

Foxground and Berry Bypass Construction Compliance Report

Report 2
1 May 2015 – 31 October 2015



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Appendix A	Project Approval Compliance Table
Appendix B	EPA Letter
Appendix C	Water quality monitoring results
Appendix D	Groundwater quality monitoring results

Details of Revision and Amendment:

Plan Control


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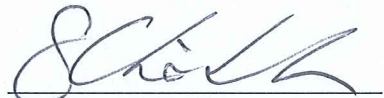
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Plan Approved
By:



Andrew Mcrae

Project Director



Shannon Chisholm

Community and 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Each new revision to the report will be distributed to all registered copyholders with an instruction that the superseded copy be destroyed or marked as superseded.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
0	20/11/2015	Draft for internal review	All	Sam Leigh	
1	4/12/2015	Initial Report Draft for review	All	Sam Leigh	
2	10/12/2015	Revised following ER review	All	Sam Leigh	
3	16/12/2015	Updated with table 7-3	30-31	Sam Leigh	
4	17/12/2015	Updated appendix A	All	Sam Leigh	

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
NCR	Non-conformance report

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. This modification removed the section which prohibited an increased to blasting limits application where a non-aboriginal heritage item existed.

On 9 March 2015, the Department of Planning and Environment approved increased blasting limits for the Toolijooa ridge earthworks cuts.

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

Approval	Approved By	Date
Consistency Assessment: Ch 15300 construction sediment basin outside the project boundary	Project ER – Toby Hobbs RMS – Michelle Toms	3 June 2015
Consistency Assessment: Ch 9600 side road additional U turn facility	Project ER – Toby Hobbs RMS – Graham Roche	28 July 2015
Consistency Assessment: Stockpile site at ch 7650 Toolijooa Road	Project ER – Toby Hobbs RMS – Graham Roche	28 July 2015
Consistency Assessment: Laydown area ch 16500 former Berry Riding club site	Project ER – Toby Hobbs RMS – Graham Roche	21 September 2015
Consistency Assessment: Miller Noise mound	Project ER – Toby Hobbs RMS – Michelle Toms	15 October 2015
Consistency Assessment: Bundewallah creek, extension of rock construction pad	Project ER – Toby Hobbs RMS – Michelle Toms	16 October 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 1 May 2015 and 31 October 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 /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 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 compliant to the conditions of approval. However there have been three non-conformities of overpressure during blasting which are detailed in section 7.

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

Project works are proceeding in accordance with the construction program. During the reporting period approximately thirty four percent of the available construction time was affected by rain delays. The project is now at full productive capacity with works progressing in all construction zones.

2.1 Demolition and property adjustment

All demolition works are complete and property adjustment works, including new property accesses, services and adjustments, are now in progress. These works are anticipated to be completed consistent with the project programme.

2.2 Utilities adjustments & diversions

Key service providing utilities have been constructed as a priority on the project and general progress is;

- 93% of required electrical service relocations are complete;
- 85% of telecommunication service relocations are complete;
- 85% of sewer and water relocation are complete;

Figure 2-1 below shows the installation of telecommunication services conduits. Southern extension service relocations account for a large percentage of the remaining works and many will be completed in the next reporting period.

Figure 2-1: Services installed underground across the project



2.3 Fencing

Boundary fencing is complete on the project with the exception of tie-in fencing to new property access points, fencing that is yet to be agreed under private property works agreements and fauna fencing around fauna passage culverts. Temporary fencing is maintained and installed around sensitive areas, heritage protection zones and maintained exclusion zones.

2.4 Traffic

In order to safely carry out works on the Princes highway, traffic speeds have been reduced to eighty kilometres per hour with a 60 km/hr zone permanently established for safety purposes adjacent the Schofields Lane T-intersection with the Princes Highway. Speeds are also modified on the highway as required during works to ensure public, and construction staff safety is maintained under strict ROL conditions. Night works as pictured in figure 2-2 are required to safely work adjacent to the highway when traffic volumes are reduced. These have been performed in accordance with the conditions of the project Environmental Protection Licence.

The following is a summary of traffic management activities during the reporting period:

- 7.8km of concrete barriers were installed;
- 35 construction access gates were used to facilitate works;
- The average travel from Tannery Rd to Toolijooa Rd was nine minutes and forty seconds;
- Nine traffic switches were completed;
- 238 detailed traffic control plans were approved and implemented during the reporting period;

Figure 2-2: Night works for SB11



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.

A summary of progress for these works is:

- Transverse drainage; 1349m installed; approximately 64% complete;
- Longitudinal drainage; 1433m installed; approximately 11% complete;
- Drainage overall 2.7 km installed; approximately 18% complete;

2.5.1 Sediment basins

The total number of sediment basins operated on site during the reporting period was 52. All sediment basins were constructed prior to ground disturbance. They are located, built and used as required by the principles set out in the industry best practice Landcom Manual 'Soils & Construction' (blue book).

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

Fortnightly inspections are conducted by a Certified Professional in Erosion and Sediment Control (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'.

Additional measures installed at sediment basins to further reduce potential site impacts include; basin baffles, pre-treatment of sediment basins with gypsum, coarse sediment traps at basin inlets, treatment and discharge in less than the EPL required five days.

During the reporting period the project treated and discharged over 350 sediment basins of captured runoff. This approximately equates to 230 million litres of water returned to the environment compliant to licence conditions. The average turbidity (NTU) measured across all discharges during the reporting period was 19 NTU. According to the project total suspended solids vs NTU correlation this equals approximately 10mg/L suspended solids. With the licence set at 50mg/L the project water quality discharges are in general much less than the licence requirements equating to an overall reduced impact on the environment.

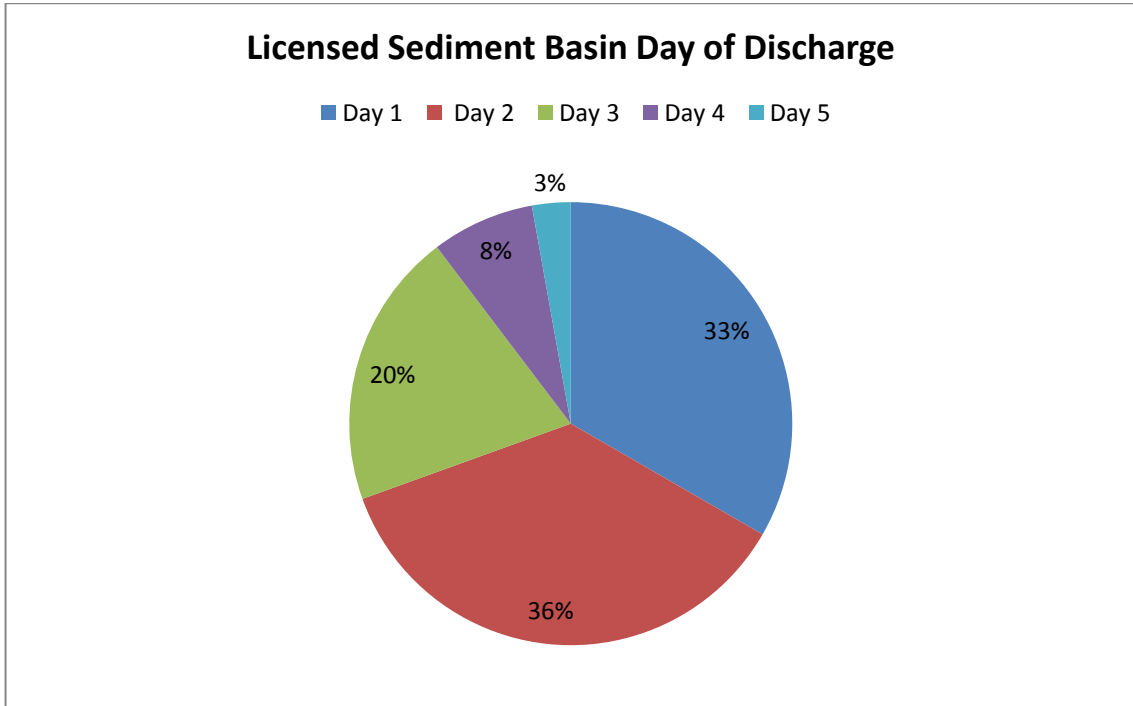
As well as achieving high standards of water clarity, the project has also been able to achieve excellent efficiency in treatment processes. From August 2015 to October 2015, over 60% of discharges were within the first two days of a cessation of a rainfall event. Table 2-1 below illustrates the timing of basin discharges in the five days following the cessation of a rainfall event. A typical site sediment basin is shown in figure 2-3.

The project has been able to achieve efficiency in basin treatment and discharge through the following;

- Specialist treatment equipment
- Pre-loading of basin inlets in advance of rainfall events;
- Dedicated trained environmental field crews for each zone of works.
- Environmental crews are well resourced and are provided with specialist field based training ; and

- Crews have tertiary, diploma and certificate IV training in environmental management;

Table 2-1: Sediment basin discharges; Five day period after rainfall



The project is focused on a continual reduction of the risk footprint through early and active rehabilitation across all areas of the site. To date the project has re-vegetated over 130,000m² of the total disturbed footprint. This is approximately 18% of the total project footprint.

Figure 2-3: Construction of sediment basins at Austral Park stockpile site



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 2-4: Earthworks continue behind the recently stabilised noise mound on North Street, Berry.



2.5.3 Temporary works

A range of temporary works 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, light vehicle tracks and temporary bridges across Broughton creek.

Figure 2-5: Temporary Bridge, new bridge and the existing Princes Highway across Broughton Creek



Figure 2-6: Light vehicle access track avoiding trees and separating light vehicles from heavy plant in cut 2



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 have been reviewed and the dates of revision for the plans are detailed in table 3-1.

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

Plan Name	DP&E Approval Date	Consistent with MCOA	Latest revision date
Construction Environmental Management Plan	06 June 2014	Yes	Rev F July 2015
Flora and Fauna Management Sub Plan	27 May 2014	Yes	Rev F Oct 2015
Heritage Management Sub Plan	13 May 2014	Yes	Rev E Oct 2015
Noise and Vibration Management Sub Plan	06 June 2014	Yes	Rev F Oct 2015
Soil and Water Quality Management Sub Plan	06 June 2014	Yes	Rev E Oct 2015
Air Quality Management Sub Plan	26 April 2014	Yes	Rev F Oct 2015
Construction Waste and Energy Management Sub Plan	29 April 2014	Yes	Rev E Oct 2015

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 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.

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.

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
July 2015	Vantage Environmental Management – Heritage management Audit	Quarterly	1 OC 4 OI 0 NCR	Closed
October 2015	Vantage Environmental Management – Surface water and groundwater monitoring	Quarterly	1 OI 1 Commendation 0 NCR	Closed

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	Closed
May 2015	NGH Environmental (on behalf of RMS) Combined Audit with PV	Bi-annually	Awaiting Formal Results – 0 NCRs	Closed

Table 3-4: Internal Audits

Date	Auditor	Type	Outcomes	Status
Sediment basin audit	James Diamond	Field audit – annual	4 OI	Closed
Spill kit audit	Jacob Cooper	Field audit – annual	4 OI	Closed
PESCP audit	James Diamond, Sam Leigh, Jacob Cooper. Alyssa Burnus	Field audit – Monthly	Multiple audits over the period actions closed out progressively	Open

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

4 Environmental Performance

Feedback received by Fulton Hogan from the key stakeholders, including RMS, the Environment Protection Authority (EPA), NSW DPI, (Fisheries and Office of Water), Shoalhaven City Council and Kiama Municipal Council and Project Environment Representative, indicate that the relevant environmental management objectives for the project have been met with best practice environmental management implemented across the project works. All works have been managed to ensure compliance 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 very 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.

The project received a letter of commendation from NSW EPA's South East Region on October 20 2015. This letter acknowledged the project's consistent efforts in

implementing a high standard of sediment and erosion controls. The letter (attached in Appendix B) particularly makes reference to the planning of high risk activities near creeks and open waterways and the focus on continual rehabilitation of the project. These aspect have also been widely acknowledged by the NSW Office of Water and NSW Fisheries All organisations continue to play an important role in the projects continual cycle of planning of sensitive works to achieve the highest environmental performance.

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.

Effectiveness of environmental controls is evaluated by industry trained environmental engineers and scientists. Controls are planned prior to ground disturbance and then installed as the priority activity. They are then reviewed weekly and during periods of rainfall to measure their effectiveness and to find additional improvements. During severe rainfall events the quality of controls has mitigated the effect on the environment, this has been noted during RMS and ER environmental inspections.

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:

STAGE ONE COMPLETED GOALS

Foxground Zone

- Make the management of Broughton creek a point of excellence on the project. Temporary bridge installation;
- Redesign Cut 2 works to reduce clearing, light vehicle access through cut 2 to result in zero trees cut down;
- Land farming of all oil wastes. Reducing the impact on local landfill and creating local rehabilitation of contaminated materials;

Broughton Zone

- Plant salvage from the Bragg and Ridge area on the project;
- Timber salvaged from clearing provided to local wood turners and craftsmen;

Berry Zone

- Bundewallah creek diversion as a point of excellence on the project;

The Bundewallah creek diversion was a high risk activity for the project. Engineering and Environmental staff worked towards a 'soft engineering' approach which critically meant a reduction in works in the waterway and emulating the natural features of the waterway. Key design features

- Use of bio degradable products
- Pools and riffles matching the natural system in preference of a evenly graded engineered channel
- Salvage and replanting of local native plants from other areas of the project required to be cleared
- Weed and waste removal from the existing channel

Structures

- Recycled curing water at Broughton creek 1 bridge deck pours;

Some of the successful completions of the stage one beyond compliance goals are shown in the photos below.

Figure 4-1: Timber felled during clearing was donated to a newly formed local community group for use on local projects



Figure 4-2: Bundewallah creek diversion downstream connection photo



STAGE TWO GOALS 2015 -2016

Foxground Zone

- Lantana and weed removal on Cut 2
- Auto flocculation station setup for passive sediment basin treatment
- Installation of visual tools for wind management in cut 2

Broughton Zone

- Provide a long term seed bank for the local Landcare groups. An area where seeds can be collected for future rehabilitation projects

Berry Zone

- Bridge to bridge rehabilitation programme, working on riparian areas of Bundewallah creek to remove weeds and increase species diversity.

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.

No monitoring was undertaken due to dry conditions in September 2015.

In the reporting period there were six monitoring events following rainfall. Four events were triggered by 15mm of rain in 24hours; two events were triggered by 50mm in 24hours. The general results of those monitoring events were;

Event 4 25 March 2015: Sampling event triggered by more than 15mm of rainfall in 24 hours. Broughton creek sampling locations did not shown any evidence of construction impacts. The waterways identified as Hitchcocks lane creek tributaries did measure some elevated suspended solids readings upstream of the construction site.

Event 5 23-24 April 2015: Sampling event triggered by more than 50mm in twenty four hours, the full list of analytes as detailed in the monitoring program was monitored for this event. During this monitoring event cadmium, chromium, zinc and copper exceeded ANZECC 2000 Freshwater 95% criteria, these concentrations were representative of background conditions and not associated with construction impacts.

Monitoring of Broughton creek indicated that the Foxground and Berry bypass has had little effect on receiving waterways for this monitoring event. Monitoring of the southern zone ephemeral drainage lines such as Hitchcocks lane tributaries again showed elevated suspended solids upstream of the construction site.

Event 6 22-23 May 2015: Triggered by 15mm of rainfall in 24 hours. Broughton creek sampling locations did not shown any evidence of construction impacts. Monitoring of the southern zone ephemeral drainage lines showed an elevated TSS at SW15, in February 2015 prior to construction an elevated reading was measured here also. GHD consulting concluded that the exceedances were representative on background conditions.

Event 7 17 June 2015: Triggered by 15mm of rainfall in 24 hours. Analytes measured did not show evidence of construction impacts on the waterways parallel and traversing the project. Monitoring of the Hitchcocks lane tributaries showed elevated suspended solids upstream of the construction site.

Event 8 20 July 2015: A minor sampling event triggered by 15mm of rain in 24 hours. One location (SW11) during this sampling event had an elevated suspended solids reading. However this location is no longer representative of construction impacts as the designed diversion of Town creek was completed before this monitoring event. This diverts the upstream site away from this redundant downstream location. The samples also measured a high level of variability from 54mg/L to 220mg/L. Field sheets reviewed stated that there was no surface flow on the day of the sampling. The location is

therefore not considered representative of construction impacts. All other waterways did not show evidence of construction impacts.

Event 9 27-28 August 2015: Sampling event triggered by more than 50mm in twenty four hours, the full list of analytes as detailed in the monitoring program was monitored for this event. According to analysis against the controls charts the levels measured were not indicative of construction impacts.

For all monitoring events during the reporting period control charts used comparing the upstream 80th percentile value vs the downstream median (as set out in the ANZECC 2000 water quality guidelines) were indicative of no construction impacts for all analytes across all water bodies monitored.

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.

During the period the project employed a low impact clearing method which involved the use of specialist harvesting equipment. This equipment allows trees to be lowered to the ground evenly reducing the fall impacts on potential unknown fauna in trees.

All major clearing for the project was completed during this reporting period. Isolated amounts of clearing and tree trimming will be undertaken to facilitate works into the future.

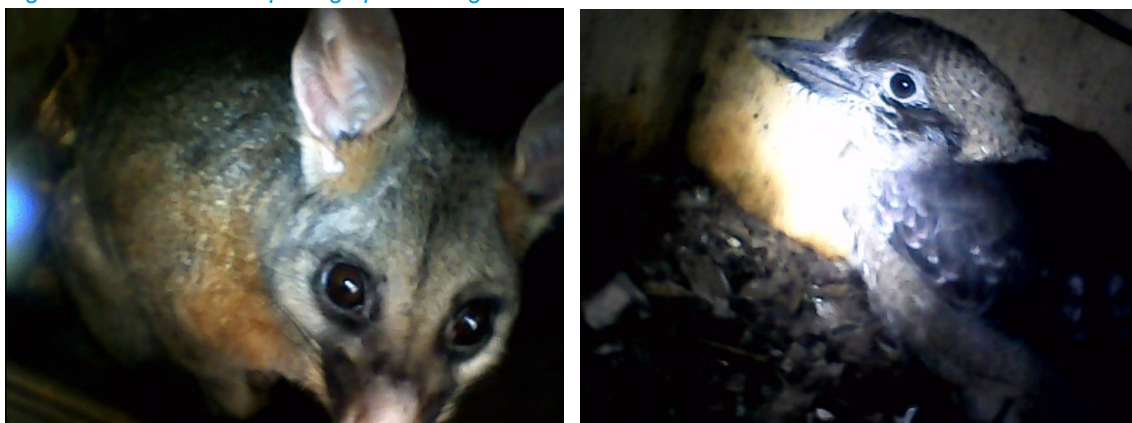
A number of fauna relocations were undertaken during clearing. The first stage of nest box monitoring was performed in the reporting period. Approximately twenty percent of nest boxes installed were found to have evidence of fauna use. Aquatic monitoring at Bundewallah, Broughton Mill and Broughton creeks confirmed the presence of Australian Bass and Platypus.

It is planned that during the next reporting period fauna poles and some rope bridges will be installed. The first of the fauna underpasses will also be completed.

Figure 5-1: Hollow bearing trees inspections using an elevated work platform



Figure 5-2: Native fauna photographed using installed nest boxes



5.3 Heritage

All archaeological salvage works for the main alignment and the project ancillary sites were completed in the previous reporting period with lithic analysis ongoing.

Significant heritage sites neighbouring to the project alignment have been protected with clear signage and temporary fencing.

The Construction Heritage Management Plan Unexpected Finds Procedure was implemented after the discovery of animal bones during excavation on two occasions during the reporting period. The European heritage unexpected finds procedure was implemented once after a section of sandstone was found during excavation. None of the unexpected finds were considered to be of heritage significance and works recommenced after assessment was undertaken.

5.4 Air quality

Ambient air quality monitoring was undertaken in accordance with the Construction Air Quality Management Sub-plan. All results for the period had an average below the 4g/m² dust level. Only one location on one month measured a level higher than 4g/m². Results are shown in table 5.1.

In May of 2015 a dust gauge exceedance was recorded at monitoring location DMG2. Upon review of the location it was observed a stockpile was directly adjacent to the monitoring location, and that 100km/hr winds observed during the month may have contributed to the high reading. The dust gauge location was moved to a location more representative of the wider catchment.

A variety of dust suppression techniques were used across the project these included but were not limited too; water carts, pre-wetting of materials prior to cartage, soil stabilisation polymers, and dust bloc haul road polymers. Progressive rehabilitation is a project focus with continual reduction of the risk footprint throughout construction.

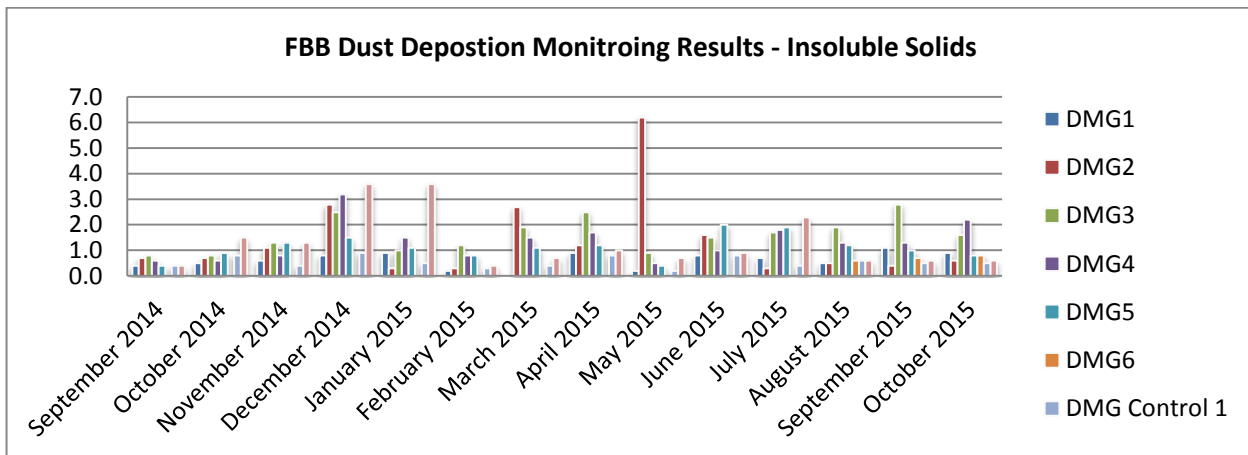
Figure 5-: Dust control in cut 2 with pre-soaking of rock prior to loading into trucks to prevent dust generation



Figure 5-: Wind-sock installed as a visual indicator to plant operators of the direction and velocity of winds



Figure 5-1: Project ambient air quality monitoring results (dust deposition in mg/m²)



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 was conducted twice in response to community enquiries and all 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

May 2015

One vibration complaint was received during May. The complainant visited the RMS project office to advise that she has felt vibrations at her property as a result of works being carried out nearby. The Community Relations Officer and two Environment Officers attended the address to carry out vibration monitoring approximately 5m in the front of the property. Vibration levels recorded were 1.76mm/s. This was noted to be within anticipated vibration levels, acceptable under international standards. The results were explained to the resident and the complainant was satisfied with the response.

August 2015

Resident on North Street called about dust concerns. Water carts continually attended the area. Polymer applied to haul road surfaces. New construction gate has been installed away from the residences. Issue closed.

September 2015

14 September 2015; Resident on North Street called about noise and vibration concerns. Attended monitoring was performed with no apparent acoustic impact & negligible vibration reading recorded. Issue closed.

16 September 2015: Resident on Woodhill Mountain Road called about noise concerns. Attended monitoring was performed and readings were within anticipated ranges for construction. Issue closed.

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 1 May 2015 to 20 October 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 Men's 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.

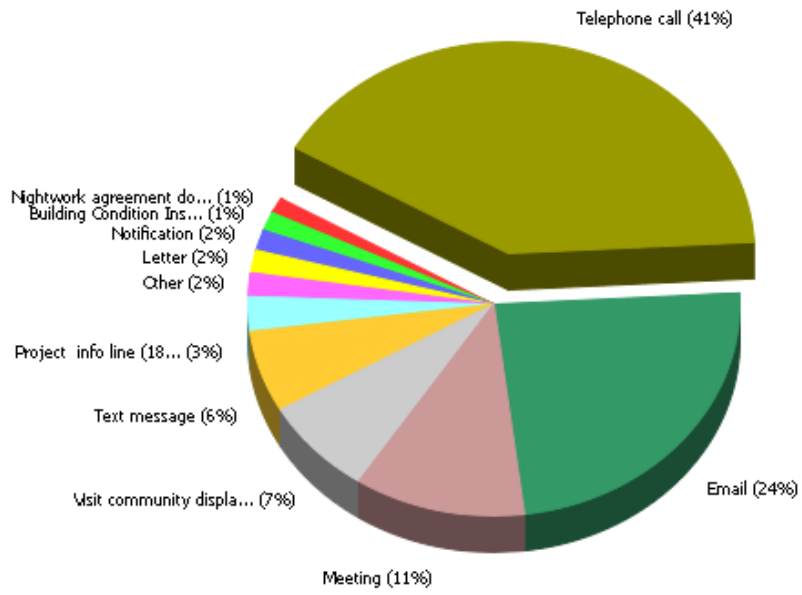
The project maintains an ongoing commitment to direct consultation with residents within the area of the project corridor regarding upcoming construction works and the project community relations team record all complaints and interactions with the public and stakeholders via software known as "Consultation Manager". The 832 community events recorded are represented overleaf.

Report Parameters:

Date between; Friday, 1 May 2015, Saturday, 31 October 2015

Issues	Events	Stakeholders distinct total	
**Information	832	719	3309
** Enquiry	278	139	295
Construction Activities	213	124	253
Blasting	209	572	1463
Property Adjustments	122	42	120
Communication Administration	109	549	626
Sponsorship	97	33	99
Out of Hours Work	91	73	208
Property access	88	42	98
Traffic changes and traffic control	78	587	1167
Other	589	892	1206
[No Issues]	96	56	100
Total Event search	1328	775	3822

Event Types - Total Events



7 Other compliance matters

7.1 Compliance Management

During the reporting period there were;

- Three events recorded as incidents see table 7-1 below;
- Three overpressure non-conformances see table 7-2 below;
- Three overall non-conformances for the project against the conditions of approval and statement of commitments table 7-3 below;

Table 7-1: Incidents

DATE	DESCRIPTION	CORRECTIVE ACTIONS	STATUS
10 Sep 2015	Hydrocarbon spill from side tipper, ruptured supply line	Corrective actions not applicable this event was a one off	Closed
11 Sep 2015	During flood repair works an excavator caused disturbance to Bundewallah Ck.	Future works delayed until low flow conditions returned in the creek. Temporary pumped diversion for one day employed during the works.	Closed
30 Oct 2015	Bundewallah Creek; turbidity issue observed following pile excavation 5m from the edge of the creek. Sub-surface flow connectivity to open channel.	Silt curtains and pumps used as controls. Revised methodology used for future works in this location.	Closed

Table 7-2: Overpressure Non-conformances

DATE	DESCRIPTION	CORRECTIVE ACTIONS	STATUS
25 June 2015	Overpressure exceedance during blasting at two locations 131 dBL 135dBL	Reviewed environmental and site conditions. Information used in future blast designs to prevent re-occurrence	Closed
6 August 2015	Overpressure exceedance during blasting 129.9 dBL	Reviewed environmental and site conditions. Information used in future blast designs to prevent re-occurrence	Closed
27 October 2015	Overpressure exceedance during blasting 129.9 dBL	Reviewed environmental and site conditions. Information used in future blast designs to prevent re-occurrence	Closed

Table 7-3: Non-conformances; Minister for Planning and Infrastructure's Conditions of Approval (22 July 2013) and Statements of commitments

Ref	Condition Short description	Details of non-compliance
B18	Condition requires aboriginal heritage archival recordings and reports.	Reports relating to Aboriginal heritage are yet to be sent to Local Councils and the Local Historical Society in the time period required.
C9	Air blast overpressure limits during blasting.	Three non-conformances for blasting overpressure limits were recorded.

C27	Road dilapidation investigations and reports.	Road dilapidation reports for the 'Sand track' were completed in September 2014. The condition requires additional reports 12 months later; these reports were due in September 2015. However they were not completed until November with the report to be provided in January 2016
B30	Establish and maintain a project website.	Documents required to be uploaded were not updated within the reporting period.

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.

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	35
Wet weather	Fulton Hogan staff; engineers, environmental, foreman, leading hands, labourers, superintendents, management	14
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	8
NSW EPA	Michael Heinze, Julian Thompson Fulton Hogan staff; environmental staff, engineers, foreman and superintendents	2

Inspection type	Attendees	Number of inspections
NSW DPI (Fisheries)	Allan Lugg, Jillian Reynolds Fulton Hogan staff; environmental staff, engineers, foreman and superintendents	1
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	1
Shoalhaven City Council	Scott Galbraith Weed Management Officer, Fulton Hogan environmental staff	2

Table 4-3: Environmental Review Group Meeting

Meeting Type	Attendees	Date
Environmental Review Group	Ron De Rooy (RMS); Graham Roche (RMS); Michael Spencer (Fulton Hogan); Rebecca Byrne (Fulton Hogan); Shannon Chisholm (Fulton Hogan); Sam Leigh (Fulton Hogan); James Diamond (Fulton Hogan); Jacob Cooper (Fulton Hogan); Glenn Snow (DP&E) Lauren Rose (DP&E); Julian Thompson (EPA); Michael Heinze (EPA); Jackie Taylor (OEH); Shane Pickering (Shoalhaven City Council); Toby Hobbs (Vantage Environmental Management).	19 August 2015

Appendix A Project Approval Compliance Table

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: <ul style="list-style-type: none"> (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	Construction Environmental Management Plan (Rev F), July 2015. Section 1.2 Tracked and reported bi-annually in the Compliance Tracking Reports.	Ongoing
A2	In the event of an inconsistency between: <ul style="list-style-type: none"> (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 F), July 2015. Section 1.2 Tracked and reported bi-annually in the Compliance Tracking Reports.	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: <ul style="list-style-type: none"> (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 F), July 2015. Section 1.2 Tracked and reported bi-annually in the Compliance Tracking Reports.	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, July 2015	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	Compliant	Construction Environmental Management Plan (Rev F), July 2015. Section 1.2	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 F), July 2015. Section 1.2	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 F), July 2015. 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 F), July 2015. Section 1.2	Ongoing
STAGING						
A9	<p>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:</p> <p>(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</p> <p>(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.</p> <p>(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).</p> <p>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.</p> <p>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).</p>	Pre-construction, construction	RMS/Fulton Hogan	Compliant	<p>NA.</p> <p>No changes to staging are proposed from that already approved by DP&E as part of the <i>Toolijooa Road Fill Works Stage of the Foxground and Berry bypass Project</i>:</p>	Closed
PART B PRIOR TO CONSTRUCTION						
DESIGN						
B1	<p>The proponent shall, in consultation with the relevant council/s, investigate the need for:</p> <p>(a) potential future on and off ramps at Woodhill Mountain Road; and</p> <p>(b) a potential future left turn lane onto the new highway from Toolijooa Road.</p> <p>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.</p>	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 12 September 2014 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. Construction of fauna underpasses has commenced in the reporting period. Installation of arboreal mammal fauna poles and rope ladders will commence in the next reporting 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 Temporary bridges installed over Broughton Creek 1,2 and 3 Temporary bridge installed over Broughton Mill Creek Bundewallah Creek diversion works to allow for design bridge construction installed fish passage maintained in the diversion channel.	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	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
	<p>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 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:</p> <ul style="list-style-type: none"> (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: <ul style="list-style-type: none"> (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. <p>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).</p>					
B8	<p>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:</p> <ul style="list-style-type: none"> (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 	Construction and operation	RMS	Compliant	<p>Biodiversity Offset Strategy (by RMS).</p> <p>RMS are in the process of preparing the Biodiversity Offset Package</p>	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
	<p>the Package in perpetuity, including ongoing management, maintenance and monitoring requirements; and</p> <p>(c) timing and responsibilities for the implementation of the provisions of the Package over time.</p> <p>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).</p>					
Ecological Monitoring						
B9	<p>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:</p> <p>(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;</p> <p>(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);</p> <p>(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;</p> <p>(d) provision for the assessment of the data to identify changes to habitat usage and whether this can be directly attributed to the project;</p> <p>(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</p> <p>(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.</p> <p>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)).</p>	Pre-construction	RMS/Fulton Hogan	Compliant	<p>Ecological Monitoring Program approved 27 October 2014</p> <p>Ecological monitoring has commenced in the reporting period and general results include.</p> <p>Aquatic monitoring is required bi-annually; it has been completed</p> <ul style="list-style-type: none"> - Autumn session 1: 4/6/2015 -6/6/2015 - Autumn session 2: 15/6/2015 -17/6/2015 - Spring session 1: 14/10/2015 -15/10/2015 - Spring session 2: 1/12/2015 – 2/12/2015 <p>Monitoring; confirmed presence of Australian bass and Platypus. All results will be compiled and reported separately to this compliance report;</p> <p>Nest box monitoring will be completed in the second week of November 2015 and reported separately to this compliance report;</p> <p>Weed monitoring to monitor the spread and control and presence of weeds was completed in October 2015. Results are been compiled and will be reported independent to this compliance report;</p> <ul style="list-style-type: none"> - Monitoring date 7/09/2015 <p>Road kill observations have been made throughout 2015 on the existing Princes highway alignment and will be reported as a separate report in the same time frame as the other ecological monitoring reports in early 2016.</p>	Ongoing
HYDROLOGY AND FLOODING						

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
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 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.	Pre-construction	RMS/Fulton Hogan	Compliant	Detailed Design - Flooding Report	Complete
B11	<p>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:</p> <ul style="list-style-type: none"> (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. <p>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).</p>	Pre-construction	RMS/Fulton Hogan	Compliant	<p>Hydrological Mitigation Report (by RMS)</p> <p>Detailed Design - Flooding Report</p> <p>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. Subject to additional reports been provided, those reports were provided on;</p> <ul style="list-style-type: none"> - June 2015 - August 2015 <p>RMS is currently investigating the option of acquiring 29A Princes Highway.</p> <p>The DP&E has been advised in a letter dated 15th June 2015 that the mitigation works at property 76 Woodhill Mountain Road have not been completed at the request of the land owner.</p> <p>An indemnity between 76 Woodhill Mtn Rd exists with Fulton Hogan, pending boundary resolution with neighbour.</p>	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

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Ref	Condition Requirement	Phase	Responsibility	Compliance status	Compliance notes	Close out
SEDIMENTATION, EROSION AND WATER						
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. Water quality monitoring dates; - 22 and 23 May 2015 - 17 June 2015 - 20 July 2015 - 27 and 28 August 2015 - September no rainfall triggered monitoring - 22 October 2015 Ground water quality monitoring results are included in appendix C of this report. Ground water monitoring is required quarterly, monitoring dates in the reporting period; - 30 and 31 March 2015 - 29 June 2015	Complete
HERITAGE IMPACTS						

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Ref	Condition Requirement	Phase	Responsibility	Compliance status	Compliance notes	Close out
Built and Landscape Heritage						
B17	<p>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).</p> <p>Additionally, for H11, the proponent shall:</p> <ul style="list-style-type: none"> (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	<p>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.</p> <p>DP&E was advised of the relocation outcome of Glen Devon in a letter dated 9th July 2015.</p> <p>The Glen Devon Heritage Interpretation Plan was submitted to DP&E on 9th July 2015.</p>	Complete
B18	<p>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.</p> <p>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.</p>	Prior to Pre-construction	RMS	Non-Compliant	<p>Archival recording and detailed historic research complete. Reports were sent to the DP&E independently of this Compliance Tracking Report.</p> <p>Reports relating to Non-Aboriginal heritage were submitted to DP&E on 10th July 2015</p> <p>Reports relating to Aboriginal heritage were submitted to DP&E on 22nd October 2015</p> <p>Reports relating to Aboriginal heritage are yet to be sent to Local Councils and the Local Historical Society</p>	Ongoing
B19	<p>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:</p> <ul style="list-style-type: none"> (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	<p>Historic and physical archaeological investigations complete.</p> <p>Report submitted to the DP&E on 10th July 2015.</p>	Ongoing
Archaeology (Aboriginal and non-Aboriginal)						
B20	<p>Prior to the commencement of pre-construction and construction activities affecting Aboriginal site G2B PAD 1 the Proponent shall:</p> <ul style="list-style-type: none"> (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 & 	Prior to Pre-construction	RMS	Compliant	<p>Archaeological investigations complete.</p> <p>Report submitted to the DP&E on 22nd October 2015.</p>	Ongoing

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	<p>Environment (DP&E), and shall include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> (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	<p>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:</p> <ul style="list-style-type: none"> (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. <p>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).</p> <p>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).</p>	Prior to Pre-construction	RMS	Compliant	<p>Archaeological salvage works have been completed on behalf of RMS by the nominated project archaeologist Kelleher Nightingale Consulting, in accordance with the approved methodology.</p> <p>The report for these works will be completed in the fourth quarter of 2015.</p>	Ongoing
B22	<p>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:</p> <ul style="list-style-type: none"> (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: <ul style="list-style-type: none"> (i) consideration of measures to avoid or minimise disturbance to archaeology, where archaeology of non-Aboriginal archaeological significance is found to be present; 	Prior to Pre-construction	RMS	Compliant	<p>Investigation and reporting is complete.</p> <p>Report submitted to the DP&E on 10th July 2015.</p>	Ongoing

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Ref	Condition Requirement	Phase	Responsibility	Compliance status	Compliance notes	Close out
	<p>(ii) where impacts cannot be avoided, recommendations for any further investigations for archaeology of historical archaeological significance; and</p> <p>(iii) management and mitigation measures to ensure there are no additional impacts due to pre-construction and construction activities.</p> <p>(c) Undertake any further archaeological excavation works recommended by the results of the non-Aboriginal archaeological investigation program.</p> <p>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).</p> <p>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.</p>					
URBAN DESIGN AND LANDSCAPING						
B23	<p>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:</p> <p>(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);</p> <p>(b) location of existing vegetation and proposed landscaping (including use of indigenous and endemic species where possible) and design features;</p> <p>(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);</p> <p>(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;</p> <p>(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;</p> <p>(f) take into account appropriate roadside plantings and landscaping in the vicinity of heritage items and ensure no</p>	Pre-construction	RMS	Compliant	<p>Urban Design and Landscape Plan approved by DP&E.</p> <p>Works to rehabilitate the project footprint have commenced and will be ongoing throughout the phases of construction.</p> <p>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</p> <ol style="list-style-type: none"> 1. RMS providing details of landscape rehabilitation of temporary access tracks and ancillary facilities in post IFC Landscape drawings; <i>Ongoing.</i> 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; <i>Complete.</i> 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; <i>Currently in draft.</i> 4. A detailed monitoring plan including monitoring periods, frequency and duration being provided in the Contractors Maintenance Management Plan; and <i>Ongoing.</i> 5. A copy of the updated Urban Design and Landscape Plan shall be provided to the Department; <i>Final plan to be provided in the next reporting period.</i> 	Ongoing

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Ref	Condition Requirement	Phase	Responsibility	Compliance status	Compliance notes	Close out
	<p>additional heritage impacts;</p> <p>(g) specific details on the landscape treatments for the North Street corridor, Town Creek diversion and Town Park.</p> <p>(h) strategies for progressive landscaping of other environmental controls such as erosion and sedimentation controls, drainage and noise mitigation;</p> <p>(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;</p> <p>(j) evidence of consultation with the relevant council and community on the proposed urban design and landscape measures prior to its finalisation; and</p> <p>(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.</p> <p>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.</p>					
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.	Complete
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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Ref	Condition Requirement	Phase	Responsibility	Compliance status	Compliance notes	Close out
	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	The strategy was approved by DP&E in a letter dated 27th Oct 2014. The final option is still being determined by Shoalhaven City Council. The draft Berry Masterplan was provided to DP&E in a meeting on 18th Nov 2015.	Ongoing
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: <ul style="list-style-type: none"> (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 Construction Environmental Management Plan (Rev F), July 2015, Section 8.3	Complete
COMMUNITY INFORMATION AND INVOLVEMENT						
<i>Provision of Electronic Information</i>						
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: <ul style="list-style-type: none"> (a) information on the current implementation status of the project; (b) a copy of the documents referred to under condition A1 of this approval, and any documentation supporting modifications to this approval that may be granted from time to time; 	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 Documents required to be uploaded to the website were not updated within the reporting period, however they were published on 2 December 2015. Periodic revisions and amendments of relevant documentation will be made as required.	Ongoing

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Ref	Condition Requirement	Phase	Responsibility	Compliance status	Compliance notes	Close out
	<ul style="list-style-type: none"> (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	<p>Prior to the commencement of construction, the Proponent shall ensure that the following are available for community complaints and enquiries during the construction period:</p> <ul style="list-style-type: none"> (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. <p>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.</p>	Construction	RMS/Fulton Hogan	Compliant	Community Communication Strategy, 27 October 2015, sections 7.2 and 8.2	Ongoing
B32	<p>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.</p> <p>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.</p>	Pre-construction, Construction	RMS/Fulton Hogan	Compliant	Community Communication Strategy, 27 October 2015, Sections 8.1 and 8.2	Ongoing
Community Involvement						
B33	<p>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:</p> <ul style="list-style-type: none"> (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 matters relating to environmental management and the 	Pre-construction	RMS/Fulton Hogan	Compliant	<ul style="list-style-type: none"> 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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Ref	Condition Requirement	Phase	Responsibility	Compliance status	Compliance notes	Close out
	<p>delivery of the project. This may include the use of an appropriately qualified and experienced independent mediator.</p> <p>Key issues that should be addressed in the Community Communication Strategy should include (but not necessarily be limited to):</p> <ul style="list-style-type: none"> (i) traffic management (including property access, pedestrian access); (ii) landscaping/urban design matters; (iii) construction activities; and (iv) noise and vibration mitigation and management. <p>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).</p>				<p>Community Communication Strategy Appendix C</p> <ul style="list-style-type: none"> 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						
<i>Environmental Representative</i>						
B34	<p>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:</p> <ul style="list-style-type: none"> (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 likely to occur. 	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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Ref	Condition Requirement	Phase	Responsibility	Compliance status	Compliance notes	Close out
Construction Environmental Management Plan						
B35	<p>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:</p> <ul style="list-style-type: none"> (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: <ul style="list-style-type: none"> (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 basins); 	Preconstruction	RMS/Fulton Hogan	Compliant	Construction Environmental Management Plan (Rev F), July 2015, Appendices and Sub Plans were updated and reviewed by the project ER from July to October 2015.	Ongoing

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	<p>(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;</p> <p>(vii) measures to monitor and manage hazard and risks including emergency management; and</p> <p>(viii) the issues identified in condition B36;</p> <p>(f) details of community involvement and complaints handling procedures during construction, consistent with the requirements of conditions B30 to B33;</p> <p>(g) details of compliance and incident management consistent with the requirements of condition B29; and</p> <p>(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).</p> <p>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).</p>					
B36	<p>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):</p> <p>(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:</p> <p>(i) identification of construction traffic routes and quantification of construction traffic volumes (including heavy vehicle/ spoil haulage) on these routes;</p> <p>(ii) details of vehicle movements for construction sites and site compounds including parking, dedicated vehicle turning areas, and ingress and egress points;</p> <p>(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</p> <p>(iv) details of temporary and interim traffic arrangements to address potential impacts;</p>	Preconstruction	RMS/Fulton Hogan	Compliant	<p>a) Construction Traffic Management Plan and Appendices</p> <p>b) Flora and Fauna Management Sub Plan (Rev F), October 2015 and Appendices</p> <p>c) Noise and Vibration Management Sub Plan (Rev), October 2015 and Appendices</p> <p>d) Soil and Water Quality Management Sub Plan (Rev E), October 2015 and Appendices</p> <p>e) Heritage Management Sub Plan (Rev E), October 2015 and Appendices</p> <p>The approval of the CEMP and sub plans issued by the DP&E on 19 September 2014 was subject to the following requirements:</p> <ol style="list-style-type: none"> 1. RMS shall advise the Department in writing of the qualifications and experience of the Project Ecologist, once appointed; <p><i>Complete.</i></p> <ol style="list-style-type: none"> 2. RMS shall provide an updated Flora and Fauna Management Sub Plan to the Department following completion of pre-construction surveys, including proposed management measures to address any threatened flora species identified during these surveys. <p><i>Flora and Fauna management plan updated 26 October 2015. Final clearing report outcomes with be included in a further revision of this plan.</i></p> <ol style="list-style-type: none"> 3. RMS shall develop a work method statement for conducting a trial blast as a part of the detailed planning, taking into account the process for safe execution of the works, including appropriate exclusion zones for safety purposes and in accordance with vibration limits for sensitive receivers; and <p><i>Complete</i></p>	Ongoing

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	<p>(v) details of evidence based mitigation measures to address potential impacts on the 'Sandtrack';</p> <p>(vi) a response procedure for dealing with traffic incidents; and</p> <p>(vii) mechanism for the monitoring, review and amendment of this sub-plan.</p> <p>(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:</p> <p>(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);</p> <p>(ii) updated sensitive area/ vegetation maps based on (i) above and previous survey work;</p> <p>(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 <i>Phytophthora cinnamomi</i>), erosion and sediment control and progressive re-vegetation;</p> <p>(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;</p> <p>(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</p> <p>(vi) mechanism for the monitoring, review and amendment of this sub-plan;</p> <p>(c) a Construction Noise and Vibration Management Sub-plan to detail how construction noise and vibration impacts will be minimised and managed. The sub-plan shall be developed in</p>				<p>4. RMS shall develop an area-specific Works in Waterways work method statement prior to the commencement of works in waterways, as per the Soil and Water Quality Management Plan.</p> <p><i>Complete.</i></p>	

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	<p>consultation with the EPA and include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> (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; <p>(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:</p> <ul style="list-style-type: none"> (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 impact on waterways or wetlands (through direct disturbance such as construction of waterway 					

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	<p>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;</p> <p>(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;</p> <p>(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;</p> <p>(vi) construction water quality monitoring requirements consistent with condition B16; and</p> <p>(vii) a groundwater management strategy, including (but not necessarily limited to):</p> <ul style="list-style-type: none"> 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 <p>(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:</p> <ul style="list-style-type: none"> (i) In relation to Aboriginal Heritage: <ul style="list-style-type: none"> i. details of management measures and strategies for protection, salvage, and/or conservation of sites and items that will 					

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	<p>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);</p> <p>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;</p> <p>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 recommending any works in the area unless authorised by the department and/ or the NSW Police Force); and</p> <p>iv. induction processes (identification, protection) for construction personnel (including procedures for keeping records of inductions) and procedures for ongoing Aboriginal consultation and involvement; and</p> <p>(ii) In relation to non-Aboriginal Heritage:</p> <p>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);</p> <p>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 new non-Aboriginal heritage impacts against the approved impacts of the</p>					

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	<p>project and notification of the Heritage Council of NSW, in accordance with Section 146 of the NSW Heritage Act 1977, and the department;</p> <p>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</p> <p>iv. heritage induction processes (identification, protection) for construction personnel (including procedures for keeping records of inductions).</p>					
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	<p>All major clearing has now been completed on the project successfully with no instances of over clearing. All boundaries maintained.</p> <p>Concept designs were 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 1280, project chainage 13900 – 13200 fencing realignment and drainage changes.</p> <p>Salvaged timber from clearing will be used on Kangaroo Valley bridge Urban design features. Timber was also donated to the community in the reporting period.</p>	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	<p>Air Quality Management Sub Plan (Rev F), October 2015</p> <p>Active air quality mitigation measures are in place on the project. These include;</p> <ul style="list-style-type: none"> - Progressive rehabilitation of the project footprint and continual reduction in exposed soils. Approximately 20% of the project footprint was rehabilitated in the period; - Application of polymer to temporary batters; - Water carts used on haul routes and to suppress dust across all areas; - Sprinklers used at crushers; - Pre-wetting material prior to crushing; - Sweeper trucks and stabilised access points; - Wind sox and visual tools to indicate wind direction and speed; - Ceasing works where dust cannot be managed. <p>In May 2015 one location was recorded above the prescribed limit.</p>	Ongoing
NOISE AND VIBRATION IMPACTS						
Construction Hours						
C3	<p>The Proponent shall only undertake construction activities associated with the project during the following standard construction hours:</p> <p>(a) For the area south of Tindalls Lane (including Berry township)</p> <p>(i) 7:00am to 6:00pm Mondays to Fridays, inclusive; and</p> <p>(ii) 8:00am to 1:00pm Saturdays; and</p>	Construction	Fulton Hogan	Compliant	Noise and Vibration Management Sub Plan (Rev F), October 2015	Ongoing

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	(iii) at no time on Sundays or public holidays.					
C4	<p>Works outside of the standard construction hours identified in condition C3 may be undertaken in the following circumstances:</p> <p>(a) works that generate noise that is:</p> <p>(i) no more than 5 dB(A) above rating background level at any residence; or</p> <p>(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</p> <p>(b) for delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or</p> <p>(c) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm; or</p> <p>(d) For the area between Toolijooa Road and Tindalls Lane, encompassing Toolijooa cut, Broughton Creek floodplain and major bridge works (outside of Berry township):</p> <p>(i) between 6:00am and 7:00am Monday to Friday; and</p> <p>(ii) between 6:00pm and 7:00pm Monday to Friday; and</p> <p>(iii) 1:00pm and 5:00pm on Saturdays; and</p> <p>(iv) at no time after 6pm on a day preceding a public holiday long weekend.</p> <p>(e) with the approval of the Secretary of the NSW Department of Planning & Environment (DP&E) in accordance with condition C6.</p>	Construction	Fulton Hogan	Compliant	<p>Noise and Vibration Management Sub Plan (Rev F), October 2015, Appendix E</p> <p>Additional approved out of hour's works have been completed and are compliant to the requirements of the individual supplementary approval.</p> <p>Condition C4 was modified by DP&E 31 July 2015.</p>	Ongoing
C5	<p>Except as expressly permitted by an Environment Protection Licence issued for the project, high noise impact activities and works shall only be undertaken:</p> <p>(a) between the hours of 8:00am to 6:00pm Mondays to Fridays;</p> <p>(b) between the hours of 8:00am to 1:00pm Saturdays; and</p> <p>(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.</p> <p>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.</p>	Construction	Fulton Hogan	Compliant	<p>Noise and Vibration Management Sub Plan (Rev F), October 2015, Chapter 7</p> <p>Respite periods are effected onsite</p>	Ongoing
C6	<p>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:</p> <p>(a) details of the nature and need for activities to be conducted during the varied construction hours;</p> <p>(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</p>	Construction	Fulton Hogan	Closed	<p>Noise and Vibration Management Sub Plan (Rev F), October 2015, Appendix E</p> <p>Condition C6 deleted by DP&E 31 July 2015.</p>	Complete

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	<p>reasonable mitigation measures have been put in place; and</p> <p>(c) evidence of consultation with the EPA on the proposed variation in standard construction hours.</p> <p>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.</p>											
C7	<p>Blasting associated with the project shall only be undertaken during the following hours:</p> <p>(a) 9:00am to 5:00pm, Mondays to Fridays, inclusive;</p> <p>(b) 9:00am to 1:00pm on Saturdays; and</p> <p>(c) at no time on Sundays or public holidays.</p> <p>This condition does not apply in the event of a direction from the NSW Police Force or other relevant authority for safety or emergency reasons to avoid loss of life, property loss and/or to prevent environmental harm.</p>	Construction	Fulton Hogan	Compliant	Noise and Vibration Management Sub Plan (Rev F), October 2015, Appendix D	Ongoing						
Construction Noise and Vibration Goals												
C8	<p>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.</p>	Construction	Fulton Hogan	Compliant	<p>Noise and Vibration Management Sub Plan (Rev F), October 2015, Section 4.1 and Chapter 7</p> <p>No exceedances were observed in the reporting period. Noise is reported monthly in EPL reports and publically available on the Fulton Hogan website.</p> <p>(http://www.fultonhogan.com/news-resources/management-plans-reporting/foxground-berry-bypass-nsw/)</p>	Ongoing						
C9	<p>The Proponent shall implement all feasible and reasonable mitigation measures with the aim of achieving the following construction vibration goals:</p> <p>(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;</p> <p>(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</p> <p>(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).</p>	Construction	Fulton Hogan	Compliant	Noise and Vibration Management Sub Plan (Rev F), October 2015, Section 4.2 and Chapter 7	Ongoing						
C10	<p>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.</p> <p>Table 1 - Airblast overpressure criteria:</p> <table border="1"> <thead> <tr> <th>Airblast overpressure (dB(Lin Peak))</th> <th>Allowable exceedance</th> </tr> </thead> <tbody> <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> </tbody> </table>	Airblast overpressure (dB(Lin Peak))	Allowable exceedance	115	5% of total number of blasts over a 12 month period	120	0%	Construction	Fulton Hogan	Non-Compliant	<p>Noise and Vibration Management Sub Plan (Rev F), October 2015, Section 4.2, Chapter 7 and Appendix D</p> <p>Blasting has commenced in Cut 2, Cut 3, and Cut 4 on the project. Three non-conformances occurred with respect to overpressure during the reporting period. They are detailed in Section 7 of the main body of the report., dates of exceedance of overpressure were;</p> <ul style="list-style-type: none"> - 25 June 2015 - 6 August 2015 - 27 October 2015 	Ongoing
Airblast overpressure (dB(Lin Peak))	Allowable exceedance											
115	5% of total number of blasts over a 12 month period											
120	0%											
C11	<p>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.</p>	Construction	Fulton Hogan	Compliant	<p>Noise and Vibration Management Sub Plan (Rev F), October 2015, Section 4.3, Chapter 7 and Appendix D</p> <p>Blasting has commenced. All peak particle vibration monitoring has been complaint in all blast monitoring locations during the reporting period.</p>	Ongoing						

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	<p>Table 2 – Peak particle velocity criteria</p> <table border="1"> <thead> <tr> <th>Receiver</th> <th>Peak particle velocity (mm/s)</th> <th>Allowable exceedance</th> </tr> </thead> <tbody> <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> </tbody> </table>	Receiver	Peak particle velocity (mm/s)	Allowable exceedance	Residence on privately owned land	5	5% of total number of blasts over a 12 month period	10	0%	Non- Aboriginal Heritage Item	3	0%					
Receiver	Peak particle velocity (mm/s)	Allowable exceedance															
Residence on privately owned land	5	5% of total number of blasts over a 12 month period															
	10	0%															
Non- Aboriginal Heritage Item	3	0%															
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 F), October 2015, Section 4.3, Chapter 7 and Appendix D Blasting trials were completed in the last reporting period. Full blasting operations have commenced and will continue into the next reporting period.	Ongoing											
C13	<p>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:</p> <p>(a) a written agreement from the EPA and the relevant landowner to exceed the criteria;</p> <p>(b) details of the proposed blasting program and justification for the proposed increase to blasting criteria including alternatives considered (where relevant);</p> <p>(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;</p> <p>(d) in relation to any identified non-Aboriginal heritage items in the vicinity of blasting works, an assessment of heritage impacts;</p> <p>(e) details of the blast management, mitigation and monitoring procedures to be implemented;</p> <p>(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).</p> <p>Unless otherwise agreed by the Director General, the following exclusions apply to the application of this condition:</p> <p>(a) any agreements reached may be terminated by the landowner at any time should concerns about the increased blasting limits be unresolved; and</p> <p>(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.</p>	Construction	Fulton Hogan	Compliant	Noise and Vibration Management Sub Plan (Rev F), October 2015, 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 has commenced.	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
Operational Noise Mitigation Review						
C14	<p>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:</p> <p>(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);</p> <p>(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 <i>Road Noise Policy</i> (DECCW, 2011), based on the operational noise performance of the project predicted under (a) above; and</p> <p>(c) where necessary, investigate additional feasible and reasonable noise mitigation measures to achieve the criteria outlined in the Road Noise Policy (DECCW, 2011).</p>	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
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	Compliant	Heritage Management Sub Plan (Rev E), October 2015, Chapter 5 and Appendix A	Ongoing
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	Compliant	Heritage Management Sub Plan (Rev E), October 2015, Chapter 5	Ongoing
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	Compliant	Heritage Management Sub Plan (Rev E), October 2015, Chapter 5 Detailed design of the Foxground and Berry Bypass Urban Design and Landscaping Plan 20 November 2015	Ongoing
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	Compliant	CEMP Section 3.7 and Appendix A5 Heritage Management Sub Plan (Rev E), October 2015, Chapter 5	Ongoing
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	Compliant	Heritage Management Sub Plan (Rev E), October 2015, Chapter 5	Ongoing
SEDIMENTATION, EROSION AND WATER						
C20	Soil and water management measures consistent with <i>Managing Urban Stormwater - Soils and Construction Volumes 1 and 2, 4th Edition</i> (Landcom, 2004) and <i>Managing Urban Stormwater Soils And Construction Vols 2A and 2D Main Road Construction</i> (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	Compliant	Soil and Water Quality Management Sub Plan (Rev E), October 2015, Section 2.2 and Chapter 5	Ongoing
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	Compliant	Soil and Water Quality Management Sub Plan (Rev E), October 2015, Chapter 5	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
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	Compliant	Soil and Water Quality Management Sub Plan (Rev E), October 2015, Chapter 5	Ongoing
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	Compliant	Community Communication Strategy Appendices C and E. Noise and Vibration Management Sub Plan (Rev F), October 2015, Chapter 7 Dilapidation Reports have been undertaken	Ongoing
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	Compliant	Community Communication Strategy Sections 3.4 and 7.2	Ongoing
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	Compliant	Community Communication Strategy Section 7.2	Ongoing
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	Compliant	Community Communication Strategy Section 7.2	Ongoing
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 for the 'Sand track' were first completed in September 2014. The condition requires additional reports 12 months later; these reports were due in September 2015. However they were not completed until November with the report to be provided in January 2016.	Ongoing
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	Construction	RMS/Fulton Hogan	Compliant	Waste and Energy Management Sub Plan (Rev E), October 2015, Chapters 4 and 5	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
	licence under the Protection of the Environment Operations Act 1997, if such a licence is required in relation to that waste.					
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	Compliant	Waste and Energy Management Sub Plan (Rev E), October 2015, Chapters 4 and 5	Ongoing
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	Compliant	Waste and Energy Management Sub Plan (Rev E), October 2015, Chapters 4 and 5	Ongoing
HAZARDS AND RISKS						
C31	<p>The Proponent shall store and handle dangerous goods, as defined by the Australian Dangerous Goods Code, strictly in accordance with:</p> <ul style="list-style-type: none"> (a) relevant Australian Standards; (b) for liquids, a minimum bund volume requirement of 110% of 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). <p>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.</p>	Pre-construction, Construction	RMS/Fulton Hogan	Compliant	<p>Project Work Health and Safety Management Plan Section 8.4</p> <p>Soil and Water Quality Management Sub Plan (Rev E), October 2015, Section 5.11</p>	Ongoing
ANCILLARY FACILITIES						
C32	<p>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:</p> <ul style="list-style-type: none"> (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	Compliant	<p>Construction Environmental Management Plan Section 2.4 and Appendix A5</p> <p>All of the ancillary sites have been established on the project with the first of these to be removed in the next reporting period.</p>	Ongoing
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	Pre-construction and Construction	RMS/Fulton Hogan	Compliant	<p>Construction Environmental Management Plan Section 2.4 and Appendix A5</p> <p>Operation and construction of sites D and H was approved 15 January 2015 subject to the implementation of <i>Ancillary facilities assessment for proposed ancillary facilities at Broughton Creek (Site D) and Austral Park Road (Site H): Foxground and Berry Bypass, November 2014</i></p>	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
	<p>necessarily be limited to:</p> <ul style="list-style-type: none"> (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; (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. <p>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.</p>					
C34	<p>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:</p> <ul style="list-style-type: none"> (a) are located within an active construction zone within the approved project footprint; and (b) have been assessed by the Environmental Representative to have: <ul style="list-style-type: none"> (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	Ongoing
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	Operation	RMS/Fulton Hogan	Compliant	Operational Noise Management Design Report and Appendices A, C and D revision 4 16 March 2015	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
	<p>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:</p> <ul style="list-style-type: none"> (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 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. <p>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).</p>					

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 F) 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 F) 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 F), 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 F), 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	There are no driven piles on the project.	Closed
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	Noise barriers on North street have been constructed as a priority to limit potential noise effects on neighbouring residents.	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.	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 Bio Banking Assessment Methodology with a minimum of 2:1 for riparian vegetation.	Pre-construction and construction	RMS	Compliant	Biodiversity Offset Strategy. Biodiversity Offset Package is being prepared	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

SoC – Revised statement of commitments (May 2013)						
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 E), October 2015, 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 E), October 2015, 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 Centre is open five days a week at the project office. Details on community enquiries during the reporting period are provided in section 6 of the main report.	Complete

SoC – Revised statement of commitments (May 2013)						
No.	Commitment Requirement	Phase	Responsibility	Compliance status	Compliance notes	Close out
	plans for Berry.				Detailed Design - Roads Report	
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 E), Chapter 5 Construction Environmental Management Plan (Rev E), 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 E), 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 Nightingale Consulting. 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 E), 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 E), 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.	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	Compliant	Construction Heritage Management Sub-plan (Rev E), Chapter 5	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 E), 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 E), 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 E), 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 E), 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 E), 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 E), 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 E), 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 E), 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 E), 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 F), 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 E), 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				

Appendix B EPA Letter



Our reference: SF15/35632: DOC15/432536
Contact: Michael Heinze 02 6229 7002

Mr Andrew McRae
Fulton Hogan - Project Director
Foxground and Berry bypass
PO Box 353
BERRY NSW 2535

30 October 2015

Dear Mr McRae

**Re: Foxground and Berry Bypass – Environment Protection Licence No. 20462 –
Environmental Controls**

I refer to the current Princes Highway major road upgrade project between Foxground and Berry, including the Berry Bypass, being undertaken by Fulton Hogan Construction Pty Ltd under Environment Protection Licence No. 20462.

The NSW Environment Protection Authority (EPA) has conducted inspections of the environmental controls and management measures across the 11 km project site, most recently on 19 and 20 August 2015. These inspections have been conducted with Fulton Hogan's project environmental team, led by Senior Project Environmental Manager, Mr Shannon Chisholm.

The EPA would like to commend Fulton Hogan on planning and implementing a high standard of sediment and erosion control at the site. We also commend construction staff who are demonstrating a strong commitment to ensuring that sediment and erosion controls at the site are implemented and properly maintained. As Fulton Hogan is aware, the site is located adjacent to a number of highly sensitive and challenging receiving environments and the EPA recognises Fulton Hogan's efforts to minimise and ameliorate the impacts of the project on both the natural environment and the local community.

In particular, the EPA has observed the following high standards of sediment and erosion control practices and procedures at the site:

- The project requires innovative sediment and erosion control planning due to the challenging nature of the construction site including being an active national highway, being subject to periods of intense rainfall, having limited area available to construct sediment and erosion controls, and being in close proximity to sensitive water bodies.
- The EPA has observed a strong connection between the sediment and erosion control principles and practices developed during the planning and the construction phases of the project. It is not uncommon for the EPA to observe that plans and procedures developed in good faith during planning stages are not implemented by staff at construction sites. The EPA has observed that importantly, Fulton Hogan has developed a range of procedures and practices to ensure that staff are aware of and committed to sediment and erosion control roles and their own responsibilities at the site.

- Procedures have been developed to ensure that sediment and erosion control is actively managed as work that may change from day to day. The procedures that have been developed to ensure that sediment and erosion control is targeted to the construction work currently undertaken at the site is clearly being implemented by staff at the site.
- We have noted the efforts by staff to ensure that areas of soil disturbance are quickly revegetated or otherwise stabilised, whether those disturbed areas are of a temporary nature, or whether the final works have been completed.
- There are well defined clean and dirty water diversion systems that have been designed and implemented to ensure that clean water is not contaminated with sediment prior to discharge to the environment.
- Given the numerous creek crossings involved in the project, the EPA has noted efforts by Fulton Hogan to ensure that any piling is carried out with forethought as to the likely impacts of not only the piles themselves, but the plant and equipment used for these operations and access across and into waterways.
- Fulton Hogan has developed procedures for departing the site after work is completed or where rain is forecast and these procedures appear to be well communicated and implemented at the site. The EPA particularly notes the efforts by the project environment team to monitor longer term weather forecasts and ensure that the site is well prepared and secured for adverse weather.

I would appreciate if you could pass this feedback on to Fulton Hogan staff involved in the project, particularly the environmental team. Should you have any queries or wish to discuss this matter, please contact me or Michael Heinze on Ph: 6229 7002.

Yours sincerely



JULIAN THOMPSON
Unit Head – South East Region
NSW Environment Protection Authority

Cc: NSW Roads & Maritime – Mr Ron de Rooy

Appendix C Water quality monitoring results

10 June 2015

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

Our ref: 21/24306
209016
Your ref:

Dear James,

Surface Water Monitoring Event 6 (Minor Event 4)

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 a monthly round of surface water monitoring at seventeen locations (SW01 to SW017) after a minor rainfall event. This report documents the sixth surface water sampling event (Event 6) undertaken since the commencement of construction which is also the fourth minor surface water sampling event.

2 Field Program

Surface water sampling was undertaken at all surface water sampling locations on the 22 and 23 May 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

This section presents control charts and discusses results in respect to exceedances of criteria or inconsistencies in the surface water results for Event 6 in accordance with:

- The limitations provided in Section 4.

- 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.

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 (NOW) 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 a spike in river flow. The surface water sampling events are also marked on Figure 2, Attachment A. No flow data was available for Broughton Mill Creek after 12 May 2015 from the NOW website at the time this report was prepared.

3.2 Surface water quality sampling results

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

Turbidity concentrations at SW4, SW5, SW6, SW9 and SW17 were below the ANZECC criteria for lowland rivers (5 – 50 NTU), which suggests that the water quality is generally better than lowland rivers in south east Australia.

Elevated turbidity and total suspended solids (TSS) concentrations exceeding the ANZECC criteria for lowland rivers (5 – 50 NTU and 50 mg/L) occurred at SW15, averaging 93 NTU and 80 mg/L, respectively. Elevated concentrations of turbidity and TSS were recorded once previously at SW15 during February 2015. The control charts for turbidity and TSS at this location (discussed in the following section) support the conclusion that the exceedances are representative of background conditions rather than construction impacts.

A field quality control and laboratory control assessment of the results from this monthly monitoring round (Event 6 – Minor Event 4) 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

An additional grab sample (QAM16) was taken next to SW02, as a biodiversity assessment indicator, results are shown in Table B1 of Attachment B.

The primary control chart indicators for assessing potential impacts associated with the FBB upgrade works during construction are limited to pH, turbidity, and TSS. The control charts for Event 6 (minor event 4) are presented in Attachment F.

The control charts suggest that the results are generally consistent with previous rounds. Generally downstream median values that are greater than the up gradient reference site 80th percentile values, exceptions are listed below:

- Median pH at SW07 has continued to slightly exceed the 80th percentile pH at upstream location SW06 (Connelly's Creek and Broughton Mill Creek and Bundewallah Creek) since February 2015. This is expected to be due to the influence of Broughton Mill Creek water quality.

Event 6 (minor event 4) 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,

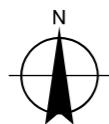
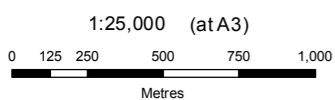


Ashlee La Fontaine
Environmental Scientist
02 9239 7122



Stefan Charteris
Senior Hydrogeologist
02 9239 7472

Attachment A - Figures



LEGEND

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

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



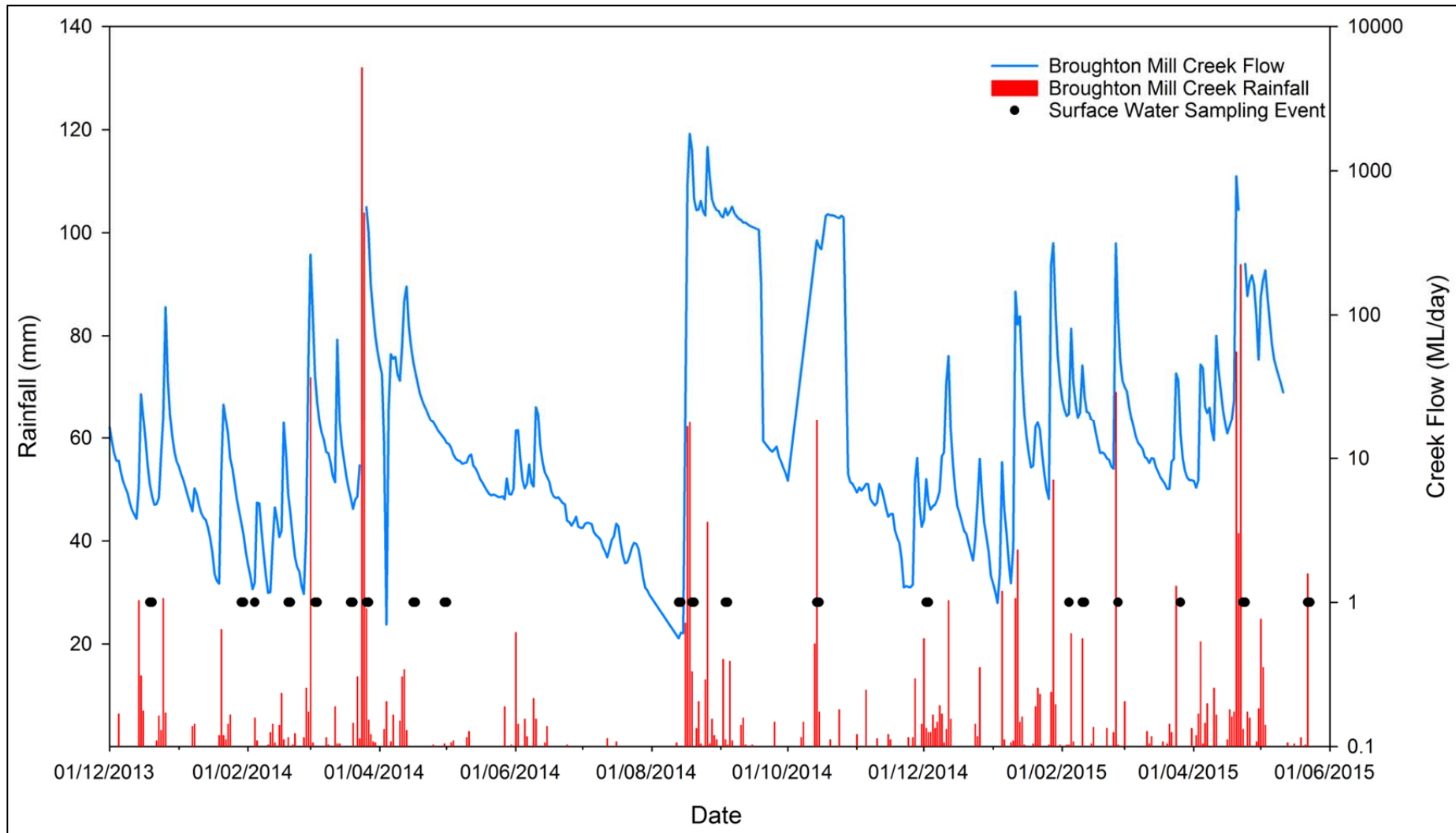
Fulton Hogan Pty Ltd
 Water Quality Monitoring

Job Number | 21-24306
 Revision | A
 Date | 03 Mar 2015

Surface water sampling locations

Figure 1

\\ghdnet\ghd\AU\Sydney\Projects\2124306\GIS\Maps\MXD\21_24306_2001_SurfaceWatersamplingLocations.mxd
 © 2015. While GHD has taken care to ensure the accuracy of this product, GHD and DATA CUSTODIAN, make no representations or warranties about its accuracy, completeness or suitability for any particular purpose.
 GHD and DATA CUSTODIAN, cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason.
 Data Source: NSW Department of Lands: DTDB and DCDB - 2012. Created by: mweber



Note: No data was available for Broughton Mill Creek flow from 12 May 2015 from the NOW website at the time this report was prepared.

Figure 2 Rainfall vs Flow within Broughton Mill Creek

Attachment B - Tabulated Results



**Appendix B
Table B1
Event 6 - Field Parameters**

	Field						
	Dissolved Oxygen (Field)	Electrical Conductivity (Field)	pH (Field)	Redox (Field)	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	Date Sampled					
QAM16_01	QAM16_1	22/05/2015	9.92	72.4	6.49	172.8	13.4
QAM16_02	QAM16_2	22/05/2015	9.95	72.4	6.48	172.8	13.4
QAM16_03	QAM16_3	22/05/2015	9.92	72	6.45	161.3	13.3
SW01_01	SW01	22/05/2015	9.83	103.4	6.32	182.5	14
SW01_02	SW01	22/05/2015	9.77	103.7	6.05	179	14
SW01_03	SW01	22/05/2015	9.81	103.5	6.01	171.7	14
SW02_01	SW02	22/05/2015	9.41	104	6.29	139.4	14.2
SW02_02	SW02	22/05/2015	9.37	104.2	6.33	132.6	14.2
SW02_03	SW02	22/05/2015	9.38	105	6.39	127.8	14.2
SW03_01	SW03	22/05/2015	9	115.7	6.43	157.6	14.1
SW03_02	SW03	22/05/2015	9.12	115.6	6.42	137	14.1
SW03_03	SW03	22/05/2015	9.14	115.9	6.43	124.8	14.1
SW04_01	SW04	22/05/2015	9.35	89.9	6.47	140.6	14.2
SW04_02	SW04	22/05/2015	9.32	89.9	6.38	129	14.2
SW04_03	SW04	22/05/2015	9.33	89.8	6.33	124.1	14.2
SW05_01	SW05	22/05/2015	9.79	108.5	6.5	105.5	14.2
SW05_02	SW05	22/05/2015	9.82	108.4	6.54	89.5	14.2
SW05_03	SW05	22/05/2015	9.96	108.4	6.56	86.7	14.2
SW06_01	SW06	22/05/2015	8.7	115.6	6.47	129.7	14.4
SW06_02	SW06	22/05/2015	6.76	116.1	6.43	127	14.4
SW06_03	SW06	22/05/2015	6.79	116	6.4	126.9	14.4
SW07_01	SW07	22/05/2015	7.3	99.8	6.55	120.4	14.4
SW07_02	SW07	22/05/2015	6.69	99.8	6.49	101.3	14.4
SW07_03	SW07	22/05/2015	6.68	100	6.46	107.7	14.4
SW08_01	SW08	22/05/2015	6.57	107.8	6.57	102.8	13.9
SW08_02	SW08	22/05/2015	6.61	107.9	6.61	84.3	13.9
SW08_03	SW08	22/05/2015	6.61	108.3	6.61	75.5	13.9
SW09_01	SW09	22/05/2015	9.64	113.3	6.66	128.3	14.4
SW09_02	SW09	22/05/2015	9.61	113.4	6.49	120.9	14.4
SW09_03	SW09	22/05/2015	9.63	113.4	6.42	116.7	14.4
SW010_01	SW10	22/05/2015	6.22	153.5	6.24	142.3	14.1
SW010_02	SW10	22/05/2015	6.25	153.6	6.23	142	14.1
SW010_03	SW10	22/05/2015	6.23	154.5	6.2	143.5	14.1
SW011_01	SW11	22/05/2015	7.44	96.9	6.65	101.3	14.6
SW011_02	SW11	22/05/2015	5.77	94.3	6.53	114.8	14.6
SW011_03	SW11	22/05/2015	5.9	95.2	6.45	117.8	14.6
SW012_01	SW12	23/05/2015	6.42	271.5	6.6	64	12.2
SW012_02	SW12	23/05/2015	6.41	271.5	6.62	37.6	12.2
SW012_03	SW12	23/05/2015	6.42	271.8	6.63	27.9	12.2
SW013_01	SW13	23/05/2015	8.5	264	6.77	75.6	12.3
SW013_02	SW13	23/05/2015	8.51	264.1	6.79	69.1	12.3
SW013_03	SW13	23/05/2015	8.55	264.9	6.81	66	12.3
SW014_01	SW14	23/05/2015	7.16	192.1	6.9	73.5	12.3
SW014_02	SW14	23/05/2015	7	192.1	6.68	109.6	12.4
SW014_03	SW14	23/05/2015	7	192.5	6.43	118.8	12.4
SW015_01	SW15	23/05/2015	8.81	223.7	6.87	76.2	11.7
SW015_02	SW15	23/05/2015	8.87	228.4	6.76	82.9	11.8
SW015_03	SW15	23/05/2015	8.81	228.6	6.71	91.2	11.8
SW016_01	SW16	23/05/2015	10.32	128.5	6.7	106.6	12.5
SW016_02	SW16	23/05/2015	10.35	128.6	6.71	100.3	12.5
SW016_03	SW16	23/05/2015	10.44	128.5	6.73	98.9	12.6
SW017_01	SW17	23/05/2015	7.49	134.2	6.85	86.3	12.7
SW017_02	SW17	23/05/2015	7.26	133.9	6.67	61.8	12.7
SW017_03	SW17	23/05/2015	7.52	134	6.59	37.4	12.8



**Appendix B
Table B2
Event 6 - Analytical Results**

	Inorganics	
	Total Suspended Solids	Turbidity
	mg/L	NTU
EQL	5	1
Lowland rivers (ANZECC 2000)	50	5-50

Field_ID	LocCode	Date Sampled	Total Suspended Solids (mg/L)	Turbidity (NTU)
QAM16_1	QAM16_1	23/05/2015	29	29
QAM16_2	QAM16_2	23/05/2015	25	22
QAM16_3	QAM16_3	23/05/2015	22	22
SW1_1	SW1_1	22/05/2015	31	18
SW1_2	SW1_2	22/05/2015	24	18
SW1_3	SW1_3	22/05/2015	24	22
SW2_1	SW2_1	22/05/2015	9	10
SW2_2	SW2_2	22/05/2015	14	13
SW2_3	SW2_3	22/05/2015	18	19
SW3_1	SW3_1	22/05/2015	<5	6.8
SW3_2	SW3_2	22/05/2015	11	12
SW3_3	SW3_3	22/05/2015	8	7.5
SW4_1	SW4_1	22/05/2015	<5	4.1
SW4_2	SW4_2	22/05/2015	<5	2.5
SW4_3	SW4_3	22/05/2015	<5	2.4
SW5_1	SW5_1	22/05/2015	<5	1.8
SW5_2	SW5_2	22/05/2015	<5	2
SW5_3	SW5_3	22/05/2015	<5	2.5
SW6_1	SW6_1	22/05/2015	<5	3.1
SW6_2	SW6_2	22/05/2015	<5	4.5
SW6_3	SW6_3	22/05/2015	<5	4.2
SW7_1	SW7_1	22/05/2015	<5	11
SW7_2	SW7_2	22/05/2015	<5	8.9
SW7_3	SW7_3	22/05/2015	<5	7.8
SW8_1	SW8_1	22/05/2015	17	9.2
SW8_2	SW8_2	22/05/2015	15	8.7
SW8_3	SW8_3	22/05/2015	12	9.7
SW9_1	SW9_1	22/05/2015	<5	2.2
SW9_2	SW9_2	22/05/2015	<5	2.1
SW9_3	SW9_3	22/05/2015	<5	2.7
SW10_1	SW10_1	22/05/2015	6	14
SW10_2	SW10_2	22/05/2015	5.5	13
SW10_3	SW10_3	22/05/2015	9.5	15
SW11_1	SW11_1	22/05/2015	9	8.8
SW11_2	SW11_2	22/05/2015	8	8.1
SW11_3	SW11_3	22/05/2015	8.5	7.7
SW12_1	SW12_1	23/05/2015	24	34
SW12_2	SW12_2	23/05/2015	24	35
SW12_3	SW12_3	23/05/2015	24	36
SW13_1	SW13_1	23/05/2015	18	35
SW13_2	SW13_2	23/05/2015	17	38
SW13_3	SW13_3	23/05/2015	22	36
SW14_1	SW14_1	23/05/2015	10	22
SW14_2	SW14_2	23/05/2015	8.5	21
SW14_3	SW14_3	23/05/2015	8.5	22
SW15_1	SW15_1	23/05/2015	98	110
SW15_2	SW15_2	23/05/2015	76	90
SW15_3	SW15_3	23/05/2015	67	79
SW16_1	SW16_1	23/05/2015	14	15
SW16_2	SW16_2	23/05/2015	5.5	8.9
SW16_3	SW16_3	23/05/2015	6.5	8.7
SW17_1	SW17_1	23/05/2015	<5	5
SW17_2	SW17_2	23/05/2015	5	5.1
SW17_3	SW17_3	23/05/2015	<5	5
DUPL1_1	SW7_1	23/05/2015	6.5	12
DUPL1_2	SW7_2	23/05/2015	6	6.6
DUPL1_3	SW7_3	23/05/2015	9	6.8
DUPL2_1	SW13_1	23/05/2015	21	34
DUPL2_2	SW13_2	23/05/2015	19	34
DUPL2_3	SW13_3	23/05/2015	24	34



**Appendix B
Table B3
Event 6 - RPD Table**

Field Duplicates (WATER)
Filter: Lab_Report_Number in('458920')

Lab Report Number	458920	458920		458920	458920		458920	458920	
Field ID	SW7_1	DUPL1_1	RPD	SW7_2	DUPL1_2	RPD	SW7_3	DUPL1_3	RPD
Date Sampled	22/05/2015	22/05/2015		22/05/2015	22/05/2015		22/05/2015	22/05/2015	

Chem_Group	ChemName	Units	EQL									
Inorganics	Total Suspended Solids	mg/l	5	<5.0	6.5	26	<5.0	6.0	18	<5.0	9.0	57
	Turbidity	NTU	1	11.0	12.0	9	8.9	6.6	30	7.8	6.8	14

Lab Report Number	458920	458920		458920	458920		458920	458920	
Field ID	SW13_1	DUPL2_1	RPD	SW13_2	DUPL2_2	RPD	SW13_3	DUPL2_3	RPD
Date Sampled	23/05/2015	23/05/2015		23/05/2015	23/05/2015		23/05/2015	23/05/2015	

Chem_Group	ChemName	Units	EQL									
Inorganics	Total Suspended Solids	mg/l	5	18.0	21.0	15	17.0	19.0	11	22.0	24.0	9
	Turbidity	NTU	1	35.0	34.0	3	38.0	34.0	11	36.0	34.0	6

*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 C - Field Sheets



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 22-5-2015
 PROJECT NAME: Berry to Foxground TIME: 16:35
 CLIENT: RMS SAMPLING OFFICERS: James D
 SITE: QAM 16
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION

ENVIRONMENTAL OBSERVATIONS

WEATHER Rain
 VEGETATION Grass / Trees
 SLOPE
 EROSION
 OTHER Brown colour. No construction impact

FIELD MEASUREMENTS

SAMPLE	QAM16 1	QAM16 2	QAM16 3
TEMPERATURE (°C)	13.4	13.4	13.8
CONDUCTIVITY (uS/cm)	72.4	72.4	72.0
pH	6.49	6.48	6.45
DO (ppm)	95.0% 9.92 mg/L	95.2% 9.95	94.9% 9.92
REDOX (mV)	172.8	172.8	161.3

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
AQM16	3	Chilled	No	

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 22/5/15
 PROJECT NAME: Berry to Foxground TIME: 10:35am
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW01
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 40m upstream of bridge

ENVIRONMENTAL OBSERVATIONS

WEATHER Rain + wind
 VEGETATION Trees bordered by pasture land.
 SLOPE
 EROSION
 OTHER Construction ~ 100m downstream, water is brown / turbid

FIELD MEASUREMENTS

SAMPLE	SW01-1	SW01-2	SW01-3
TEMPERATURE (°C)	14.0	14.0	14.0
CONDUCTIVITY (uS/cm)	103.4	103.7	103.5
pH	6.32	6.05	6.01
DO (ppm)	95.1%, 9.83mg/L	94.7%, 9.77mg/L	95.0%, 9.81mg/L
REDOX (mV)	142.5	179.0	171.7

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW01	3	chilled	NO	

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 22/5/15
 PROJECT NAME: Berry to Foxground TIME: 11.00
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW02

COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION Upstream ab bridge, water rushing to much to sample downstream.

ENVIRONMENTAL OBSERVATIONS

WEATHER Rain
 VEGETATION Trees & pastureland
 SLOPE
 EROSION
 OTHER water light brown/turbid, no construction visible.

FIELD MEASUREMENTS

SAMPLE	SW02-01	SW02-02	SW02-03
TEMPERATURE (°C)	14.2	14.2	14.2
CONDUCTIVITY (uS/cm)	104.0	104.2	105.0
pH	6.29	6.33	6.39
DO (ppm)	91.2%, 9.41mg/L	91.1%, 9.37mg/L	91.4%, 9.33mg/L
REDOX (mV)	139.4	132.6	127.8

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Fast flowing
 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. 21/24306/01 DATE: 22/6/15
 PROJECT NAME: Berry to Foxground TIME: 11.22am
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW03
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION usual location, ~20m from access point

ENVIRONMENTAL OBSERVATIONS

WEATHER Rain
 VEGETATION Trees bordered by pasture land
 SLOPE
 EROSION
 OTHER Water is light brown/turbid, no construction visible.

FIELD MEASUREMENTS

SAMPLE	SW03-1	SW03-2	SW03-3
TEMPERATURE (°C)	14.1	14.1	14.1
CONDUCTIVITY (uS/cm)	100 115.7	115.6	115.9
pH	6.43	6.42	6.43
DO (ppm)	87.6%, 9.00mg/L	88.7%, 9.12mg/L	88.9%, 9.14mg/L
REDOX (mV)	157.6	137.0	124.8

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW03	3	chilled	no	clear

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 22/5/15
 PROJECT NAME: Berry to Foxground TIME: 11.53am
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW04
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION usual location, sampled at turbo ck crossing

ENVIRONMENTAL OBSERVATIONS

WEATHER Rain
 VEGETATION Turbo paddocks
 SLOPE
 EROSION
 OTHER No construction visible from site, water mostly clear
 some grass has been removed from adjacent paddocks.

FIELD MEASUREMENTS

SAMPLE	SW04-1	SW04-2	SW04-3
TEMPERATURE (°C)	14.2	14.2	14.2
CONDUCTIVITY (uS/cm)	89.9	89.9	89.8
pH	6.47	6.38	6.33
DO (ppm)	91.0%, 9.35mg/L	90.8%, 9.32mg/L	91.0%, 9.33mg/L
REDOX (mV)	140.6	129.0	124.1

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW04	3	chilled	NO	Clear

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 22/5/15

PROJECT NAME: Berry to Foxground TIME: 12.14 pm

CLIENT: RMS SAMPLING OFFICERS: JC JD

SITE: ~~SWOS~~ SWOS

COORDINATES/GPS (If Applicable)

SAMPLING METHOD (ie grab, bucket) Grab

DETAILED SAMPLE LOCATION DESCRIPTION ~~SWOS~~ ~ 15m from sharp bend in river/creek. ^{upstream}

ENVIRONMENTAL OBSERVATIONS

WEATHER Rain

VEGETATION Pasture land adjacent.

SLOPE

EROSION

OTHER Water is clear, no construction visible.

FIELD MEASUREMENTS

SAMPLE	SWOS-01	SWOS-02	SWOS-03
TEMPERATURE (°C)	14.2	14.2	14.2
CONDUCTIVITY (uS/cm)	98.5 108.5	98.4 108.4	98.4 108.4
pH	6.50 6.50	6.54 6.54	6.56 6.56
DO (ppm)	95.5%, 9.79	95.8%, 9.92	97.2%, 9.96
REDOX (mV)	105.5	89.5	86.7

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Moderately flowing

CROSS SECTION WIDTH (m)

DEPTH (m)

OTHER

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SWOS	3	Chilled	No	clear

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 22/5/15
 PROJECT NAME: Berry to Foxground TIME: 2:00pm
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW06
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION New metal fence + sediment pond.

ENVIRONMENTAL OBSERVATIONS

WEATHER Rain
 VEGETATION Parkland / Sports fields
 SLOPE
 EROSION
 OTHER Opposite bank has been cleared of vegetation. Construction occurring across ck in this area.

FIELD MEASUREMENTS

SAMPLE	SW06-1	SW06-2	SW06-3
TEMPERATURE (°C)	14.4	14.4	14.4
CONDUCTIVITY (uS/cm)	115.6	116.1	116.0
pH	6.47	6.43	6.40
DO (ppm)	85.2% , 8.70mg/L	66.1% , 6.76mg/L	66.4% , 6.79mg/L
REDOX (mV)	129.7	127.0	126.9

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Moderately flowing
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER Water is mostly clear

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW06	3	chilled	No	clear

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 22/5/15
 PROJECT NAME: Berry to Foxground TIME: 1.30pm
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW07
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION Behind bowling club

ENVIRONMENTAL OBSERVATIONS

WEATHER Rain
 VEGETATION Lawn.
 SLOPE
 EROSION
 OTHER Water mostly clear, no construction visible.

FIELD MEASUREMENTS

SAMPLE	SW07-01	SW07-2	SW07-3
TEMPERATURE (°C)	14.4	14.4	14.4
CONDUCTIVITY (uS/cm)	99.8	99.8	100.0
pH	6.55	6.49	6.46
DO (ppm)	71.4% , 7.30 mg/L	65.5% , 6.69 mg/L	65.4% , 6.68 mg/L
REDOX (mV)	120.4	101.3	107.7

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW07	6	chilled	Yes.	DUPL 01, 02, 03

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 22/05/15
 PROJECT NAME: Berry to Foxground TIME: 2.30pm
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW08

COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~1-2m upstream of town ck. diversion.

ENVIRONMENTAL OBSERVATIONS

WEATHER Rain debris
 VEGETATION Farm land, some vegetation floating in water
 SLOPE
 EROSION
 OTHER Water mostly clear, no current construction activity in area. Some observed near north st.

FIELD MEASUREMENTS

SAMPLE	SW08-01	SW08-02	SW08-03
TEMPERATURE (°C)	13.9	13.9	13.8
CONDUCTIVITY (uS/cm)	107.8	107.9	108.3
pH	6.57	6.61	6.61
DO (ppm)	95.3%, 9.85mg/L	93.5%, 9.67mg/L	96.2%, 9.94mg/L
REDOX (mV)	102.8	84.3	75.5

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW08	3	Chilled	NO	clear

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 22/5/15
 PROJECT NAME: Berry to Foxground TIME: 1.02pm
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW09
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION Under bridge Waddell Mt Rd.

ENVIRONMENTAL OBSERVATIONS

WEATHER Rain
 VEGETATION
 SLOPE
 EROSION
 OTHER Water is clear, construction activity evident adjacent to site (to the south).

FIELD MEASUREMENTS

SAMPLE	SW09-1	SW09-2	SW09-3
TEMPERATURE (°C)	14.4	14.4	14.4
CONDUCTIVITY (uS/cm)	113.3	113.4	113.4
pH	6.66	6.49	6.42
DO (ppm)	94.4% , 9.64mg/L	94.1% , 9.61mg/L	94.3% , 9.63mg/L
REDOX (mV)	124.3	120.9	116.7

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW09	3	Chilled	No	clear.

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 22/5/15
 PROJECT NAME: Berry to Foxground TIME: 3.23 pm
 CLIENT: RMS SAMPLING OFFICERS: JL JD
 SITE: SW10
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab north east
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 30m^A from road, ~ 50-60m^N from new house

ENVIRONMENTAL OBSERVATIONS
 WEATHER Rain
 VEGETATION Long grass + pastureland.
 SLOPE
 EROSION channel still eroded
 OTHER Water slightly brown

FIELD MEASUREMENTS

SAMPLE	SW10-1	SW10-2	SW10-3
TEMPERATURE (°C)	14.1	14.1	14.1
CONDUCTIVITY (uS/cm)	153.5	153.6	154.5
pH	6.24	6.23	6.20
DO (ppm)	60.6%, 6.22mg/L	60.9%, 6.25mg/L	61.2%, 6.23mg/L
REDOX (mV)	142.3	142.0	143.5

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW10	3	chilled	No	clear

FIELD SUPERVISOR _____ CHECKED (SIGN & DATE) _____



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 22/5/15
 PROJECT NAME: Berry to Foxground TIME: 3.00pm
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW11

COORDINATES/GPS (if Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION end of Albany st, near housing

ENVIRONMENTAL OBSERVATIONS

WEATHER Rain
 VEGETATION Some trees + grass/lawn area.
 SLOPE
 EROSION
 OTHER

FIELD MEASUREMENTS

SAMPLE	SW11-1	SW11-2	SW11-3
TEMPERATURE (°C)	14.6	14.6	14.6
CONDUCTIVITY (uS/cm)	96.9	94.3	95.2
pH	6.65	6.53	6.45
DO (ppm)	73.1%, 7.44	56.7%, 5.77mg/l	58.1%, 5.90mg/l
REDOX (mV)	101.3	114.8	117.8

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Likely low flow & not visible on surface
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW11	3	chilled	NO	

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 23/5/15
 PROJECT NAME: Berry to Foxground TIME: 8.35am
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW12

COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab

DETAILED SAMPLE LOCATION DESCRIPTION *Directly at under road pipe outlet into
 cast iron drainage line. Surrounding area has undergone clearing, lots
 of exposed surfaces.*

ENVIRONMENTAL OBSERVATIONS
 WEATHER *Cloudy*
 VEGETATION *no vegetation in waterway, some grass + blackberry adjacent*
 SLOPE
 EROSION
 OTHER *Water slightly turbid.*

FIELD MEASUREMENTS

SAMPLE	SW12-01	SW12-02	SW12-03
TEMPERATURE (°C)	12.2	12.2	12.2
CONDUCTIVITY (uS/cm)	271.5	271.5	271.8
pH	6.60	6.62	6.63
DO (ppm)	60.0%, 6.42mg/L	59.8%, 6.41mg/L	59.8%, 6.42mg/L
REDOX (mV)	64.0	37.6	27.9

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW12	3	chilled	No	Clear, slightly brown.

FIELD SUPERVISOR _____ CHECKED (SIGN & DATE) _____



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 23/5/15
 PROJECT NAME: Berry to Foxground TIME: 9.20am
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW13

COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~5m down from bridge into Arbour, no construction visible

ENVIRONMENTAL OBSERVATIONS

WEATHER cloudy
 VEGETATION ~~none~~ Lawn; some trees.
 SLOPE
 EROSION
 OTHER Water is slightly cloudy ^{light} brown

FIELD MEASUREMENTS

SAMPLE	SW13_1	SW13_2	SW13_3
TEMPERATURE (°C)	12.3	12.3	12.3
CONDUCTIVITY (uS/cm)	264.0	264.1	264.9
pH	6.77	6.79	6.81
DO (ppm)	79.4%, 8.50mg/L	79.6%, 8.51mg/L	80.1%, 8.55mg/L
REDOX (mV)	75.6	69.1	66.0

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW13	6	chilled	Yes	DUP L2_01, 02, 03

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 23/5/15
 PROJECT NAME: Berry to Foxground TIME: 9.50am
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW14
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab west
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 100-120m from Highway

ENVIRONMENTAL OBSERVATIONS

WEATHER Cloudy
 VEGETATION Pasture land, no cows visible in paddock, waterway heavily vegetated.
 SLOPE
 EROSION
 OTHER Water is mostly clear. Construction ~ 80m east.

FIELD MEASUREMENTS

SAMPLE	SW14-1	SW14-2	SW14-3
TEMPERATURE (°C)	12.3	12.4	12.4
CONDUCTIVITY (uS/cm)	192.1	192.1	192.5
pH	6.90	6.68	6.43
DO (ppm)	67.2% 7.16mg/L	65.5% 7.00mg/L	65.6% 7.00mg/L
REDOX (mV)	73.5	109.6	118.6

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Flowing, although not visible from surface.
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW14	3	Chilled	No	known

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 23/5/15
 PROJECT NAME: Berry to Foxground TIME: 9:00am
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SWIS
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 120m south Bupa complex, ~ 80m east of construction.

ENVIRONMENTAL OBSERVATIONS

WEATHER Cloudy
 VEGETATION Posture land
 SLOPE
 EROSION
 OTHER Water slightly turbid → light brown / cloudy.

FIELD MEASUREMENTS

SAMPLE	SWIS-1	SWIS-2	SWIS-3
TEMPERATURE (°C)	11.7	11.8	11.8
CONDUCTIVITY (uS/cm)	223.7	228.4	228.6
pH	6.87	6.76	6.71
DO (ppm)	81.4% 8.81 mg/L	82% 8.87 mg/L	81.6% 8.81 mg/L
REDOX (mV)	76.2	82.9	91.2

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SWIS	3	Chilled	NO	Clear.

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 23/5/15
 PROJECT NAME: Berry to Foxground TIME: 10.15am
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW16
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~100m^{west} from new fence, within flowing water.

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny, some cloud
 VEGETATION Pasture land, cows in paddock.
 SLOPE
 EROSION
 OTHER Water is mostly clear, a little cloudy.

FIELD MEASUREMENTS

SAMPLE	SW16-1	SW16-2	SW16-3
TEMPERATURE (°C)	12.5	12.5	12.6
CONDUCTIVITY (uS/cm)	128.5	124.6	128.5
pH	6.70	6.71	6.73
DO (ppm)	97.1% 10.32mg/L	97.7% 10.35mg/L	98.0% 10.44mg/L
REDOX (mV)	106.6	100.3	96.9

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW16	3	chilled	NO	clear

FIELD SUPERVISOR _____ CHECKED (SIGN & DATE) _____



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 23/5/15
 PROJECT NAME: Berry to Foxground TIME: 10.40am
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW17

COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~20m upstream usual location → cons. Next to horse paddocks.

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny + some wind
 VEGETATION Pasture land
 SLOPE
 EROSION
 OTHER Water is clear, lots of sediment settled on bottom → was slightly stirred when probe put in water

FIELD MEASUREMENTS

SAMPLE	SW17-1	SW17-2	SW17-3
TEMPERATURE (°C)	12.7	12.7	12.8
CONDUCTIVITY (uS/cm)	134.2	133.9	134.0
pH	6.85	6.67	6.59
DO (ppm)	70.4%, 7.49mg/L	68.6%, 7.26mg/L	71.1%, 7.52mg/L
REDOX (mV)	86.3	61.8	37.4

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW17	3	Chilled	No	

FIELD SUPERVISOR

CHECKED (SIGN & DATE)

Attachment D - Laboratory Certificates



mgt

Sydney
 Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
 Phone: +612 9900 8400
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 Unit 1-21 Smallwood Place, Murrarie
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 2 Kingston Town Close, Oakleigh, VIC 3166
 Phone: +613 8564 5000 Fax: +613 8564 5090
 Email: enquiries.melb@mglabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS Page 4 of 4

Company Name : GHD Pty Ltd	Contact Name : Ashlee La Fontaine 0449 211 450	Purchase Order :	COC Number :
Office Address :	Project Manager : Ashlee La Fontaine	PROJECT Number : 21/2430601	Eurofins mgt quote ID : 150501GHD
Level 15, 133 Castlereagh Street, Sydney NSW 2000	Email for results : ashlee.lafontaine@ghd.com	PROJECT Name : Foxground to Berry	Data output format:

Special Directions & Comments :	Analytes										Some common holding times (with correct preservation) For further information contact the lab				
	~ Sampling Event 1 ~	Turbidity	Suspended Solids (SS)								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

Eurofins mgt DI water batch number:														Containers:							Sample comments:				
Sample ID	Date	Matrix																1LP	200ml	125P	1LA	40mL vial	125mL A	Jar	
1	23/05/15	w		X	X													1							
2	23/05/15	w		X	X													1							
3	23/05/15	w		X	X													1							
4	22/05/15	w		X	X													1							
5	22/05/15	w		X	X													1							
6	22/05/15	w		X	X													1							
7	23/05/15	w		X	X													1							
8	23/05/15	w		X	X													1							
9	23/05/15	w		X	X													1							
10	22/05/15	w		X	X													1							
11	22/05/15	w		X	X													1							
12	22/05/15	w		X	X													1							
13																									
14																									
15																									
16																									

Relinquished By: Jane Curran	Received By: <i>Sam</i>	Turn around time	Method Of Shipment	Temperature on arrival:
Date & Time : 25/05/2015 2pm	Date & Time : <i>26/5 9:30</i>	1 DAY <input type="checkbox"/> 2 DAY <input type="checkbox"/> 3 DAY <input type="checkbox"/>	<input type="checkbox"/> Courier <input type="checkbox"/> Hand Delivered <input type="checkbox"/> Postal	<i>7.6</i>
Signature: <i>[Signature]</i>	Signature: <i>[Signature]</i>	5 DAY <input checked="" type="checkbox"/> 10 DAY <input type="checkbox"/> Other:	Courier Consignment # :	Report number: <i>458920</i>

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: Ashlee la Fontaine

Report 458920-W
 Project name FOXGROUND TO BERRY B/F BYPASS
 Project ID 21/2430601
 Received Date May 26, 2015

Client Sample ID			SW1_1	SW1_2	SW1_3	SW2_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-My21667	S15-My21668	S15-My21669	S15-My21670
Date Sampled			May 22, 2015	May 22, 2015	May 22, 2015	May 22, 2015
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	31	24	24	9.0
Turbidity	1	NTU	18	18	22	10

Client Sample ID			SW2_2	SW2_3	SW3_1	SW3_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-My21671	S15-My21672	S15-My21673	S15-My21674
Date Sampled			May 22, 2015	May 22, 2015	May 22, 2015	May 22, 2015
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	14	18	< 5	11
Turbidity	1	NTU	13	19	6.8	12

Client Sample ID			SW3_3	SW4_1	SW4_2	SW4_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-My21675	S15-My21676	S15-My21677	S15-My21678
Date Sampled			May 22, 2015	May 22, 2015	May 22, 2015	May 22, 2015
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	8.0	< 5	< 5	< 5
Turbidity	1	NTU	7.5	4.1	2.5	2.4

Client Sample ID			SW5_1	SW5_2	SW5_3	SW6_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-My21679	S15-My21680	S15-My21681	S15-My21682
Date Sampled			May 22, 2015	May 22, 2015	May 22, 2015	May 22, 2015
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	< 5	< 5	< 5	< 5
Turbidity	1	NTU	1.8	2.0	2.5	3.1

Client Sample ID			SW6_2	SW6_3	SW7_1	SW7_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-My21683	S15-My21684	S15-My21685	S15-My21686
Date Sampled			May 22, 2015	May 22, 2015	May 22, 2015	May 22, 2015
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	< 5	< 5	< 5	< 5
Turbidity	1	NTU	4.5	4.2	11	8.9

Client Sample ID			SW7_3	SW8_1	SW8_2	SW8_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-My21687	S15-My21688	S15-My21689	S15-My21690
Date Sampled			May 22, 2015	May 22, 2015	May 22, 2015	May 22, 2015
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	< 5	17	15	12
Turbidity	1	NTU	7.8	9.2	8.7	9.7

Client Sample ID			SW9_1	SW9_2	SW9_3	SW10_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-My21691	S15-My21692	S15-My21693	S15-My21694
Date Sampled			May 22, 2015	May 22, 2015	May 22, 2015	May 22, 2015
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	< 5	< 5	< 5	6.0
Turbidity	1	NTU	2.2	2.1	2.7	14

Client Sample ID			SW10_2	SW10_3	SW11_1	SW11_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-My21695	S15-My21696	S15-My21697	S15-My21698
Date Sampled			May 22, 2015	May 22, 2015	May 22, 2015	May 22, 2015
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	5.5	9.5	9.0	8.0
Turbidity	1	NTU	13	15	8.8	8.1

Client Sample ID			SW11_3	SW12_1	SW12_2	SW12_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-My21699	S15-My21700	S15-My21701	S15-My21702
Date Sampled			May 22, 2015	May 23, 2015	May 23, 2015	May 23, 2015
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	8.5	24	24	24
Turbidity	1	NTU	7.7	34	35	36

Client Sample ID			SW13_1	SW13_2	SW13_3	SW14_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-My21703	S15-My21704	S15-My21705	S15-My21706
Date Sampled			May 23, 2015	May 23, 2015	May 23, 2015	May 23, 2015
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	18	17	22	10
Turbidity	1	NTU	35	38	36	22

Client Sample ID			SW14_2	SW14_3	SW15_1	SW15_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-My21707	S15-My21708	S15-My21709	S15-My21710
Date Sampled			May 23, 2015	May 23, 2015	May 23, 2015	May 23, 2015
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	8.5	8.5	98	76
Turbidity	1	NTU	21	22	110	90

Client Sample ID			SW15_3	SW16_1	SW16_2	SW16_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-My21711	S15-My21712	S15-My21713	S15-My21714
Date Sampled			May 23, 2015	May 23, 2015	May 23, 2015	May 23, 2015
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	67	14	5.5	6.5
Turbidity	1	NTU	79	15	8.9	8.7

Client Sample ID			SW17_1	SW17_2	SW17_3	DUPL1_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-My21715	S15-My21716	S15-My21717	S15-My21718
Date Sampled			May 23, 2015	May 23, 2015	May 23, 2015	May 23, 2015
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	< 5	5.0	< 5	6.5
Turbidity	1	NTU	5.0	5.1	5.0	12

Client Sample ID			DUPL1_2	DUPL1_3	DUPL2_1	DUPL2_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-My21719	S15-My21720	S15-My21721	S15-My21722
Date Sampled			May 23, 2015	May 23, 2015	May 23, 2015	May 23, 2015
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	6.0	9.0	21	19
Turbidity	1	NTU	6.6	6.8	34	34

Client Sample ID			DUPL2_3	QAM16_1	QAM16_2	QAM16_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-My21723	S15-My21724	S15-My21725	S15-My21726
Date Sampled			May 23, 2015	May 23, 2015	May 23, 2015	May 23, 2015
Test/Reference	LOR	Unit				
Suspended Solids	5	mg/L	24	29	25	22
Turbidity	1	NTU	34	29	22	22

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 - Method: 4100 Total Suspended Solids dried at 103-105°C	Sydney	May 26, 2015	7 Day
Turbidity - Method: 4040 Turbidity	Sydney	May 28, 2015	2 Day

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY B/F BYPASS Project ID: 21/2430601	Order No.: Report #: 458920 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: May 26, 2015 9:32 AM Due: Jun 2, 2015 Priority: 5 Day Contact Name: Ashlee la Fontaine
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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		
SW1_1	May 22, 2015		Water	S15-My21667	X	X
SW1_2	May 22, 2015		Water	S15-My21668	X	X
SW1_3	May 22, 2015		Water	S15-My21669	X	X
SW2_1	May 22, 2015		Water	S15-My21670	X	X
SW2_2	May 22, 2015		Water	S15-My21671	X	X
SW2_3	May 22, 2015		Water	S15-My21672	X	X
SW3_1	May 22, 2015		Water	S15-My21673	X	X
SW3_2	May 22, 2015		Water	S15-My21674	X	X
SW3_3	May 22, 2015		Water	S15-My21675	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY B/F BYPASS Project ID: 21/2430601	Order No.: Report #: 458920 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: May 26, 2015 9:32 AM Due: Jun 2, 2015 Priority: 5 Day Contact Name: Ashlee la Fontaine
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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						
SW4_1	May 22, 2015		Water	S15-My21676	X	X
SW4_2	May 22, 2015		Water	S15-My21677	X	X
SW4_3	May 22, 2015		Water	S15-My21678	X	X
SW5_1	May 22, 2015		Water	S15-My21679	X	X
SW5_2	May 22, 2015		Water	S15-My21680	X	X
SW5_3	May 22, 2015		Water	S15-My21681	X	X
SW6_1	May 22, 2015		Water	S15-My21682	X	X
SW6_2	May 22, 2015		Water	S15-My21683	X	X
SW6_3	May 22, 2015		Water	S15-My21684	X	X
SW7_1	May 22, 2015		Water	S15-My21685	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY B/F BYPASS Project ID: 21/2430601	Order No.: Report #: 458920 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: May 26, 2015 9:32 AM Due: Jun 2, 2015 Priority: 5 Day Contact Name: Ashlee la Fontaine
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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						
SW7_2	May 22, 2015		Water	S15-My21686	X	X
SW7_3	May 22, 2015		Water	S15-My21687	X	X
SW8_1	May 22, 2015		Water	S15-My21688	X	X
SW8_2	May 22, 2015		Water	S15-My21689	X	X
SW8_3	May 22, 2015		Water	S15-My21690	X	X
SW9_1	May 22, 2015		Water	S15-My21691	X	X
SW9_2	May 22, 2015		Water	S15-My21692	X	X
SW9_3	May 22, 2015		Water	S15-My21693	X	X
SW10_1	May 22, 2015		Water	S15-My21694	X	X
SW10_2	May 22, 2015		Water	S15-My21695	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY B/F BYPASS Project ID: 21/2430601	Order No.: Report #: 458920 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: May 26, 2015 9:32 AM Due: Jun 2, 2015 Priority: 5 Day Contact Name: Ashlee la Fontaine
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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						
SW10_3	May 22, 2015		Water	S15-My21696	X	X
SW11_1	May 22, 2015		Water	S15-My21697	X	X
SW11_2	May 22, 2015		Water	S15-My21698	X	X
SW11_3	May 22, 2015		Water	S15-My21699	X	X
SW12_1	May 23, 2015		Water	S15-My21700	X	X
SW12_2	May 23, 2015		Water	S15-My21701	X	X
SW12_3	May 23, 2015		Water	S15-My21702	X	X
SW13_1	May 23, 2015		Water	S15-My21703	X	X
SW13_2	May 23, 2015		Water	S15-My21704	X	X
SW13_3	May 23, 2015		Water	S15-My21705	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY B/F BYPASS Project ID: 21/2430601	Order No.: Report #: 458920 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: May 26, 2015 9:32 AM Due: Jun 2, 2015 Priority: 5 Day Contact Name: Ashlee la Fontaine
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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						
SW14_1	May 23, 2015		Water	S15-My21706	X	X
SW14_2	May 23, 2015		Water	S15-My21707	X	X
SW14_3	May 23, 2015		Water	S15-My21708	X	X
SW15_1	May 23, 2015		Water	S15-My21709	X	X
SW15_2	May 23, 2015		Water	S15-My21710	X	X
SW15_3	May 23, 2015		Water	S15-My21711	X	X
SW16_1	May 23, 2015		Water	S15-My21712	X	X
SW16_2	May 23, 2015		Water	S15-My21713	X	X
SW16_3	May 23, 2015		Water	S15-My21714	X	X
SW17_1	May 23, 2015		Water	S15-My21715	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY B/F BYPASS Project ID: 21/2430601	Order No.: Report #: 458920 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: May 26, 2015 9:32 AM Due: Jun 2, 2015 Priority: 5 Day Contact Name: Ashlee la Fontaine
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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						
SW17_2	May 23, 2015		Water	S15-My21716	X	X
SW17_3	May 23, 2015		Water	S15-My21717	X	X
DUPL1_1	May 23, 2015		Water	S15-My21718	X	X
DUPL1_2	May 23, 2015		Water	S15-My21719	X	X
DUPL1_3	May 23, 2015		Water	S15-My21720	X	X
DUPL2_1	May 23, 2015		Water	S15-My21721	X	X
DUPL2_2	May 23, 2015		Water	S15-My21722	X	X
DUPL2_3	May 23, 2015		Water	S15-My21723	X	X
QAM16_1	May 23, 2015		Water	S15-My21724	X	X
QAM16_2	May 23, 2015		Water	S15-My21725	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY B/F BYPASS Project ID: 21/2430601	Order No.: Report #: 458920 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: May 26, 2015 9:32 AM Due: Jun 2, 2015 Priority: 5 Day Contact Name: Ashlee la Fontaine
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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						
QAM16_3	May 23, 2015		Water	S15-My21726	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

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

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	< 5			5	Pass	
Turbidity				NTU	< 1			1	Pass	
LCS - % Recovery										
Suspended Solids				%	98			70-130	Pass	
Turbidity				%	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			
Turbidity	S15-My21670	CP	NTU	10	10	1.0		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Suspended Solids	S15-My21674	CP	mg/L	11	11	5.0		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Turbidity	S15-My21680	CP	NTU	2.0	1.8	10		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Suspended Solids	S15-My21684	CP	mg/L	< 5	< 5	<1		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Turbidity	S15-My21690	CP	NTU	9.7	8.5	12		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Suspended Solids	S15-My21694	CP	mg/L	6.0	6.5	8.0		30%	Pass	
Turbidity	S15-My21694	CP	NTU	14	14	2.0		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Suspended Solids	S15-My21704	CP	mg/L	17	20	16		30%	Pass	
Turbidity	S15-My21704	CP	NTU	38	37	5.0		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Suspended Solids	S15-My21709	CP	mg/L	98	100	6.0		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Turbidity	S15-My21714	CP	NTU	8.7	9.0	4.0		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Suspended Solids	S15-My21719	CP	mg/L	6.0	6.0	<1		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Turbidity	S15-My21724	CP	NTU	29	27	6.0		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

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Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY B/F BYPASS Project ID: 21/2430601	Order No.: Report #: 458920 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: May 26, 2015 9:32 AM Due: Jun 2, 2015 Priority: 5 Day Contact Name: Ashlee la Fontaine
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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		
SW1_1	May 22, 2015		Water	S15-My21667	X	X
SW1_2	May 22, 2015		Water	S15-My21668	X	X
SW1_3	May 22, 2015		Water	S15-My21669	X	X
SW2_1	May 22, 2015		Water	S15-My21670	X	X
SW2_2	May 22, 2015		Water	S15-My21671	X	X
SW2_3	May 22, 2015		Water	S15-My21672	X	X
SW3_1	May 22, 2015		Water	S15-My21673	X	X
SW3_2	May 22, 2015		Water	S15-My21674	X	X
SW3_3	May 22, 2015		Water	S15-My21675	X	X

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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						
SW4_1	May 22, 2015		Water	S15-My21676	X	X
SW4_2	May 22, 2015		Water	S15-My21677	X	X
SW4_3	May 22, 2015		Water	S15-My21678	X	X
SW5_1	May 22, 2015		Water	S15-My21679	X	X
SW5_2	May 22, 2015		Water	S15-My21680	X	X
SW5_3	May 22, 2015		Water	S15-My21681	X	X
SW6_1	May 22, 2015		Water	S15-My21682	X	X
SW6_2	May 22, 2015		Water	S15-My21683	X	X
SW6_3	May 22, 2015		Water	S15-My21684	X	X
SW7_1	May 22, 2015		Water	S15-My21685	X	X

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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						
SW7_2	May 22, 2015		Water	S15-My21686	X	X
SW7_3	May 22, 2015		Water	S15-My21687	X	X
SW8_1	May 22, 2015		Water	S15-My21688	X	X
SW8_2	May 22, 2015		Water	S15-My21689	X	X
SW8_3	May 22, 2015		Water	S15-My21690	X	X
SW9_1	May 22, 2015		Water	S15-My21691	X	X
SW9_2	May 22, 2015		Water	S15-My21692	X	X
SW9_3	May 22, 2015		Water	S15-My21693	X	X
SW10_1	May 22, 2015		Water	S15-My21694	X	X
SW10_2	May 22, 2015		Water	S15-My21695	X	X

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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						
SW10_3	May 22, 2015		Water	S15-My21696	X	X
SW11_1	May 22, 2015		Water	S15-My21697	X	X
SW11_2	May 22, 2015		Water	S15-My21698	X	X
SW11_3	May 22, 2015		Water	S15-My21699	X	X
SW12_1	May 23, 2015		Water	S15-My21700	X	X
SW12_2	May 23, 2015		Water	S15-My21701	X	X
SW12_3	May 23, 2015		Water	S15-My21702	X	X
SW13_1	May 23, 2015		Water	S15-My21703	X	X
SW13_2	May 23, 2015		Water	S15-My21704	X	X
SW13_3	May 23, 2015		Water	S15-My21705	X	X

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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						
SW14_1	May 23, 2015		Water	S15-My21706	X	X
SW14_2	May 23, 2015		Water	S15-My21707	X	X
SW14_3	May 23, 2015		Water	S15-My21708	X	X
SW15_1	May 23, 2015		Water	S15-My21709	X	X
SW15_2	May 23, 2015		Water	S15-My21710	X	X
SW15_3	May 23, 2015		Water	S15-My21711	X	X
SW16_1	May 23, 2015		Water	S15-My21712	X	X
SW16_2	May 23, 2015		Water	S15-My21713	X	X
SW16_3	May 23, 2015		Water	S15-My21714	X	X
SW17_1	May 23, 2015		Water	S15-My21715	X	X

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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						
SW17_2	May 23, 2015		Water	S15-My21716	X	X
SW17_3	May 23, 2015		Water	S15-My21717	X	X
DUPL1_1	May 23, 2015		Water	S15-My21718	X	X
DUPL1_2	May 23, 2015		Water	S15-My21719	X	X
DUPL1_3	May 23, 2015		Water	S15-My21720	X	X
DUPL2_1	May 23, 2015		Water	S15-My21721	X	X
DUPL2_2	May 23, 2015		Water	S15-My21722	X	X
DUPL2_3	May 23, 2015		Water	S15-My21723	X	X
QAM16_1	May 23, 2015		Water	S15-My21724	X	X
QAM16_2	May 23, 2015		Water	S15-My21725	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY B/F BYPASS Project ID: 21/2430601	Order No.: Report #: 458920 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: May 26, 2015 9:32 AM Due: Jun 2, 2015 Priority: 5 Day Contact Name: Ashlee la Fontaine
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						
QAM16_3	May 23, 2015		Water	S15-My21726	X	X

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 C_o = Analyte concentration of the original sample
 C_d = 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, particularly 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 tested (turbidity and total suspended solids) are:

- Duplicate sample SW7_3, total suspended solids failed the internal lab duplicate analysis (RPD 57%). This is not considered to be significant given that the reported values and variation between the parent and duplicate results are small or insignificant relative to the assessment criteria (lowland rivers value of 50 mg/L and the statistical criteria used for the control charts) adopted for the project.

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 were received within recommended holding times.

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

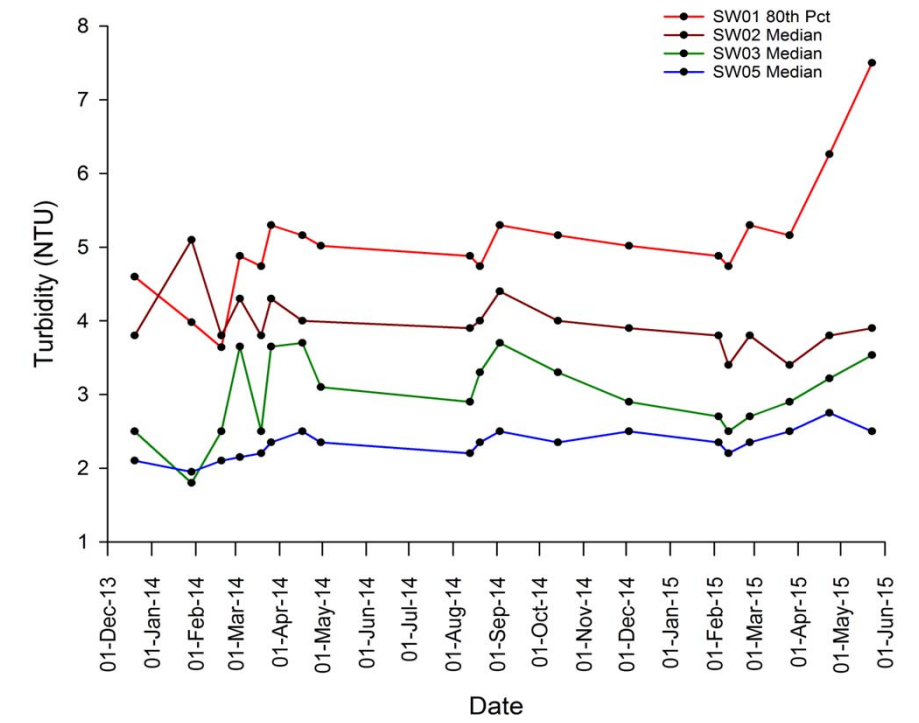
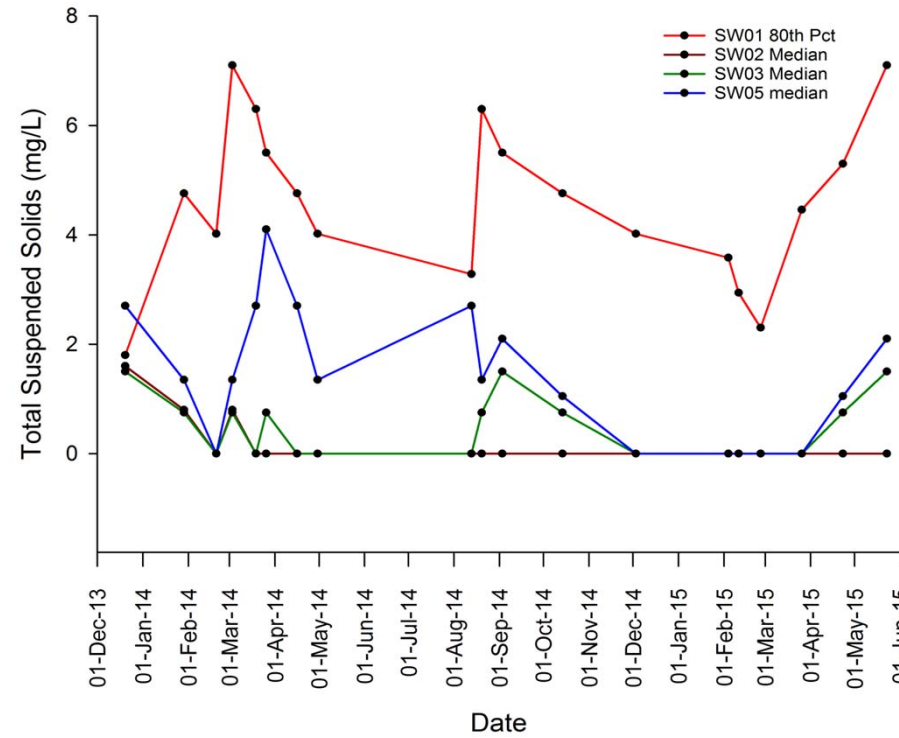
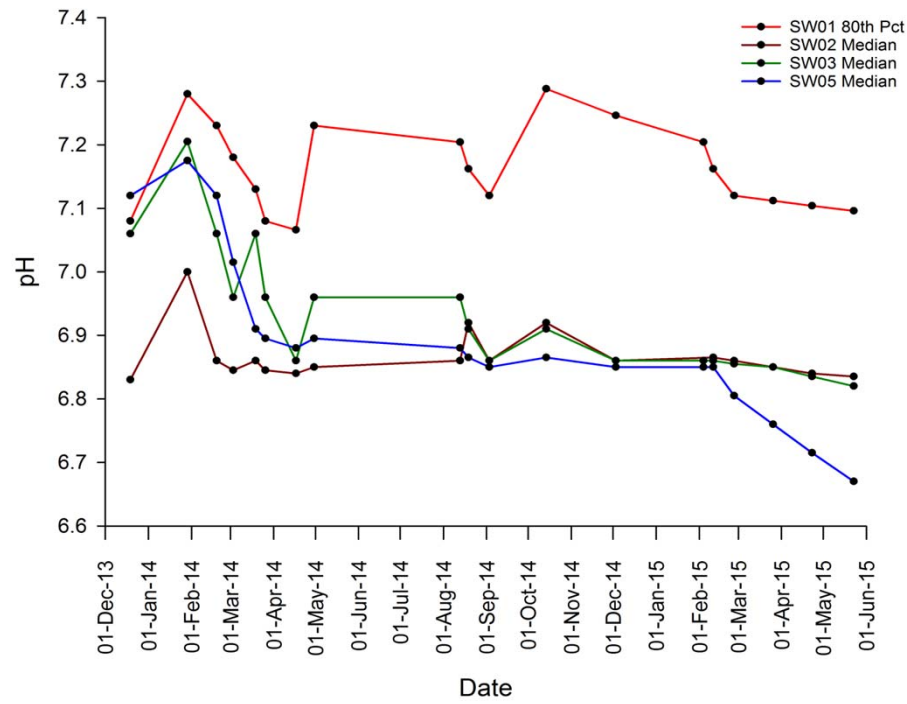
The QA/QC results show that most of the samples collected have met the appropriate standards and therefore, the data was considered to be valid and of sufficient quality to meet the data quality objectives for the assessment.

Attachment F - Control Charts

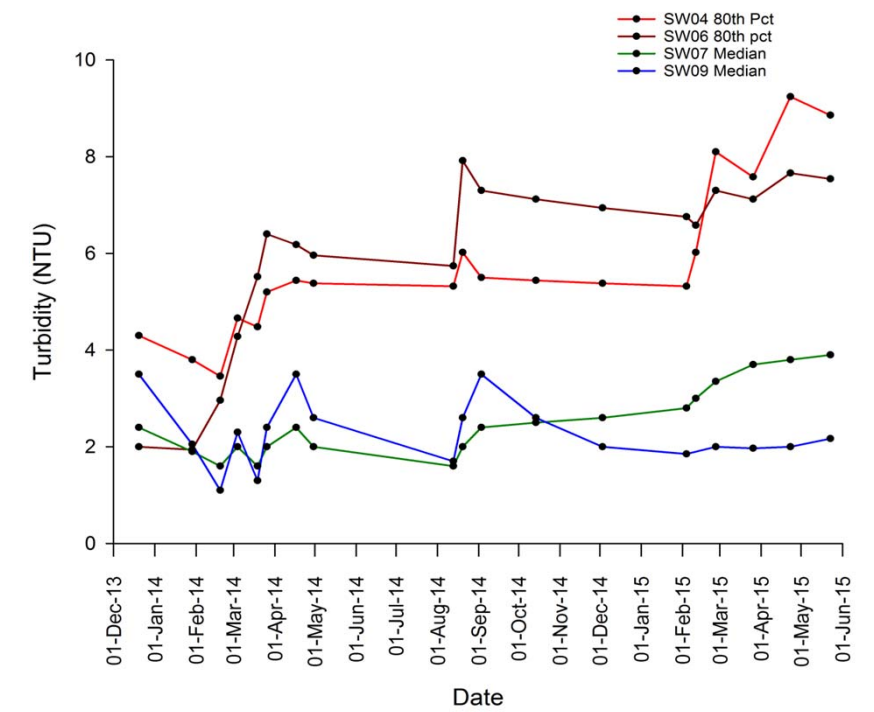
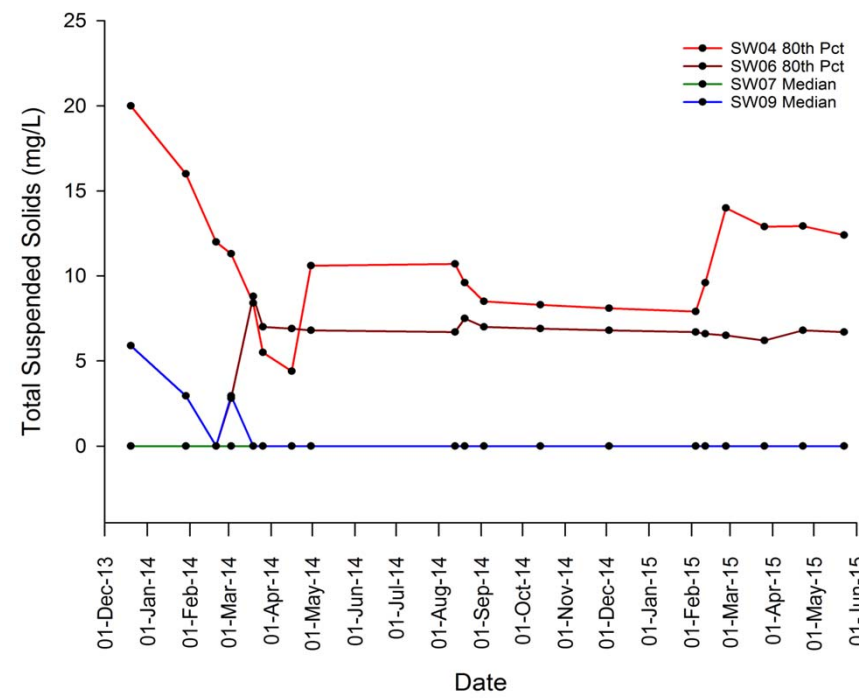
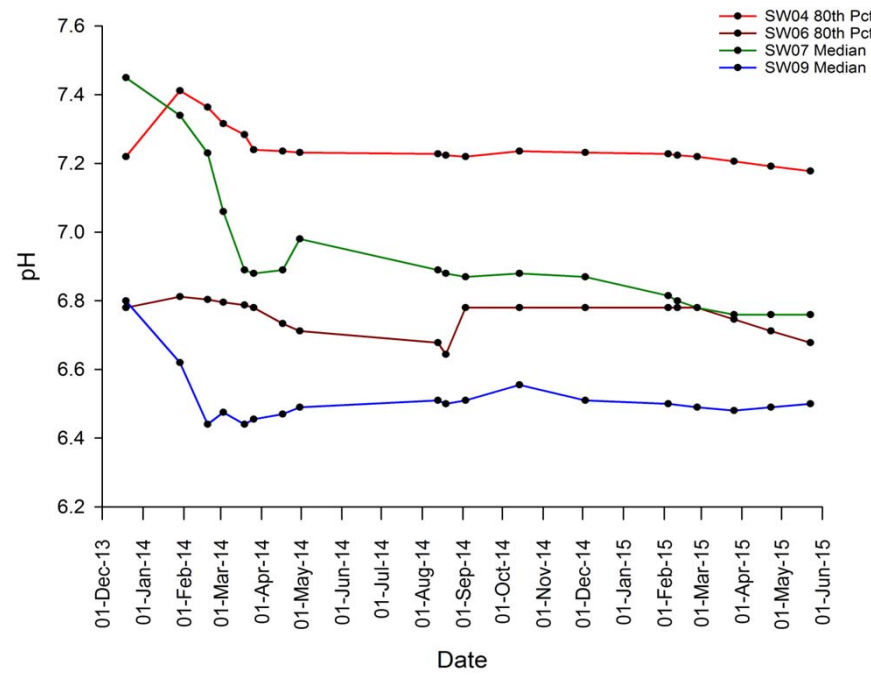


Attachment E Control Charts

1. Broughton Creek



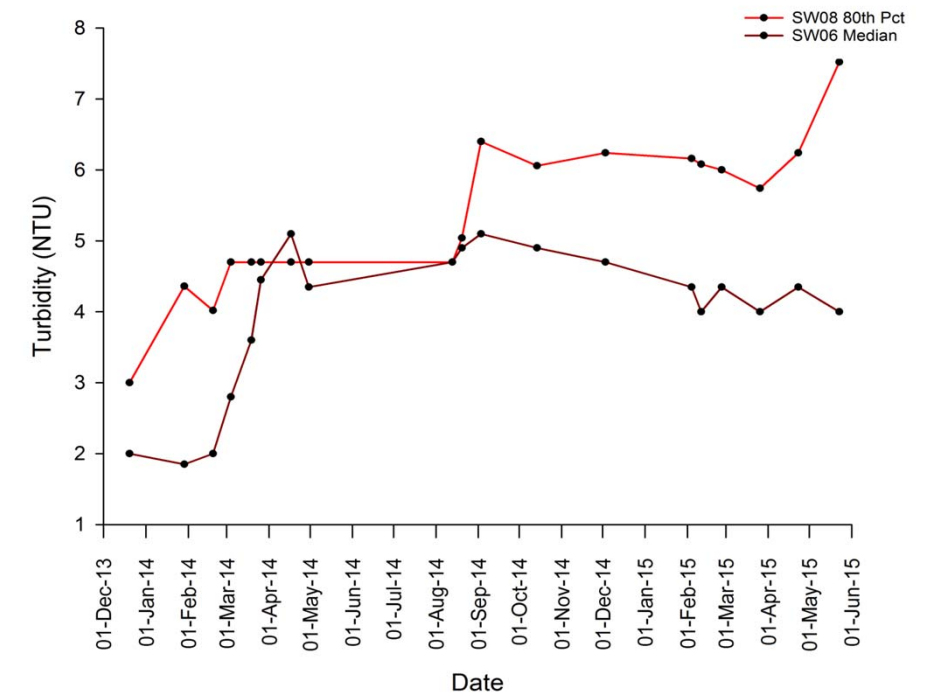
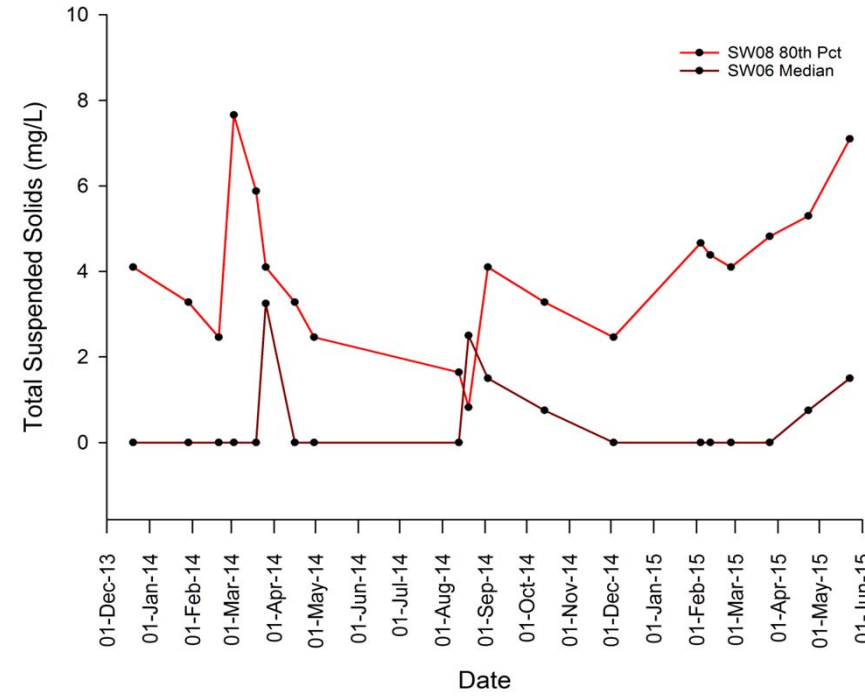
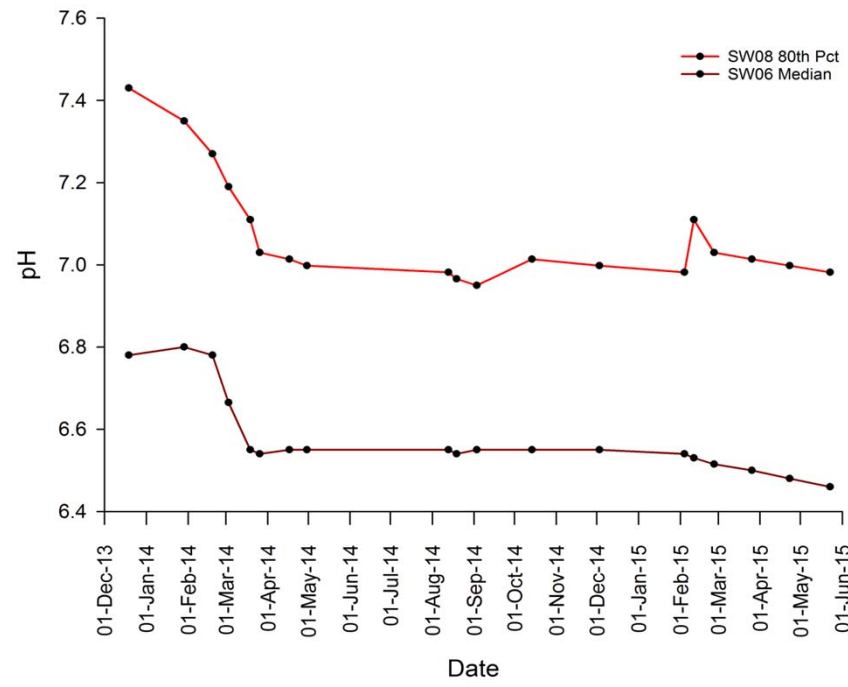
2. Connelly's Creek and Broughton Mill Creek and Bundewallah Creek



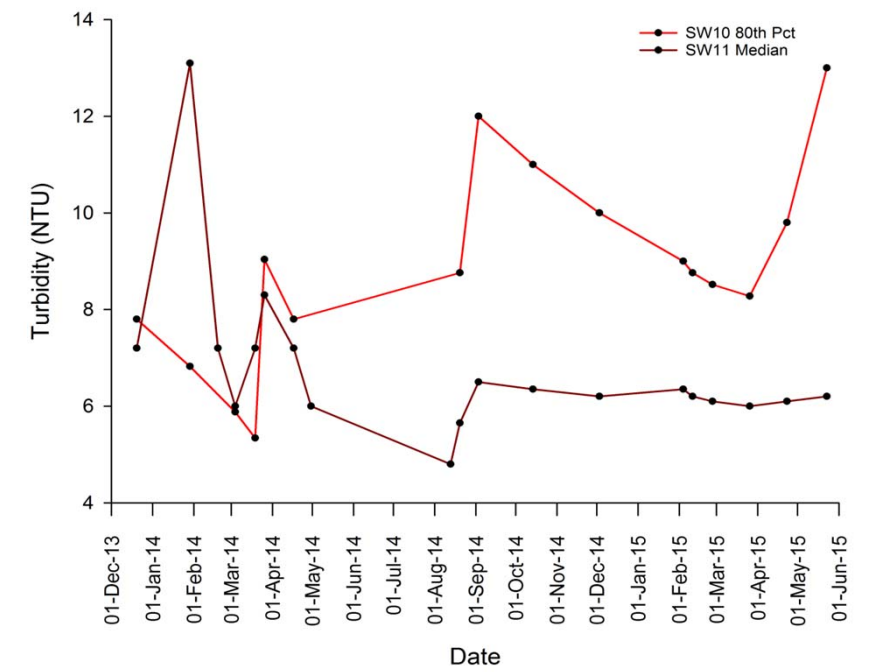
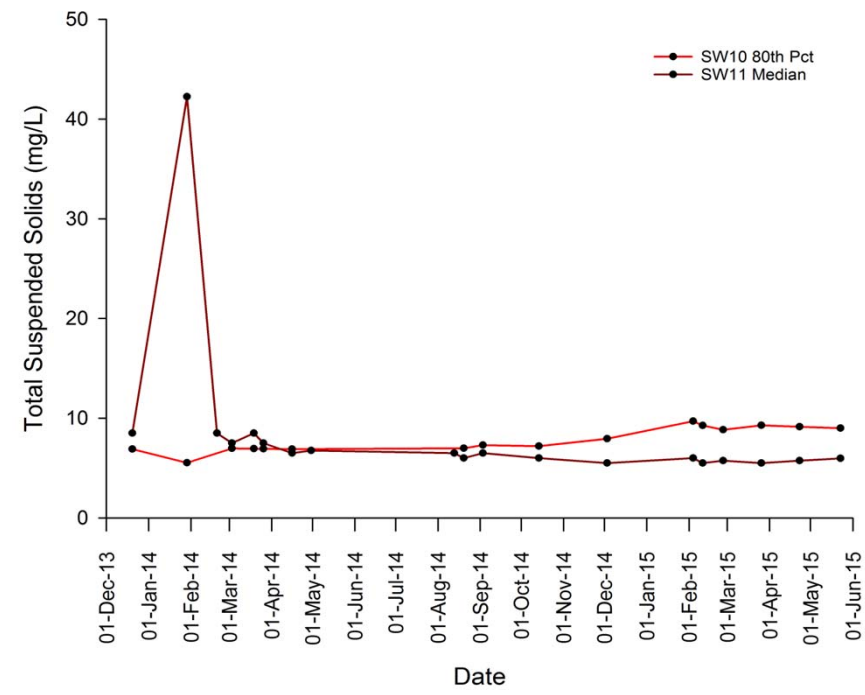
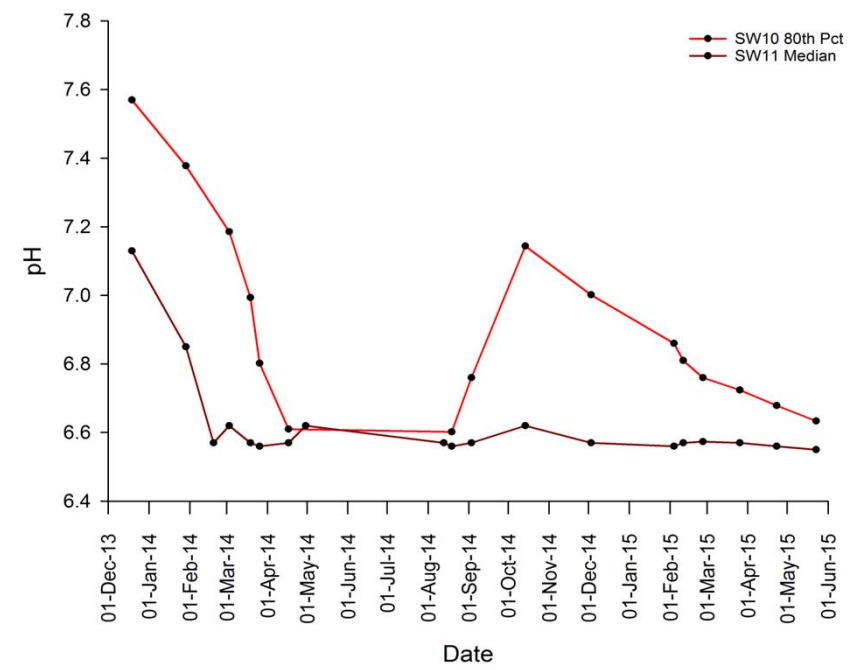


Attachment E Control Charts

3. Bundewallah Creek and Connelly's Creek



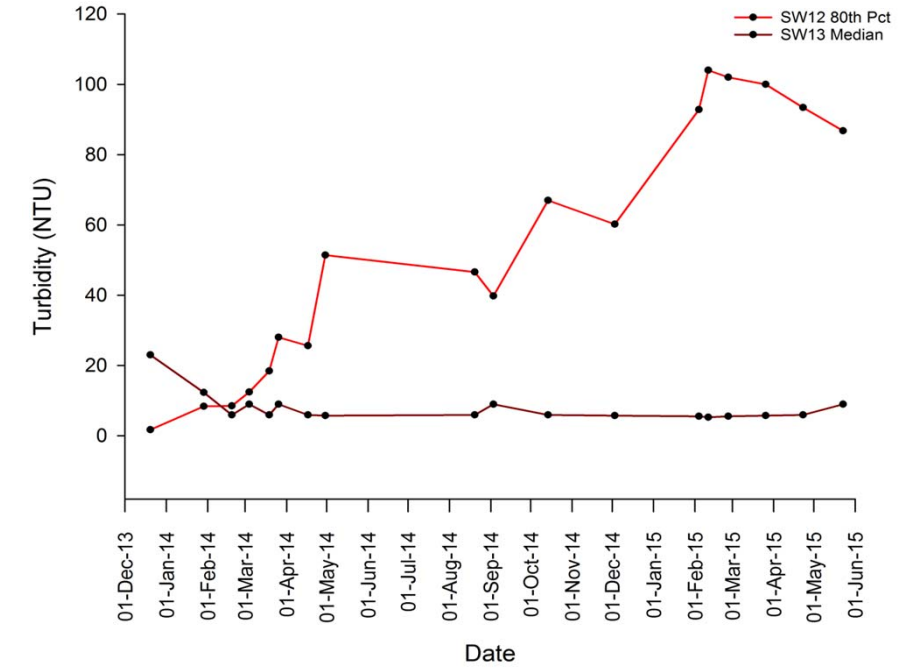
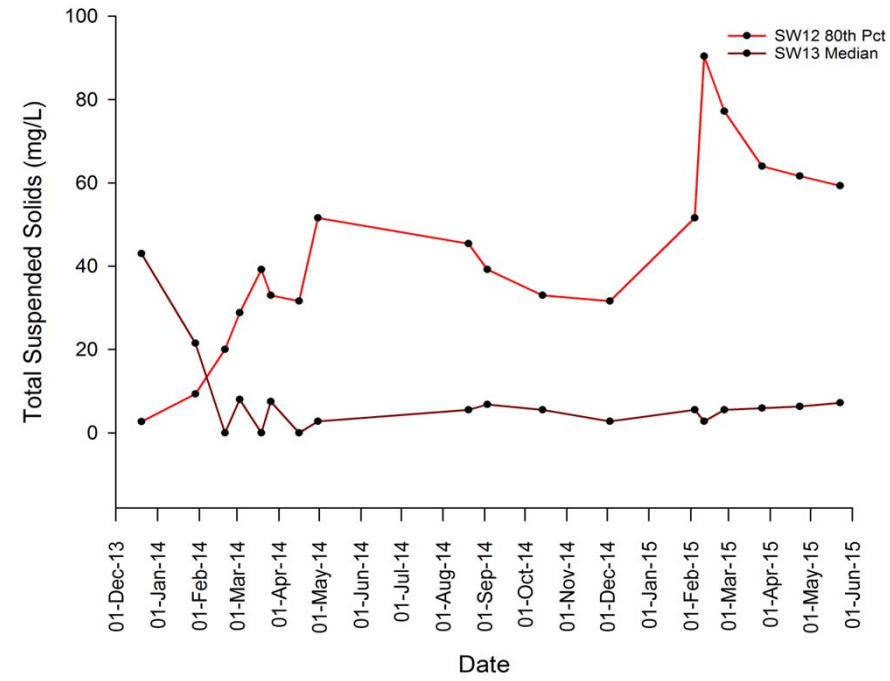
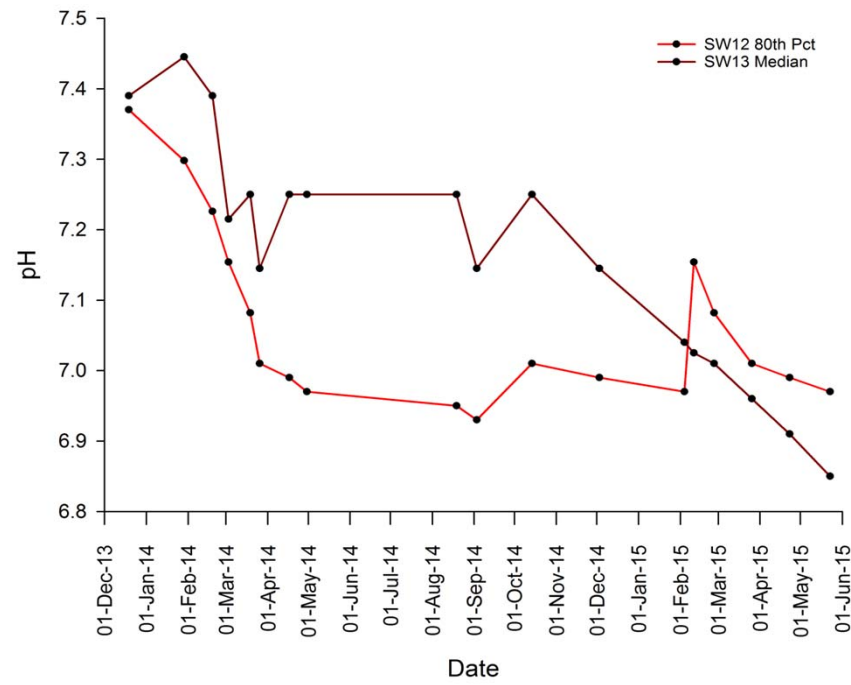
4. Town Creek



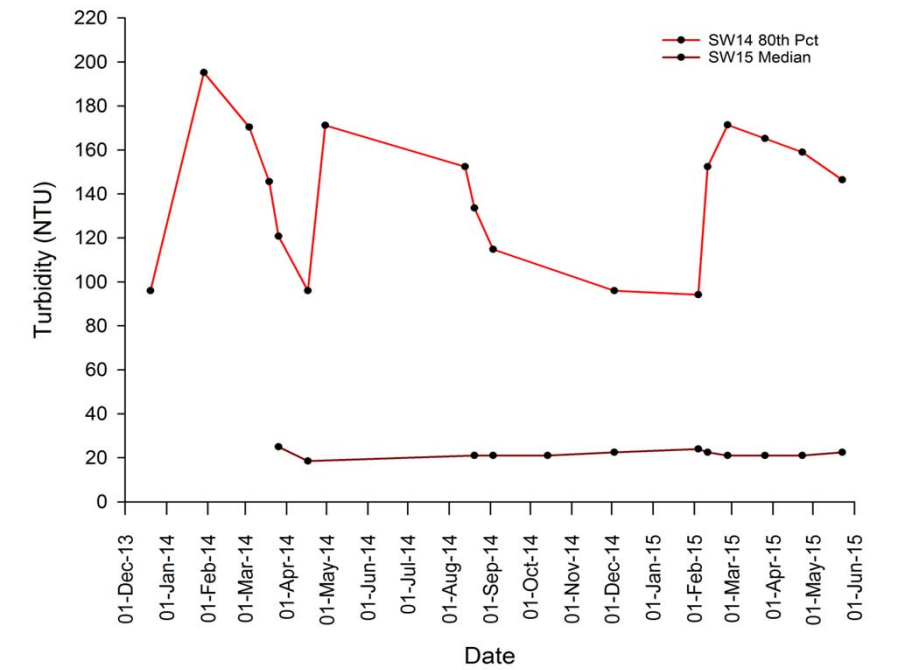
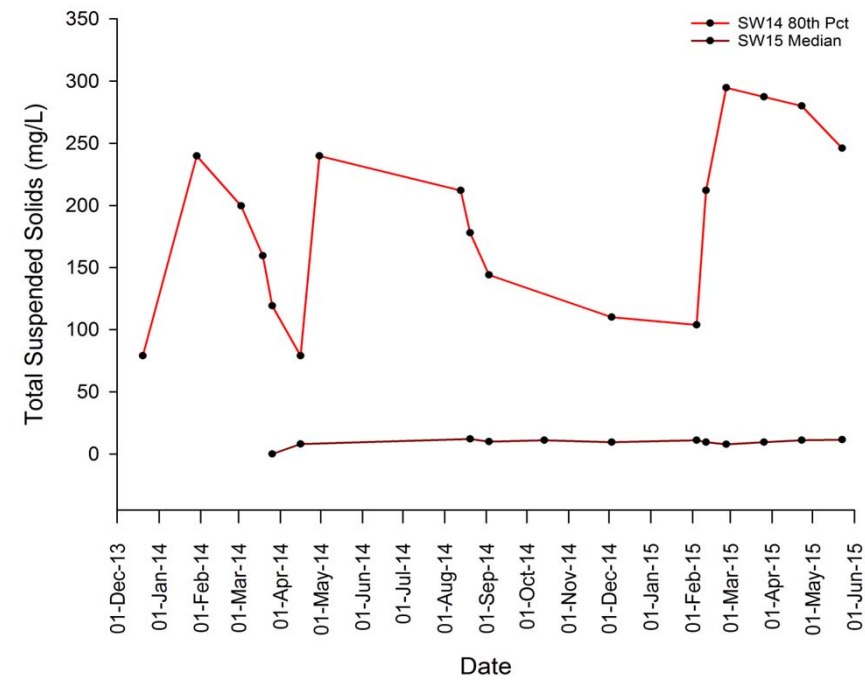
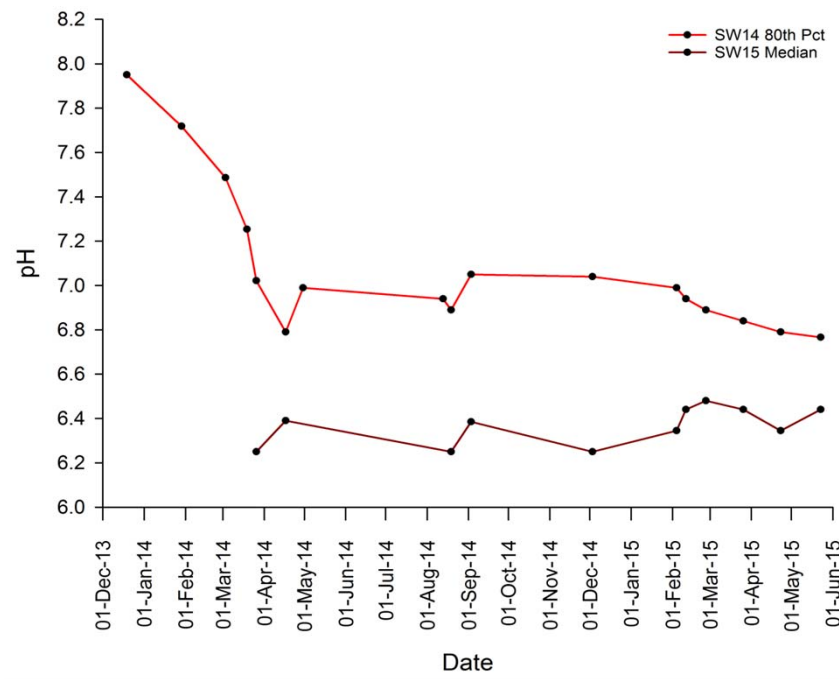


Attachment E Control Charts

5. Hitchcocks Lane Creek Tributary



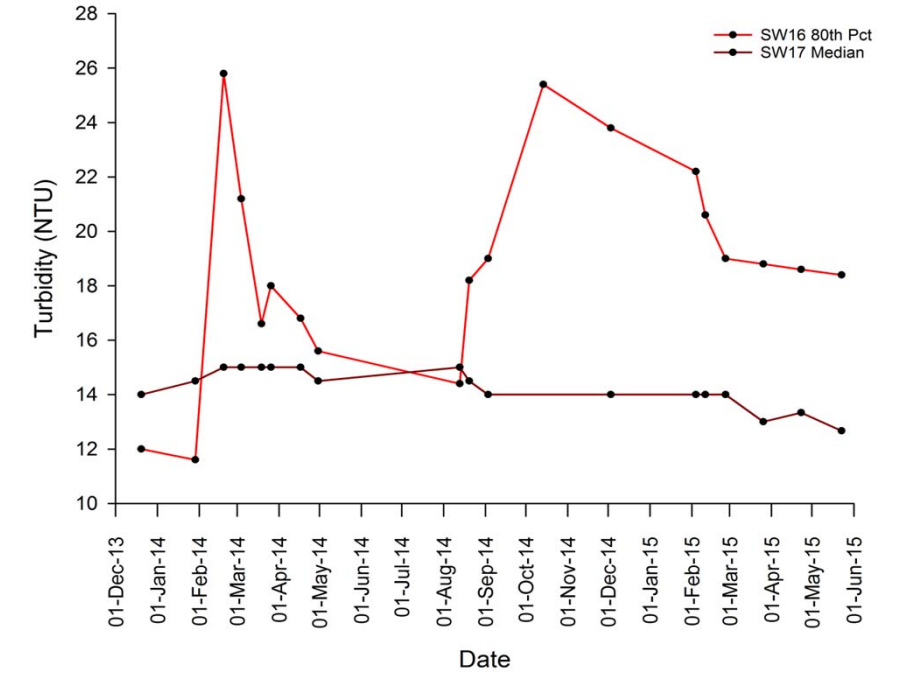
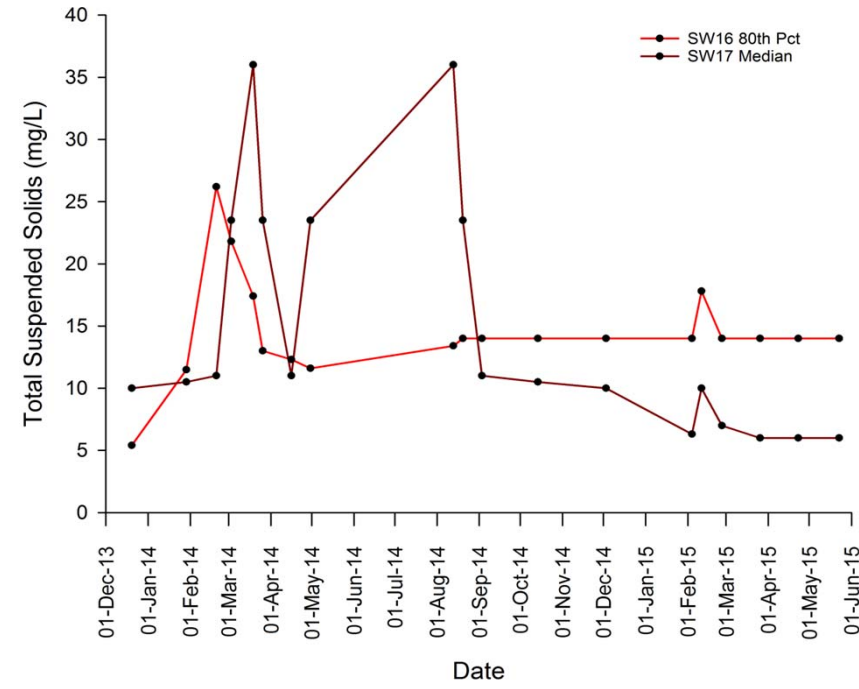
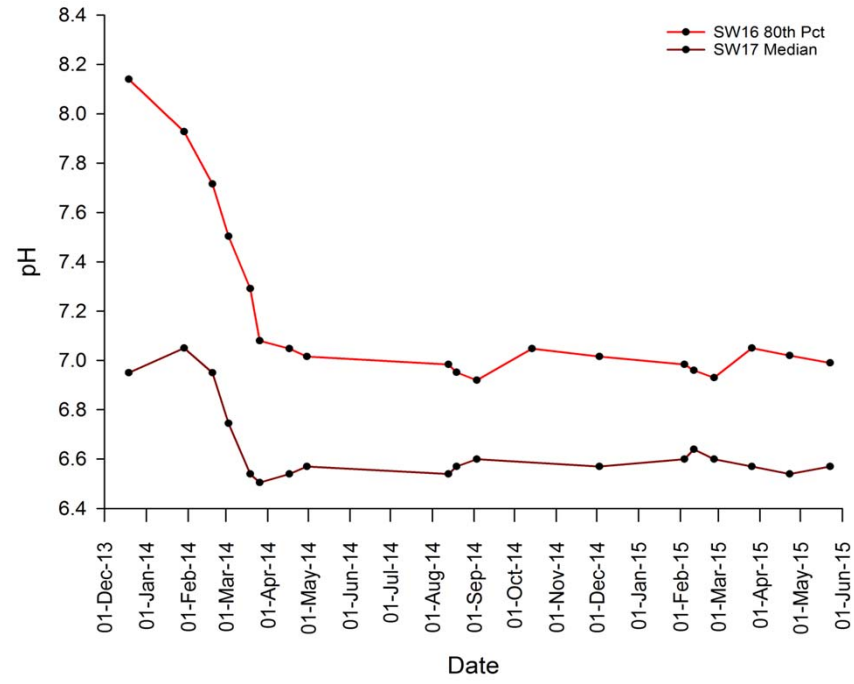
6. Hitchcocks Lane Creek





Attachment E Control Charts

7. Unnamed Tributary



19 August 2015

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

Our ref: 21/24306
210631
Your ref:

Dear James,

Surface Water Monitoring Event 8 (Minor Event 6)

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 a monthly round of surface water monitoring at seventeen locations (SW01 to SW017) after a minor rainfall event. This report documents the eighth surface water sampling event (Event 8) undertaken since the commencement of construction which is also the sixth minor surface water sampling event (Minor Event 6).

2 Field Program

Surface water sampling was undertaken at all surface water sampling locations on the 20 July 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

This section presents control charts and discusses results in respect to exceedances of criteria or inconsistencies in the surface water results for Event 8 (Minor Event 6) in accordance with:

- The limitations provided in Section 4.

- 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.

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 (NOW) 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 a spike in river flow. The surface water sampling events are also marked on Figure 2, Attachment A.

3.2 Surface water quality sampling results

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

Turbidity concentrations at SW12 and SW13, located within Hitchcocks Lane Creek tributary, exceeded the ANZECC criteria for lowland rivers (6 – 50 NTU), averaging 70 NTU and 62 NTU, respectively. Elevated turbidity was recorded on a previous occasion at SW12 (during February 2015). Recent upstream construction activity not associated with the highway upgrade was observed during sampling and could potentially be contributing to the elevated turbidity concentrations. The turbidity control chart for SW12 and SW13 (discussed in the following section) support the conclusion that the exceedances are representative of background conditions rather than construction impacts.

Both elevated turbidity and suspended solids (TSS) concentrations exceeding the ANZECC criteria for lowland rivers (6 – 50 NTU and 50 mg/L) occurred at SW11 (the down gradient location on Town Creek) and within the duplicate sample taken at the site (ID: DUPL1). The control charts for turbidity and TSS at this location support the conclusion that the exceedances are representative of background conditions rather than construction impacts. At the time of sampling, the diversion of Town Creek had taken place and SW11 and SW10 were no longer connected.

A field quality control and laboratory control assessment of the results from this monthly monitoring round (Event 8 – Minor Event 6) 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

An additional grab sample (QAM16) was taken downstream of SW01 and upstream of SW02 within Broughton Creek as a biodiversity assessment indicator. The results are included within Table B1 and B2 of Attachment B.

The primary control chart indicators for assessing potential impacts associated with the FBB upgrade works during construction are limited to pH, turbidity, and TSS. The control charts for Event 8 (minor event 6) are presented in Attachment F.

The control charts suggest that the results are generally consistent with previous rounds. Generally downstream median values that are greater than the up gradient reference site 80th percentile values, exceptions are listed below:

- Median pH at SW07 has continued to slightly exceed the 80th percentile pH at upstream location SW06 (Connelly's Creek and Broughton Mill Creek and Bundewallah Creek) since February 2015. This is expected to be due to the influence of Broughton Mill Creek water quality.

Event 8 (Minor Event 6) 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,

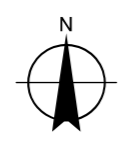
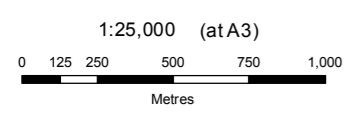


Jane Curran
Environmental Scientist
02 4424 4960



Stefan Charteris
Principal Hydrogeologist
02 9239 7472

Attachment A - Figures



LEGEND

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

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



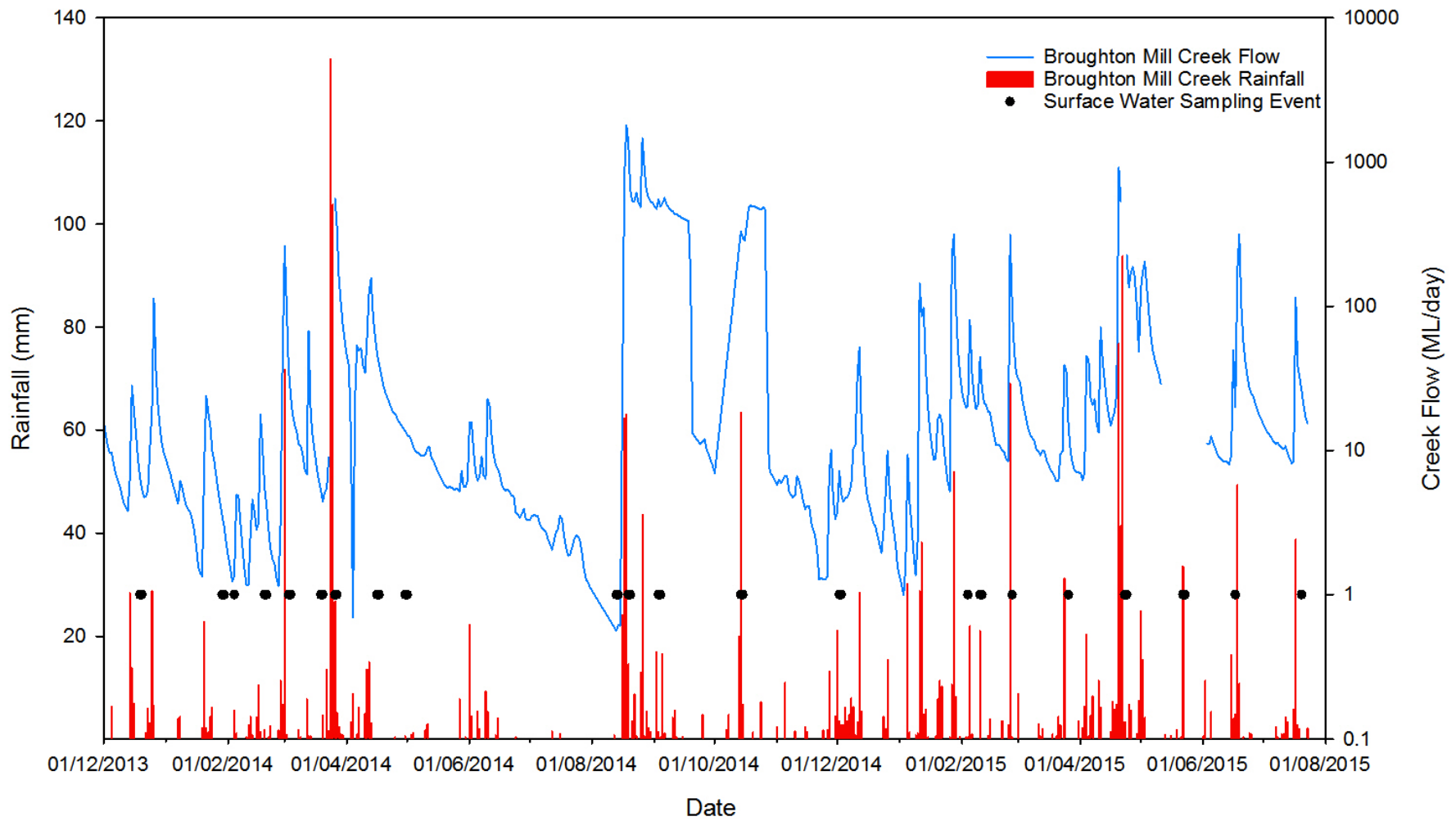
Fulton Hogan Pty Ltd
 Water Quality Monitoring

Job Number | 21-24306
 Revision | A
 Date | 03 Mar 2015

Surface water sampling locations

Figure 1

\\ghdnet\ghd\AU\Sydney\Projects\2124306\GIS\Maps\MXD\21_24306_2001_SurfaceWatersamplingLocations.mxd
 © 2015. While GHD has taken care to ensure the accuracy of this product, GHD and DATA CUSTODIAN, make no representations or warranties about its accuracy, completeness or suitability for any particular purpose.
 GHD and DATA CUSTODIAN, cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason.
 Data Source: NSW Department of Lands: DTDB and DCDB - 2012. Created by: mweber



Note: No data was available for Broughton Mill Creek flow from 12 May to 2 June 2015 from the NOW website at the time this report was prepared.

Figure 2 Rainfall vs Flow within Broughton Mill Creek

Attachment B - Tabulated Results



**Appendix B
Table B1
Event 8 - Field Parameters**

	Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Redox	Temp (Field)
	mg/L	µS/cm	pH_Units	mV	oC
ADWG 2011 Aesthetic			6.5-8.5		
Lowland rivers (ANZECC 2000)		300	6.5-8		

Field ID	Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Redox	Temp (Field)
QAM16_01	11.52	81.4	6.51	143.3	10
QAM16_02	11.39	81.5	6.44	133	10
QAM16_03	11.34	81.5	6.41	132.3	10
SW01_01	10.55	81.9	6.89	137.5	10.1
SW01_02	10.33	81.3	6.75	130.1	10
SW01_03	10.05	81.3	6.61	127.9	10
SW02_01	10.55	84.4	6.62	142.4	10.5
SW02_02	10.71	84.4	6.44	136.6	10.5
SW02_03	10.8	84.5	6.39	137.4	10.5
SW03_01	11.32	93.2	6.45	126.7	10
SW03_02	11.25	93.2	6.41	119.1	10
SW03_03	11.19	93.3	6.39	117.5	10.4
SW04_01	10.68	78.7	7.23	153.5	9.2
SW04_02	10.64	78.6	5.9	140.4	9.1
SW04_03	10.69	78.5	6.7	141.5	9.1
SW05_01	11.47	93.2	6.46	129.2	9.8
SW05_02	11.38	93.3	6.41	124.3	9.8
SW05_03	11.33	93.2	6.38	126	9.8
SW06_01	9.41	105.7	6.62	167.7	9.6
SW06_02	9.83	105.7	6.47	160.9	9.6
SW06_03	9.74	105.7	6.38	155.2	9.6
SW07_01	8.8	92.2	6.61	138.2	9.5
SW07_02	8.11	92.2	6.51	135.2	9.5
SW07_03	8.42	92	6.48	134.9	9.5
SW08_01	10.45	101.5	6.57	104.1	9.3
SW08_02	10.68	101.6	6.57	91.2	9.3
SW08_03	10.58	101.5	6.57	86	9.3
SW09_01	10.24	105.8	6.67	159	9.5
SW09_02	10.32	105.7	6.58	150.3	9.5
SW09_03	10.36	105.8	6.51	148.2	9.5
SW010_01	8.04	149.9	6.58	126.3	9.3
SW010_02	8.03	150.1	6.44	132.8	9.3
SW010_03	8	150.1	6.35	137.5	9.3
SW011_01	4.73	185.9	6.4	138.8	8.9
SW011_02	4.33	185.9	6.34	142.6	8.9
SW011_03	4.11	186	6.31	147.6	9
SW012_01	7.79	264.9	6.36	104.8	8.9
SW012_02	7.06	263.2	6.42	100.8	9
SW012_03	7.18	262.4	6.46	99.3	8.8
SW013_01	10.22	251	6.45	134.7	8.3
SW013_02	10.22	251.1	6.51	110.9	8.3
SW013_03	10.17	251.5	6.57	104.7	8.4
SW014_01	8.84	187.9	6.55	132.4	9.8
SW014_02	8.8	206.7	6.35	116.3	9.2
SW014_03	8.89	207	6.26	142.3	9.1
SW015_01	9.15	181.4	6.42	164.3	7.6
SW015_02	9.07	181.7	6.4	166.6	7.6
SW015_03	9.17	181.6	6.39	169	7.7
SW016_01	11.85	133.4	6.75	140.7	10.7
SW016_02	11.8	133.7	6.65	133.5	10.7
SW016_03	11.75	134.1	6.62	133.6	10.8
SW017_01	9.69	132.2	6.88	115.6	10
SW017_02	9.55	131.6	6.64	114.8	9.9
SW017_03	9.56	131.7	6.57	115.6	9.9



**Appendix B
Table B2
Event 8 - Analytical Results**

	Inorganic	
	Total Suspended Solids	Turbidity
	mg/L	NTU
EQL	5	1
Lowland rivers (ANZECC 2000)	50	6-50

Field_ID	Total Suspended Solids (mg/L)	Turbidity (NTU)
SW1_1	13	7.9
SW1_2	5.2	6.3
SW1_3	2.4	6.9
SW2_1	2.1	8.6
SW2_2	2.8	7.9
SW2_3	1.6	8.4
SW3_1	2.2	9.8
SW3_2	2.8	9.3
SW3_3	2.4	9.3
SW4_1	3.8	7.4
SW4_2	2.3	7.2
SW4_3	<5	7.2
SW5_1	3.9	12
SW5_2	1.6	11
SW5_3	2.8	12
SW6_1	<5	6.9
SW6_2	1.5	6.8
SW6_3	1.5	6.7
SW7_1	1.6	8.3
SW7_2	1.9	8
SW7_3	2.3	7.1
SW8_1	2.6	8.3
SW8_2	3.3	7.2
SW8_3	1.7	6.8
SW9_1	2.1	6.7
SW9_2	1.1	6.7
SW9_3	1.7	7.2
SW10_1	<5	7.9
SW10_2	<5	8
SW10_3	<5	8.1
SW11_1	65	92
SW11_2	120	120
SW11_3	75	80
SW12_1	21	72
SW12_2	17	72
SW12_3	11	65
SW13_1	7.3	62
SW13_2	8.1	61
SW13_3	16	62
SW14_1	15	35
SW14_2	5.9	30
SW14_3	46	42
SW15_1	21	40
SW15_2	7.7	30
SW15_3	7	29
SW16_1	5.3	11
SW16_2	1.7	12
SW16_3	1.3	13
SW17_1	1.2	9.7
SW17_2	5.3	9.8
SW17_3	<5	9.5
DUPL1_1	98	140
DUPL1_2	260	150
DUPL1_3	54	78
DUPL2_1	21	16
DUPL2_2	8.7	6.9
DUPL2_3	<5	5.3
QAM16_1	1.9	7.2
QAM16_2	3.3	6.2
QAM16_3	1.3	6.3



**Appendix B
Table B3
Event 8 - RPD Table**

Field Duplicates (WATER)
Filter: Lab_Report_Number in('466061')

Lab Report Number	466061	466061	RPD	466061	466061	RPD	466061	466061	RPD
Field ID	SW11_1	DUPL1_1		SW11_2	DUPL1_2		SW11_3	DUPL1_3	
Sampled Date/Time	20/07/2015	20/07/2015		20/07/2015	20/07/2015		20/07/2015	20/07/2015	

Method	ChemName	Units	EQL									
Inorganic	Total Suspended Solids	mg/l	5	65.0	98.0	40	120.0	260.0	74	75.0	54.0	33
	Turbidity	NTU	1	92.0	140.0	41	120.0	150.0	22	80.0	78.0	3

Field Duplicates (WATER)
Filter: Lab_Report_Number in('466061')

Lab Report Number	466061	466061	RPD	466061	466061	RPD	466061	466061	RPD
Field ID	SW1_1	DUPL2_1		SW1_2	DUPL2_2		SW1_3	DUPL2_3	
Sampled Date/Time	20/07/2015	20/07/2015		20/07/2015	20/07/2015		20/07/2015	20/07/2015	

Method	ChemName	Units	EQL									
Inorganic	Total Suspended Solids	mg/l	5	13.0	21.0	47	5.2	8.7	50	2.4	<1.0	82
	Turbidity	NTU	1	7.9	16.0	68	6.3	6.9	9	6.9	5.3	26

*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 C - Field Sheets



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 2.05pm
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW01
 COORDINATES/GPS (if Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~50m upstream of bridge.

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Paddock + trees.
 SLOPE
 EROSION
 OTHER Construction downstream on other side of bridge in ck.

FIELD MEASUREMENTS

SAMPLE	SW01-1	SW01-2	SW01-3
TEMPERATURE (°C)	10.1	10.0	10.0
CONDUCTIVITY (uS/cm)	81.9	81.3	81.3
pH	6.89	6.75	6.61
DO (ppm)	93.7%, 10.55mg/L	91.5%, 10.33mg/L	89.1%, 10.05
REDOX (mV)	137.5	130.1	127.9

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW01	3	Chilled	Yes	clear slightly brown. DUPL 2-1, 2, 3

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 2.30pm
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: AQM16 (aquatic monitoring)
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION Downstream of bridge construction. Site is located between sm01 + sm02 on Broughton ck.

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Trees + grass. Location is near large She-oak.
 SLOPE
 EROSION
 OTHER Construction ~ 70m upstream. Stockpiles upstream.

FIELD MEASUREMENTS

SAMPLE	AQM16-1	AQM16-2	AQM16-3
TEMPERATURE (°C)	10.0	10.0	10.0
CONDUCTIVITY (uS/cm)	81.4	81.5	81.5
pH	6.51	6.44	6.41
DO (ppm)	102.1% 11.52mg/L	101.1% 11.39mg/L	100.5% 11.34mg/L
REDOX (mV)	143.3	133.0	132.3

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
8 AQM16	3	chilled	No	Slightly brown

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 2.48pm
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW02
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION Downside of bridge/causeway

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Trees.
 SLOPE
 EROSION
 OTHER No construction visible. Water is slightly brown

FIELD MEASUREMENTS

SAMPLE	SW02-1	SW02-2	SW02-3
TEMPERATURE (°C)	10.5	10.5	10.5
CONDUCTIVITY (uS/cm)	84.4	84.4	84.5
pH	6.62	6.44	6.39
DO (ppm)	94.5%, 10.55mg/L	95.9%, 10.71mg/L	96.6%, 10.80mg/L
REDOX (mV)	142.4	136.6	137.4

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW02	3	chilled	No	Water slightly brown.

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 3.15pm
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW03
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 25m off Farmers access road

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Trees
 SLOPE
 EROSION
 OTHER no construction visible. Water is slightly brown.

FIELD MEASUREMENTS

SAMPLE	SW03-1	SW03-2	SW03-3
TEMPERATURE (°C)	10.0	10.0	10.4
CONDUCTIVITY (uS/cm)	93.2	93.2	93.3
pH	6.45	6.41	6.39
DO (ppm)	100.4%, 11.32mg/L	99.8%, 11.25mg/L	99.2%, 11.19mg/L
REDOX (mV)	126.7	119.1	117.5

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW03	3	chilled	No	slightly brown

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 7.57am
 CLIENT: RMS SAMPLING OFFICERS: JC, JD
 SITE: SW04
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Grass + trees, old turbeo paddock + muddy.
 SLOPE
 EROSION
 OTHER

FIELD MEASUREMENTS

SAMPLE	SW04-1	SW04-2	SW04-3
TEMPERATURE (°C)	9.2	9.1	9.1
CONDUCTIVITY (uS/cm)	78.7	78.6	78.5
pH	7.23	5.90	6.70
DO (ppm)	10.6%	92.4%, 10.69mg/L	92.7%, 10.02mg/L
REDOX (mV)	153.5	140.4	141.5

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW04	3	chilled	No	clear

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 3.40pm
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW05

COORDINATES/GPS (If Applicable)

SAMPLING METHOD (ie grab, bucket)

Grab upstream

DETAILED SAMPLE LOCATION DESCRIPTION

~ 15m from sharp turn in ch at riffle

ENVIRONMENTAL OBSERVATIONS

WEATHER

Sunny

VEGETATION

Paddock + trees.

SLOPE

EROSION

OTHER

Cows in paddock + crossing ck.

FIELD MEASUREMENTS

SAMPLE	SW05-1	SW05-2	SW05-3
TEMPERATURE (°C)	9.8	9.8	9.8
CONDUCTIVITY (uS/cm)	93.2	93.3	93.2
pH	6.46	6.41	6.38
DO (ppm)	101.3%, 11.47mg/L	100.5%, 11.38mg/L	100.0%, 11.33mg/L
REDOX (mV)	129.2	124.3	126.0

HYDROLOGICAL DATA

FLOW MEASUREMENT

(or stream height if rating table available)

Fast flowing

CROSS SECTION WIDTH (m)

DEPTH (m)

OTHER

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW05	3	chilled	No	clear

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 9:05am
 CLIENT: RMS SAMPLING OFFICERS: JC, JD
 SITE: SW06

COORDINATES/GPS (If Applicable) _____

SAMPLING METHOD (ie grab, bucket) Grab

DETAILED SAMPLE LOCATION DESCRIPTION above cleared area in ck. (~5m upstream of diversion gate to be opened up).

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Trees + grass. Construction ~100m towards Berry near sediment pond. (upstream).
 SLOPE _____
 EROSION _____
 OTHER Construction visible downstream on other side of ck.

FIELD MEASUREMENTS

SAMPLE	SW06-1	SW06-2	SW06-3
TEMPERATURE (°C)	9.6	9.6	9.6
CONDUCTIVITY (uS/cm)	105.7	105.7	105.7
pH	6.62	6.47	6.38
DO (ppm)	81.8%, 9.4mg/L	86.2%, 9.83mg/L	85.1%, 9.74mg/L
REDOX (mV)	167.7	160.9	155.2

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
<u>SW06</u>	<u>3</u>	<u>Chilled</u>	<u>No</u>	<u>clear</u>

FIELD SUPERVISOR _____ CHECKED (SIGN & DATE) _____



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 10.15am
 CLIENT: RMS SAMPLING OFFICERS: JC, J.D.
 SITE: SW07
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION Behind Berry bowling club.

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Lawn.
 SLOPE
 EROSION
 OTHER No construction visible.

FIELD MEASUREMENTS

SAMPLE	SW07-1	SW07-2	SW07-3
TEMPERATURE (°C)	9.5	9.5	9.5
CONDUCTIVITY (uS/cm)	92.2	92.2	92.0
pH	6.61	6.51	6.48
DO (ppm)	77.1%, 8.40 mg/L	71.0%, 8.11 mg/L	73.7%, 8.42 mg/L
REDOX (mV)	138.2	135.2	134.9

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW07	3	chilled	No	ok

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 9.35am
 CLIENT: RMS SAMPLING OFFICERS: JC, J.D.
 SITE: SW08
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 1m above Town Ck. Diversion

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Some trees + paddock area - no cows visible.
 SLOPE
 EROSION
 OTHER Construction upstream of Town Ck, none upstream Bundawalla ck.

FIELD MEASUREMENTS

SAMPLE	SW08-1	SW08-2	SW08-3
TEMPERATURE (°C)	9.3	9.3	9.3
CONDUCTIVITY (uS/cm)	101.5	101.6	101.5
pH	6.57	6.57	6.57
DO (ppm)	91.7%, 10.45mg/L	93.2%, 10.68mg/L	92.7%, 10.58mg/L
REDOX (mV)	104.1	91.2	86.0

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW08	3	Chilled	No	clear

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 8.28am
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW09
 COORDINATES/GPS (If Applicable) _____
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION Under Woodhill Mt Rd bridge

ENVIRONMENTAL OBSERVATIONS
 WEATHER Sunny
 VEGETATION Trees + grass. ~~was~~ old Turfco paddocks → new construction area.
 SLOPE _____
 EROSION _____
 OTHER _____

FIELD MEASUREMENTS

SAMPLE	SW09-01	SW09-2	SW09-3
TEMPERATURE (°C)	9.5	9.5	9.5
CONDUCTIVITY (uS/cm)	105.8	105.7	105.8
pH	6.67	6.58	6.61
DO (ppm)	89.7%, 10.24mg/L	90.4%, 10.32mg/L	91.0%, 10.36mg/L
REDOX (mV)	159.0	150.3	148.2

HYDROLOGICAL DATA
 FLOW MEASUREMENT (or stream height if rating table available) Moderate-fast flowing
 CROSS SECTION WIDTH (m) _____
 DEPTH (m) _____
 OTHER _____

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
<u>SW09</u>	<u>3</u>	<u>chilled</u>	<u>No</u>	<u>clean</u>

FIELD SUPERVISOR _____ CHECKED (SIGN & DATE) _____



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 1.15pm
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW10

COORDINATES/GPS (If Applicable) _____
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~20m upstream of Pond.

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Paddock with grass
 SLOPE _____
 EROSION Creek is eroded (more than last event)
 OTHER No construction upstream

FIELD MEASUREMENTS

SAMPLE	SW10-1	SW10-2	SW10-3
TEMPERATURE (°C)	9.3	9.3	9.3
CONDUCTIVITY (uS/cm)	149.9	150.1	150.1
pH	6.58	6.44	6.35
DO (ppm)	70.1%, 8.04mg/L	69.4%, 8.03mg/L	69.7%, 8.00mg/L
REDOX (mV)	126.3	132.8	137.5

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
<u>SW10</u>	<u>3</u>	<u>Chilled</u>	<u>Yes</u>	<u>Clear</u>

FIELD SUPERVISOR _____ CHECKED (SIGN & DATE) _____



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 9.55am
 CLIENT: RMS SAMPLING OFFICERS: JC, JD
 SITE: SW11
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 20m from Albert St. (south). Near
 conifer bushes.

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION
 SLOPE
 EROSION
 OTHER ~~MA~~ Construction upstream on Vth St.

FIELD MEASUREMENTS

SAMPLE	SW11-1	SW11-2	SW11-3
TEMPERATURE (°C)	8.9	8.9	9.0
CONDUCTIVITY (uS/cm)	185.9	185.9	186.0
pH	6.4	6.34	6.31
DO (ppm)	41.0%, 4.73mg/L	37.5%, 4.33mg/L	35.5% 4.11mg/L
REDOX (mV)	138.8	142.6	147.6

HYDROLOGICAL DATA

FLOW MEASUREMENT
 (or stream height if rating table available) Low flow (no visible flow on surface).
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW11	6	Chilled	Yes	DUPLI-1, 2, 3

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 12.55 pm
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW12
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION above rock access road + construction side of fence.

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Blackberry + grass.
 SLOPE
 EROSION * erosion in housing estate upstream has ^{likely} contributed to
 OTHER colour of water (brown-cream).

FIELD MEASUREMENTS

SAMPLE	SW12-1	SW12-2	SW12-3
TEMPERATURE (°C)	8.9	9.0	8.8
CONDUCTIVITY (uS/cm)	264.9	263.2	262.4
pH	6.36	6.42	6.46
DO (ppm)	67.5%, 7.79mg/L	61.2%, 7.06mg/L	61.9%, 7.18mg/L
REDOX (mV)	104.8	100.8	99.3

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Low flow (no visible flow from surface).
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW12	3	Chilled	No	Slightly brown.

FIELD SUPERVISOR

CHECKED (SIGN & DATE)

Construction downstream + around location.
 immediately



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 11:10am
 CLIENT: RMS SAMPLING OFFICERS: JC, J.D
 SITE: SW13
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 3m downstream of bridge into Arbour.

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Lawn + some trees.
 SLOPE
 EROSION
 OTHER Construction upstream of Prince's Hwy

FIELD MEASUREMENTS

SAMPLE	SW13-1	SW13-2	SW13-3
TEMPERATURE (°C)	8.3	8.3	8.4
CONDUCTIVITY (uS/cm)	251.0	251.1	251.5
pH	6.45	6.51	6.57
DO (ppm)	87.2%, 10.22mg/L	87.3% 10.22mg/L	86.7%, 10.17mg/L
REDOX (mV)	134.7	110.9	104.7

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW13	3	chilled	No	clear

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 12:30pm
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW14
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 150-200m upstream of Hwy

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Paddock with grass
 SLOPE
 EROSION
 OTHER Construction downstream next to Hwy

FIELD MEASUREMENTS

SAMPLE	SW14-1	SW14-2	SW14-3
TEMPERATURE (°C)	9.6	9.2	9.1
CONDUCTIVITY (uS/cm)	187.9	206.7	207.0
pH	6.55	6.35	6.26
DO (ppm)	78.4%, 8.84mg/L	76.5%, 8.88mg/L	77.3%, 8.89mg/L
REDOX (mV)	132.4	116.3	142.3

HYDROLOGICAL DATA

FLOW MEASUREMENT
 (or stream height if rating table available) Low flow (no visible flow from surface).
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW14	3	chilled	No	clear

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 10:50am
 CLIENT: RMS SAMPLING OFFICERS: JC, J.D
 SITE: SW15
 COORDINATES/GPS (If Applicable) _____
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 70m down from Berry. (usual location)

ENVIRONMENTAL OBSERVATIONS
 WEATHER Sunny
 VEGETATION Grass paddocks/floodplain
 SLOPE _____
 EROSION _____
 OTHER Construction ~ 150m upstream along Princes Hwy

FIELD MEASUREMENTS

SAMPLE	SW15-1	SW15-2	SW15-3
TEMPERATURE (°C)	7.6°C	7.6°C	7.7
CONDUCTIVITY (uS/cm)	181.4	181.7	181.6
pH	6.42	6.40	6.39
DO (ppm)	76.5%, 9.15 mg/L	76.0%, 9.07 mg/L	76.9%, 9.17 mg/L
REDOX (mV)	164.3	166.6	169.0

HYDROLOGICAL DATA
 FLOW MEASUREMENT (or stream height if rating table available) (No flow visible) Low flow
 CROSS SECTION WIDTH (m) _____
 DEPTH (m) _____
 OTHER _____

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
<u>SW15</u>	<u>3</u>	<u>Chilled</u>	<u>No</u>	<u>Clear</u>

FIELD SUPERVISOR _____ CHECKED (SIGN & DATE) _____



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 12.05pm
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW16
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 150m upstream of Amy.

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Paddock with grass
 SLOPE
 EROSION
 OTHER No construction, cows in paddock.

FIELD MEASUREMENTS

SAMPLE	SW16-1	SW16-2	SW16-3
TEMPERATURE (°C)	10.7	10.7	10.6
CONDUCTIVITY (uS/cm)	133.4	133.7	134.1
pH	6.75	6.65	6.62
DO (ppm)	106.5%, 11.85mg/L	106.4%, 11.80mg/L	105.9%, 11.75mg/L
REDOX (mV)	140.7	133.5	133.6

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW16	3	Chilled	NO	clear

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 20/7/15
 PROJECT NAME: Berry to Foxground TIME: 11.35am
 CLIENT: RMS SAMPLING OFFICERS: JC, J.D.
 SITE: SW17
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 200m downstream of Hwy1

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Paddock with grass
 SLOPE
 EROSION
 OTHER No construction, lots of horses around the.

FIELD MEASUREMENTS

SAMPLE	SW17-1	SW17-2	SW17-3
TEMPERATURE (°C)	10.0	9.9	9.9
CONDUCTIVITY (uS/cm)	132.2	131.6	131.7
pH	6.88	6.64	6.57
DO (ppm)	85.4%, 9.69mg/L	84.4%, 9.55mg/L	84.7%, 9.56mg/L
REDOX (mV)	115.6	114.8	115.6

HYDROLOGICAL DATA

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

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW17	3	chilled	No	clear

FIELD SUPERVISOR

CHECKED (SIGN & DATE)

Attachment D - Laboratory Certificates



mgt

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 Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS Page 1 of 4

Company Name : GHD Pty Ltd	Contact Name : Ashlee La Fontaine 0449 211 450	Purchase Order :	COC Number :
Office Address :	Project Manager : Amy Dobson	PROJECT Number : 21/2430601	Eurofins mgt quote ID : 150501GHD
Level 15, 133 Castlereagh Street, Sydney NSW 2000	Email for results : ashlee.lafontaine@ghd.com, jane.curran@ghd.com	PROJECT Name : Foxground to Berry	Data output format:

Special Directions & Comments :	Analytes										Some common holding times (with correct preservation). For further information contact the lab				
	~ Sampling Event 1 ~	Turbidity	Suspended Solids (SS)								Waters		Soils		
											Parameter	Time	Parameter	Time	
												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

Eurofins mgt DI water batch number:														Containers:							Sample comments:			
Sample ID	Date	Matrix															1LP	200ml	125P	1LA		40mL vial	125mL A	Jar
1	SW1_1	20/07/15	w		X	X											1							
2	SW1_2	20/07/15	w		X	X											1							
3	SW1_3	20/07/15	w		X	X											1							
4	SW2_1	20/07/15	w		X	X											1							
5	SW2_2	20/07/15	w		X	X											1							
6	SW2_3	20/07/15	w		X	X											1							
7	SW3_1	20/07/15	w		X	X											1							
8	SW3_2	20/07/15	w		X	X											1							
9	SW3_3	20/07/15	w		X	X											1							
10	SW4_1	20/07/15	w		X	X											1							
11	SW4_2	20/07/15	w		X	X											1							
12	SW4_3	20/07/15	w		X	X											1							
13	SW5_1	20/07/15	w		X	X											1							
14	SW5_2	20/07/15	w		X	X											1							
15	SW5_3	20/07/15	w		X	X											1							
16	SW6_1	20/07/15	w		X	X											1							

Relinquished By: Jane Curran	Received By: <i>Jan</i>	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Date & Time : 21/07/15 12pm	Date & Time :	1 DAY <input type="checkbox"/> 2 DAY <input type="checkbox"/> 3 DAY <input type="checkbox"/>	5 DAY <input checked="" type="checkbox"/> 10 DAY <input type="checkbox"/> Other:	<input type="checkbox"/> Courier <input type="checkbox"/> Hand Delivered <input type="checkbox"/> Postal	5.6
Signature: <i>Jane Curran</i>	Signature:			Courier Consignment # :	Report number: 466061

Sample Receipt 1 Syd

Subject: FW: Foxground to Berry 21/2430601

From: Sample Receipt 1 Syd

Sent: Wednesday, 22 July 2015 5:00 PM

To: Ashlee La Fontaine

Cc: amy.dobson@ghd.com; jane.curran@ghd.com; EnviroSampleNSW

Subject: Foxground to Berry 21/2430601

Hi Ashlee,

We've received two samples with the same ID SW3_3 and no SW13_3. Pictured below are the samples received are you able to differentiate which is SW13_3?



Thank you

Ellen

Sample Receipt 1 Syd

Eurofins | mgt

Unit F3, Parkview Building

16 Mars Road

LANE COVE WEST NSW 2066

AUSTRALIA

Phone : +61 2 9900 8400

Fax : +61 2 9420 2977

Handwritten: Job # 466061

Email : sample_sydney1@eurofins.com.au

Website : environment.eurofins.com.au

PFOS & PFOA proficiency study results demonstrate Eurofins | mgt's commitment to QUALITY - [click here for more information](#)

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: Amy Dobson

Report 466061-W
 Project name FOXGROUND TO BERRY
 Project ID 21/2430601
 Received Date Jul 22, 2015

Client Sample ID			SW1_1	SW1_2	SW1_3	SW2_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-JI19501	S15-JI19502	S15-JI19503	S15-JI19504
Date Sampled			Jul 20, 2015	Jul 20, 2015	Jul 20, 2015	Jul 20, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	13	5.2	2.4	2.1
Turbidity	1	NTU	7.9	6.3	6.9	8.6

Client Sample ID			SW2_2	SW2_3	SW3_1	SW3_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-JI19505	S15-JI19506	S15-JI19507	S15-JI19508
Date Sampled			Jul 20, 2015	Jul 20, 2015	Jul 20, 2015	Jul 20, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	2.8	1.6	2.2	2.8
Turbidity	1	NTU	7.9	8.4	9.8	9.3

Client Sample ID			SW3_3	SW4_1	SW4_2	SW4_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-JI19509	S15-JI19510	S15-JI19511	S15-JI19512
Date Sampled			Jul 20, 2015	Jul 20, 2015	Jul 20, 2015	Jul 20, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	2.4	3.8	2.3	< 1
Turbidity	1	NTU	9.3	7.4	7.2	7.2

Client Sample ID			SW5_1	SW5_2	SW5_3	SW6_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-JI19513	S15-JI19514	S15-JI19515	S15-JI19516
Date Sampled			Jul 20, 2015	Jul 20, 2015	Jul 20, 2015	Jul 20, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	3.9	1.6	2.8	< 1
Turbidity	1	NTU	12	11	12	6.9

Client Sample ID			SW6_2	SW6_3	SW7_1	SW7_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-JI19517	S15-JI19518	S15-JI19519	S15-JI19520
Date Sampled			Jul 20, 2015	Jul 20, 2015	Jul 20, 2015	Jul 20, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	1.5	1.5	1.6	1.9
Turbidity	1	NTU	6.8	6.7	8.3	8.0

Client Sample ID			SW7_3	SW8_1	SW8_2	SW8_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-JI19521	S15-JI19522	S15-JI19523	S15-JI19524
Date Sampled			Jul 20, 2015	Jul 20, 2015	Jul 20, 2015	Jul 20, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	2.3	2.6	3.3	1.7
Turbidity	1	NTU	7.1	8.3	7.2	6.8

Client Sample ID			SW9_1	SW9_2	SW9_3	SW10_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-JI19525	S15-JI19526	S15-JI19527	S15-JI19528
Date Sampled			Jul 20, 2015	Jul 20, 2015	Jul 20, 2015	Jul 20, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	2.1	1.1	1.7	< 1
Turbidity	1	NTU	6.7	6.7	7.2	7.9

Client Sample ID			SW10_2	SW10_3	SW11_1	SW11_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-JI19529	S15-JI19530	S15-JI19531	S15-JI19532
Date Sampled			Jul 20, 2015	Jul 20, 2015	Jul 20, 2015	Jul 20, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	< 1	< 1	65	120
Turbidity	1	NTU	8.0	8.1	92	120

Client Sample ID			SW11_3	SW12_1	SW12_2	SW12_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-JI19533	S15-JI19534	S15-JI19535	S15-JI19536
Date Sampled			Jul 20, 2015	Jul 20, 2015	Jul 20, 2015	Jul 20, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	75	21	17	11
Turbidity	1	NTU	80	72	72	65

Client Sample ID			SW13_1	SW13_2	SW13_3	SW14_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-JI19537	S15-JI19538	S15-JI19539	S15-JI19540
Date Sampled			Jul 20, 2015	Jul 20, 2015	Jul 20, 2015	Jul 20, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	7.3	8.1	16	15
Turbidity	1	NTU	62	61	62	35

Client Sample ID			SW14_2	SW14_3	SW15_1	SW15_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-JI19541	S15-JI19542	S15-JI19543	S15-JI19544
Date Sampled			Jul 20, 2015	Jul 20, 2015	Jul 20, 2015	Jul 20, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	5.9	46	21	7.7
Turbidity	1	NTU	30	42	40	30

Client Sample ID			SW15_3	SW16_1	SW16_2	SW16_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-JI19545	S15-JI19546	S15-JI19547	S15-JI19548
Date Sampled			Jul 20, 2015	Jul 20, 2015	Jul 20, 2015	Jul 20, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	7.0	5.3	1.7	1.3
Turbidity	1	NTU	29	11	12	13

Client Sample ID			SW17_1	SW17_2	SW17_3	DUPL1_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-JI19549	S15-JI19550	S15-JI19551	S15-JI19552
Date Sampled			Jul 20, 2015	Jul 20, 2015	Jul 20, 2015	Jul 20, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	1.2	5.3	< 1	98
Turbidity	1	NTU	9.7	9.8	9.5	140

Client Sample ID			DUPL1_2	DUPL1_3	DUPL2_1	DUPL2_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-JI19553	S15-JI19554	S15-JI19555	S15-JI19556
Date Sampled			Jul 20, 2015	Jul 20, 2015	Jul 20, 2015	Jul 20, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	260	54	21	8.7
Turbidity	1	NTU	150	78	16	6.9

Client Sample ID			DUPL2_3	AQM16_1	AQM16_2	AQM16_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-JI19557	S15-JI19558	S15-JI19559	S15-JI19560
Date Sampled			Jul 20, 2015	Jul 20, 2015	Jul 20, 2015	Jul 20, 2015
Test/Reference	LOR	Unit				
Suspended Solids	1	mg/L	< 1	1.9	3.3	1.3
Turbidity	1	NTU	5.3	7.2	6.2	6.3

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 - Method: APHA 2540D Total Suspended Solids	Melbourne	Jul 22, 2015	7 Day
Turbidity - Method: APHA 2130 Turbidity	Melbourne	Jul 23, 2015	2 Day

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 466061 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jul 22, 2015 9:28 AM Due: Jul 29, 2015 Priority: 5 Day Contact Name: Amy Dobson
Eurofins mgt Client Manager: Charl Du Preez		

Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
SW1_1	Jul 20, 2015		Water	S15-JI19501	X	X
SW1_2	Jul 20, 2015		Water	S15-JI19502	X	X
SW1_3	Jul 20, 2015		Water	S15-JI19503	X	X
SW2_1	Jul 20, 2015		Water	S15-JI19504	X	X
SW2_2	Jul 20, 2015		Water	S15-JI19505	X	X
SW2_3	Jul 20, 2015		Water	S15-JI19506	X	X
SW3_1	Jul 20, 2015		Water	S15-JI19507	X	X
SW3_2	Jul 20, 2015		Water	S15-JI19508	X	X
SW3_3	Jul 20, 2015		Water	S15-JI19509	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 466061 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jul 22, 2015 9:28 AM Due: Jul 29, 2015 Priority: 5 Day Contact Name: Amy Dobson
Eurofins mgt Client Manager: Charl Du Preez		

Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
SW4_1	Jul 20, 2015		Water	S15-JI19510	X	X
SW4_2	Jul 20, 2015		Water	S15-JI19511	X	X
SW4_3	Jul 20, 2015		Water	S15-JI19512	X	X
SW5_1	Jul 20, 2015		Water	S15-JI19513	X	X
SW5_2	Jul 20, 2015		Water	S15-JI19514	X	X
SW5_3	Jul 20, 2015		Water	S15-JI19515	X	X
SW6_1	Jul 20, 2015		Water	S15-JI19516	X	X
SW6_2	Jul 20, 2015		Water	S15-JI19517	X	X
SW6_3	Jul 20, 2015		Water	S15-JI19518	X	X
SW7_1	Jul 20, 2015		Water	S15-JI19519	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 466061 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jul 22, 2015 9:28 AM Due: Jul 29, 2015 Priority: 5 Day Contact Name: Amy Dobson
Eurofins mgt Client Manager: Charl Du Preez		

Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
SW7_2	Jul 20, 2015		Water	S15-JI19520	X	X
SW7_3	Jul 20, 2015		Water	S15-JI19521	X	X
SW8_1	Jul 20, 2015		Water	S15-JI19522	X	X
SW8_2	Jul 20, 2015		Water	S15-JI19523	X	X
SW8_3	Jul 20, 2015		Water	S15-JI19524	X	X
SW9_1	Jul 20, 2015		Water	S15-JI19525	X	X
SW9_2	Jul 20, 2015		Water	S15-JI19526	X	X
SW9_3	Jul 20, 2015		Water	S15-JI19527	X	X
SW10_1	Jul 20, 2015		Water	S15-JI19528	X	X
SW10_2	Jul 20, 2015		Water	S15-JI19529	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 466061 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jul 22, 2015 9:28 AM Due: Jul 29, 2015 Priority: 5 Day Contact Name: Amy Dobson
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Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
SW10_3	Jul 20, 2015		Water	S15-JI19530	X	X
SW11_1	Jul 20, 2015		Water	S15-JI19531	X	X
SW11_2	Jul 20, 2015		Water	S15-JI19532	X	X
SW11_3	Jul 20, 2015		Water	S15-JI19533	X	X
SW12_1	Jul 20, 2015		Water	S15-JI19534	X	X
SW12_2	Jul 20, 2015		Water	S15-JI19535	X	X
SW12_3	Jul 20, 2015		Water	S15-JI19536	X	X
SW13_1	Jul 20, 2015		Water	S15-JI19537	X	X
SW13_2	Jul 20, 2015		Water	S15-JI19538	X	X
SW13_3	Jul 20, 2015		Water	S15-JI19539	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 466061 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jul 22, 2015 9:28 AM Due: Jul 29, 2015 Priority: 5 Day Contact Name: Amy Dobson
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Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
SW14_1	Jul 20, 2015		Water	S15-JI19540	X	X
SW14_2	Jul 20, 2015		Water	S15-JI19541	X	X
SW14_3	Jul 20, 2015		Water	S15-JI19542	X	X
SW15_1	Jul 20, 2015		Water	S15-JI19543	X	X
SW15_2	Jul 20, 2015		Water	S15-JI19544	X	X
SW15_3	Jul 20, 2015		Water	S15-JI19545	X	X
SW16_1	Jul 20, 2015		Water	S15-JI19546	X	X
SW16_2	Jul 20, 2015		Water	S15-JI19547	X	X
SW16_3	Jul 20, 2015		Water	S15-JI19548	X	X
SW17_1	Jul 20, 2015		Water	S15-JI19549	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 466061 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jul 22, 2015 9:28 AM Due: Jul 29, 2015 Priority: 5 Day Contact Name: Amy Dobson
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Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
SW17_2	Jul 20, 2015		Water	S15-JI19550	X	X
SW17_3	Jul 20, 2015		Water	S15-JI19551	X	X
DUPL1_1	Jul 20, 2015		Water	S15-JI19552	X	X
DUPL1_2	Jul 20, 2015		Water	S15-JI19553	X	X
DUPL1_3	Jul 20, 2015		Water	S15-JI19554	X	X
DUPL2_1	Jul 20, 2015		Water	S15-JI19555	X	X
DUPL2_2	Jul 20, 2015		Water	S15-JI19556	X	X
DUPL2_3	Jul 20, 2015		Water	S15-JI19557	X	X
AQM16_1	Jul 20, 2015		Water	S15-JI19558	X	X
AQM16_2	Jul 20, 2015		Water	S15-JI19559	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 466061 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jul 22, 2015 9:28 AM Due: Jul 29, 2015 Priority: 5 Day Contact Name: Amy Dobson
Eurofins mgt Client Manager: Charl Du Preez		

Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
AQM16_3	Jul 20, 2015		Water	S15-JI19560	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

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

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	< 1			1	Pass	
Turbidity				NTU	< 1			1	Pass	
LCS - % Recovery										
Suspended Solids				%	105			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	S15-JI19501	CP	mg/L	13	14	9.0		30%	Pass	
Turbidity	S15-JI19501	CP	NTU	7.9	8.1	2.0		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Suspended Solids	S15-JI19511	CP	mg/L	2.3	2.6	12		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Turbidity	S15-JI19520	CP	NTU	8.0	7.5	6.0		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Suspended Solids	S15-JI19521	CP	mg/L	2.3	2.4	4.0		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Suspended Solids	S15-JI19532	CP	mg/L	120	120	<1		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Turbidity	S15-JI19539	CP	NTU	62	63	1.0		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Suspended Solids	S15-JI19542	CP	mg/L	46	52	11		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Suspended Solids	S15-JI19552	CP	mg/L	98	95	3.0		30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Turbidity	S15-JI19558	CP	NTU	7.2	6.5	10		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
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

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

Project Name: FOXGROUND TO BERRY
Project ID: 21/2430601

Order No.:
Report #: 466061
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Jul 22, 2015 9:28 AM
Due: Jul 29, 2015
Priority: 5 Day
Contact Name: Amy Dobson

Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
SW1_1	Jul 20, 2015		Water	S15-JI19501	X	X
SW1_2	Jul 20, 2015		Water	S15-JI19502	X	X
SW1_3	Jul 20, 2015		Water	S15-JI19503	X	X
SW2_1	Jul 20, 2015		Water	S15-JI19504	X	X
SW2_2	Jul 20, 2015		Water	S15-JI19505	X	X
SW2_3	Jul 20, 2015		Water	S15-JI19506	X	X
SW3_1	Jul 20, 2015		Water	S15-JI19507	X	X
SW3_2	Jul 20, 2015		Water	S15-JI19508	X	X
SW3_3	Jul 20, 2015		Water	S15-JI19509	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 466061 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jul 22, 2015 9:28 AM Due: Jul 29, 2015 Priority: 5 Day Contact Name: Amy Dobson
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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
SW4_1	Jul 20, 2015		Water	S15-JI19510	X	X
SW4_2	Jul 20, 2015		Water	S15-JI19511	X	X
SW4_3	Jul 20, 2015		Water	S15-JI19512	X	X
SW5_1	Jul 20, 2015		Water	S15-JI19513	X	X
SW5_2	Jul 20, 2015		Water	S15-JI19514	X	X
SW5_3	Jul 20, 2015		Water	S15-JI19515	X	X
SW6_1	Jul 20, 2015		Water	S15-JI19516	X	X
SW6_2	Jul 20, 2015		Water	S15-JI19517	X	X
SW6_3	Jul 20, 2015		Water	S15-JI19518	X	X
SW7_1	Jul 20, 2015		Water	S15-JI19519	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 466061 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jul 22, 2015 9:28 AM Due: Jul 29, 2015 Priority: 5 Day Contact Name: Amy Dobson
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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
SW7_2	Jul 20, 2015		Water	S15-JI19520	X	X
SW7_3	Jul 20, 2015		Water	S15-JI19521	X	X
SW8_1	Jul 20, 2015		Water	S15-JI19522	X	X
SW8_2	Jul 20, 2015		Water	S15-JI19523	X	X
SW8_3	Jul 20, 2015		Water	S15-JI19524	X	X
SW9_1	Jul 20, 2015		Water	S15-JI19525	X	X
SW9_2	Jul 20, 2015		Water	S15-JI19526	X	X
SW9_3	Jul 20, 2015		Water	S15-JI19527	X	X
SW10_1	Jul 20, 2015		Water	S15-JI19528	X	X
SW10_2	Jul 20, 2015		Water	S15-JI19529	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 466061 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jul 22, 2015 9:28 AM Due: Jul 29, 2015 Priority: 5 Day Contact Name: Amy Dobson
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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
SW10_3	Jul 20, 2015		Water	S15-JI19530	X	X
SW11_1	Jul 20, 2015		Water	S15-JI19531	X	X
SW11_2	Jul 20, 2015		Water	S15-JI19532	X	X
SW11_3	Jul 20, 2015		Water	S15-JI19533	X	X
SW12_1	Jul 20, 2015		Water	S15-JI19534	X	X
SW12_2	Jul 20, 2015		Water	S15-JI19535	X	X
SW12_3	Jul 20, 2015		Water	S15-JI19536	X	X
SW13_1	Jul 20, 2015		Water	S15-JI19537	X	X
SW13_2	Jul 20, 2015		Water	S15-JI19538	X	X
SW13_3	Jul 20, 2015		Water	S15-JI19539	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 466061 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jul 22, 2015 9:28 AM Due: Jul 29, 2015 Priority: 5 Day Contact Name: Amy Dobson
Eurofins mgt Client Manager: Charl Du Preez		

Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
SW14_1	Jul 20, 2015		Water	S15-JI19540	X	X
SW14_2	Jul 20, 2015		Water	S15-JI19541	X	X
SW14_3	Jul 20, 2015		Water	S15-JI19542	X	X
SW15_1	Jul 20, 2015		Water	S15-JI19543	X	X
SW15_2	Jul 20, 2015		Water	S15-JI19544	X	X
SW15_3	Jul 20, 2015		Water	S15-JI19545	X	X
SW16_1	Jul 20, 2015		Water	S15-JI19546	X	X
SW16_2	Jul 20, 2015		Water	S15-JI19547	X	X
SW16_3	Jul 20, 2015		Water	S15-JI19548	X	X
SW17_1	Jul 20, 2015		Water	S15-JI19549	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 466061 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jul 22, 2015 9:28 AM Due: Jul 29, 2015 Priority: 5 Day Contact Name: Amy Dobson
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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
SW17_2	Jul 20, 2015		Water	S15-JI19550	X	X
SW17_3	Jul 20, 2015		Water	S15-JI19551	X	X
DUPL1_1	Jul 20, 2015		Water	S15-JI19552	X	X
DUPL1_2	Jul 20, 2015		Water	S15-JI19553	X	X
DUPL1_3	Jul 20, 2015		Water	S15-JI19554	X	X
DUPL2_1	Jul 20, 2015		Water	S15-JI19555	X	X
DUPL2_2	Jul 20, 2015		Water	S15-JI19556	X	X
DUPL2_3	Jul 20, 2015		Water	S15-JI19557	X	X
AQM16_1	Jul 20, 2015		Water	S15-JI19558	X	X
AQM16_2	Jul 20, 2015		Water	S15-JI19559	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 466061 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jul 22, 2015 9:28 AM Due: Jul 29, 2015 Priority: 5 Day Contact Name: Amy Dobson
Eurofins mgt Client Manager: Charl Du Preez		

Sample Detail					Suspended Solids	Turbidity
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
AQM16_3	Jul 20, 2015		Water	S15-JI19560	X	X

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 C_o = Analyte concentration of the original sample
 C_d = 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, particularly 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 tested (turbidity and total suspended solids) are:

- Duplicate sample SW11_2, total suspended solids failed the internal lab duplicate analysis (RPD 74%). This difference is expected to be due to background variability as indicated by the variation in replicate sample results and is therefore not considered to be due to laboratory analytical methods. They are also not considered to be significant given that the reported values and variation between the parent and duplicate results are insignificant relative to the assessment criteria (lowland rivers value of 50 mg/L and the statistical criteria used for the control charts) adopted for the project (i.e. all results exceed the criteria).
- Duplicate sample SW1_1, turbidity failed the internal lab duplicate analysis (RPD 68%). This difference is expected to be due to background variability as indicated by the variation in replicate sample results and is therefore not considered to be due to laboratory analytical methods. They are also not considered to be significant given that the reported values and variation between the parent and duplicate results are insignificant relative to the assessment criteria (lowland rivers value of 6 – 50 NTU and the statistical criteria used for the control charts) adopted for the project (i.e. all results exceed the criteria).
- Duplicate sample SW1_3, total suspended solids failed the internal lab duplicate analysis (RPD 82%). This difference is expected to be due to background variability as indicated by the variation in replicate sample results and is therefore not considered to be due to laboratory analytical methods. .

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 were received within recommended holding times.

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

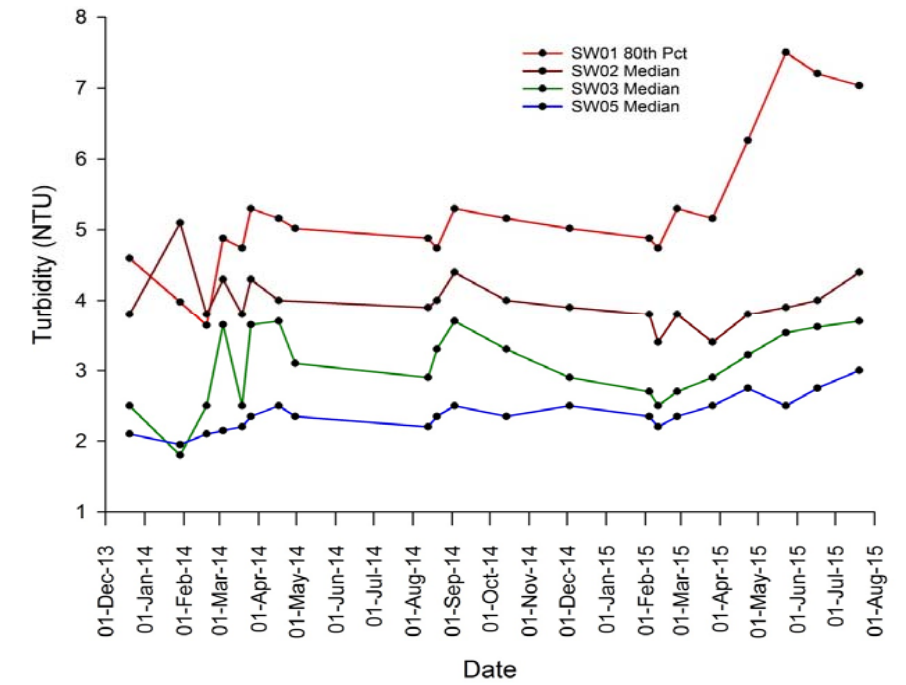
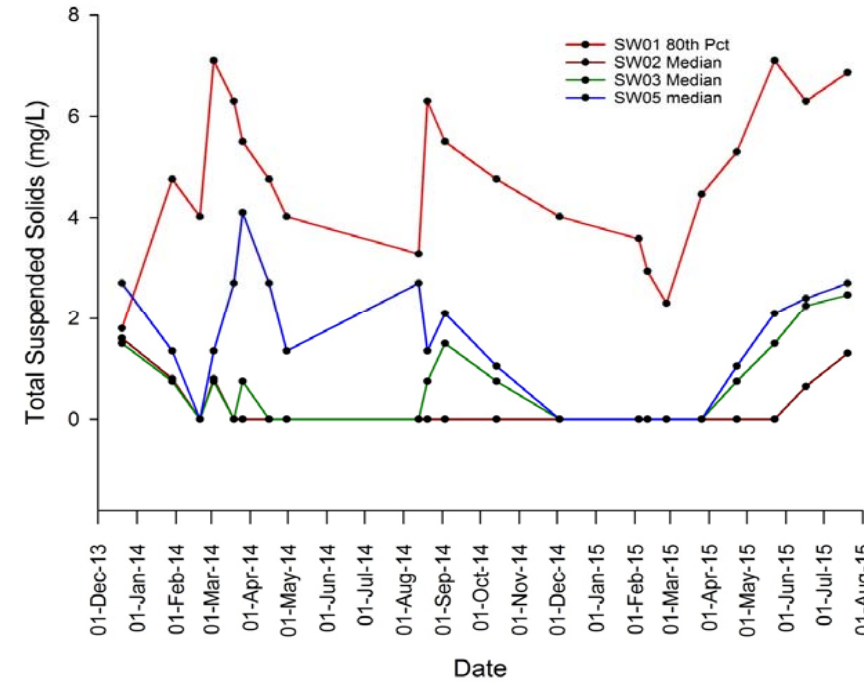
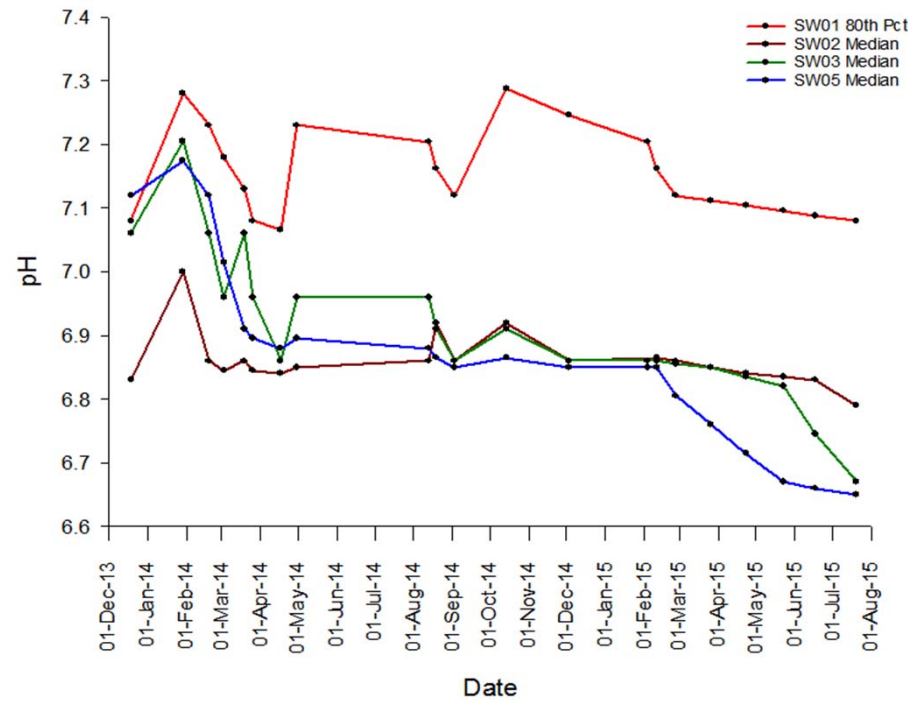
The QA/QC results show that most of the samples collected have met the appropriate standards and therefore, the data was considered to be valid and of sufficient quality to meet the data quality objectives for the assessment.

Attachment F - Control Charts

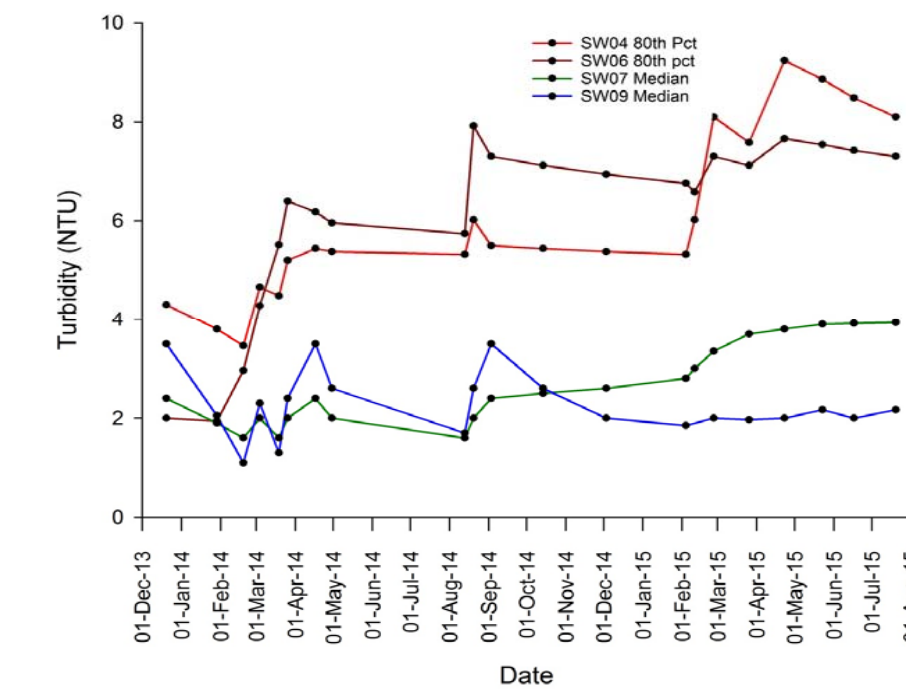
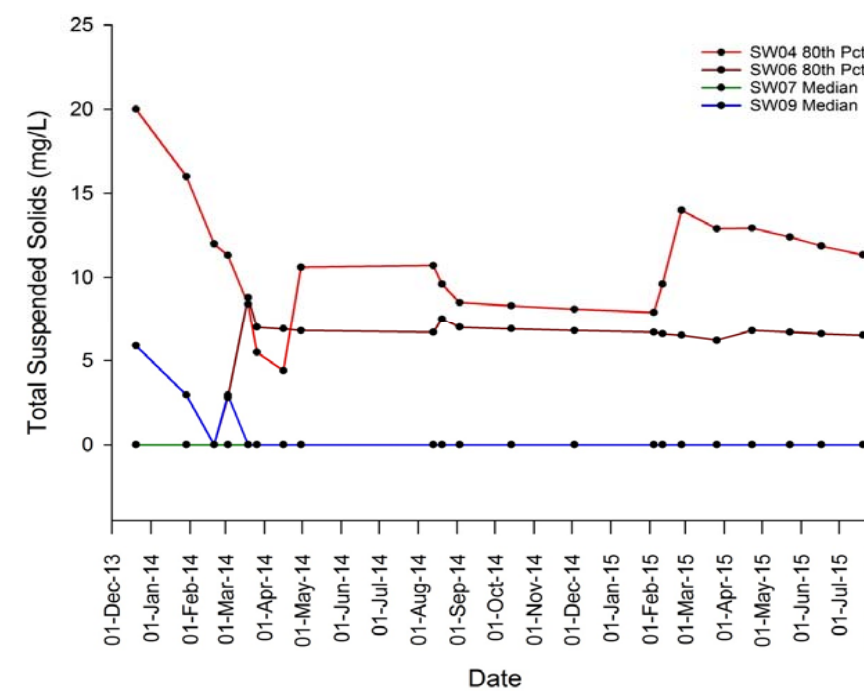
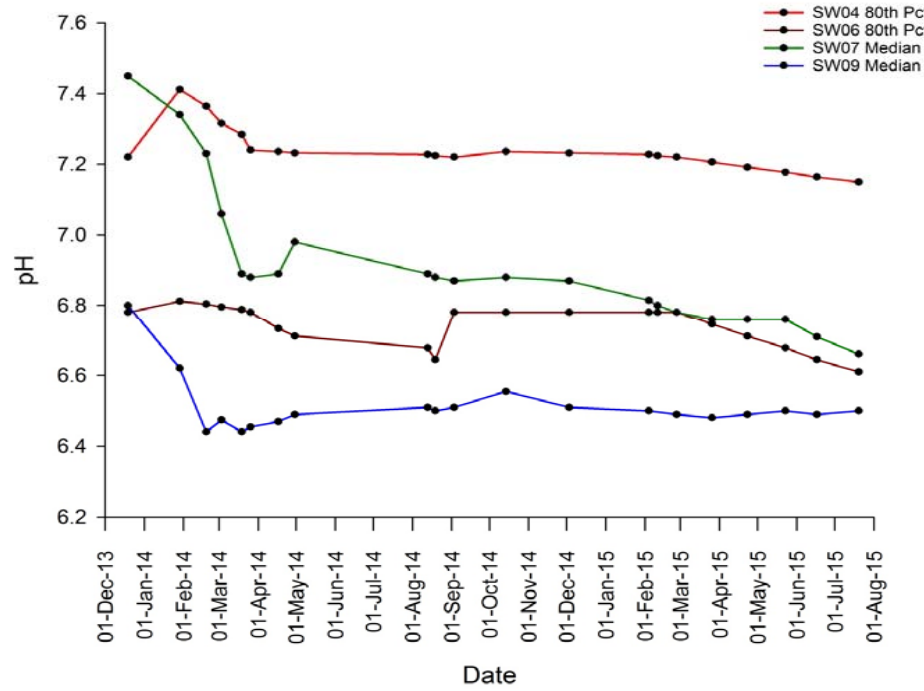


Attachment F Control Charts

1. Broughton Creek



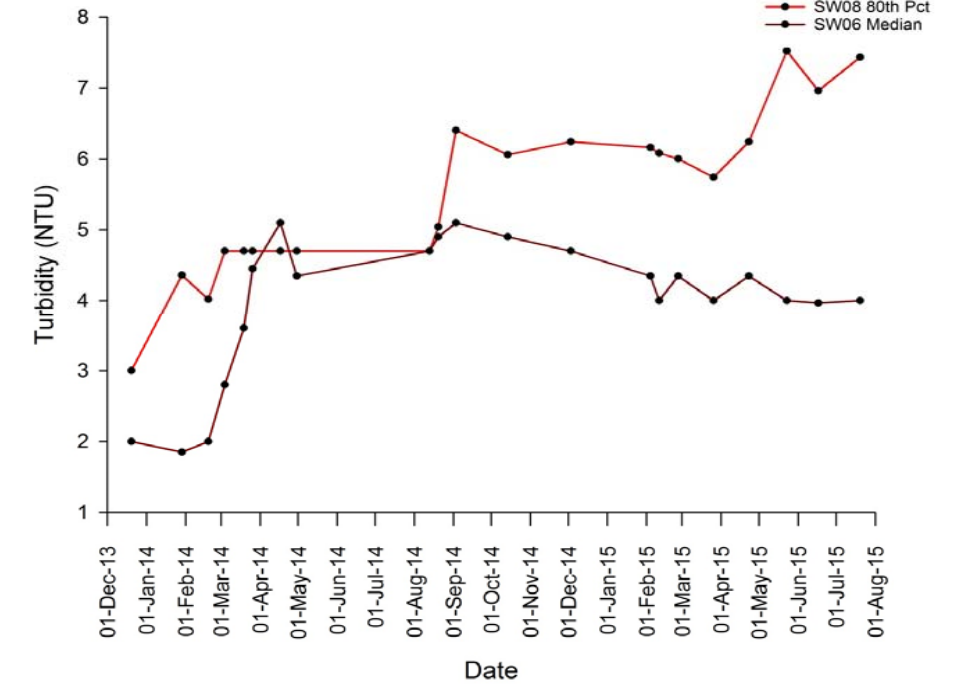
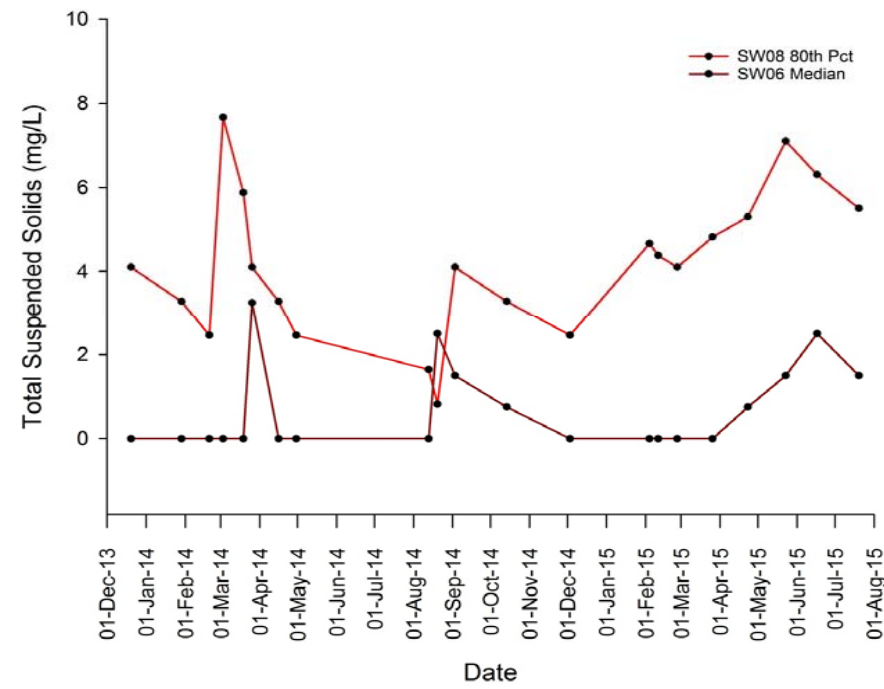
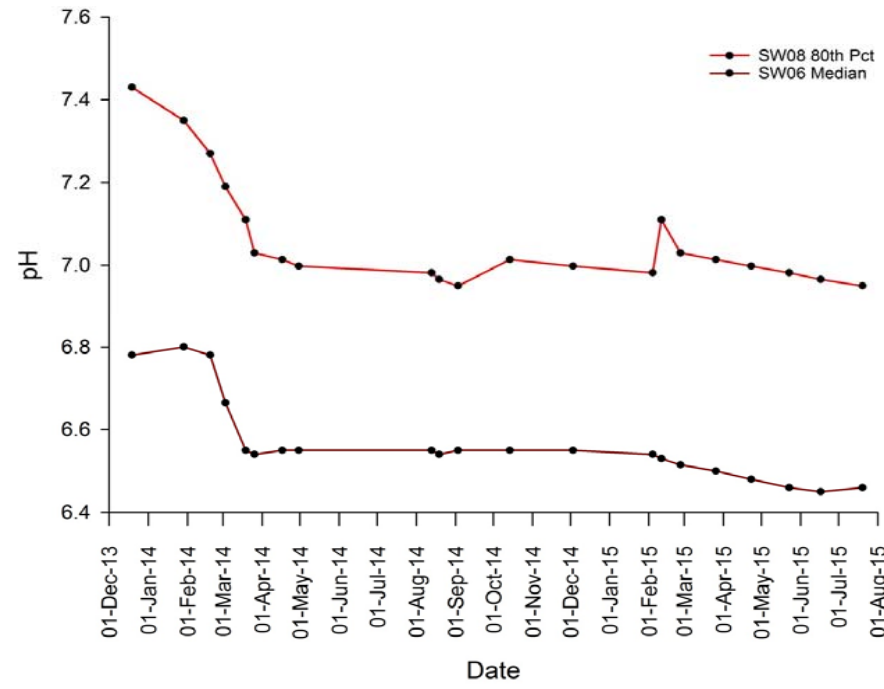
2. Connelly's Creek and Broughton Mill Creek and Bundewallah Creek



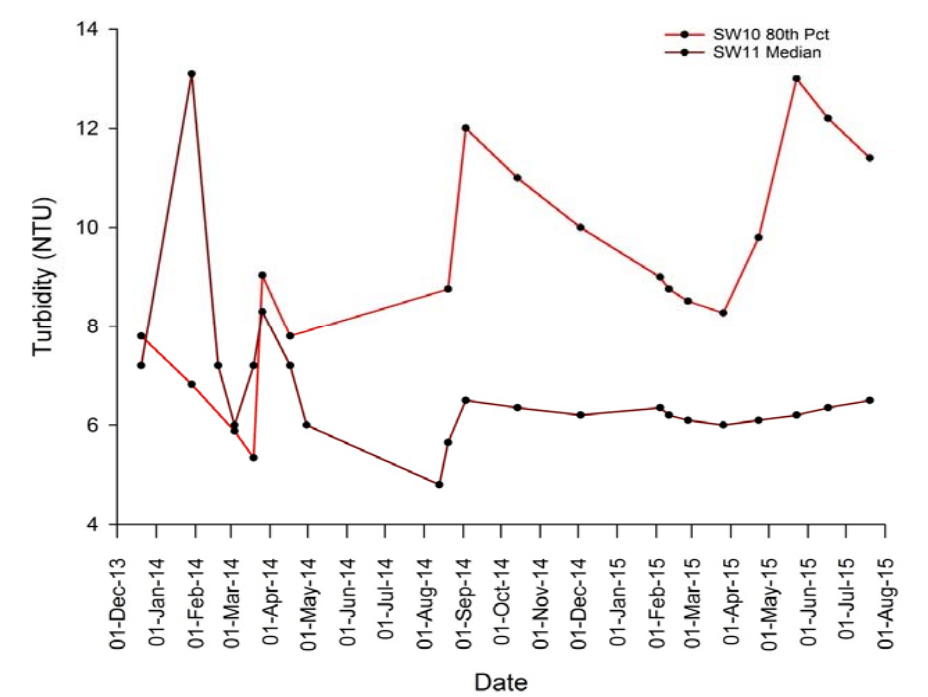
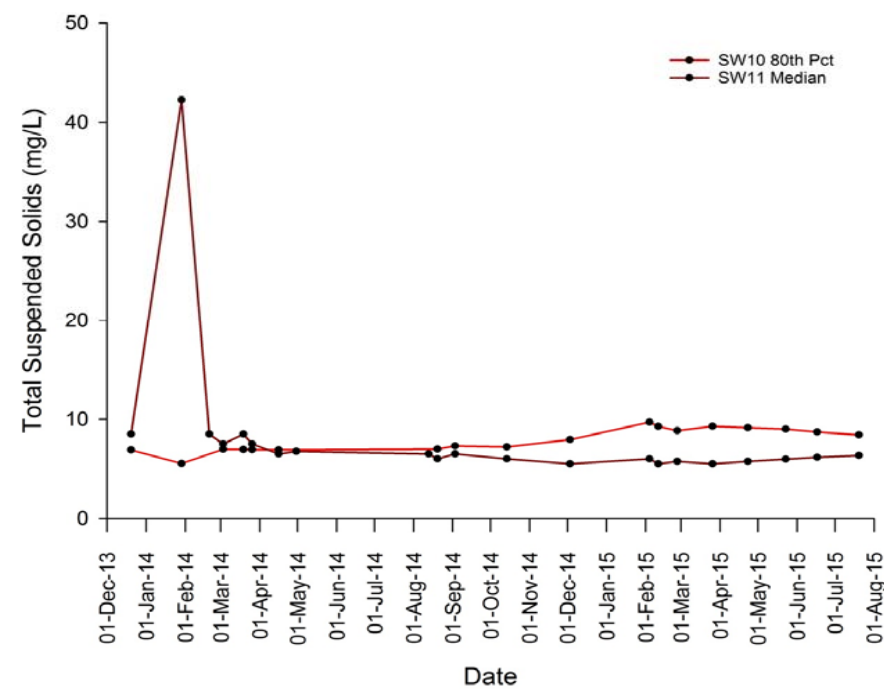
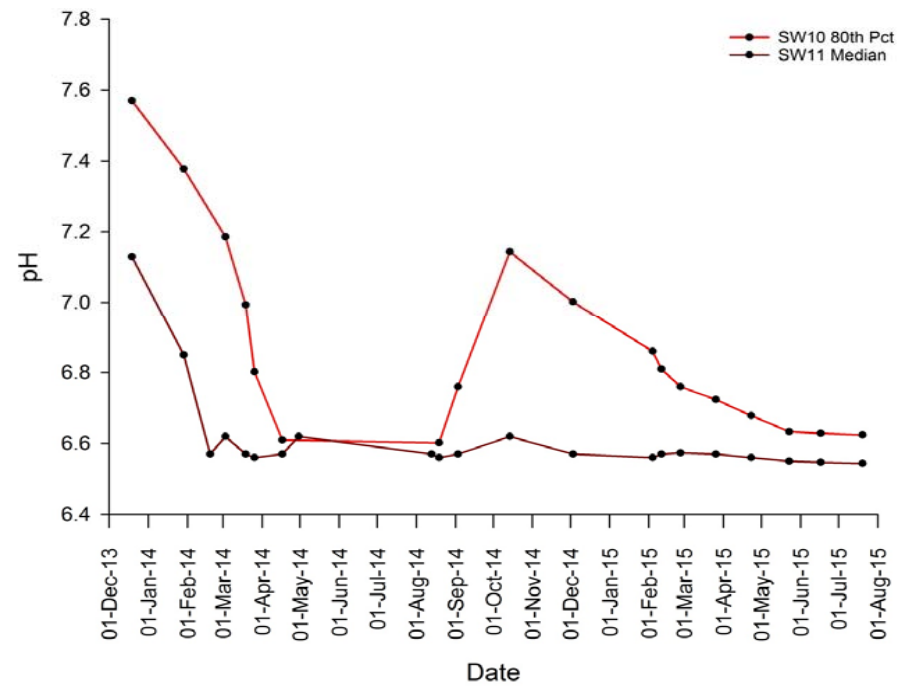


Attachment F Control Charts

3. Bundewallah Creek and Connelly's Creek



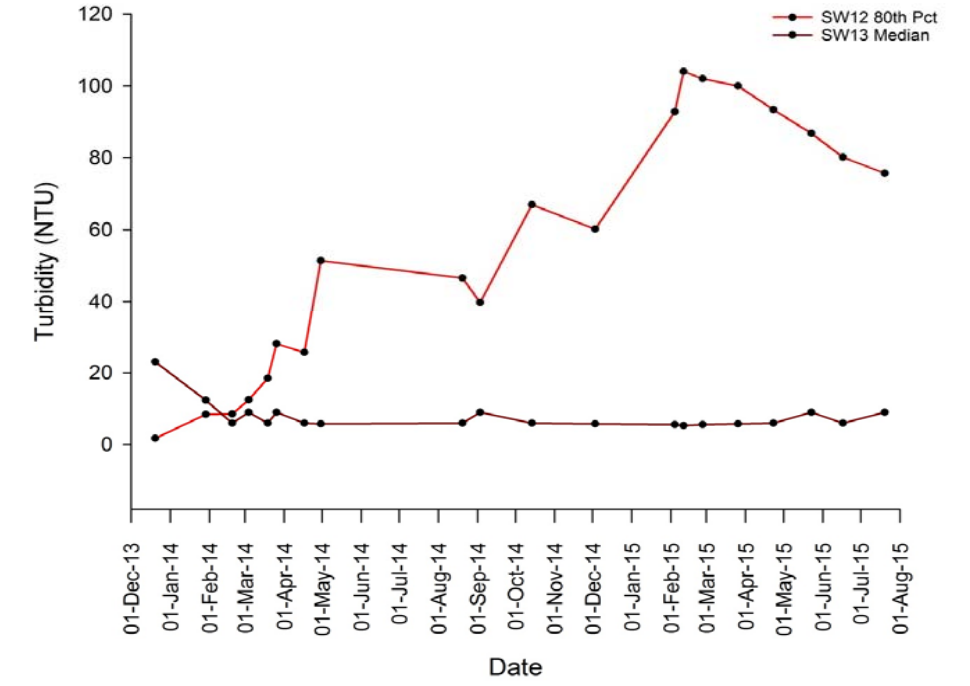
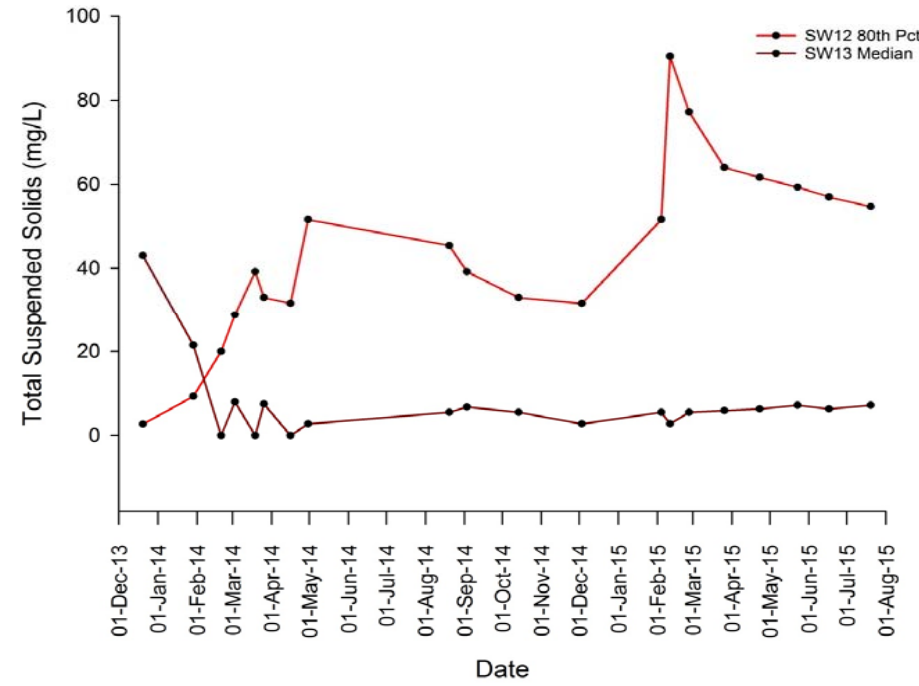
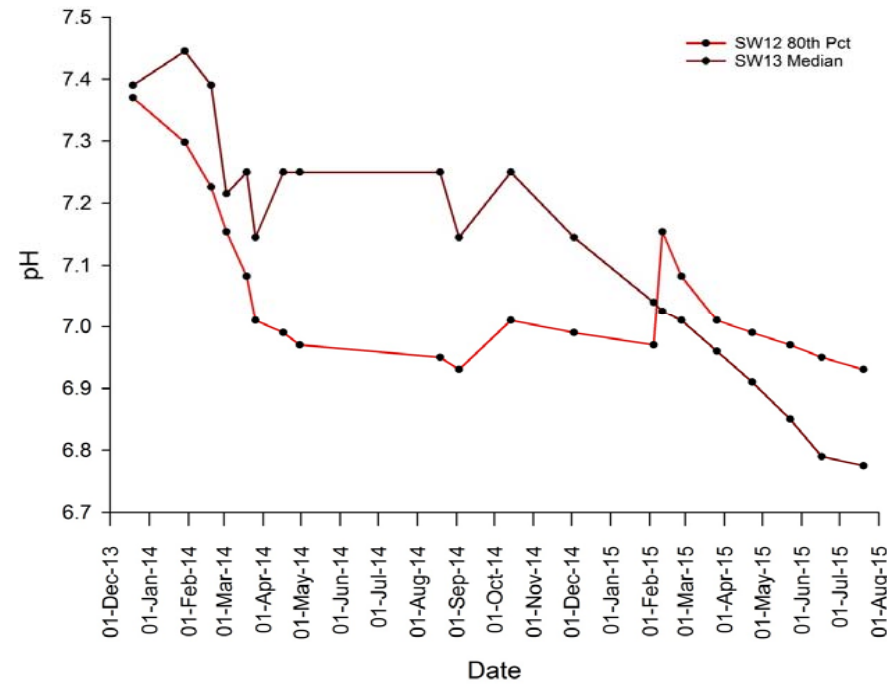
4. Town Creek



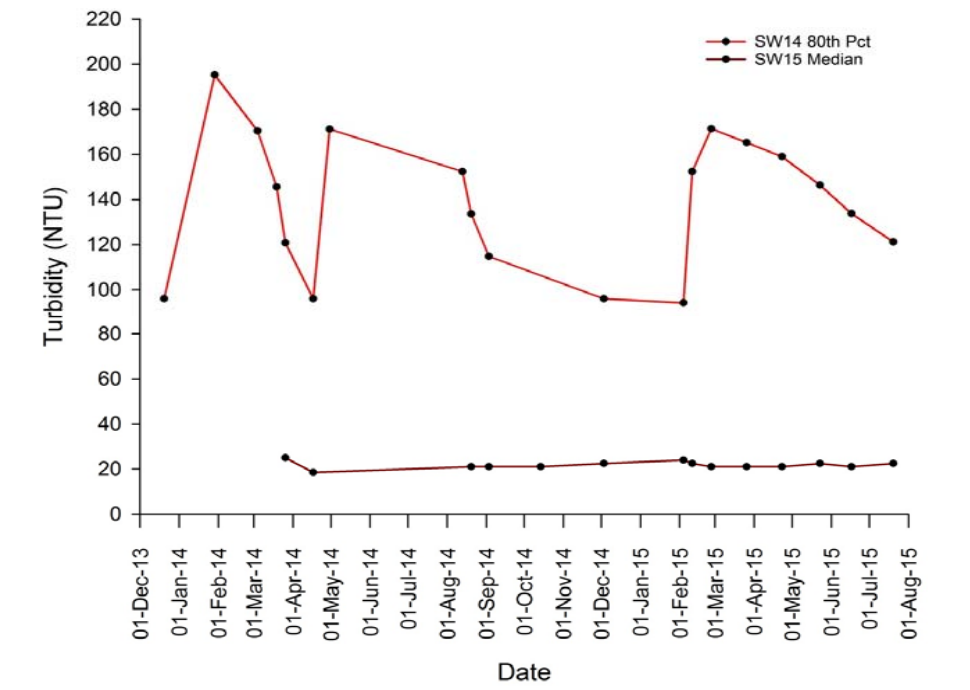
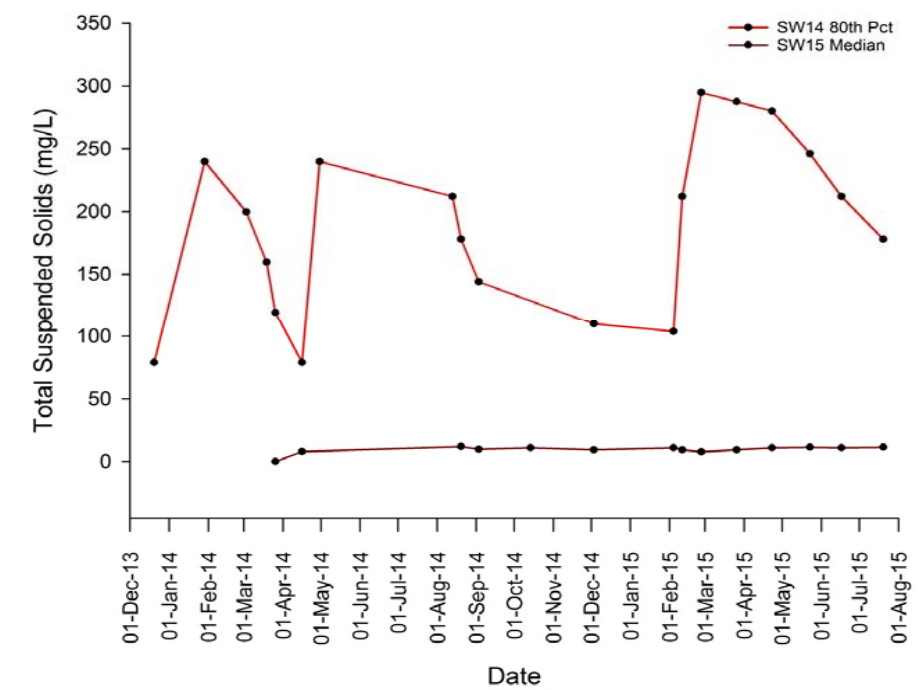
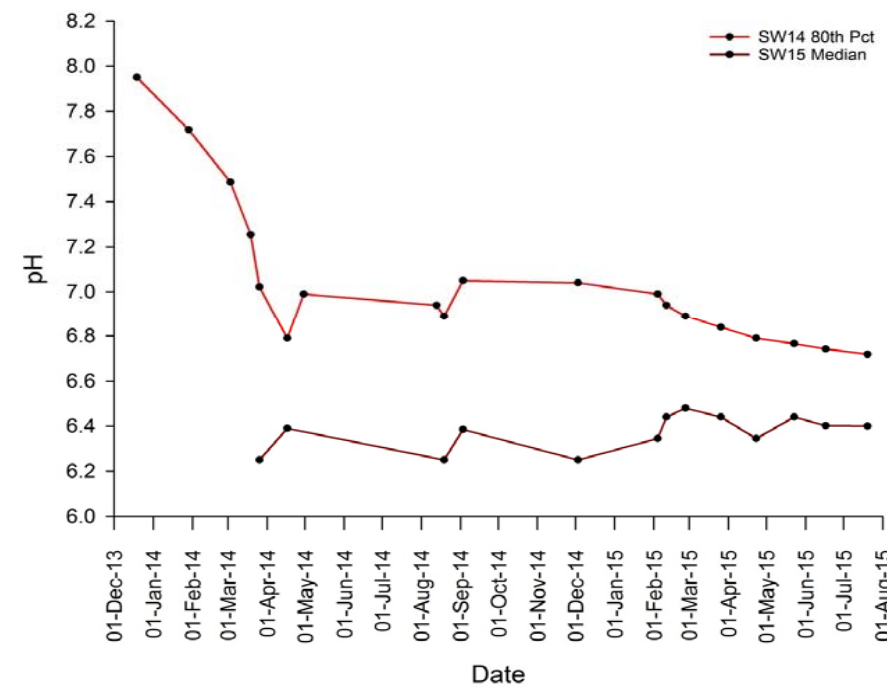


Attachment F Control Charts

5. Hitchcocks Lane Creek Tributary



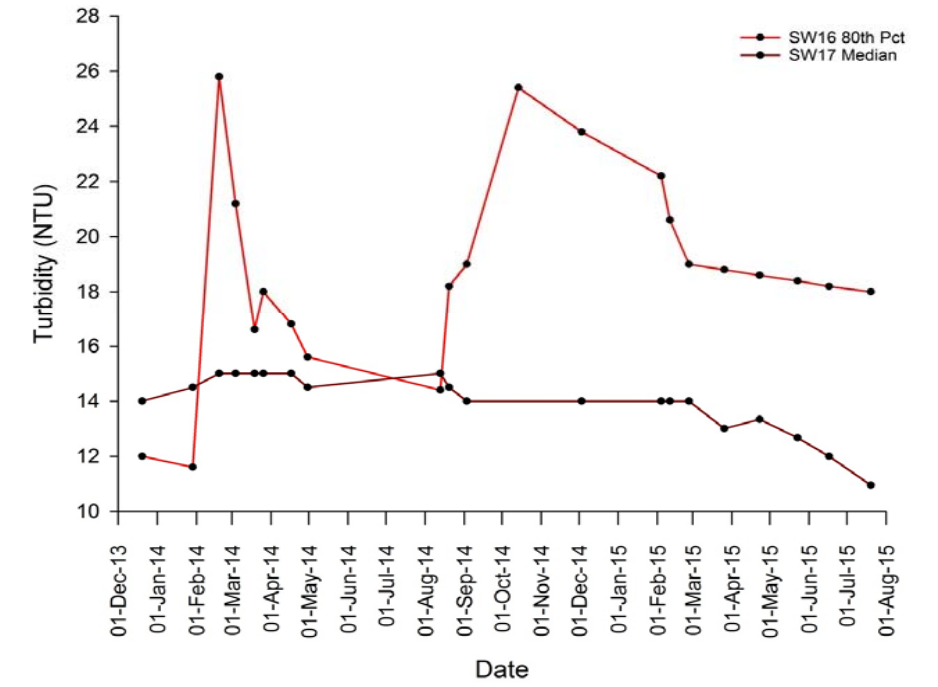
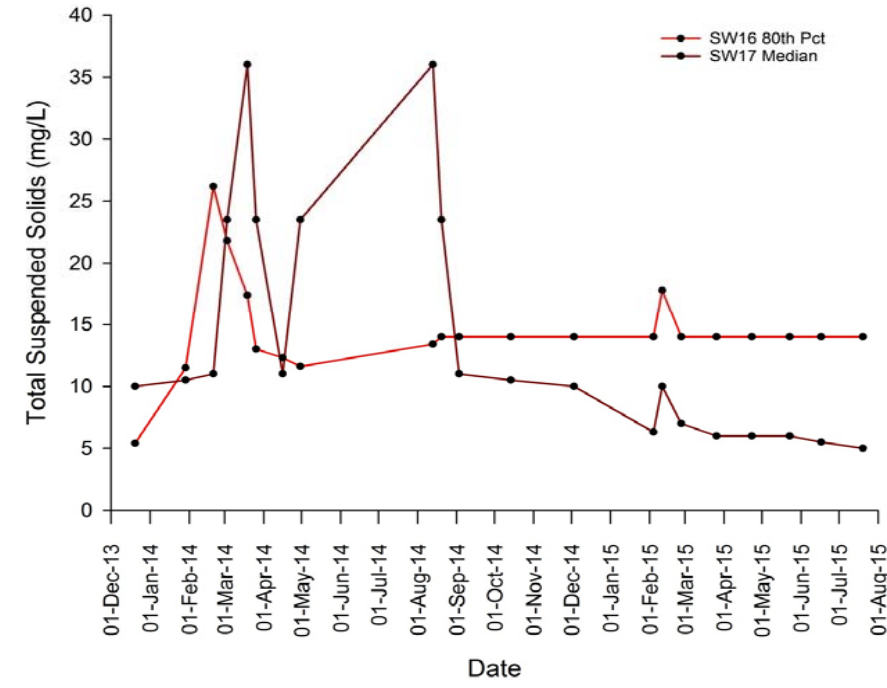
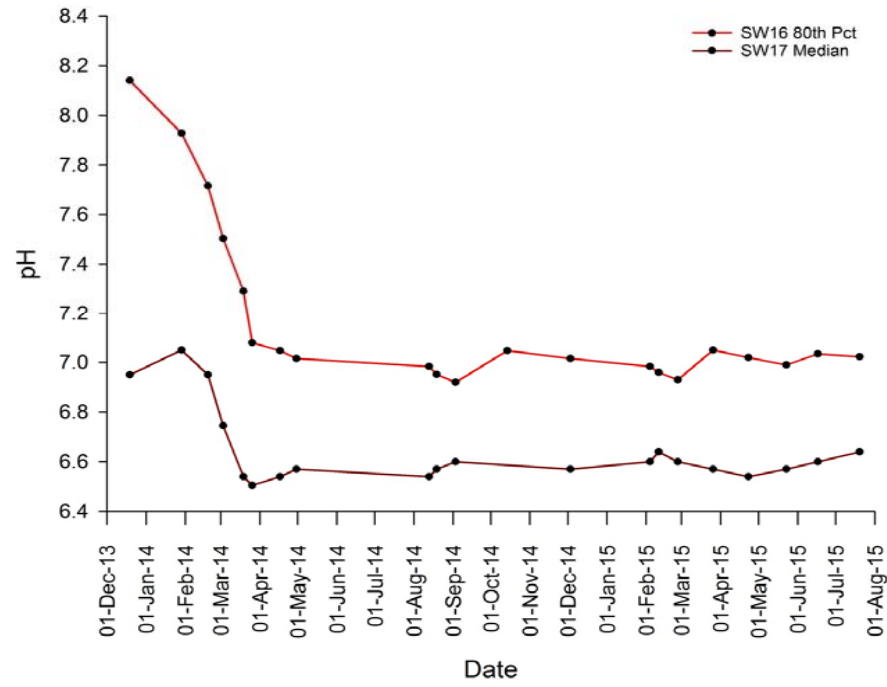
6. Hitchcocks Lane Creek





Attachment F Control Charts

7. Unnamed Tributary





01 October 2015

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

Our ref: 21/24306
211468
Your ref:

Dear James,

Surface Water Monitoring Event 9

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 a monthly round of surface water monitoring at seventeen locations (SW01 to SW017) after a major rainfall event. This report documents the ninth surface water sampling event (Event 9) undertaken since the commencement of construction which is also the third major surface water sampling event (Major Event 3).

2 Field Program

Surface water sampling was undertaken at all surface water sampling locations on the 27th and 28th August 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 and provide visual oil and grease information.

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;
- Heavy Metals (Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, and Zinc);
- Phosphate (Total);
- Total Nitrogen (TKN, Nox); and
- Total Recoverable Hydrocarbons (TRH).

3 Results and Discussion

This section presents control charts and discusses results in respect to exceedances of criteria or inconsistencies in the surface water results for Event 9 (Major Event 3) in accordance with:

- The limitations provided in Section 4.
- GHD 2014, Foxground to Berry Bypass Water Quality Monitoring 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.

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 (NOW) 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 at SW15, located within Hitchcocks Lane Creek, exceeded the ANZECC criteria for lowland rivers (6 – 50 NTU), averaging 61 NTU. Elevated concentrations of turbidity at SW15 were recorded on a previous occasion (during May 2015). The turbidity control chart for SW15 (discussed in the following section) supports the conclusion that the exceedances are representative of background conditions rather than construction impacts.

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

Copper concentrations marginally exceeded the ANZECC 2000 Freshwater 95% criteria (0.0014 mg/L) at SW03, SW07, SW10, SW11, SW12, SW13, SW14 and SW15 with values between 0.002 mg/L and 0.005 mg/L, however, these are considered to be representative of background conditions.

Zinc concentrations exceeded the ANZECC 2000 Freshwater 95% criteria at SW10, SW11 and SW14. However, these concentrations are considered representative of background conditions.

A field quality control and laboratory control assessment of the results from this monthly monitoring round (Event 9 – Major 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

An additional grab sample (QAM16) was taken downstream of SW01 and upstream of SW02 within Broughton Creek as a biodiversity assessment indicator. The results are included within Table B1 and B2 of Attachment B.

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 9 (Major 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, exceptions are listed below:

- Median pH at SW07 has continued to slightly exceed the 80th percentile pH at upstream location SW06 (Connelly's Creek and Broughton Mill Creek and Bundewallah Creek) since February 2015. This is expected to be due to the influence of Broughton Mill Creek water quality.

Event 9 (Major 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,

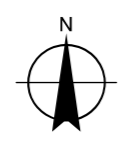
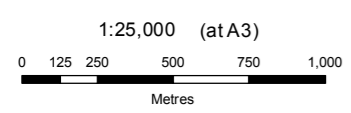


Jane Curran
Env Scientist
02 4424 4960



Stefan Charteris
Senior Hydrogeologist
02 9239 7472

Attachment A - Figures



LEGEND

Surface Water Sampling Locations	Railways
Berry to Foxground upgrade alignment	Waterways
Roads	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\2124306\GIS\Maps\MXD\21_24306_2001_SurfaceWatersamplingLocations.mxd
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Data Source: NSW Department of Lands: DTDB and DCDB - 2012. Created by: mweber

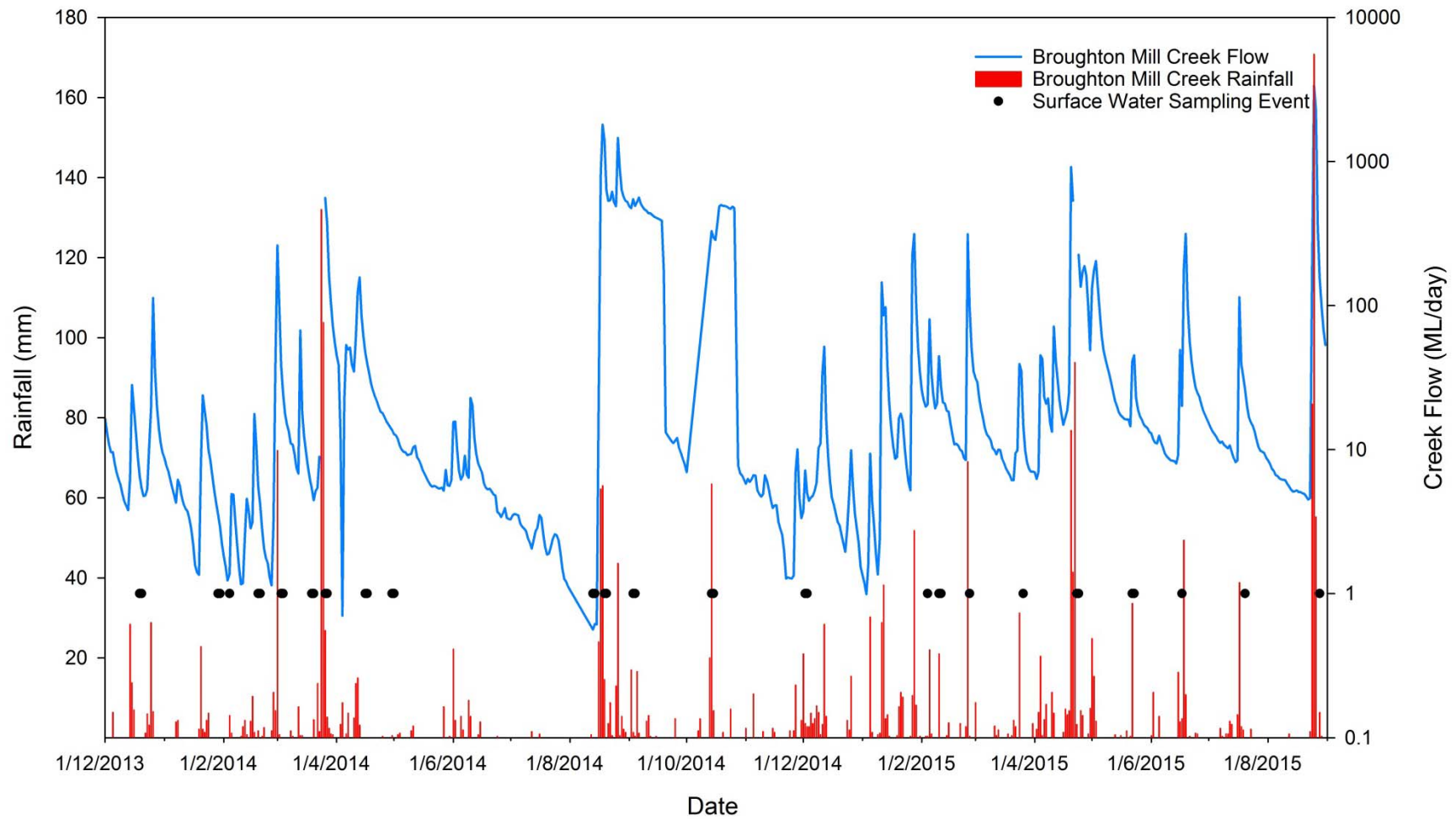


Figure 2 Rainfall vs Flow within Broughton Mill Creek

Attachment B - Tabulated Results



**Attachment B
Table B1
Event 9 - Field Parameters**

	Field				
	Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Redox	Temp (Field)
	mg/L	µS/cm	pH Units	mV	oC
ADWG 2011 Aesthetic			6.5-8.5		
Lowland rivers (ANZECC 2000)		300	6.5-8		

Field ID	Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Redox	Temp (Field)
QAM16_01	9.74	84.2	6.79	154.3	13.2
QAM16_02	9.71	84.3	6.41	149.7	13.3
QAM16_03	9.72	84.5	6.27	146	13.3
SW01_01	9.6	88.4	6.09	143.9	14
SW01_02	9.59	88.5	6.05	144.5	14
SW01_03	9.6	88.5	6.04	143.2	14
SW02_01	9.87	86.2	6.4	156.4	13.4
SW02_02	9.85	86.3	6.27	155.7	13.4
SW02_03	9.84	86.5	6.22	155.8	13.4
SW03_01	9.27	90.4	6.27	164	13.6
SW03_02	9.23	90.5	5.98	164	13.6
SW03_03	9.24	90.4	5.93	164.4	13.7
SW04_01	9.23	81	6.25	149.9	14.5
SW04_02	9.18	81.2	6.03	148.3	14.5
SW04_03	9.24	81.2	6.03	148.9	14.5
SW05_01	9.24	91.1	6.25	155.6	14.3
SW05_02	9.09	91	6.12	174.4	14.3
SW05_03	9.17	90.8	6.1	186.8	14.3
SW06_01	9.11	104.6	6.47	163.1	14.7
SW06_02	8.69	104.9	6.25	160.4	14.7
SW06_03	8.53	105	6.2	160.2	14.7
SW07_01	8.3	95.5	6.34	170	14.7
SW07_02	7.69	96.3	6.24	166.7	14.7
SW07_03	7.84	96.6	6.16	163.8	14.7
SW08_01	10.24	100.3	6.69	120.1	11.6
SW08_02	10.18	100.2	6.55	119.5	11.7
SW08_03	10.18	100.3	6.48	119.8	11.7
SW09_01	9.5	105.2	6.15	157.7	14.8
SW09_02	9.49	105.2	6.11	155.8	14.8
SW09_03	9.46	105.2	6.1	154.6	14.8
SW010_01	6.57	136.7	6.3	166.8	13.4
SW010_02	6.5	136.8	6.1	184.5	13.4
SW010_03	6.47	136.8	6.08	185.4	13.4
SW011_01	7.2	135.1	6.5	143.9	12.3
SW011_02	6.98	132.5	6.44	143.4	12.3
SW011_03	6.8	130.2	6.33	150.6	12.5
SW012_01	7.16	180.9	6.24	119	13.9
SW012_02	7.21	181	8.22	108.5	13.9
SW012_03	7.1	181.4	6.28	103.7	13.9
SW013_01	9.11	176.5	6.62	119.6	13.2
SW013_02	9.05	176.6	6.53	116.3	13.3
SW013_03	9.09	176.8	6.53	116.4	13.3
SW014_01	8.06	143.3	6.55	148.8	15.7
SW014_02	8.31	144	6.24	162.9	15.8
SW014_03	8.2	144.3	6.1	167	15.9
SW015_01	8.57	147.7	6.42	158.2	11.2
SW015_02	8.46	149.4	6.48	156.7	11.4
SW015_03	8.54	150.2	6.52	155.3	11.5
SW016_01	9.95	117.6	6.56	130.5	13.7
SW016_02	9.98	117.5	6.41	131.6	13.7
SW016_03	9.94	117.5	6.41	126.2	13.7
SW017_01	9.72	117.2	6.74	129.8	13.3
SW017_02	9.72	117.4	6.61	127.8	13.3
SW017_03	9.68	117.3	6.51	128	13.3



**Attachment B
Table B2
Event 9 - Analytical Results**

	Inorganics			Nutrients			Metals							
	Kjeldahl Nitrogen Total mg/L	Total Suspended Solids mg/L	Turbidity NTU	Nitrogen (Total Oxidised) mg/L	Nitrogen (Total) mg/L	Phosphate total (P) mg/L	Arsenic (Filtered) mg/L	Cadmium (Filtered) mg/L	Chromium (III-VI) (Filtered) mg/L	Copper (Filtered) mg/L	Lead (Filtered) mg/L	Mercury (Filtered) mg/L	Nickel (Filtered) mg/L	Zinc (Filtered) mg/L
EQL	0.2	1	1	0.05	0.2	0.05	0.001	0.0002	0.001	0.001	0.001	0.0001	0.001	0.001
ANZECC 2000 FW 95%								0.0002	0.001	0.0014	0.0034	0.0006	0.011	0.008
Lowland rivers (ANZECC 2000)		50	6-50	0.04	0.5									

Field ID	Kjeldahl Nitrogen Total mg/L	Total Suspended Solids mg/L	Turbidity NTU	Nitrogen (Total Oxidised) mg/L	Nitrogen (Total) mg/L	Phosphate total (P) mg/L	Arsenic (Filtered) mg/L	Cadmium (Filtered) mg/L	Chromium (III-VI) (Filtered) mg/L	Copper (Filtered) mg/L	Lead (Filtered) mg/L	Mercury (Filtered) mg/L	Nickel (Filtered) mg/L	Zinc (Filtered) mg/L
AQM16_1	<0.2	3.2	13	0.41	0.5	<0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.003
AQM16_2	<0.2	2.1	13	0.41	0.5	<0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.001
AQM16_3	<0.2	2.7	13	0.41	0.5	<0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.002
SW01_01	0.2	3.9	11	0.38	0.6	<0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.004
SW01_02	<0.2	3.1	10	0.39	0.5	<0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.002
SW01_03	<0.2	1.2	11	0.38	0.5	<0.05	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.002
SW02_01	<0.2	3	15	0.43	0.5	<0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.003
SW02_02	<0.2	3.1	15	0.43	0.5	<0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.001
SW02_03	<0.2	3.7	14	0.45	0.45	<0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.002
SW03_01	<0.2	3.3	15	0.46	0.5	<0.05	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	<0.001	0.003
SW03_02	<0.2	4.2	16	0.45	0.5	<0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.003
SW03_03	<0.2	4.7	15	0.45	0.45	<0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.002
SW04_01	<0.2	<1	10	0.51	0.51	<0.05	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.003
SW04_02	<0.2	2.6	11	0.51	0.51	<0.05	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.001
SW04_03	<0.2	2.5	10	0.5	0.5	<0.05	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001
SW05_01	<0.2	8	14	0.44	0.44	0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.003
SW05_02	<0.2	6.7	14	0.44	0.44	<0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	<0.001
SW05_03	<0.2	3.7	13	0.44	0.44	<0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.002
SW06_01	<0.2	8.9	17	0.77	0.77	0.06	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.004
SW06_02	<0.2	7	17	0.77	0.8	0.07	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.002
SW06_03	<0.2	4.3	17	0.78	0.9	0.06	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.001
SW07_01	<0.2	3.5	14	0.64	0.64	<0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.006
SW07_02	0.2	4.2	14	0.64	0.9	<0.05	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	<0.001	0.003
SW07_03	<0.2	4.9	14	0.64	0.8	<0.05	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.002
SW08_01	0.4	5.1	13	0.61	1	0.07	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.003
SW08_02	<0.2	8.4	13	0.61	0.61	0.06	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.002
SW08_03	<0.2	3.3	13	0.62	0.62	0.05	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.002
SW09_01	<0.2	6.4	18	0.77	0.77	0.06	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.004
SW09_02	<0.2	7.9	18	0.79	0.79	0.06	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.002
SW09_03	<0.2	8	17	0.78	0.78	0.06	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.001
SW010_01	<0.2	3.5	11	0.4	0.5	0.08	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	<0.001	0.007
SW010_02	<0.2	5.3	11	0.4	0.4	0.08	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	<0.001	0.005
SW010_03	<0.2	5.3	11	0.4	0.4	0.08	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	<0.001	0.01
SW011_01	<0.2	33	43	0.6	0.6	0.05	<0.001	<0.0002	<0.001	0.003	<0.001	<0.0001	<0.001	0.013
SW011_02	<0.2	26	37	0.59	0.8	0.06	<0.001	<0.0002	<0.001	0.003	<0.001	<0.0001	<0.001	0.016
SW011_03	<0.2	22	34	0.54	0.7	0.05	<0.001	<0.0002	<0.001	0.003	<0.001	<0.0001	<0.001	0.011
SW012_01	<0.2	-	-	0.95	1.1	-	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	<0.001	0.004
SW012_02	<0.2	14	43	0.97	0.97	0.09	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	<0.001	0.005
SW012_03	<0.2	8.9	42	0.97	0.97	0.09	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	<0.001	0.007
SW013_01	<0.2	9.5	44	0.94	0.94	0.09	<0.001	<0.0002	<0.001	0.003	<0.001	<0.0001	<0.001	0.005
SW013_02	<0.2	42	44	0.92	0.92	0.08	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	<0.001	0.003
SW013_03	<0.2	11	46	0.92	0.92	0.09	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	<0.001	0.002
SW014_01	0.3	8.6	39	0.23	0.5	0.16	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	0.001	0.01
SW014_02	0.2	8.3	39	0.24	0.5	0.16	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	0.001	0.011
SW014_03	0.3	4.9	39	0.23	0.5	0.16	<0.001	<0.0002	<0.001	0.003	<0.001	<0.0001	0.001	0.008
SW015_01	0.5	16	55	0.37	0.5	0.15	<0.001	<0.0002	<0.001	0.004	<0.001	<0.0001	0.001	0.007
SW015_02	<0.2	<1	62	0.41	0.6	0.15	<0.001	<0.0002	<0.001	0.005	<0.001	<0.0001	0.002	0.007
SW015_03	<0.2	29	66	0.43	0.6	0.15	<0.001	<0.0002	<0.001	0.004	<0.001	<0.0001	0.002	0.005
SW016_01	<0.2	7.5	23	0.42	0.42	0.07	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.004
SW016_02	<0.2	12	24	0.41	0.41	0.07	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.004
SW016_03	<0.2	10	22	0.42	0.42	0.07	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.001
SW017_01	<0.2	4	22	0.38	0.4	0.06	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.005
SW017_02	0.3	3.5	21	0.39	0.7	0.06	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.003
SW017_03	0.3	3.4	21	0.39	0.6	0.06	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.004
DUPL1_1	<0.2	7.5	15	0.46	0.6	<0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.002
DUPL1_2	<0.2	5	16	0.46	0.6	0.05	<0.001	<0.0002	<0.001	0.002	<0.001	<0.0001	<0.001	0.003
DUPL1_3	0.2	4.6	15	0.46	0.7	<0.05	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.002
DUPL2_1	<0.2	8.9	21	0.41	0.6	0.07	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.002
DUPL2_2	<0.2	5.1	24	0.41	0.6	0.07	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.003
DUPL2_3	<0.2	24	23	0.41	0.6	0.07	<0.001	<0.0002	<0.001	0.001	<0.001	<0.0001	<0.001	0.002



**Attachment B
Table B3
Event 9 RPD Results**

Field Duplicates (WATER)
Filter: SDG in '01 Sep 2015)

Chem Group	ChemName	Units	EQL	1-Sep-15 SW3_1			1-Sep-15 DUPL1_1			1-Sep-15 SW3_2			1-Sep-15 DUPL1_2			1-Sep-15 SW3_3			1-Sep-15 DUPL1_3			1-Sep-15 SW16_1			1-Sep-15 DUPL2_1			1-Sep-15 SW16_2			1-Sep-15 DUPL2_2			1-Sep-15 SW16_3			1-Sep-15 DUPL2_3		
				Field ID	Sampled Date	RPD	Field ID	Sampled Date	RPD	Field ID	Sampled Date	RPD	Field ID	Sampled Date	RPD	Field ID	Sampled Date	RPD	Field ID	Sampled Date	RPD	Field ID	Sampled Date	RPD	Field ID	Sampled Date	RPD	Field ID	Sampled Date	RPD	Field ID	Sampled Date	RPD						
Inorganics	Kjeldahl Nitrogen Total	mg/l	0.2	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0									
	Total Suspended Solids	mg/l	5	3.3	7.5	78	4.2	5.0	17	4.7	4.6	2	7.5	8.9	17	12.0	5.1	81	10.0	24.0	82	23.0	21.0	9	24.0	24.0	0	22.0	23.0	4									
	Turbidity	NTU	1	15.0	15.0	0	16.0	16.0	0	15.0	15.0	0	23.0	21.0	9	24.0	24.0	0	22.0	23.0	4	23.0	21.0	9	24.0	24.0	0	22.0	23.0	4									
Nutrients	Nitrogen (Total Oxidised)	mg/l	0.05	0.46	0.46	0	0.45	0.46	2	0.45	0.46	2	0.42	0.41	2	0.41	0.41	0	0.42	0.41	2	0.41	0.41	0	0.42	0.41	2	0.41	0.41	0									
	Nitrogen (Total)	mg/l	0.2	0.5	0.6	18	0.5	0.6	18	0.45	0.7	43	0.42	0.6	35	0.41	0.6	38	0.42	0.6	35	0.41	0.6	35	0.41	0.6	38	0.42	0.6	35									
	Phosphate total (P)	mg/l	0.05	<0.05	<0.05	0	<0.05	0.05	0	<0.05	<0.05	0	0.07	0.07	0	0.07	0.07	0	0.07	0.07	0	0.07	0.07	0	0.07	0.07	0	0.07	0.07	0									
Metals	Arsenic (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	<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	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0									
	Chromium (III+VI) (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	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0									
	Copper (Filtered)	mg/l	0.001	0.002	0.001	67	0.001	0.002	67	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	0.001	0.001	0									
	Lead (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	<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	<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	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0									
	Zinc (Filtered)	mg/l	0.001	0.003	0.002	40	0.003	0.003	0	0.002	0.002	0	0.004	0.002	67	0.004	0.003	29	0.001	0.002	67	0.004	0.003	29	0.001	0.002	67	0.004	0.003	29									

*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 C– Field Sheets



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 27/8/15
 PROJECT NAME: Berry to Foxground TIME: 11.00am
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: Swol
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 50m upstream of bridge / construction

ENVIRONMENTAL OBSERVATIONS

WEATHER Cloudy
 VEGETATION Trees + cow paddocks
 SLOPE
 EROSION
 OTHER No construction upstream, water is slightly brown.

FIELD MEASUREMENTS

SAMPLE	Swol-1	Swol-2	Swol-3
TEMPERATURE (°C)	14.0	14.0	14.0
CONDUCTIVITY (uS/cm)	88.4	88.5	88.5
pH	6.09	6.05	6.04
DO (ppm)	93.5% 9.60mg/L	93.2% 9.59mg/L	93.2% 9.60mg/L
REDOX (mV)	143.9	144.5	143.2

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Fast flowing
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visual oil or grease

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
Swol	9	chilled	NO	clear

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 27/6/15
 PROJECT NAME: Berry to Foxground TIME: 9.00am
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: AQM16
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 20m from bridge crossing

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION trees & grass
 SLOPE
 EROSION
 OTHER Water is brown.

FIELD MEASUREMENTS

SAMPLE	AQM16-1	AQM16-2	AQM16-3
TEMPERATURE (°C)	13.2	13.3	13.3
CONDUCTIVITY (uS/cm)	84.2	84.3	84.5
pH	6.79	6.41	6.27
DO (ppm)	92.9% 9.74mg/L	92.7% 9.71mg/L	92.8% 9.72mg/L
REDOX (mV)	154.3	149.7	1460

HYDROLOGICAL DATA

FLOW MEASUREMENT
 (or stream height if rating table available) Fast blowing.
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER Construction site upstream + surrounds,
 No visual oil or grease.

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
AQM16	9	Chilled	No	clear

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 27/8/15
 PROJECT NAME: Berry to Foxground TIME: 10am
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: SW02
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION western side of causeway - upstream side

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Trees & paddocks
 SLOPE
 EROSION
 OTHER no construction visible, water is brown.

FIELD MEASUREMENTS

SAMPLE	SW02-1	SW02-2	SW02-3
TEMPERATURE (°C)	13.4	13.4	13.4
CONDUCTIVITY (uS/cm)	86.2	86.3	86.5
pH	6.40	6.27	6.22
DO (ppm)	94.4% 9.87mg/L	94.4% 9.85mg/L	94.3% 9.84mg/L
REDOX (mV)	156.4	155.7	155.8

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Fast flowing
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visual oil or grease.

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW02	9	chilled	No	slightly brown

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 27/8/15
 PROJECT NAME: Berry to Foxground TIME: 10.40am
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: SW03
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 10m from farm access road.

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION trees + farm paddocks
 SLOPE
 EROSION
 OTHER No construction visible (upstream). Water is brown.

FIELD MEASUREMENTS

SAMPLE	SW03-1	SW03-2	SW03-3
TEMPERATURE (°C)	13.6	13.6	13.7
CONDUCTIVITY (uS/cm)	90.4	90.5	90.4
pH	6.27	5.98	5.93
DO (ppm)	89.1% 9.27mg/L	88.9% 9.23mg/L	89.1% 9.24mg/L
REDOX (mV)	164.0	164.0	164.4

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Fast flowing.
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visible oil or grease

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW03	16	Chilled	Yes	DUPLI

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 27/8/15
 PROJECT NAME: Berry to Foxground TIME: 3.00pm
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: SW04
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION at creek crossing

ENVIRONMENTAL OBSERVATIONS
 WEATHER Sunny
 VEGETATION Twisted paddooles + trees.
 SLOPE
 EROSION
 OTHER No visible construction upstream. Water is brown.

FIELD MEASUREMENTS

SAMPLE	SW04-1	SW04-2	SW04-3
TEMPERATURE (°C)	14.5	14.5	14.5
CONDUCTIVITY (uS/cm)	81.0	81.2	81.2
pH	6.25	6.03	6.03
DO (ppm)	90.5%, 9.23mg/L	90.4%, 9.18mg/L	90.5%, 9.24mg/L
REDOX (mV)	149.9	148.3	148.9

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) fast flowing
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visual oil or grease.

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: 27/8/15
 PROJECT NAME: Berry to Foxground TIME: 3.50pm
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: SWOS
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 30m upstream of 90° bend in c/c.

ENVIRONMENTAL OBSERVATIONS
 WEATHER Sunny
 VEGETATION Paddock + some trees.
 SLOPE
 EROSION
 OTHER No construction visible upstream/around site. Water is brown.

FIELD MEASUREMENTS

SAMPLE	SWOS-1	SWOS-2	SWOS-3
TEMPERATURE (°C)	14.3	14.3	14.3
CONDUCTIVITY (uS/cm)	91.1	91.0	90.8
pH	6.25	6.12	6.10
DO (ppm)	90.1%, 9.24mg/L	89.9%, 9.09mg/L	90.0%, 9.17mg/L
REDOX (mV)	155.6	174.4	186.8

HYDROLOGICAL DATA
 FLOW MEASUREMENT (or stream height if rating table available) Fast flowing
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visual oil or grease

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

FIELD SUPERVISOR _____ CHECKED (SIGN & DATE) _____



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 27/8/15
 PROJECT NAME: Berry to Foxground TIME: 1:40am
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: SW06
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~20m upstream ck diversion, beside construction
 B bridge construction area.

ENVIRONMENTAL OBSERVATIONS
 WEATHER Sunny
 VEGETATION Trees + cleared areas.
 SLOPE
 EROSION
 OTHER Water is brown, exposed ground areas upslope.

FIELD MEASUREMENTS

SAMPLE	SW06-1	SW06-2	SW06-3
TEMPERATURE (°C)	14.7	14.7	14.7
CONDUCTIVITY (uS/cm)	104.6	104.9	105.0
pH	6.47	6.25	6.20
DO (ppm)	90.0% 9.11mg/L	85.9% 8.69mg/L	85.0% 8.53mg/L
REDOX (mV)	163.1	160.4	160.2

HYDROLOGICAL DATA
 FLOW MEASUREMENT (or stream height if rating table available) Fast flowing
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visual oil or grease

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: 27/8/15
 PROJECT NAME: Berry to Foxground TIME: 4.35am
 CLIENT: RMS SAMPLING OFFICERS: JL
 SITE: SW07
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION Behind Berry Bowling club.

ENVIRONMENTAL OBSERVATIONS

WEATHER Cloudy
 VEGETATION Cut Lawn + trees.
 SLOPE
 EROSION
 OTHER No construction visible from site, water is brown.

FIELD MEASUREMENTS

SAMPLE	SW07-1	SW07-2	SW07-3
TEMPERATURE (°C)	14.7	14.7	14.7
CONDUCTIVITY (uS/cm)	95.5	96.3	96.6
pH	6.34	6.24	6.16
DO (ppm)	82.1% 8.30 mg/L	75.8% 7.69 mg/L	76.5% 7.84 mg/L
REDOX (mV)	170.0	166.7	163.8

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Fast flowing.
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visible oil or grease

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: 28/8/15
 PROJECT NAME: Berry to Foxground TIME: 8.20am
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: SW08
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION Next to town ck. diversion

ENVIRONMENTAL OBSERVATIONS

WEATHER Rain
 VEGETATION
 SLOPE
 EROSION
 OTHER Water is brown.

FIELD MEASUREMENTS

SAMPLE	SW08_1	SW08_2	SW08_3
TEMPERATURE (°C)	11.6	11.7	11.7
CONDUCTIVITY (uS/cm)	100.3	100.2	100.3
pH	6.69	6.55	6.48
DO (ppm)	94.3% 10.24mg/L	93.6% 10.16mg/L	93.5% 10.19 mg/L
REDOX (mV)	120.1	119.5	

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Fast flowing
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visible oil or grease

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW08	9	chilled	Yes	Clear

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 27/8/15
 PROJECT NAME: Berry to Foxground TIME: 2.20pm
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: SW09

COORDINATES/GPS (If Applicable)

SAMPLING METHOD (ie grab, bucket) Grab

DETAILED SAMPLE LOCATION DESCRIPTION ~ 5m upstream of bridge across Wardhill Mt Road.

ENVIRONMENTAL OBSERVATIONS

WEATHER Cloudy
 VEGETATION Turf & sports field. Trees
 SLOPE
 EROSION
 OTHER Water is brown, construction, upstream + north side.

FIELD MEASUREMENTS

SAMPLE	SW09-1	SW09-2	SW09-3
TEMPERATURE (°C)	14.8	14.8	14.8
CONDUCTIVITY (uS/cm)	105.2	105.2	105.2
pH	6.15	6.11	6.10
DO (ppm)	94.0% 9.50mg/L	93.8% 9.49mg/L	93.6% 9.46mg/L
REDOX (mV)	157.7	155.8	154.6

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Fast flowing
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visual oil or grease

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW09	9	chilled	No	clear

FIELD SUPERVISOR CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 29/6/15
 PROJECT NAME: Berry to Foxground TIME: 2.30pm
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: SW10

COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 50m north of North St, above pond.

ENVIRONMENTAL OBSERVATIONS
 WEATHER Rain
 VEGETATION Grass.
 SLOPE
 EROSION Very eroded since last visit.
 OTHER No construction upstream, some construction visible.

FIELD MEASUREMENTS

SAMPLE	SW10-1	SW10-2	SW10-3
TEMPERATURE (°C)	13.4	13.4	13.4
CONDUCTIVITY (uS/cm)	136.7	136.8	136.8
pH	6.30	6.10	6.08
DO (ppm)	63.04% 6.57mg/L	62.3%, 6.50mg/L	62% 6.47mg/L
REDOX (mV)	166.8	184.5	185.4

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Fast flowing
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visual oil or grease

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW10	9	chilled	No	clear

FIELD SUPERVISOR _____ CHECKED (SIGN & DATE) _____



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 28/6/15
 PROJECT NAME: Berry to Foxground TIME: 8.55am
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: SW11

COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION end of Albany St.

ENVIRONMENTAL OBSERVATIONS

WEATHER Rain
 VEGETATION vegetated waterway
 SLOPE
 EROSION
 OTHER water is creamy brown. Construction upstream. Exposed soil is visible.

FIELD MEASUREMENTS

SAMPLE	SW11-1	SW11-2	SW11-3
TEMPERATURE (°C)	12.3	12.3	12.5
CONDUCTIVITY (uS/cm)	135.1	132.5	130.2
pH	6.50	6.44	6.33
DO (ppm)	67.6 7.20	65.4 ⁶ / ₁₀ 6.9 ⁶ / ₁₀ mg/L	64.0 ⁶ / ₁₀ 6.40 mg/L
REDOX (mV)	143.9	143.4	150.6

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Low flow
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visual oil or grease

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW11	9	chilled	1/0	clear

FIELD SUPERVISOR _____ CHECKED (SIGN & DATE) _____



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 28/6/15
 PROJECT NAME: Berry to Foxground TIME: 2.05pm
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: SW12

COORDINATES/GPS (If Applicable)

SAMPLING METHOD (ie grab, bucket) Grab

DETAILED SAMPLE LOCATION DESCRIPTION Within construction zone, upstream access rd in gate 21A. ~50-70m west of Hwy.

ENVIRONMENTAL OBSERVATIONS
 WEATHER Cloudy
 VEGETATION Some veg & mostly reeds.
 SLOPE
 EROSION
 OTHER Construction surrounding location. Evidence of exposed soil upslope in Housing Estate.

FIELD MEASUREMENTS

SAMPLE	SW12-1	SW12-2	SW12-3
TEMPERATURE (°C)	13.9	13.9	13.9
CONDUCTIVITY (uS/cm)	140.9	141.0	141.4
pH	6.24	6.22	6.26
DO (ppm)	69.2% 7.16mg/L	69.9% 7.21mg/L	68.6% 7.10mg/L
REDOX (mV)	119.0	108.5	103.7

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Low flow
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER Water is brown. No visual oil or grease

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: 28/6/15
 PROJECT NAME: Berry to Foxground TIME: 11.15am
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: SW13
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 3m downstream of bridge into Arbour

ENVIRONMENTAL OBSERVATIONS

WEATHER Sunny
 VEGETATION Lawn + some trees
 SLOPE
 EROSION
 OTHER Water is brown, construction is upstream.

FIELD MEASUREMENTS

SAMPLE	SW13-1	SW13-2	SW13-3
TEMPERATURE (°C)	13.2	13.3	13.3
CONDUCTIVITY (uS/cm)	176.5	176.6	176.8
pH	6.62	6.53	6.53
DO (ppm)	86.9%, 9.11	86.5%, 9.05mg/l	87.0%, 9.09 mg/l
REDOX (mV)	119.6	116.3	116.4

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Fast flowing
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visual oil or grease

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW13	9	chilled	No	slightly brown

FIELD SUPERVISOR _____ CHECKED (SIGN & DATE) _____



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 28/8/15
 PROJECT NAME: Berry to Foxground TIME: 1.25 pm
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: SW14

COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 100m upstream (west) of construction site

ENVIRONMENTAL OBSERVATIONS

WEATHER Cloudy
 VEGETATION water-way heavily vegetated. Surrounded by con paddles
 SLOPE
 EROSION
 OTHER No construction upstream / surrounding

FIELD MEASUREMENTS

SAMPLE	SW14-1	SW14-2	SW14-3
TEMPERATURE (°C)	15.7	15.8	15.9
CONDUCTIVITY (uS/cm)	143.3	144.0	144.3
pH	6.55	6.24	6.10
DO (ppm)	80.9% 8.06 mg/L	83.9% 8.31 mg/L	83.0% 8.20 mg/L
REDOX (mV)	148.8	162.9	167.0

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Low flow
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visual oil or grease

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW14	9	chilled	No	slightly brown

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 28/8/15
 PROJECT NAME: Berry to Foxground TIME: 9.35am
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: SW15
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 70m from Hwy (east)

ENVIRONMENTAL OBSERVATIONS

WEATHER Cloudy
 VEGETATION Vegetated waterway, short grass on banks/surrounds
 SLOPE
 EROSION
 OTHER Constructor upstream next to Hwy. Water is brown.

FIELD MEASUREMENTS

SAMPLE	SW15-1	SW15-2	SW15-3
TEMPERATURE (°C)	11.2	11.4	11.5
CONDUCTIVITY (uS/cm)	147.7	149.4	150.2
pH	6.42	6.48	6.52
DO (ppm)	76.1% 8.57mg/L	77.4% 8.46mg/L	76.2% 8.54mg/L
REDOX (mV)	158.2	156.7	155.3

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Moderately flowing
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visual oil or grease

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW15	9	chilled	No	Slightly brown

FIELD SUPERVISOR

CHECKED (SIGN & DATE)



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 28/6/15
 PROJECT NAME: Berry to Foxground TIME: 12:40pm
 CLIENT: RMS SAMPLING OFFICERS: JC JD
 SITE: SW16
 COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~200m west of Hwy.

ENVIRONMENTAL OBSERVATIONS
 WEATHER Sunny/cloudy
 VEGETATION Cow paddock
 SLOPE
 EROSION
 OTHER No construction visible from site. Water is brown.

FIELD MEASUREMENTS

SAMPLE	SW16-1	SW16-2	SW16-3
TEMPERATURE (°C)	13.7	13.7	13.7
CONDUCTIVITY (uS/cm)	117.6	117.5	117.5
pH	6.56	6.41	6.41
DO (ppm)	96.0%, 9.95mg/L	96.2%, 9.98mg/L	96.0%, 9.94mg/L
REDOX (mV)	130.5	131.6	126.2

HYDROLOGICAL DATA
 FLOW MEASUREMENT (or stream height if rating table available) Fast flowing
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visual oil or grease

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW16	18	chilled	Yes	DUPL2

FIELD SUPERVISOR _____ CHECKED (SIGN & DATE) _____



SURFACE WATER SAMPLING RECORD

PROJECT NO. 21/24306/01 DATE: 28/8/15
 PROJECT NAME: Berry to Foxground TIME: 12 pm
 CLIENT: RMS SAMPLING OFFICERS: JC
 SITE: SW17

COORDINATES/GPS (If Applicable)
 SAMPLING METHOD (ie grab, bucket) Grab
 DETAILED SAMPLE LOCATION DESCRIPTION ~ 300m east of Hwy, near coral trees

ENVIRONMENTAL OBSERVATIONS

WEATHER Cloudy
 VEGETATION Horse/cow paddock
 SLOPE
 EROSION
 OTHER No construction visible upstream. Water is brown.

FIELD MEASUREMENTS

SAMPLE	SW17-1	SW17-2	SW17-3
TEMPERATURE (°C)	13.3	13.3	13.3
CONDUCTIVITY (uS/cm)	117.2	117.4	117.3
pH	6.74	6.61	6.51
DO (ppm)	92.8%, 9.72 mg/L	93.0%, 9.72 mg/L	92.6%, 9.68 mg/L
REDOX (mV)	129.8	127.8	128.0

HYDROLOGICAL DATA

FLOW MEASUREMENT (or stream height if rating table available) Fast flowing
 CROSS SECTION WIDTH (m)
 DEPTH (m)
 OTHER No visual oil or grease

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

FIELD SUPERVISOR

CHECKED (SIGN & DATE)

Attachment D - Laboratory Certificates



mgt

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS		Page 3 of 4	
Company Name : GHD Pty Ltd	Contact Name : Ashlee La Fontaine 0449 211 450	Purchase Order :	COC Number :
Office Address :	Project Manager : Amy Dobson	PROJECT Number : 21/2430601	Eurofins mgt quote ID : 150501GHD
Level 15, 133 Castlereagh Street, Sydney NSW 2000	Email for results : ashlee.lafontaine@ghd.com, jane.curran@ghd.com, stefan.charteris@ghd.com	PROJECT Name : Foxground to Berry	Data output format:

Special Directions & Comments :	Analytes										Some common holding times (with correct preservation). For further information contact the lab			
	~ Sampling Event 2 ~	Turbidity	Suspended Solids (SS)	Eurofins Suite: MB AS, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Phosphate (Total)	Total Nitrogen (TKN, Nox, Total N)	Total Recoverable hydrocarbons (TRH)	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			

Eurofins mgt DI water batch number:	Sample ID	Date	Matrix	Analytes										Containers:							Sample comments:				
				~ Sampling Event 2 ~	Turbidity	Suspended Solids (SS)	Eurofins Suite: MB AS, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Phosphate (Total)	Total Nitrogen (TKN, Nox, Total N)	Total Recoverable hydrocarbons (TRH)	1LP	200ml	125P	1LA	40mL vial	125mL A	Jar								
	1	SW11_3	28/08/15	w	X	X	X	X	X																
	2	SW12_1	28/08/15	w	X	X	X	X	X																
	3	SW12_2	28/08/15	w	X	X	X	X	X																
	4	SW12_3	28/08/15	w	X	X	X	X	X																
	5	SW13_1	28/08/15	w	X	X	X	X	X																
	6	SW13_2	28/08/15	w	X	X	X	X	X																
	7	SW13_3	28/08/15	w	X	X	X	X	X																
	8	SW14_1	28/08/15	w	X	X	X	X	X																
	9	SW14_2	28/08/15	w	X	X	X	X	X																
	10	SW14_3	28/08/15	w	X	X	X	X	X																
	11	SW15_1	28/08/15	w	X	X	X	X	X																
	12	SW15_2	28/08/15	w	X	X	X	X	X																
	13	SW15_3	28/08/15	w	X	X	X	X	X																
	14	SW16_1	28/08/15	w	X	X	X	X	X																
	15	SW16_2	28/08/15	w	X	X	X	X	X																
	16	SW16_3	28/08/15	w	X	X	X	X	X																

Relinquished By: Jane Curran	Received By:	Turn around time		Method Of Shipment		Temperature on arrival:
Date & Time : 31/08/15 2 pm	Date & Time :	1 DAY <input type="checkbox"/>	2 DAY <input type="checkbox"/>	3 DAY <input type="checkbox"/>	<input type="checkbox"/> Courier <input type="checkbox"/> Hand Delivered <input type="checkbox"/> Postal Courier Consignment # :	Report number:
Signature:	Signature:	5 DAY <input checked="" type="checkbox"/>	10 DAY <input type="checkbox"/>	Other:		470719

CHAIN OF CUSTODY RECORD

CLIENT DETAILS Page 1 of 4

Company Name : GHD Pty Ltd	Contact Name : Ashlee La Fontaine 0449 211 450	Purchase Order :	COC Number :
Office Address :	Project Manager : Amy Dobson	PROJECT Number : 21/2430601	Eurofins mgt quote ID : 150501GHD
Level 15, 133 Castlereagh Street, Sydney NSW 2000	Email for results : ashlee.lafontaine@ghd.com, jane.curran@ghd.com, stefan.charteris@ghd.com	PROJECT Name : Foxground to Berry	Data output format:

Special Directions & Comments :	Analytes										Some common holding times (with correct preservation). For further information contact the lab																				
	- Sampling Event 2 -	Turbidity	Suspended Solids (SS)	Eurofins Suite: M8 As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Phosphate (Total)	Total Nitrogen (TKN, Nox, Total N)	Total Recoverable Hydrocarbons (TRH)	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

Eurofins mgt DI water batch number:				- Sampling Event 2 -	Turbidity	Suspended Solids (SS)	Eurofins Suite: M8 As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Phosphate (Total)	Total Nitrogen (TKN, Nox, Total N)	Total Recoverable Hydrocarbons (TRH)	Containers:								Sample comments:		
Sample ID	Date	Matrix	1LP								200ml	125P	1LA	40mL vial	125mL A	Jar					
1	SW1_1	27/08/15	w	X	X	X	X	X			1	1	1								
2	SW1_2	27/08/15	w	X	X	X	X	X			1	1	1								
3	SW1_3	27/08/15	w	X	X	X	X	X			1	1	1								Metals are filtered
4	SW2_1	27/08/15	w	X	X	X	X	X			1	1	1								
5	SW2_2	27/08/15	w	X	X	X	X	X			1	1	1								
6	SW2_3	27/08/15	w	X	X	X	X	X			1	1	1								
7	SW3_1	27/08/15	w	X	X	X	X	X			1	1	1								
8	SW3_2	27/08/15	w	X	X	X	X	X			1	1	1								
9	SW3_3	27/08/15	w	X	X	X	X	X			1	1	1								
10	SW4_1	27/08/15	w	X	X	X	X	X			1	1	1								
11	SW4_2	27/08/15	w	X	X	X	X	X			1	1	1								
12	SW4_3	27/08/15	w	X	X	X	X	X			1	1	1								
13	SW5_1	27/08/15	w	X	X	X	X	X			1	1	1								
14	SW5_2	27/08/15	w	X	X	X	X	X			1	1	1								
15	SW5_3	27/08/15	w	X	X	X	X	X			1	1	1								
16	SW6_1	27/08/15	w	X	X	X	X	X			1	1	1								

Relinquished By: Jane Curran	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Date & Time : 31/08/15 2 pm	Received By: <i>Sean</i>	1 DAY <input type="checkbox"/> 2 DAY <input type="checkbox"/> 3 DAY <input type="checkbox"/>	<input type="checkbox"/> Courier <input type="checkbox"/> Hand Delivered <input type="checkbox"/> Postal Courier Consignment # :	10.6°
Signature: <i>[Signature]</i>	Date & Time : 1/9 9.20	5 DAY <input checked="" type="checkbox"/> 10 DAY <input type="checkbox"/> Other:		Report number:
	Signature: <i>[Signature]</i>			

Sample Receipt Advice

Company name: **GHD Pty Ltd NSW**
Contact name: Amy Dobson
Project name: FOXGROUND TO BERRY
Project ID: 21/2430601
COC number: Not provided
Turn around time: 5 Day
Date/Time received: Sep 1, 2015 9:20 AM
Eurofins | mgt reference: **470719**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 10.6 degrees Celsius.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Charl Du Preez on Phone : +61 (2) 9900 8400 or by e.mail: charldupreez@eurofins.com.au

Results will be delivered electronically via e.mail to Amy Dobson - amy.dobson@ghd.com.

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: Amy Dobson

Report 470719-W
 Project name FOXGROUND TO BERRY
 Project ID 21/2430601
 Received Date Sep 01, 2015

Client Sample ID			SW1_1	SW1_2	SW1_3	SW2_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00921	S15-Se00922	S15-Se00923	S15-Se00924
Date Sampled			Aug 27, 2015	Aug 27, 2015	Aug 27, 2015	Aug 27, 2015
Test/Reference	LOR	Unit				
Nitrate & Nitrite (as N)	0.05	mg/L	0.38	0.39	0.38	0.43
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Suspended Solids	1	mg/L	3.9	3.1	1.2	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	0.6	0.5	0.5	0.5
Turbidity	1	NTU	11	10	11	15
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	0.004	0.002	0.002	0.003

Client Sample ID			SW2_2	SW2_3	SW3_1	SW3_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00925	S15-Se00926	S15-Se00927	S15-Se00928
Date Sampled			Aug 27, 2015	Aug 27, 2015	Aug 27, 2015	Aug 27, 2015
Test/Reference	LOR	Unit				
Nitrate & Nitrite (as N)	0.05	mg/L	0.43	0.45	0.46	0.45
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Suspended Solids	1	mg/L	3.1	3.7	3.3	4.2
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	0.5	0.45	0.5	0.5
Turbidity	1	NTU	15	14	15	16
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	0.002	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			SW2_2	SW2_3	SW3_1	SW3_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00925	S15-Se00926	S15-Se00927	S15-Se00928
Date Sampled			Aug 27, 2015	Aug 27, 2015	Aug 27, 2015	Aug 27, 2015
Test/Reference	LOR	Unit				
Heavy Metals						
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	0.001	0.002	0.003	0.003

Client Sample ID			SW3_3	SW4_1	SW4_2	SW4_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00929	S15-Se00930	S15-Se00931	S15-Se00932
Date Sampled			Aug 27, 2015	Aug 27, 2015	Aug 27, 2015	Aug 27, 2015
Test/Reference	LOR	Unit				
Nitrate & Nitrite (as N)	0.05	mg/L	0.45	0.51	0.51	0.50
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Suspended Solids	1	mg/L	4.7	< 1	2.6	2.5
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	0.45	0.51	0.51	0.50
Turbidity	1	NTU	15	10	11	10
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	0.002	0.003	0.001	< 0.001

Client Sample ID			SW5_1	SW5_2	SW5_3	SW6_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00933	S15-Se00934	S15-Se00935	S15-Se00936
Date Sampled			Aug 27, 2015	Aug 27, 2015	Aug 27, 2015	Aug 27, 2015
Test/Reference	LOR	Unit				
Nitrate & Nitrite (as N)	0.05	mg/L	0.44	0.44	0.44	0.77
Phosphate total (as P)	0.05	mg/L	0.05	< 0.05	< 0.05	0.06
Suspended Solids	1	mg/L	8.0	6.7	3.7	8.9
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	0.44	0.44	0.44	0.77
Turbidity	1	NTU	14	14	13	17
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	< 0.001	0.002	0.004

Client Sample ID			SW6_2	SW6_3	SW7_1	SW7_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00937	S15-Se00938	S15-Se00939	S15-Se00940
Date Sampled			Aug 27, 2015	Aug 27, 2015	Aug 27, 2015	Aug 27, 2015
Test/Reference	LOR	Unit				
Nitrate & Nitrite (as N)	0.05	mg/L	0.77	0.78	0.64	0.64
Phosphate total (as P)	0.05	mg/L	0.07	0.06	< 0.05	< 0.05
Suspended Solids	1	mg/L	7.0	4.3	3.5	4.2
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	0.8	0.9	0.64	0.9
Turbidity	1	NTU	17	17	14	14
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	0.002
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	0.002	0.001	0.006	0.003

Client Sample ID			SW7_3	SW8_1	SW8_2	SW8_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00941	S15-Se00942	S15-Se00943	S15-Se00944
Date Sampled			Aug 27, 2015	Aug 27, 2015	Aug 27, 2015	Aug 27, 2015
Test/Reference	LOR	Unit				
Nitrate & Nitrite (as N)	0.05	mg/L	0.64	0.61	0.61	0.62
Phosphate total (as P)	0.05	mg/L	< 0.05	0.07	0.06	0.05
Suspended Solids	1	mg/L	4.9	5.1	8.4	3.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.4	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.8	1.0	0.61	0.62
Turbidity	1	NTU	14	13	13	13
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	0.002	0.003	0.002	0.002

Client Sample ID			SW9_1	SW9_2	SW9_3	SW10_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00945	S15-Se00946	S15-Se00947	S15-Se00948
Date Sampled			Aug 27, 2015	Aug 27, 2015	Aug 27, 2015	Aug 27, 2015
Test/Reference	LOR	Unit				
Nitrate & Nitrite (as N)	0.05	mg/L	0.77	0.79	0.78	0.40
Phosphate total (as P)	0.05	mg/L	0.06	0.06	0.06	0.08
Suspended Solids	1	mg/L	6.4	7.9	8.0	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	0.77	0.79	0.78	0.5
Turbidity	1	NTU	18	18	17	11
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	0.002
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	0.004	0.002	0.001	0.007

Client Sample ID			SW10_2	SW10_3	SW11_1	SW11_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00949	S15-Se00950	S15-Se00951	S15-Se00952
Date Sampled			Aug 27, 2015	Aug 27, 2015	Aug 27, 2015	Aug 27, 2015
Test/Reference	LOR	Unit				
Nitrate & Nitrite (as N)	0.05	mg/L	0.40	0.40	0.60	0.59
Phosphate total (as P)	0.05	mg/L	0.08	0.08	0.05	0.06
Suspended Solids	1	mg/L	5.3	5.3	33	26
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	0.4	0.4	0.60	0.8
Turbidity	1	NTU	11	11	43	37
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	0.002	0.002	0.003	0.003
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	0.005	0.010	0.013	0.016

Client Sample ID			SW11_3	SW12_1	SW12_2	SW12_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00953	S15-Se00954	S15-Se00955	S15-Se00956
Date Sampled			Aug 27, 2015	Aug 27, 2015	Aug 27, 2015	Aug 27, 2015
Test/Reference	LOR	Unit				
Nitrate & Nitrite (as N)	0.05	mg/L	0.54	0.95	0.97	0.97
Phosphate total (as P)	0.05	mg/L	0.05	-	0.09	0.09
Suspended Solids	1	mg/L	22	-	14	8.9
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	0.7	1.1	0.97	0.97
Turbidity	1	NTU	34	-	43	42
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	0.003	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	0.011	0.004	0.005	0.007

Client Sample ID			SW13_1	SW13_2	SW13_3	SW14_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00957	S15-Se00958	S15-Se00959	S15-Se00960
Date Sampled			Aug 27, 2015	Aug 27, 2015	Aug 27, 2015	Aug 28, 2015
Test/Reference	LOR	Unit				
Nitrate & Nitrite (as N)	0.05	mg/L	0.94	0.92	0.92	0.23
Phosphate total (as P)	0.05	mg/L	0.09	0.08	0.09	0.16
Suspended Solids	1	mg/L	9.5	42	11	8.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.3
Total Nitrogen (as N)	0.2	mg/L	0.94	0.92	0.92	0.5
Turbidity	1	NTU	44	44	46	39
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	0.003	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	0.005	0.003	0.002	0.010

Client Sample ID			SW14_2	SW14_3	SW15_1	SW15_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00961	S15-Se00962	S15-Se00963	S15-Se00964
Date Sampled			Aug 28, 2015	Aug 28, 2015	Aug 28, 2015	Aug 28, 2015
Test/Reference	LOR	Unit				
Nitrate & Nitrite (as N)	0.05	mg/L	0.24	0.23	0.37	0.41
Phosphate total (as P)	0.05	mg/L	0.16	0.16	0.15	0.15
Suspended Solids	1	mg/L	8.3	4.9	16	< 1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.2	0.3	0.5	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.5	0.5	0.5	0.6
Turbidity	1	NTU	39	39	55	62
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	0.002	0.003	0.004	0.005
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	0.002
Zinc (filtered)	0.001	mg/L	0.011	0.008	0.007	0.007

Client Sample ID			SW15_3	SW16_1	SW16_2	SW16_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00965	S15-Se00966	S15-Se00967	S15-Se00968
Date Sampled			Aug 28, 2015	Aug 28, 2015	Aug 28, 2015	Aug 28, 2015
Test/Reference	LOR	Unit				
Nitrate & Nitrite (as N)	0.05	mg/L	0.43	0.42	0.41	0.42
Phosphate total (as P)	0.05	mg/L	0.15	0.07	0.07	0.07
Suspended Solids	1	mg/L	29	7.5	12	10
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	0.6	0.42	0.41	0.42
Turbidity	1	NTU	66	23	24	22
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	0.001	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	0.002	< 0.001	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	0.005	0.004	0.004	0.001

Client Sample ID			SW17_1	SW17_2	SW17_3	DUPL1_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00969	S15-Se00970	S15-Se00971	S15-Se00972
Date Sampled			Aug 28, 2015	Aug 28, 2015	Aug 28, 2015	Aug 27, 2015
Test/Reference	LOR	Unit				
Nitrate & Nitrite (as N)	0.05	mg/L	0.38	0.39	0.39	0.46
Phosphate total (as P)	0.05	mg/L	0.06	0.06	0.06	< 0.05
Suspended Solids	1	mg/L	4.0	3.5	3.4	7.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.3	0.3	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.4	0.7	0.6	0.6
Turbidity	1	NTU	22	21	21	15
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	0.005	0.003	0.004	0.002

Client Sample ID			DUPL1_2	DUPL1_3	DUPL2_1	DUPL2_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00973	S15-Se00974	S15-Se00975	S15-Se00976
Date Sampled			Aug 27, 2015	Aug 27, 2015	Aug 28, 2015	Aug 28, 2015
Test/Reference	LOR	Unit				
Nitrate & Nitrite (as N)	0.05	mg/L	0.46	0.46	0.41	0.41
Phosphate total (as P)	0.05	mg/L	0.05	< 0.05	0.07	0.07
Suspended Solids	1	mg/L	5.0	4.6	8.9	5.1
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	0.6	0.7	0.6	0.6
Turbidity	1	NTU	16	15	21	24
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	0.002	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	0.002	0.002	0.003

Client Sample ID			DUPL2_3	AQM16_1	AQM16_2	AQM16_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S15-Se00977	S15-Se00978	S15-Se00979	S15-Se00980
Date Sampled			Aug 28, 2015	Aug 27, 2015	Aug 27, 2015	Aug 27, 2015
Test/Reference	LOR	Unit				
Nitrate & Nitrite (as N)	0.05	mg/L	0.41	0.41	0.41	0.41
Phosphate total (as P)	0.05	mg/L	0.07	< 0.05	< 0.05	< 0.05
Suspended Solids	1	mg/L	24	3.2	2.1	2.7
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	0.6	0.5	0.5	0.5
Turbidity	1	NTU	23	13	13	13
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	0.002	0.003	0.001	0.002

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 Nitrogen Set (as N)			
Nitrate & Nitrite (as N)	Melbourne	Sep 02, 2015	28 Day
- Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA			
Total Kjeldahl Nitrogen (as N)	Melbourne	Sep 01, 2015	7 Day
- Method: APHA 4500 TKN			
Phosphate total (as P)	Melbourne	Sep 01, 2015	28 Day
- Method: APHA 4500-P E. Phosphorous			
Suspended Solids	Melbourne	Sep 01, 2015	7 Day
- Method: APHA 2540D Total Suspended Solids			
Turbidity	Melbourne	Sep 02, 2015	2 Day
- Method: APHA 2130 Turbidity			
Metals M8 filtered	Melbourne	Sep 04, 2015	28 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 470719 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Sep 1, 2015 9:20 AM Due: Sep 8, 2015 Priority: 5 Day Contact Name: Amy Dobson
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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Phosphate total (as P)	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									
Brisbane Laboratory - NATA Site # 20794									
External Laboratory									
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
SW1_1	Aug 27, 2015		Water	S15-Se00921	X	X	X	X	X
SW1_2	Aug 27, 2015		Water	S15-Se00922	X	X	X	X	X
SW1_3	Aug 27, 2015		Water	S15-Se00923	X	X	X	X	X
SW2_1	Aug 27, 2015		Water	S15-Se00924	X	X	X	X	X
SW2_2	Aug 27, 2015		Water	S15-Se00925	X	X	X	X	X
SW2_3	Aug 27, 2015		Water	S15-Se00926	X	X	X	X	X
SW3_1	Aug 27, 2015		Water	S15-Se00927	X	X	X	X	X
SW3_2	Aug 27, 2015		Water	S15-Se00928	X	X	X	X	X
SW3_3	Aug 27, 2015		Water	S15-Se00929	X	X	X	X	X

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Eurofins mgt Client Manager: Charl Du Preez		

Sample Detail					Phosphate total (as P)	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									
Brisbane Laboratory - NATA Site # 20794									
External Laboratory									
SW4_1	Aug 27, 2015		Water	S15-Se00930	X	X	X	X	X
SW4_2	Aug 27, 2015		Water	S15-Se00931	X	X	X	X	X
SW4_3	Aug 27, 2015		Water	S15-Se00932	X	X	X	X	X
SW5_1	Aug 27, 2015		Water	S15-Se00933	X	X	X	X	X
SW5_2	Aug 27, 2015		Water	S15-Se00934	X	X	X	X	X
SW5_3	Aug 27, 2015		Water	S15-Se00935	X	X	X	X	X
SW6_1	Aug 27, 2015		Water	S15-Se00936	X	X	X	X	X
SW6_2	Aug 27, 2015		Water	S15-Se00937	X	X	X	X	X
SW6_3	Aug 27, 2015		Water	S15-Se00938	X	X	X	X	X
SW7_1	Aug 27, 2015		Water	S15-Se00939	X	X	X	X	X

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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Phosphate total (as P)	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									
Brisbane Laboratory - NATA Site # 20794									
External Laboratory									
SW7_2	Aug 27, 2015		Water	S15-Se00940	X	X	X	X	X
SW7_3	Aug 27, 2015		Water	S15-Se00941	X	X	X	X	X
SW8_1	Aug 27, 2015		Water	S15-Se00942	X	X	X	X	X
SW8_2	Aug 27, 2015		Water	S15-Se00943	X	X	X	X	X
SW8_3	Aug 27, 2015		Water	S15-Se00944	X	X	X	X	X
SW9_1	Aug 27, 2015		Water	S15-Se00945	X	X	X	X	X
SW9_2	Aug 27, 2015		Water	S15-Se00946	X	X	X	X	X
SW9_3	Aug 27, 2015		Water	S15-Se00947	X	X	X	X	X
SW10_1	Aug 27, 2015		Water	S15-Se00948	X	X	X	X	X
SW10_2	Aug 27, 2015		Water	S15-Se00949	X	X	X	X	X

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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Phosphate total (as P)	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									
Brisbane Laboratory - NATA Site # 20794									
External Laboratory									
SW10_3	Aug 27, 2015		Water	S15-Se00950	X	X	X	X	X
SW11_1	Aug 27, 2015		Water	S15-Se00951	X	X	X	X	X
SW11_2	Aug 27, 2015		Water	S15-Se00952	X	X	X	X	X
SW11_3	Aug 27, 2015		Water	S15-Se00953	X	X	X	X	X
SW12_1	Aug 27, 2015		Water	S15-Se00954				X	X
SW12_2	Aug 27, 2015		Water	S15-Se00955	X	X	X	X	X
SW12_3	Aug 27, 2015		Water	S15-Se00956	X	X	X	X	X
SW13_1	Aug 27, 2015		Water	S15-Se00957	X	X	X	X	X
SW13_2	Aug 27, 2015		Water	S15-Se00958	X	X	X	X	X
SW13_3	Aug 27, 2015		Water	S15-Se00959	X	X	X	X	X

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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Phosphate total (as P)	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									
Brisbane Laboratory - NATA Site # 20794									
External Laboratory									
SW14_1	Aug 28, 2015		Water	S15-Se00960	X	X	X	X	X
SW14_2	Aug 28, 2015		Water	S15-Se00961	X	X	X	X	X
SW14_3	Aug 28, 2015		Water	S15-Se00962	X	X	X	X	X
SW15_1	Aug 28, 2015		Water	S15-Se00963	X	X	X	X	X
SW15_2	Aug 28, 2015		Water	S15-Se00964	X	X	X	X	X
SW15_3	Aug 28, 2015		Water	S15-Se00965	X	X	X	X	X
SW16_1	Aug 28, 2015		Water	S15-Se00966	X	X	X	X	X
SW16_2	Aug 28, 2015		Water	S15-Se00967	X	X	X	X	X
SW16_3	Aug 28, 2015		Water	S15-Se00968	X	X	X	X	X
SW17_1	Aug 28, 2015		Water	S15-Se00969	X	X	X	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 470719 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Sep 1, 2015 9:20 AM Due: Sep 8, 2015 Priority: 5 Day Contact Name: Amy Dobson
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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Phosphate total (as P)	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									
Brisbane Laboratory - NATA Site # 20794									
External Laboratory									
SW17_2	Aug 28, 2015		Water	S15-Se00970	X	X	X	X	X
SW17_3	Aug 28, 2015		Water	S15-Se00971	X	X	X	X	X
DUPL1_1	Aug 27, 2015		Water	S15-Se00972	X	X	X	X	X
DUPL1_2	Aug 27, 2015		Water	S15-Se00973	X	X	X	X	X
DUPL1_3	Aug 27, 2015		Water	S15-Se00974	X	X	X	X	X
DUPL2_1	Aug 28, 2015		Water	S15-Se00975	X	X	X	X	X
DUPL2_2	Aug 28, 2015		Water	S15-Se00976	X	X	X	X	X
DUPL2_3	Aug 28, 2015		Water	S15-Se00977	X	X	X	X	X
AQM16_1	Aug 27, 2015		Water	S15-Se00978	X	X	X	X	X
AQM16_2	Aug 27, 2015		Water	S15-Se00979	X	X	X	X	X

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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail				Phosphate total (as P)	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								
Brisbane Laboratory - NATA Site # 20794								
External Laboratory								
AQM16_3	Aug 27, 2015		Water	S15-Se00980	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

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

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								
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass		
Phosphate total (as P)	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		
Total Nitrogen (as N)	mg/L	< 0.2			0.2	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								
Nitrate & Nitrite (as N)	%	105			70-130	Pass		
Phosphate total (as P)	%	100			70-130	Pass		
Suspended Solids	%	88			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	84			70-130	Pass		
Total Nitrogen (as N)	%	84			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic (filtered)	%	97			80-120	Pass		
Cadmium (filtered)	%	102			80-120	Pass		
Chromium (filtered)	%	101			80-120	Pass		
Copper (filtered)	%	99			80-120	Pass		
Lead (filtered)	%	101			80-120	Pass		
Mercury (filtered)	%	93			70-130	Pass		
Nickel (filtered)	%	98			80-120	Pass		
Zinc (filtered)	%	100			80-120	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Arsenic (filtered)	S15-Se00921	CP	%	94		70-130	Pass	
Cadmium (filtered)	S15-Se00921	CP	%	100		70-130	Pass	
Chromium (filtered)	S15-Se00921	CP	%	98		70-130	Pass	
Copper (filtered)	S15-Se00921	CP	%	95		70-130	Pass	
Lead (filtered)	S15-Se00921	CP	%	97		70-130	Pass	
Mercury (filtered)	S15-Se00921	CP	%	88		70-130	Pass	
Nickel (filtered)	S15-Se00921	CP	%	95		70-130	Pass	
Zinc (filtered)	S15-Se00921	CP	%	96		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	S15-Se00922	CP	%	87		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	S15-Se00922	CP	%	77		70-130	Pass	
Total Nitrogen (as N)	S15-Se00922	CP	%	77		70-130	Pass	
Spike - % Recovery								
				Result 1				
Arsenic (filtered)	S15-Se00931	CP	%	93		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Cadmium (filtered)	S15-Se00931	CP	%	98		70-130	Pass	
Chromium (filtered)	S15-Se00931	CP	%	95		70-130	Pass	
Copper (filtered)	S15-Se00931	CP	%	93		70-130	Pass	
Lead (filtered)	S15-Se00931	CP	%	95		70-130	Pass	
Mercury (filtered)	S15-Se00931	CP	%	87		70-130	Pass	
Nickel (filtered)	S15-Se00931	CP	%	93		70-130	Pass	
Zinc (filtered)	S15-Se00931	CP	%	95		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	S15-Se00932	CP	%	90		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic (filtered)	S15-Se00941	CP	%	98		70-130	Pass	
Cadmium (filtered)	S15-Se00941	CP	%	102		70-130	Pass	
Chromium (filtered)	S15-Se00941	CP	%	100		70-130	Pass	
Copper (filtered)	S15-Se00941	CP	%	98		70-130	Pass	
Lead (filtered)	S15-Se00941	CP	%	100		70-130	Pass	
Mercury (filtered)	S15-Se00941	CP	%	92		70-130	Pass	
Nickel (filtered)	S15-Se00941	CP	%	98		70-130	Pass	
Zinc (filtered)	S15-Se00941	CP	%	99		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	S15-Se00942	CP	%	88		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic (filtered)	S15-Se00951	CP	%	95		70-130	Pass	
Cadmium (filtered)	S15-Se00951	CP	%	98		70-130	Pass	
Chromium (filtered)	S15-Se00951	CP	%	97		70-130	Pass	
Copper (filtered)	S15-Se00951	CP	%	94		70-130	Pass	
Lead (filtered)	S15-Se00951	CP	%	95		70-130	Pass	
Mercury (filtered)	S15-Se00951	CP	%	89		70-130	Pass	
Nickel (filtered)	S15-Se00951	CP	%	93		70-130	Pass	
Zinc (filtered)	S15-Se00951	CP	%	96		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	S15-Se00952	CP	%	97		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	S15-Se00952	CP	%	84		70-130	Pass	
Total Nitrogen (as N)	S15-Se00952	CP	%	84		70-130	Pass	
Spike - % Recovery								
				Result 1				
Nitrate & Nitrite (as N)	S15-Se00954	CP	%	104		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic (filtered)	S15-Se00961	CP	%	94		70-130	Pass	
Cadmium (filtered)	S15-Se00961	CP	%	99		70-130	Pass	
Chromium (filtered)	S15-Se00961	CP	%	97		70-130	Pass	
Copper (filtered)	S15-Se00961	CP	%	95		70-130	Pass	
Lead (filtered)	S15-Se00961	CP	%	96		70-130	Pass	
Mercury (filtered)	S15-Se00961	CP	%	80		70-130	Pass	
Nickel (filtered)	S15-Se00961	CP	%	94		70-130	Pass	
Zinc (filtered)	S15-Se00961	CP	%	96		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	S15-Se00962	CP	%	100		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Kjeldahl Nitrogen (as N)	S15-Se00962	CP	%	81			70-130	Pass	
Total Nitrogen (as N)	S15-Se00962	CP	%	81			70-130	Pass	
Spike - % Recovery									
				Result 1					
Nitrate & Nitrite (as N)	S15-Se00963	CP	%	109			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S15-Se00971	CP	%	94			70-130	Pass	
Cadmium (filtered)	S15-Se00971	CP	%	99			70-130	Pass	
Chromium (filtered)	S15-Se00971	CP	%	96			70-130	Pass	
Copper (filtered)	S15-Se00971	CP	%	95			70-130	Pass	
Lead (filtered)	S15-Se00971	CP	%	96			70-130	Pass	
Mercury (filtered)	S15-Se00971	CP	%	86			70-130	Pass	
Nickel (filtered)	S15-Se00971	CP	%	95			70-130	Pass	
Zinc (filtered)	S15-Se00971	CP	%	96			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	S15-Se00972	CP	%	105			70-130	Pass	
Spike - % Recovery									
				Result 1					
Nitrate & Nitrite (as N)	S15-Se00975	CP	%	103			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-Se00921	CP	NTU	11	11	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S15-Se00921	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S15-Se00921	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	S15-Se00921	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S15-Se00921	CP	mg/L	0.001	0.001	4.0	30%	Pass	
Lead (filtered)	S15-Se00921	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S15-Se00921	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S15-Se00921	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	S15-Se00921	CP	mg/L	0.004	0.003	17	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	S15-Se00922	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	S15-Se00922	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Total Nitrogen (as N)	S15-Se00922	CP	mg/L	0.5	0.4	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Suspended Solids	S15-Se00927	CP	mg/L	3.3	3.3	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S15-Se00931	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S15-Se00931	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	S15-Se00931	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S15-Se00931	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	S15-Se00931	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S15-Se00931	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S15-Se00931	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	S15-Se00931	CP	mg/L	0.001	0.001	3.0	30%	Pass	

Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	S15-Se00932	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Kjeldahl Nitrogen (as N)	S15-Se00932	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass
Total Nitrogen (as N)	S15-Se00932	CP	mg/L	0.50	0.3	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Suspended Solids	S15-Se00937	CP	mg/L	7.0	7.3	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	S15-Se00940	CP	NTU	14	14	1.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	S15-Se00941	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	S15-Se00941	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	S15-Se00941	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	S15-Se00941	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	S15-Se00941	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury (filtered)	S15-Se00941	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	S15-Se00941	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	S15-Se00941	CP	mg/L	0.002	0.002	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	S15-Se00942	CP	mg/L	0.07	0.07	1.0	30%	Pass
Total Kjeldahl Nitrogen (as N)	S15-Se00942	CP	mg/L	0.4	0.3	5.0	30%	Pass
Total Nitrogen (as N)	S15-Se00942	CP	mg/L	1.0	0.9	5.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Suspended Solids	S15-Se00948	CP	mg/L	3.5	3.5	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	S15-Se00951	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	S15-Se00951	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	S15-Se00951	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	S15-Se00951	CP	mg/L	0.003	0.003	4.0	30%	Pass
Lead (filtered)	S15-Se00951	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury (filtered)	S15-Se00951	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	S15-Se00951	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	S15-Se00951	CP	mg/L	0.013	0.012	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	S15-Se00952	CP	mg/L	0.06	0.05	10	30%	Pass
Total Kjeldahl Nitrogen (as N)	S15-Se00952	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass
Total Nitrogen (as N)	S15-Se00952	CP	mg/L	0.8	0.8	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Nitrate & Nitrite (as N)	S15-Se00954	CP	mg/L	0.95	0.96	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Suspended Solids	S15-Se00959	CP	mg/L	11	10	5.0	30%	Pass
Turbidity	S15-Se00959	CP	NTU	46	46	<1	30%	Pass

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	S15-Se00961	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	S15-Se00961	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	S15-Se00961	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	S15-Se00961	CP	mg/L	0.002	0.002	5.0	30%	Pass
Lead (filtered)	S15-Se00961	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury (filtered)	S15-Se00961	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	S15-Se00961	CP	mg/L	0.001	0.001	3.0	30%	Pass
Zinc (filtered)	S15-Se00961	CP	mg/L	0.011	0.011	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	S15-Se00962	CP	mg/L	0.16	0.17	9.0	30%	Pass
Total Kjeldahl Nitrogen (as N)	S15-Se00962	CP	mg/L	0.3	0.3	<1	30%	Pass
Total Nitrogen (as N)	S15-Se00962	CP	mg/L	0.5	0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Nitrate & Nitrite (as N)	S15-Se00963	CP	mg/L	0.37	0.38	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Suspended Solids	S15-Se00969	CP	mg/L	4.0	4.1	3.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	S15-Se00971	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	S15-Se00971	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	S15-Se00971	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	S15-Se00971	CP	mg/L	0.001	0.001	1.0	30%	Pass
Lead (filtered)	S15-Se00971	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury (filtered)	S15-Se00971	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	S15-Se00971	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	S15-Se00971	CP	mg/L	0.004	0.004	20	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	S15-Se00972	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Kjeldahl Nitrogen (as N)	S15-Se00972	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass
Total Nitrogen (as N)	S15-Se00972	CP	mg/L	0.6	0.6	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Nitrate & Nitrite (as N)	S15-Se00975	CP	mg/L	0.41	0.41	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	S15-Se00978	CP	NTU	13	14	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	S15-Se00980	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Kjeldahl Nitrogen (as N)	S15-Se00980	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass
Total Nitrogen (as N)	S15-Se00980	CP	mg/L	0.5	0.5	<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

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

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Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 470719 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Sep 1, 2015 9:20 AM Due: Sep 8, 2015 Priority: 5 Day Contact Name: Amy Dobson
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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Phosphate total (as P)	Suspended Solids	Turbidity	Metals M8	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									
Brisbane Laboratory - NATA Site # 20794									
External Laboratory									
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
SW1_1	Aug 27, 2015		Water	S15-Se00921	X	X	X	X	X
SW1_2	Aug 27, 2015		Water	S15-Se00922	X	X	X	X	X
SW1_3	Aug 27, 2015		Water	S15-Se00923	X	X	X	X	X
SW2_1	Aug 27, 2015		Water	S15-Se00924	X	X	X	X	X
SW2_2	Aug 27, 2015		Water	S15-Se00925	X	X	X	X	X
SW2_3	Aug 27, 2015		Water	S15-Se00926	X	X	X	X	X
SW3_1	Aug 27, 2015		Water	S15-Se00927	X	X	X	X	X
SW3_2	Aug 27, 2015		Water	S15-Se00928	X	X	X	X	X
SW3_3	Aug 27, 2015		Water	S15-Se00929	X	X	X	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 470719 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Sep 1, 2015 9:20 AM Due: Sep 8, 2015 Priority: 5 Day Contact Name: Amy Dobson
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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Phosphate total (as P)	Suspended Solids	Turbidity	Metals M8	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									
Brisbane Laboratory - NATA Site # 20794									
External Laboratory									
SW4_1	Aug 27, 2015		Water	S15-Se00930	X	X	X	X	X
SW4_2	Aug 27, 2015		Water	S15-Se00931	X	X	X	X	X
SW4_3	Aug 27, 2015		Water	S15-Se00932	X	X	X	X	X
SW5_1	Aug 27, 2015		Water	S15-Se00933	X	X	X	X	X
SW5_2	Aug 27, 2015		Water	S15-Se00934	X	X	X	X	X
SW5_3	Aug 27, 2015		Water	S15-Se00935	X	X	X	X	X
SW6_1	Aug 27, 2015		Water	S15-Se00936	X	X	X	X	X
SW6_2	Aug 27, 2015		Water	S15-Se00937	X	X	X	X	X
SW6_3	Aug 27, 2015		Water	S15-Se00938	X	X	X	X	X
SW7_1	Aug 27, 2015		Water	S15-Se00939	X	X	X	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 470719 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Sep 1, 2015 9:20 AM Due: Sep 8, 2015 Priority: 5 Day Contact Name: Amy Dobson
--	--	--

Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Phosphate total (as P)	Suspended Solids	Turbidity	Metals M8	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									
Brisbane Laboratory - NATA Site # 20794									
External Laboratory									
SW7_2	Aug 27, 2015		Water	S15-Se00940	X	X	X	X	X
SW7_3	Aug 27, 2015		Water	S15-Se00941	X	X	X	X	X
SW8_1	Aug 27, 2015		Water	S15-Se00942	X	X	X	X	X
SW8_2	Aug 27, 2015		Water	S15-Se00943	X	X	X	X	X
SW8_3	Aug 27, 2015		Water	S15-Se00944	X	X	X	X	X
SW9_1	Aug 27, 2015		Water	S15-Se00945	X	X	X	X	X
SW9_2	Aug 27, 2015		Water	S15-Se00946	X	X	X	X	X
SW9_3	Aug 27, 2015		Water	S15-Se00947	X	X	X	X	X
SW10_1	Aug 27, 2015		Water	S15-Se00948	X	X	X	X	X
SW10_2	Aug 27, 2015		Water	S15-Se00949	X	X	X	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 470719 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Sep 1, 2015 9:20 AM Due: Sep 8, 2015 Priority: 5 Day Contact Name: Amy Dobson
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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Phosphate total (as P)	Suspended Solids	Turbidity	Metals M8	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									
Brisbane Laboratory - NATA Site # 20794									
External Laboratory									
SW10_3	Aug 27, 2015		Water	S15-Se00950	X	X	X	X	X
SW11_1	Aug 27, 2015		Water	S15-Se00951	X	X	X	X	X
SW11_2	Aug 27, 2015		Water	S15-Se00952	X	X	X	X	X
SW11_3	Aug 27, 2015		Water	S15-Se00953	X	X	X	X	X
SW12_1	Aug 27, 2015		Water	S15-Se00954	X	X	X	X	X
SW12_2	Aug 27, 2015		Water	S15-Se00955	X	X	X	X	X
SW12_3	Aug 27, 2015		Water	S15-Se00956	X	X	X	X	X
SW13_1	Aug 27, 2015		Water	S15-Se00957	X	X	X	X	X
SW13_2	Aug 27, 2015		Water	S15-Se00958	X	X	X	X	X
SW13_3	Aug 27, 2015		Water	S15-Se00959	X	X	X	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 470719 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Sep 1, 2015 9:20 AM Due: Sep 8, 2015 Priority: 5 Day Contact Name: Amy Dobson
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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Phosphate total (as P)	Suspended Solids	Turbidity	Metals M8	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									
Brisbane Laboratory - NATA Site # 20794									
External Laboratory									
SW14_1	Aug 28, 2015		Water	S15-Se00960	X	X	X	X	X
SW14_2	Aug 28, 2015		Water	S15-Se00961	X	X	X	X	X
SW14_3	Aug 28, 2015		Water	S15-Se00962	X	X	X	X	X
SW15_1	Aug 28, 2015		Water	S15-Se00963	X	X	X	X	X
SW15_2	Aug 28, 2015		Water	S15-Se00964	X	X	X	X	X
SW15_3	Aug 28, 2015		Water	S15-Se00965	X	X	X	X	X
SW16_1	Aug 28, 2015		Water	S15-Se00966	X	X	X	X	X
SW16_2	Aug 28, 2015		Water	S15-Se00967	X	X	X	X	X
SW16_3	Aug 28, 2015		Water	S15-Se00968	X	X	X	X	X
SW17_1	Aug 28, 2015		Water	S15-Se00969	X	X	X	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 470719 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Sep 1, 2015 9:20 AM Due: Sep 8, 2015 Priority: 5 Day Contact Name: Amy Dobson
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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Phosphate total (as P)	Suspended Solids	Turbidity	Metals M8	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									
Brisbane Laboratory - NATA Site # 20794									
External Laboratory									
SW17_2	Aug 28, 2015		Water	S15-Se00970	X	X	X	X	X
SW17_3	Aug 28, 2015		Water	S15-Se00971	X	X	X	X	X
DUPL1_1	Aug 27, 2015		Water	S15-Se00972	X	X	X	X	X
DUPL1_2	Aug 27, 2015		Water	S15-Se00973	X	X	X	X	X
DUPL1_3	Aug 27, 2015		Water	S15-Se00974	X	X	X	X	X
DUPL2_1	Aug 28, 2015		Water	S15-Se00975	X	X	X	X	X
DUPL2_2	Aug 28, 2015		Water	S15-Se00976	X	X	X	X	X
DUPL2_3	Aug 28, 2015		Water	S15-Se00977	X	X	X	X	X
AQM16_1	Aug 27, 2015		Water	S15-Se00978	X	X	X	X	X
AQM16_2	Aug 27, 2015		Water	S15-Se00979	X	X	X	X	X

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 470719 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Sep 1, 2015 9:20 AM Due: Sep 8, 2015 Priority: 5 Day Contact Name: Amy Dobson
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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail				Phosphate total (as P)	Suspended Solids	Turbidity	Metals M8	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								
Brisbane Laboratory - NATA Site # 20794								
External Laboratory								
AQM16_3	Aug 27, 2015		Water	S15-Se00980	X	X	X	X

Attachment E- Laboratory QA/QC

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 C_o = Analyte concentration of the original sample
 C_d = 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 tested (turbidity, total suspended solids, heavy metals, phosphorus, and total nitrogen) are:

- The RPD between duplicate sample DUPL1_1 and primary sample value SW03_1 was:
 - 78% for total suspended solids
 - 67% for copper (filtered)
- The RPD between duplicate sample DUPL1_2 and primary sample value SW03_2 was:
 - 67% for copper (filtered)
- The RPD between duplicate sample DUPL1_3 and primary sample value SW16_1 was:
 - 67% for zinc (filtered)
- The RPD between duplicate sample DUPL2_2 and primary sample value SW16_2 was:
 - 81% for total suspended solids
- The RPD between duplicate sample DUPL2_3 and primary sample value SW16_3 was:
 - 82% for total suspended solids
 - 67% for zinc (filtered)

These failures are considered to be due to low level concentrations that are at or about the EQL and are not considered to represent differences that affect the confidence in the water quality results.

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 9 – Major Event 3) were received within required holding times.

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

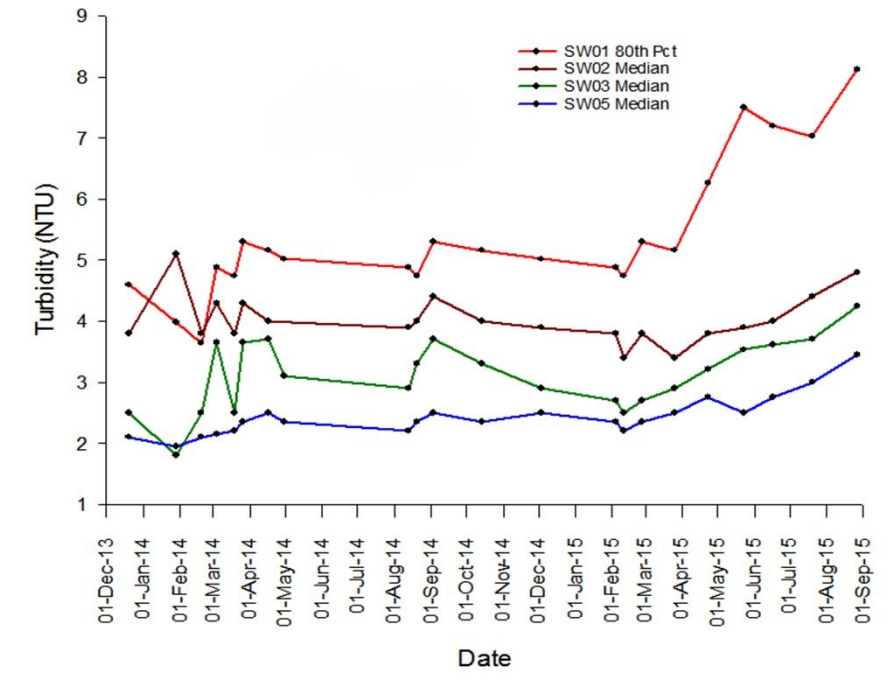
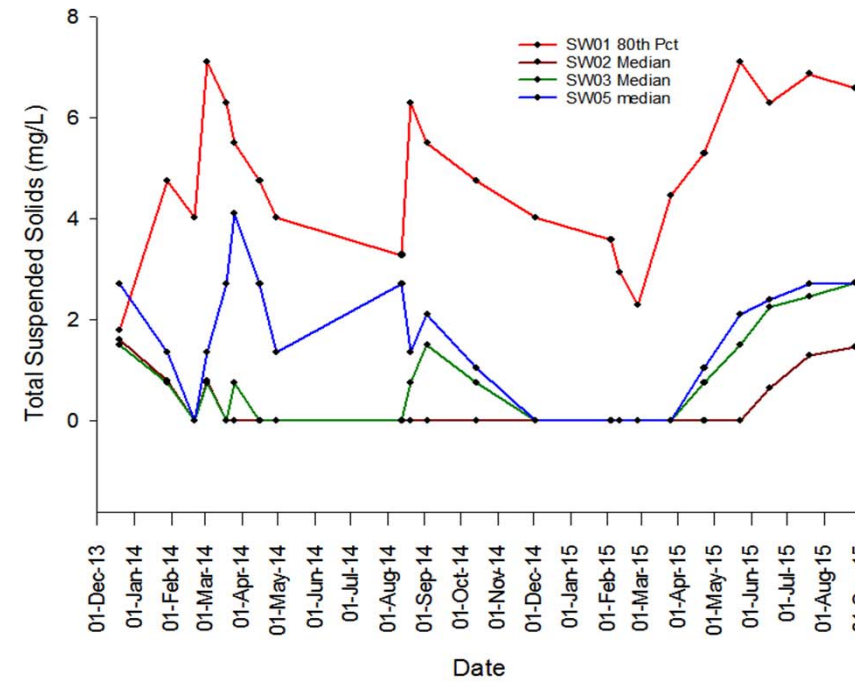
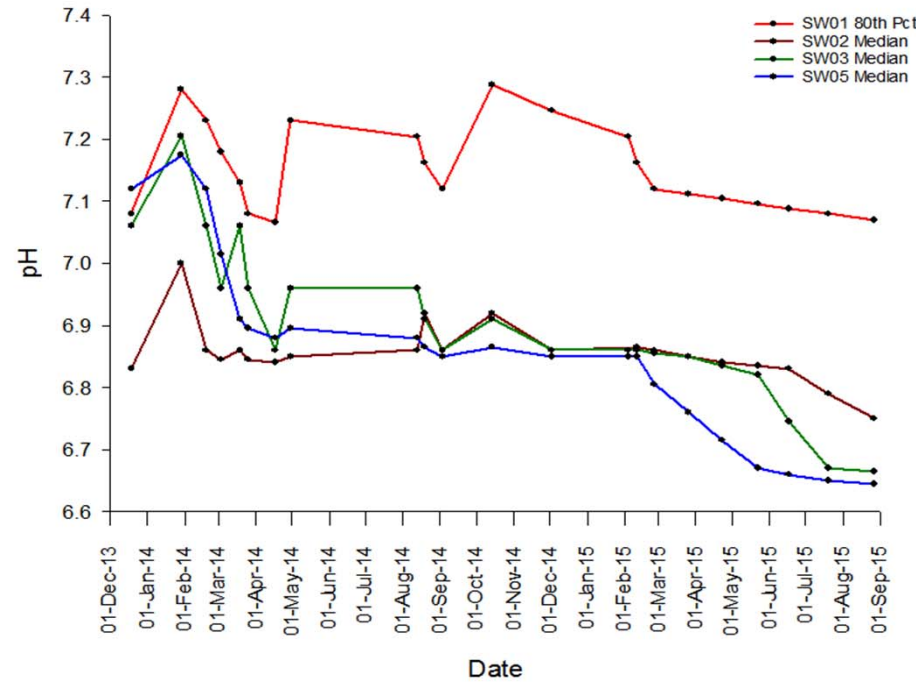
The QA/QC results show that the samples collected have met the appropriate standards or had acceptable differences. As such, the data was considered to be valid and of sufficient quality to meet the data quality objectives for the assessment.

Attachment F - Control Charts

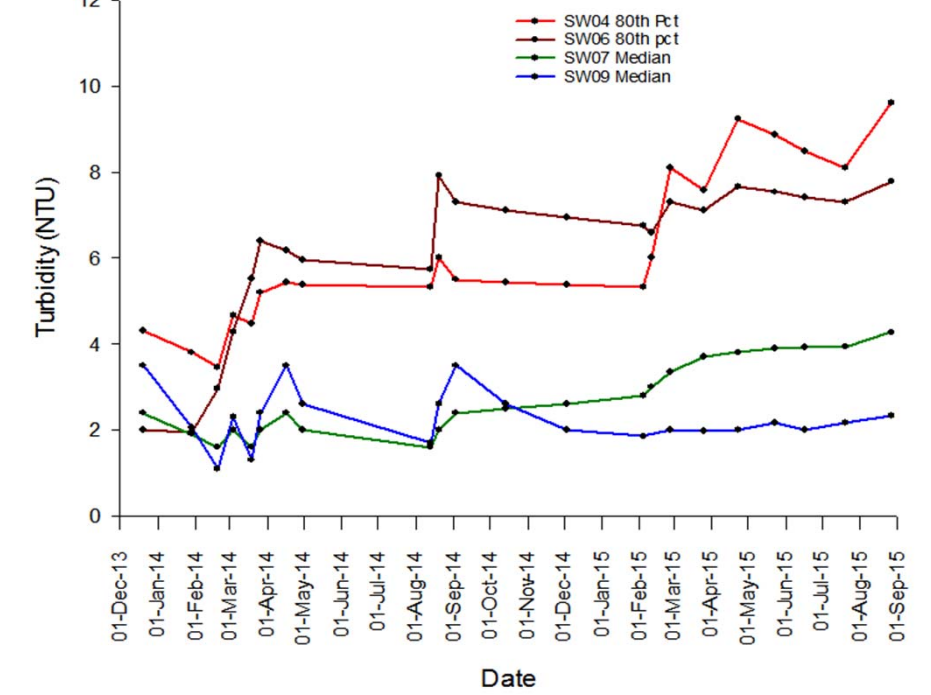
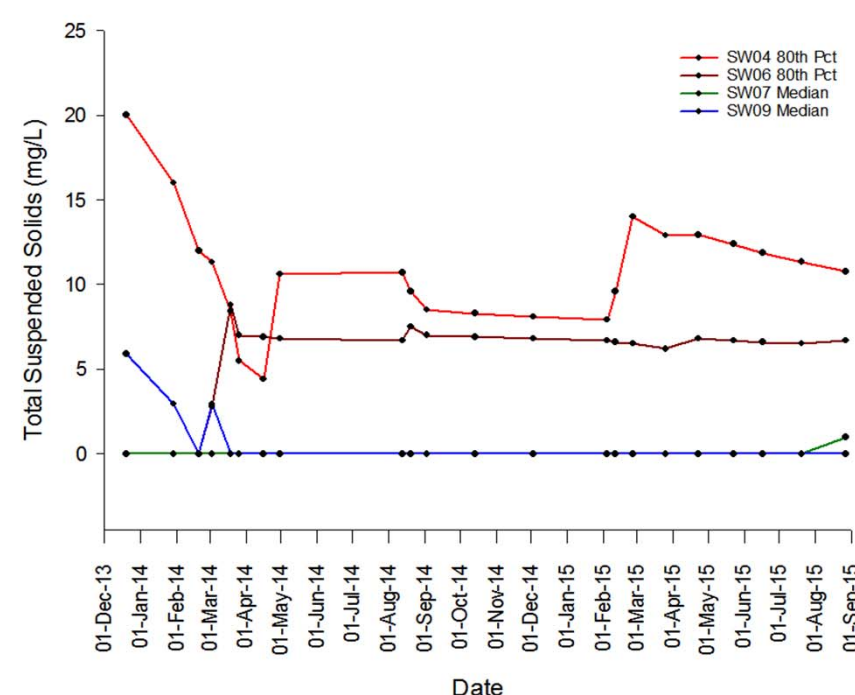
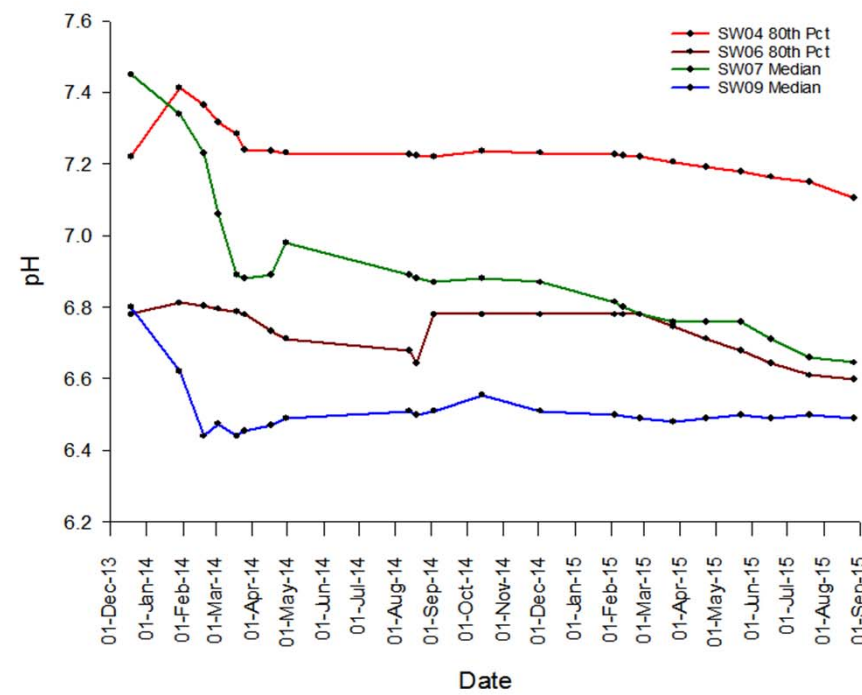


Attachment E Control Charts

1. Broughton Creek



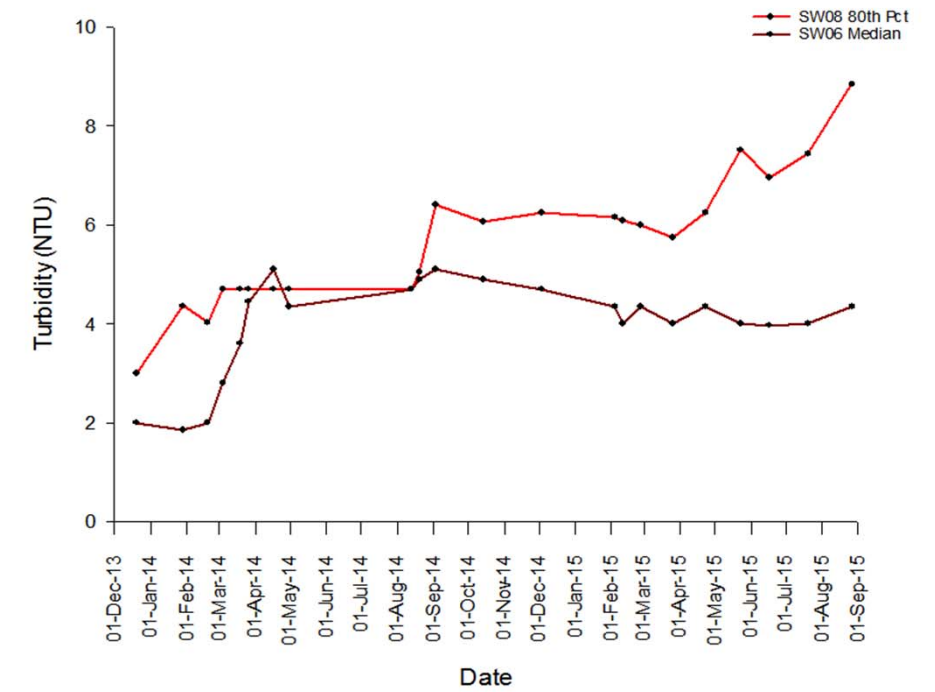
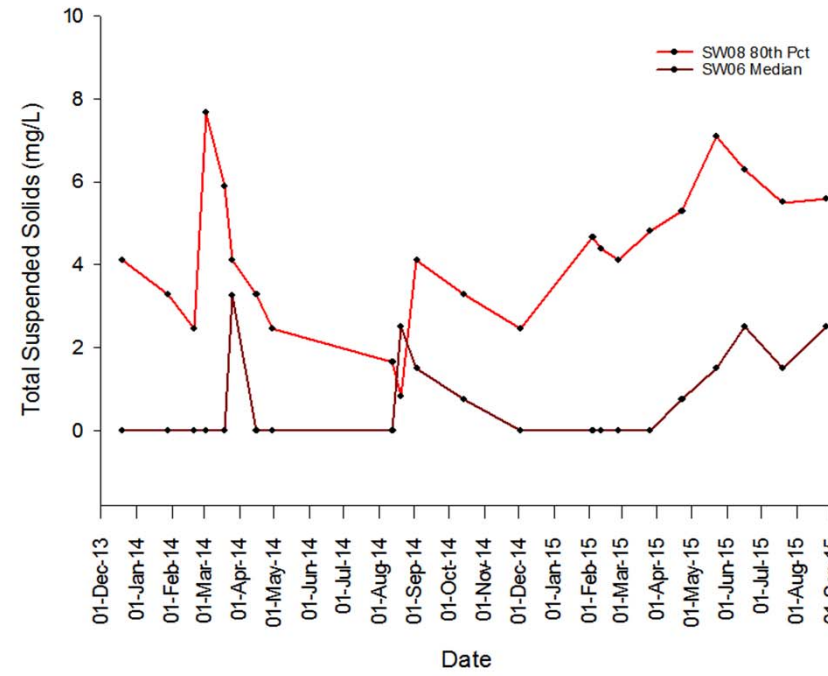
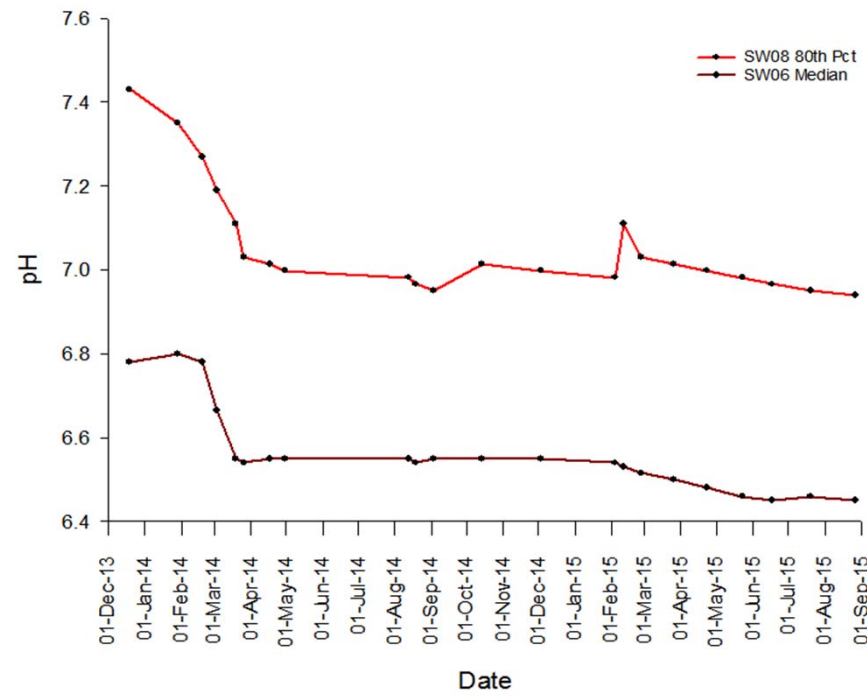
2. Connelly's Creek and Broughton Mill Creek and Bundewallah Creek



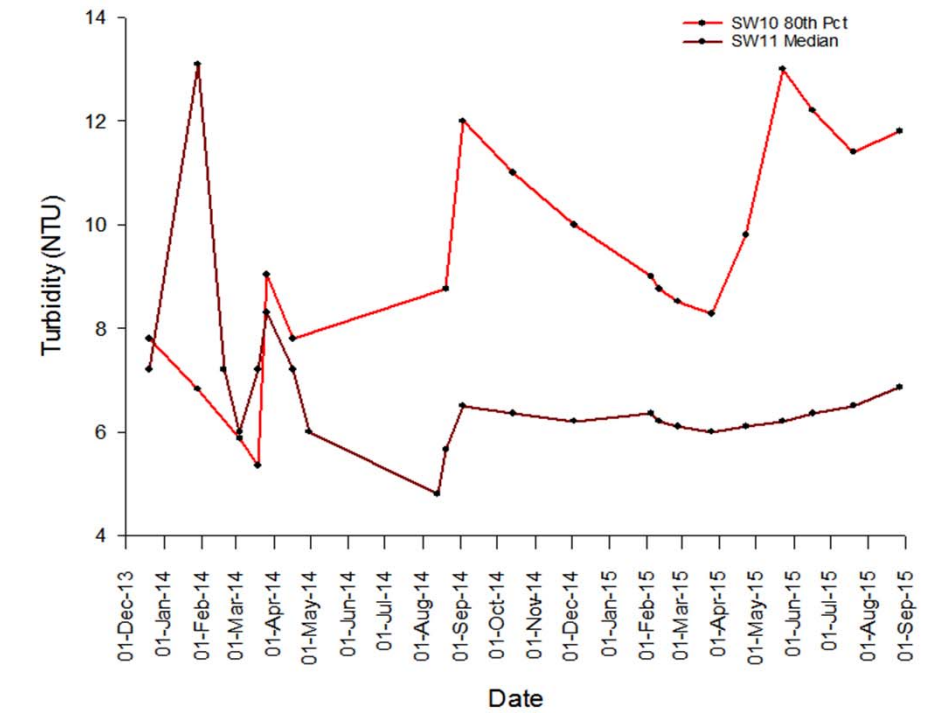
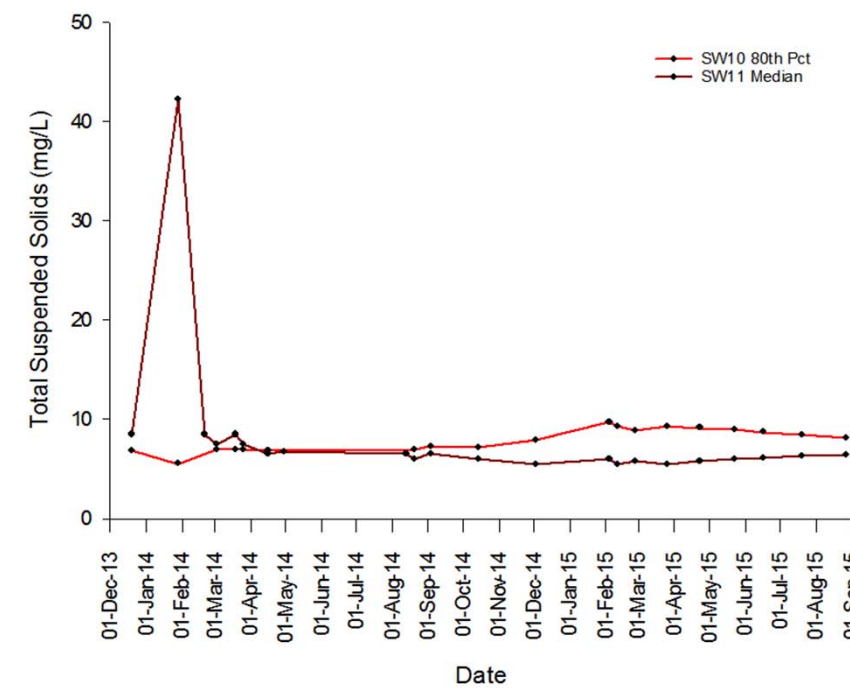
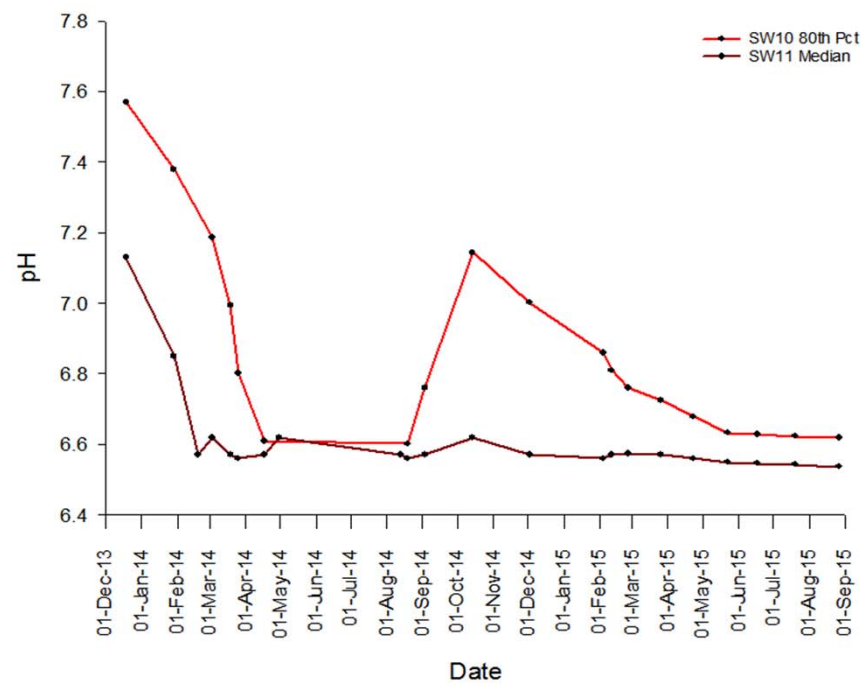


Attachment E Control Charts

3. Bundewallah Creek and Connelly's Creek



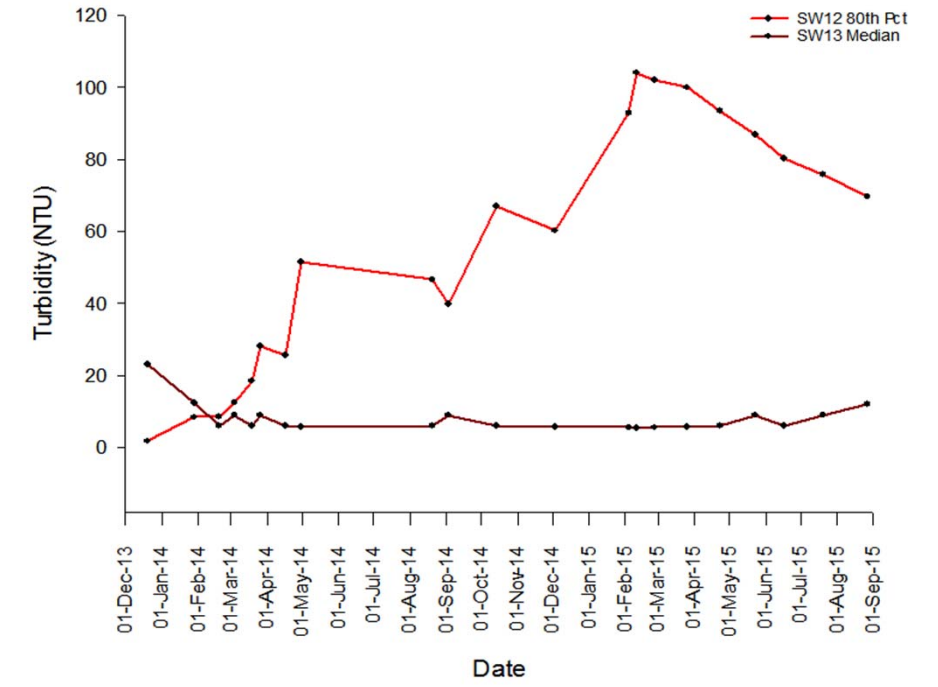
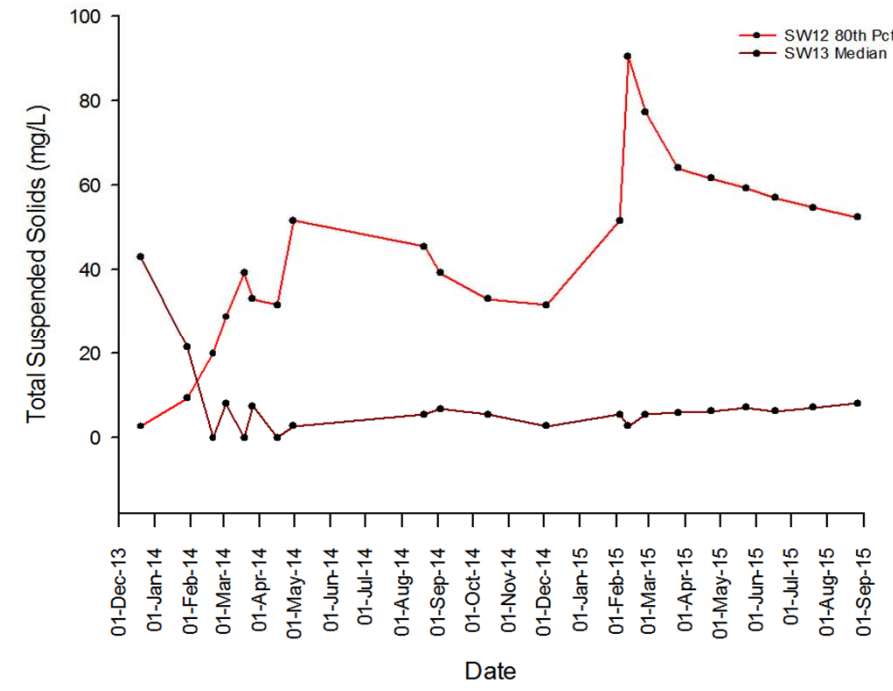
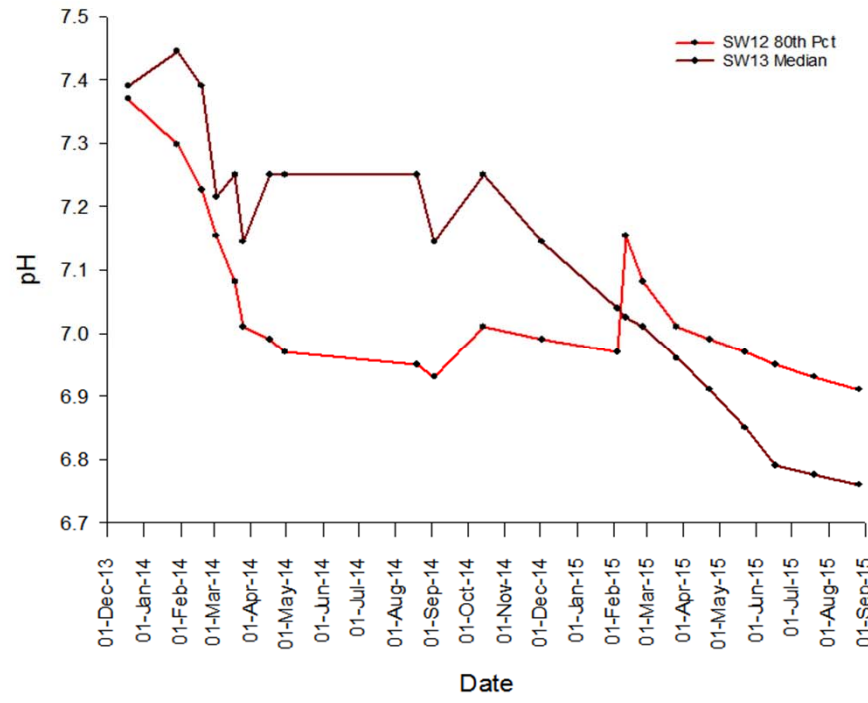
4. Town Creek



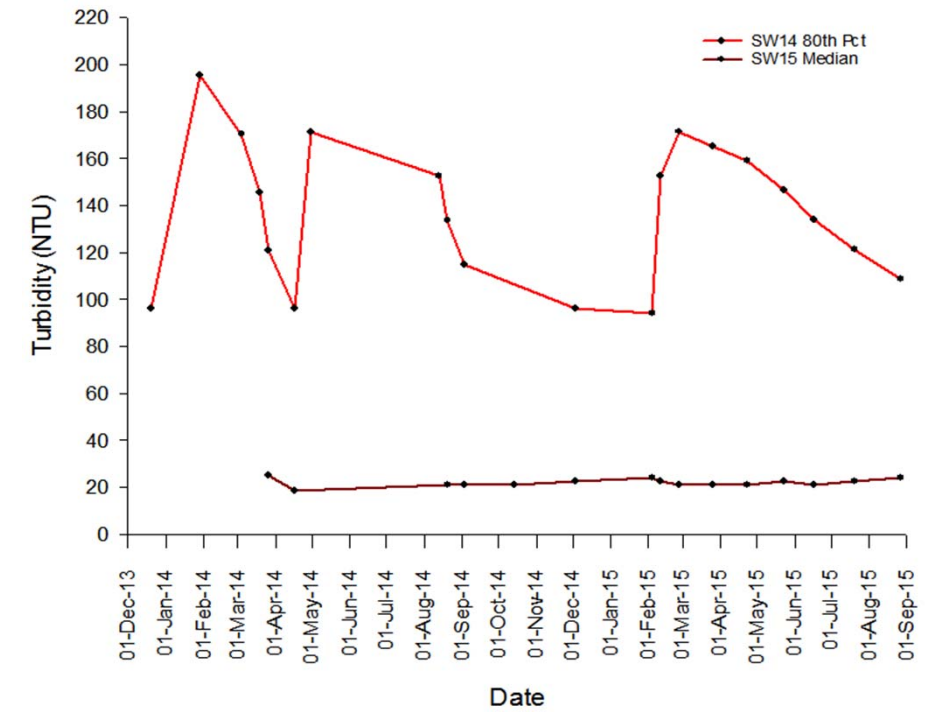
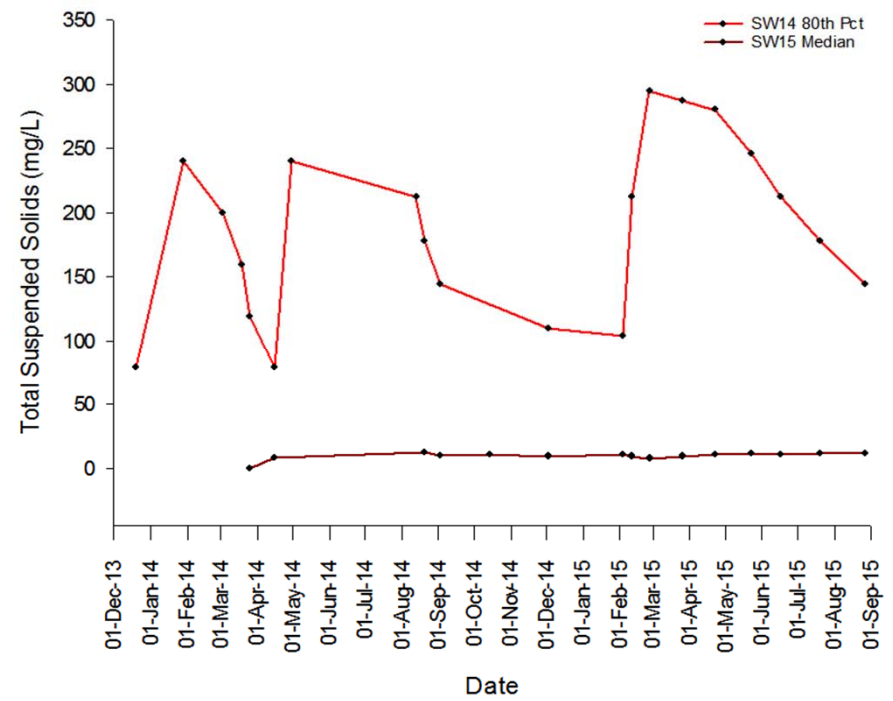
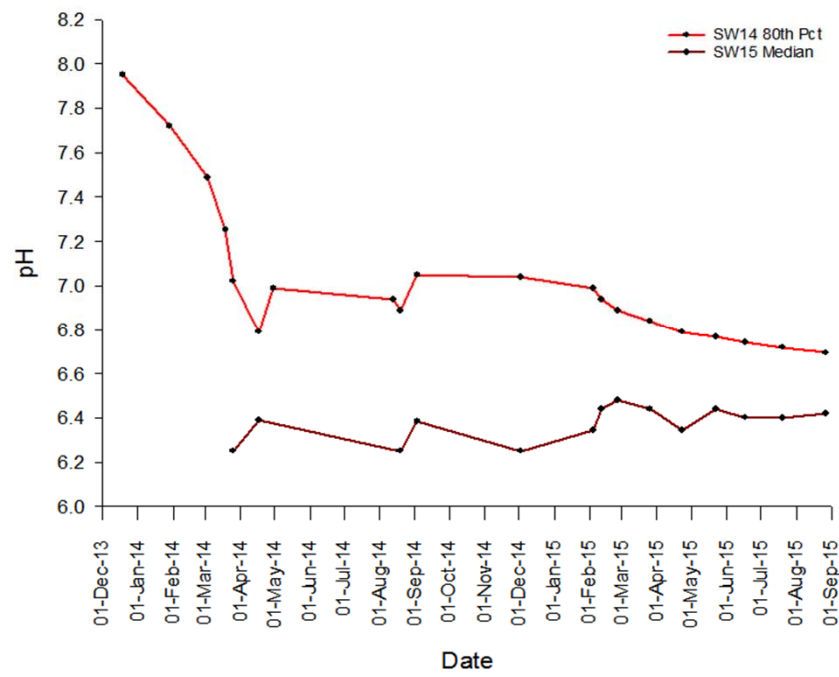


Attachment E Control Charts

5. Hitchcocks Lane Creek Tributary



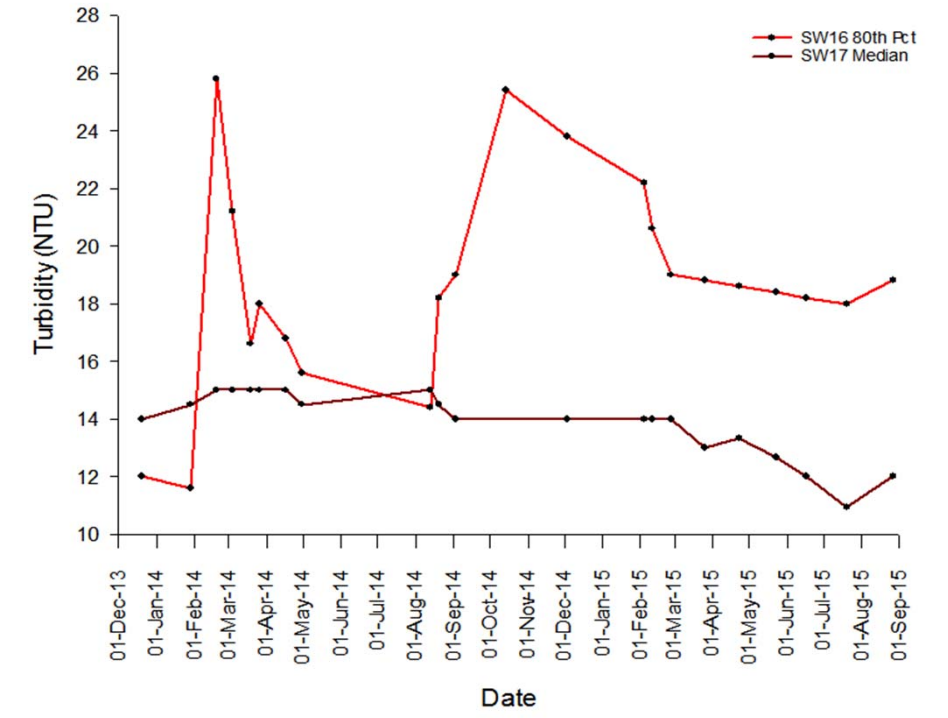
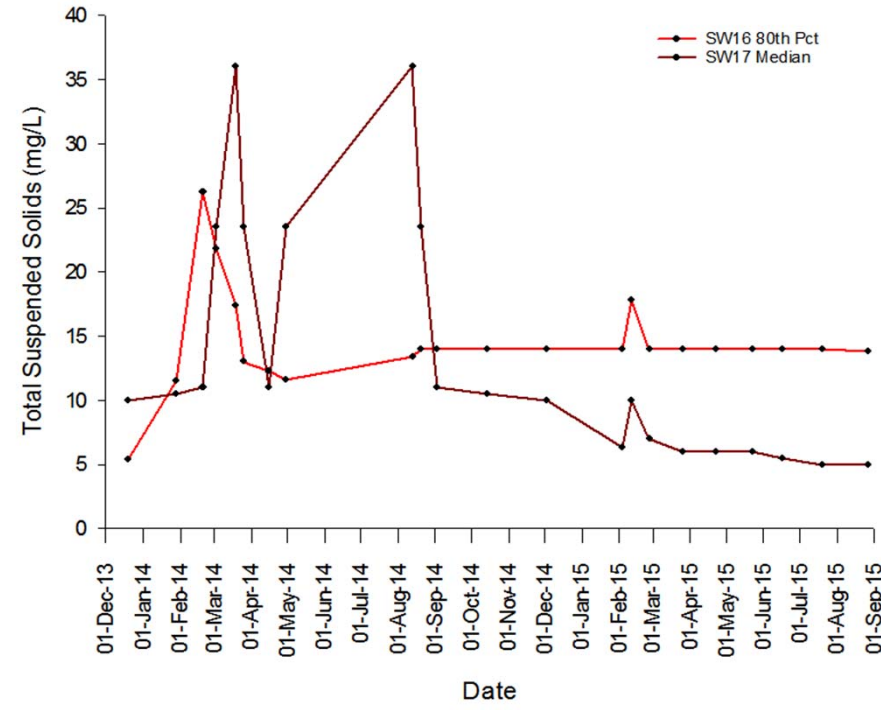
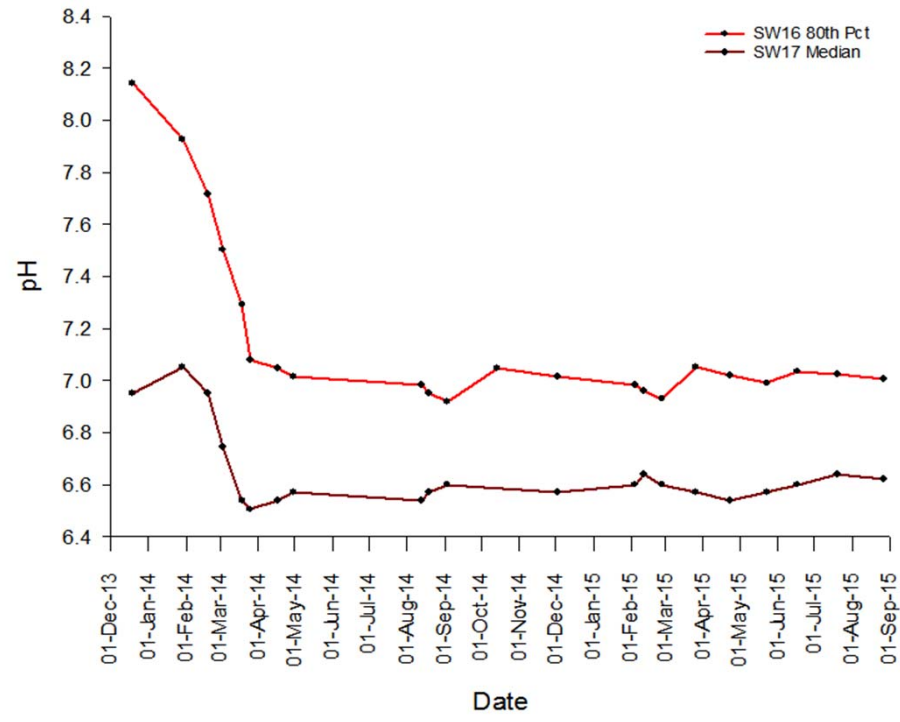
6. Hitchcocks Lane Creek





Attachment E Control Charts

7. Unnamed Tributary



Appendix D Groundwater quality monitoring results

09 April 2015

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

Our ref: 21/24306
207749
Your ref:

Dear James,

Groundwater Monitoring Event 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 quarterly round of groundwater monitoring at six locations (MW01, MW04, MW09, MW10, MW12 and MW16). This report documents the first quarterly groundwater sampling event (Event 1) undertaken since the commencement of construction.

2 Field Program

Groundwater sampling was undertaken at all groundwater monitoring wells on 30 and 31 March 2015; refer to Figure 1, Attachment A for monitoring well locations. This quarterly groundwater 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, Princes Highway Upgrade – Foxground to Berry Bypass Project, Water Quality Monitoring Groundwater Monitoring 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). These results are provided in Table B1, Attachment B. Field sheets and calibration certificates are provided in Attachment C.

Water samples were submitted to a NATA certified testing laboratory (Eurofins | Mgt) of the analysis of:

- BTEX (Benzene, Toluene, Ethyl-benzene, Xylene)
- TPH (Total Petroleum Hydrocarbons)
- Heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)

3 Results and Discussion

This section presents control charts and discusses results (with regard to exceedances of criteria or inconsistencies in the groundwater results for Event 1) in accordance with:

- The limitations provided in Section 4

- 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

3.1 Groundwater elevations

The rainfall within Broughton Creek catchment and the groundwater elevations within monitored wells are presented in Figure 2 of Attachment A. This information was obtained from the NSW Office of Water website (<http://realtimedata.water.nsw.gov.au/water.stm>).

The levels show that the majority of wells are relatively stable with the exception of MW01, which had an increasing groundwater elevation compared with the previous pre-construction observations (pre-December 2014). The increase in groundwater elevation at MW01 is interpreted to be a response to rainfall. A decrease in groundwater elevation is the expected response associated with construction activities near to MW01. A longer-term response was evident in MW04, MW09, MW10, MW12, and MW16 standing water levels.

3.2 Groundwater quality sampling results

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

There were no visual or olfactory signs of contamination observed at any of the sampling points during the groundwater investigation.

Groundwater 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.

Existing groundwater quality characteristics outside of the ranges present within the screening criteria are summarised in Table 1. The results suggest that groundwater quality is above some screening criteria at a number of locations throughout the catchment. pH and electrical conductivity have the most exceedances, with less frequent exceedances of chromium, copper and zinc. Most of the exceedances are of the ADWG aesthetic or ANZECC Freshwater guidelines and shows that the groundwater is not suitable from an aesthetic drinking water perspective. All results are below the ANZECC livestock watering criteria and are therefore suitable for this purpose.

Table 1 Summary of Water Quality Screening

Analyte	Units	Screening Criteria	Locations exceeding adopted criteria	Minimum value	Maximum value
pH	pH units	6.5 - 8.5 (ADWG - aesthetic)	5	4.66 (MW04)	7.28 (MW01)
Electrical Conductivity	mg/L	600 (ADWG - aesthetic)	3	138.7 (MW04)	2677 mg/L (MW10)
Chromium	mg/L	0.001 (Freshwater 95%)	2 (MW01 & MW04)	<0.001	0.004 mg/L (MW16)
Copper	mg/L	0.0014 (Freshwater 95%)	2 (MW01 & MW16)	<0.001	0.003 mg/L (MW04)

Analyte	Units	Screening Criteria	Locations exceeding adopted criteria	Minimum value	Maximum value
Zinc	mg/L	0.008 (Freshwater 95%)	6	0.008 (MW16)	0.056 mg/L (MW09)

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

Exceedances of these analytes were also reported during the pre-construction phase of monitoring. Further discussion of this rounds results with regards to pre-construction data are presented in Sections 3.2.1 and 3.2.2.

3.2.1 Control charts

In accordance with the assessment criteria documented in the monitoring plans and summarised in Section 2, the control charts have been developed for electrical conductivity (field) and pH (field). The remaining analytes with detectable concentrations have been assessed using other methods and are discussed in the following sections.

The groundwater control charts compare pre-construction (reference) data with construction and operation (test) data. The 'reference' data is presented as an 80th percentile of the pre-construction monitoring, while the 'test' data represent the median of the sampling. The control charts for Event 1 are presented in Attachment F.

The control charts suggest that the results are generally consistent with previous rounds. There are no exceedances of the 80th percentile reference data, which suggests that the wells are not being significantly influenced by construction works.

3.2.2 Results Graphs

The concentrations for metals (with detectable concentrations) were plotted in time series to assess the changes pre and during construction and the emergence of trends. Control charts were considered unsuitable in this instance as metals data sets generally have a high percentage of values below detection limits. This resulted in identified exceedances in the control charts that were associated with statistical issues rather than trends in the data. Time series results graphs were created for the following metals:

- Nickel.
- Copper.
- Arsenic.
- Zinc.

Nickel, copper, arsenic and zinc are the only metals presented as the concentrations of all other metals are below or at the limit of the laboratory limit of reporting (LOR) and / or some very minor detections.

The results graphs show elevated concentrations in the construction phase compared to the pre-construction phase for Nickel (MW01 and MW10), Copper (MW01 and MW04) and Zinc (MW01, MW04, MW09, MW10, and MW12). The elevated concentrations of these metals are expected to be due to natural variation in background groundwater conditions for the following reasons:

- Groundwater flow velocities are generally slow and therefore it is unlikely that 'construction impacted' groundwater would have migrated to the wells at this stage.
- There is a small pre-construction data set (between five and seven samples) and it is possible that normal background concentrations in groundwater have not been characterised. Further to this, the elevated levels represent one data set since the commencement of construction and are not currently indicative of an increasing trend.
- The metals present in groundwater are unlikely to be associated with construction activities.

Despite the above conclusions, it is plausible that the elevated concentrations could be associated with construction activities and if elevated concentrations and increasing trends are present in following events then a more detailed assessment of the trends should be considered.

Benzene, toluene, ethylbenzene, xylenes (BTEX), total recoverable hydrocarbons (TRH) and polycyclic aromatic hydrocarbons (PAHs) were below detection and the results could not be graphed. The results graphs for Event 1 are presented in Attachment F.

Event 1 results suggest that construction works are currently having no significant impact on groundwater 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,

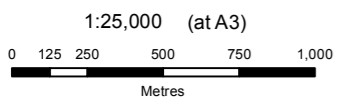


Ashlee La Fontaine
Environmental Scientist
02 9239 7122



Stefan Charteris
Senior Hydrogeologist
02 9239 7472

Attachment A - Figures



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



LEGEND

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



Roads and Maritime Services
 Water Quality Monitoring

Job Number | 61-24306
 Revision | A
 Date | 28 Apr 2015

Groundwater Sampling Locations

Figure 1

\\ghdnet\ghd\AU\Sydney\Projects\21\24306\GIS\Maps\MXD\21_24306_2002_GroundWatersamplingLocations.mxd
 © 2010. While GHD has taken care to ensure the accuracy of this product, GHD and DATA CUSTODIAN, make no representations or warranties about its accuracy, completeness or suitability for any particular purpose.
 GHD and DATA CUSTODIAN, cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason.
 Data Source: NSW Department of Lands: DTDB and DCDB - 2012. Created by: mweber

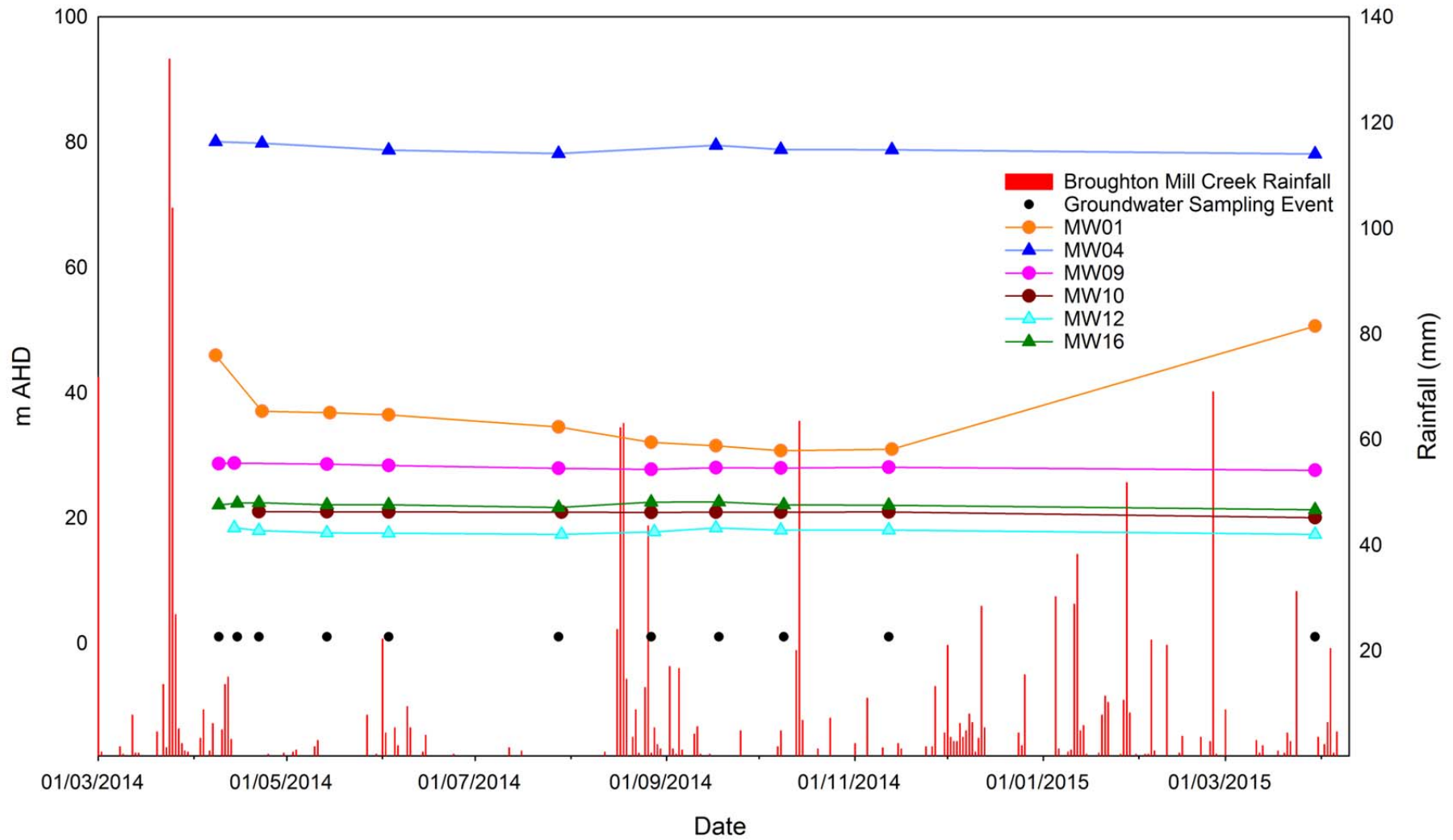


Figure 2 Rainfall vs Groundwater elevations in monitoring wells

Attachment B - Tabulated Results



Attachment B
Table B1
Event 1 - Field Parameters

Field							
Dissolved Oxygen (Field)	Electrical Conductivity (Field)	pH (Field)	Redox (Field)	Temperature (Field)			
mg/L	µS/cm	pH Units	mV	oC			
EQL							
ADWG 2011 Aesthetic	600	6.5-8.5					
ADWG 2011 Health							
ANZECC 2000 - Stock Watering							
ANZECC 2000 FW 95%		6.5 - 8.5					

Field ID	Date	SampleCode					
MW01	30/03/2015	MW01_30 Mar 15_-	4	2329	7.28	-13.1	18.6
MW04	30/03/2015	MW04_30 Mar 15_-	3.02	138.7	4.66	113.9	17.9
MW09	31/03/2015	MW09_31 Mar 15_-	0.44	1560	6.39	-25.7	17.2
MW10	31/03/2015	MW10_31 Mar 15_-	0.76	2677	6.15	-33.8	19.2
MW12	31/03/2015	MW12_31 Mar 15_-	0.76	376.1	5.07	62.1	18.5
MW16	30/03/2015	MW16_30 Mar 15_-	0.23	553	5.76	-5.8	18.7



**Attachment B
Table B2
Event 1 Analytical Results**

	Metals								BTEX & MAH						TRH - NEPM 2013					TPH - NEPM 1999					PAH		
	Arsenic (Filtered) mg/L	Cadmium (Filtered) mg/L	Chromium (III+VI) (Filtered) mg/L	Copper (Filtered) mg/L	Lead (Filtered) mg/L	Mercury (Filtered) mg/L	Nickel (Filtered) mg/L	Zinc (Filtered) mg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene (o) µg/L	Xylene (m & p) µg/L	Xylene Total µg/L	C6 - C10 less BTEX (F1) mg/L	C6 - C10 Fraction mg/L	>C10 - C16 less Naphthalene (F2) mg/L	>C10 - C16 Fraction mg/L	>C16 - C34 Fraction (F3) mg/L	>C34 - C40 Fraction (F4) mg/L	C6 - C 9 Fraction mg/L	C10 - C14 Fraction mg/L	C15 - C28 Fraction mg/L	C29 - C36 Fraction mg/L	C10 - C36 (Sum of Total) - Lab calc mg/L	Naphthalene µg/L	
EQL	0.001	0.0001	0.001	0.001	0.001	0.0001	0.001	0.005	1	1	1	1	2	3	0.02	0.02	0.05	0.05	0.1	0.1	0.02	0.05	0.1	0.1	0.1	0.1	20
ADWG 2011 Aesthetic				1				3	25	3			20														
ADWG 2011 Human Health	0.01	0.002		2	0.01	0.001	0.02	1	800	300			600														
ANZECC 2000 - Stock Watering	0.5	0.01	1	0.5	0.1	0.002	1	20																			
ANZECC 2000 FW 95%		0.0002	0.001	0.0014	0.0034	0.0006	0.011	0.008	950			350														16	
Field ID	Date																										
MW01	30/03/2015	0.004	<0.0001	0.001	0.002	<0.001	<0.0001	0.005	0.036	<1	<1	<1	<1	<2	<3	<0.02	<0.02	<0.05	<0.05	0.9	<0.1	<0.02	<0.05	1	<0.1	1	<20
MW04	30/03/2015	<0.001	<0.0001	<0.001	0.003	<0.001	<0.0001	0.002	0.027	<1	<1	<1	<1	<2	<3	<0.02	<0.02	<0.05	<0.05	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.1	<20
MW09	31/03/2015	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.0001	0.002	0.056	<1	<1	<1	<1	<2	<3	<0.02	<0.02	<0.05	<0.05	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.1	<20
MW10	31/03/2015	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.0001	0.002	0.015	<1	<1	<1	<1	<2	<3	<0.02	<0.02	<0.05	<0.05	0.1	<0.1	<0.02	<0.05	0.1	<0.1	0.1	<20
MW12	31/03/2015	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.0001	0.009	0.022	<1	<1	<1	<1	<2	<3	<0.02	<0.02	<0.05	<0.05	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.1	<20
MW16	30/03/2015	<0.001	<0.0001	0.004	<0.001	<0.001	<0.0001	0.002	0.008	<1	<1	<1	<1	<2	<3	<0.02	<0.02	<0.05	<0.05	0.9	<0.1	<0.02	<0.05	1.1	<0.1	1.1	<20



Attachment B Table B3 Event 1 RPD Results

Fulton Hogan
Berry to Foxground
Water Quality Monitoring Program

Field Duplicates (WATER)
Filter: Lab_Report_Number in('452737')

Lab Report Number	452737	452737	
Field ID	MW04	QA01	RPD
Sampled Date/Time	30/03/2015	30/03/2015	

Chem_Group	ChemName	Units	EQL			
Metals	Arsenic (Filtered)	mg/l	0.001	<0.001	<0.001	0
	Cadmium (Filtered)	mg/l	0.0001	<0.0001	<0.0001	0
	Chromium (III+VI) (Filtered)	mg/l	0.001	<0.001	<0.001	0
	Copper (Filtered)	mg/l	0.001	0.003	0.003	0
	Lead (Filtered)	mg/l	0.001	<0.001	<0.001	0
	Mercury (Filtered)	mg/l	0.0001	<0.0001	<0.0001	0
	Nickel (Filtered)	mg/l	0.001	0.002	0.001	67
	Zinc (Filtered)	mg/l	0.005	0.027	0.022	20
BTEX & MAH	Benzene	µg/l	1	<1.0	<1.0	0
	Toluene	µg/l	1	<1.0	<1.0	0
	Ethylbenzene	µg/l	1	<1.0	<1.0	0
	Xylene (o)	µg/l	1	<1.0	<1.0	0
	Xylene (m & p)	µg/l	2	<2.0	<2.0	0
	Xylene Total	µg/l	3	<3.0	<3.0	0
TRH - NEPM 2013	C6 - C10 less BTEX (F1)	mg/l	0.02	<0.02	<0.02	0
	C6 - C10 Fraction	mg/l	0.02	<0.02	<0.02	0
	>C10 - C16 less Naphtha	mg/l	0.05	<0.05	<0.05	0
	>C10 - C16 Fraction	mg/l	0.05	<0.05	<0.05	0
	>C16 - C34 Fraction (F3)	mg/l	0.1	<0.1	0.2	67
>C34 - C40 Fraction (F4)	mg/l	0.1	<0.1	<0.1	0	
TPH - NEPM 1999	C6 - C 9 Fraction	mg/l	0.02	<0.02	<0.02	0
	C10 - C14 Fraction	mg/l	0.05	<0.05	<0.05	0
	C15 - C28 Fraction	mg/l	0.1	<0.1	0.2	67
	C29 - C36 Fraction	mg/l	0.1	<0.1	<0.1	0
	C10 - C36 (Sum of Total)	mg/l	0.1	<0.1	0.2	67
PAH	Naphthalene	µg/l	20	<20.0	<20.0	0

*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 C– Field Sheets and Calibration Certificates

GROUNDWATER PURGING AND SAMPLING FIELD SHEET



PROJECT DETAILS

Project Number: 21/24306

Borehole ID

MW01

Project Name: Foxground to Berry Bypass

Sample ID:

MW01

Client: Fulton Hogan

Date:

30/3/15

Site: Foxground to Berry Bypass

Sampler:

ALF

Well Condition (i.e. road box locked etc):

Purge Method: Low Flow

Depth to Water Table Pre-purge (from TOC):

1.35

Sample Method: Low Flow

Depth of PSH (from TOC):

-

Casing Type: PVC

Depth to Bottom of Casing (BOC) from TOC:

-

Well Diameter: 50mm

Casing Stickup:

-

Calculated Bore Volume(L):

Depth to Water Table Post - purge (from TOC):

8.32

QA Collected:

-

FIELD PARAMETERS (RECORDED USING YSI Pro Plus)

Time	Volume (L)	Depth to Water from TOC(m)	D.O (mg/L)	E.C (us/cm)	pH	Eh (mv)	Temp (°C)	Comments
3:37	1	1.34	1.24	2378	5.79	23.9	18.6	Brown, low
3:39	2	1.72	1.60	2323	6.04	17.6	18.2	turbidity -
3:40	3	3.35	1.40	2291	6.26	13.0	18.0	clear. No odor.
3:42	4	3.37	1.71	2296	6.46	9.3	18.1	
3:44	5	3.82	2.09	2303	6.68	3.8	18.4	
3:46	6	4.37	2.21	2311	6.81	0.6	18.5	
3:50	7	4.39	2.50	2329	6.94	-3.1	18.6	
3:53	8	5.10	2.62	2341	7.04	-6.0	18.8	
3:56	9	5.31	2.85	2350	7.11	-8.0	18.9	
3:59	10	5.63	3.14	2349	7.17	-9.8	19.0	
4:02	11	6.12	3.35	2351	7.20	-11.0	18.9	
4:05	12	6.50	3.71	2342	7.24	-12.9	18.8	
4:08	13	6.53	4.00	2329	7.28	-13.1	18.6	Sampled @ 13 L

Post Sample Parameters

Number of Bottles:

4

Comments:

GROUNDWATER PURGING AND SAMPLING FIELD SHEET



PROJECT DETAILS

Project Number: 21/24306

Borehole ID

MW16

Project Name: Foxground to Berry Bypass

Sample ID:

MW16

Client: Fulton Hogan

Date:

30/3/15

Site: Foxground to Berry Bypass

Sampler:

MLF

Well Condition (i.e road box, locked etc):

Purge Method: Low Flow

Depth to Water Table Pre-purge (from TOC):

1.53

Sample Method: Low Flow

Depth of PSH (from TOC):

-

Casing Type: PVC

Depth to Bottom of Casing (BOC) from TOC:

-

Well Diameter: 50mm

Casing Stickup:

-

Calculated Bore Volume(L):

Depth to Water Table Post - purge (from TOC):

1.96

QA Collected:

FIELD PARAMETERS (RECORDED USING YSI Pro Plus)

Time	Volume (L)	Depth to Water from TOC(m)	D.O (mg/L)	E.C (us/cm)	pH	Eh (mv)	Temp (°C)	Comments
11:29	0.5	1.50	7.30	574	7.93	-10.6	21.0	1. low turbidity -
11:31	1.5	1.67	8.08	549	7.61	-13.6	20.0	colourless. No odor
11:33	2.5	1.71	6.28	543	7.29	-12.1	19.9	
11:35	3.5	1.85	5.41	541	7.08	-9.5	19.7	
11:37	4.5	1.87	3.93	536	6.84	-4.7	19.5	
11:39	5.5	1.86	2.34	532	6.56	0.4	19.3	
11:41	7.0	1.90	1.36	532	6.33	1.0	19.2	
11:43	8.0	1.90	0.81	545	6.08	-9.2	19.0	
11:45	9.0	1.93	0.71	548	6.02	-9.7	19.0	
11:47	10.0	1.91	0.38	551	5.88	-7.8	18.8	
11:50	11.0	1.93	0.27	553	5.80	-6.7	18.8	
11:52	12.0	1.96	0.23	553	5.76	-5.8	18.7	Sampled @ 12L

DIPPING RESULTS

Post Sample Parameters					
	MW07	11.64		12.19pm	31/3/15
	MW11	10.88		11.59am	31/3/15
	MW13	7.03		1.43pm	30/3/15

Number of Bottles:

4

Comments:

Well Volume Calculation (50mm diameter) 3.8xH (H=height of water column)

CALIBRATION RECORD

Instrument YSI Pro Plus
Serial Number 13J00151

Date	4/02/2015	11/02/2015	25/02/2015	25/03/2015
Time	8:20:00 AM	8:30:00 AM	10:10:00 AM	11:45:00 AM
Staff	JC	JC	JC	SC

Conductivity (S. Conductance)

Temperature	22.8	23.7	23.4	22.4
Solution	2655	2707	2655	2681
Pre-calibration	2746	2702	2674	2683
Post-calibration	2550	2637	2575	2683

pH 7

Temperature	22.8	23.6	23.7	22.4
Solution	7.02	7.02	7.02	7.01
Pre-calibration	7.3	6.92	7.22	7.7
Post-calibration	7.01	7.01	6.95	6.98

pH 4

Temperature	22.8	23.5	23.4	22.4
Solution	4.00	4.00	4.00	4.00
Pre-calibration	3.85	4.00	4.00	4.00
Post-calibration	4.00	3.96	3.98	3.94

ORP

Temperature	22.8	23.6	23.5	22.8
Solution	240	22.9	229	234.9
Pre-calibration	231.7	227.6	236.7	363.4
Post-calibration	240.0	229.1	229.1	234.9

DO (air)

Temperature	18.4	20.1	21.8	22.7
Solution	100	100	100	100
Pre-calibration	75	99.9	123.4	98.4
Post-calibration	95.1	99.1	100.3	100.5

Signed	Yes	Yes	Yes	Yes
--------	-----	-----	-----	-----



AirMet Scientific P/L
7-11 Ceylon Street
Nunawading
Victoria 3131, Australia

Calibration Certificate

This document hereby certifies that this instrument detailed has been calibrated to the parameters listed below.

Certificate Print Date: 27 October, 2014

Call ID: 00164934

Calibration Date: 27 October, 2014

Arrow Job Code: 206745.

Next Calibration Due: 27 April, 2015

Customer: GHD Pty Ltd	Type: Water Meter
Model: WATERMETER	Serial No: 13J100151
Description: Generic water meter	

Sensor	Serial No	Standard Solutions	Certified	Solution # (Bottle #)	Instrument Reading	Units
Dissolved Oxygen				230	0	%
EC		Electro solution		LG1689	2750	ms
Ph		Rowe Scientific Ph4		LK2362	4.05	Ph
Ph		Rowe Scientific Ph7		LF1041	6.96	Ph
Ph		Rowe Scientific Ph10		LL1545	10.00	Ph
Redox		Zobell 231		KH1997/KH1995	226.2	mV
Temp		Brand 1 Temp			23	Degrees

Completed by: Kurt Avallone

Signed: 

Australian Standard Alarm Levels

Attachment D - Laboratory Certificates

Enquiries Syd

Subject: FW: COC Change

From: Ashlee La Fontaine [<mailto:Ashlee.LaFontaine@ghd.com>]

Sent: Wednesday, 1 April 2015 3:00 PM

To: Charl DuPreez

Subject: COC Change

Hi Charl,

I sent an esky with a COC yesterday by courier from Nowra, and I added the analysis of PAH to it. I am just wondering if it is not too late to get this analysis removed? It is no longer needed.

Kind Regards,

Ashlee La Fontaine
Environmental Scientist

GHD

T: 61 2 9239 7122 | V: 217122 | M: 61 449 211 450 | E: ashlee.lafontaine@ghd.com

Level 12, 133 Castlereagh Street Sydney, 2000 Australia | www.ghd.com

WATER | ENERGY & RESOURCES | ENVIRONMENT | PROPERTY & BUILDINGS | TRANSPORTATION

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: Ashlee la Fontaine
Report 452737-W
 Project name FOXBERRY TO GROUND 21/2430601
 Received Date Apr 01, 2015

Client Sample ID			MW04 Water S15-Ap00911 Not Provided	MW09 Water S15-Ap00912 Not Provided	MW10 Water S15-Ap00913 Not Provided	MW12 Water S15-Ap00914 Not Provided
Sample Matrix	LOR	Unit				
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	0.10	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	86	86	84	86
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
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	0.003	< 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	0.002	0.002	0.002	0.009
Zinc (filtered)	0.005	mg/L	0.027	0.056	0.015	0.022

Client Sample ID			MW16 Water	MW01 Water	QA01 Water
Sample Matrix			S15-Ap00915	S15-Ap00916	S15-Ap00917
Eurofins mgt Sample No.			Not Provided	Not Provided	Not Provided
Date Sampled					
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	1.1	1.0	0.2
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	1.1	1.0	0.20
BTEX					
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	83	84	80
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene ^{N02}	0.02	mg/L	< 0.02	< 0.02	< 0.02
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	0.9	0.9	0.2
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1
Heavy Metals					
Arsenic (filtered)	0.001	mg/L	< 0.001	0.004	< 0.001
Cadmium (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Chromium (filtered)	0.001	mg/L	0.004	0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.002	0.003
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.002	0.005	0.001
Zinc (filtered)	0.005	mg/L	0.008	0.036	0.022

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 - Method: TRH C6-C36 - LTM-ORG-2010	Sydney	Apr 02, 2015	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Apr 02, 2015	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Apr 01, 2015	14 Day
Metals M8 filtered - Method: LTM-MET-3040_R0 TOTAL AND DISSOLVED METALS AND MERCURY IN WATERS BY ICP-MS	Sydney	Apr 01, 2015	28 Day

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

Project Name: FOXBERRY TO GROUND 21/2430601

Order No.:
Report #: 452737
Phone: 02 9239 7100
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Received: Apr 1, 2015 8:56 AM
Due: Apr 10, 2015
Priority: 5 Day
Contact Name: Ashlee la Fontaine

Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Metals M8 filtered	BTEX	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted							
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217					X	X	X
Brisbane Laboratory - NATA Site # 20794							
External Laboratory							
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID			
MW04	Not Provided		Water	S15-Ap00911	X	X	X
MW09	Not Provided		Water	S15-Ap00912	X	X	X
MW10	Not Provided		Water	S15-Ap00913	X	X	X
MW12	Not Provided		Water	S15-Ap00914	X	X	X
MW16	Not Provided		Water	S15-Ap00915	X	X	X
MW01	Not Provided		Water	S15-Ap00916	X	X	X
QA01	Not Provided		Water	S15-Ap00917	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

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

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							
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							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	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							
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							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	105			70-130	Pass	
TRH C10-C14	%	86			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	107			70-130	Pass	
Toluene	%	103			70-130	Pass	
Ethylbenzene	%	98			70-130	Pass	
m&p-Xylenes	%	102			70-130	Pass	
o-Xylene	%	100			70-130	Pass	
Xylenes - Total	%	101			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	75			70-130	Pass	
TRH C6-C10	%	116			70-130	Pass	
TRH >C10-C16	%	71			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic (filtered)	%	100			70-130	Pass	

Test		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Cadmium (filtered)		%	99			70-130	Pass	
Chromium (filtered)		%	104			70-130	Pass	
Copper (filtered)		%	104			70-130	Pass	
Lead (filtered)		%	100			70-130	Pass	
Mercury (filtered)		%	93			70-130	Pass	
Nickel (filtered)		%	103			70-130	Pass	
Zinc (filtered)		%	103			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	S15-Ma22004	NCP	%	102		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic (filtered)	S15-Ap00912	CP	%	111		70-130	Pass	
Cadmium (filtered)	S15-Ap00912	CP	%	106		70-130	Pass	
Chromium (filtered)	S15-Ap00912	CP	%	108		70-130	Pass	
Copper (filtered)	S15-Ap00912	CP	%	101		70-130	Pass	
Lead (filtered)	S15-Ap00912	CP	%	92		70-130	Pass	
Mercury (filtered)	S15-Ap00912	CP	%	81		70-130	Pass	
Nickel (filtered)	S15-Ap00912	CP	%	98		70-130	Pass	
Zinc (filtered)	S15-Ap00912	CP	%	102		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	S15-Ap00913	CP	%	106		70-130	Pass	
TRH C10-C14	S15-Ap00913	CP	%	113		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	S15-Ap00913	CP	%	114		70-130	Pass	
Toluene	S15-Ap00913	CP	%	107		70-130	Pass	
Ethylbenzene	S15-Ap00913	CP	%	101		70-130	Pass	
m&p-Xylenes	S15-Ap00913	CP	%	109		70-130	Pass	
o-Xylene	S15-Ap00913	CP	%	107		70-130	Pass	
Xylenes - Total	S15-Ap00913	CP	%	108		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH C6-C10	S15-Ap00913	CP	%	114		70-130	Pass	
TRH >C10-C16	S15-Ap00913	CP	%	94		70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C10-C14	S15-Ap00911	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH C15-C28	S15-Ap00911	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH C29-C36	S15-Ap00911	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	S15-Ap00911	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	S15-Ap00911	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	S15-Ap00911	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	S15-Ap00911	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	S15-Ap00911	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Chromium (filtered)	S15-Ap00911	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	S15-Ap00911	CP	mg/L	0.003	0.003	2.0	30%	Pass
Lead (filtered)	S15-Ap00911	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury (filtered)	S15-Ap00911	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	S15-Ap00911	CP	mg/L	0.002	0.002	5.0	30%	Pass
Zinc (filtered)	S15-Ap00911	CP	mg/L	0.027	0.025	8.0	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S15-Ap00912	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S15-Ap00912	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	S15-Ap00912	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	S15-Ap00912	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	S15-Ap00912	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
o-Xylene	S15-Ap00912	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	S15-Ap00912	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S15-Ap00912	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
TRH C6-C10	S15-Ap00912	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
TRH C6-C10 less BTEX (F1)	S15-Ap00912	CP	mg/L	< 0.02	< 0.02	<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
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.

Authorised By

Charl Du Preez	Analytical Services Manager
Ivan Taylor	Senior Analyst-Metal (NSW)
Ryan Hamilton	Senior Analyst-Organic (NSW)
Ryan Hamilton	Senior Analyst-Volatile (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

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Attachment E - Laboratory Quality Assurance and Quality Control Results

Field Program groundwater

Intra-laboratory duplicate samples were collected and analysed as part of the groundwater 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 C_o = Analyte concentration of the original sample
 C_d = 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. Groundwater 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 tested are:

- Duplicate sample MW04, nickel failed the internal lab duplicate analysis (RPD 67%).
- Duplicate sample MW04, TRH C16 – C34 fraction failed the internal lab duplicate analysis (RPD 67%).
- Duplicate sample MW04, TPH C15 – C28 failed the internal lab duplicate analysis (RPD 67%).
- Duplicate sample MW04, TPH C10 – C36 failed the internal lab duplicate analysis (RPD 67%).

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 01 April 2015, one to two days after sampling on the 30th and 31st of March 2015.

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.

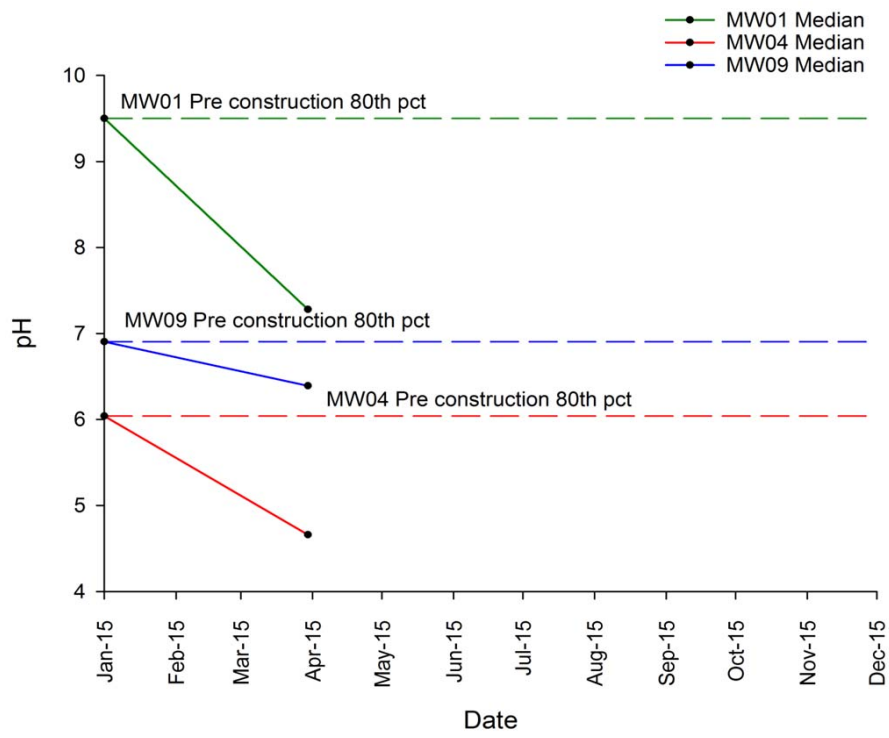
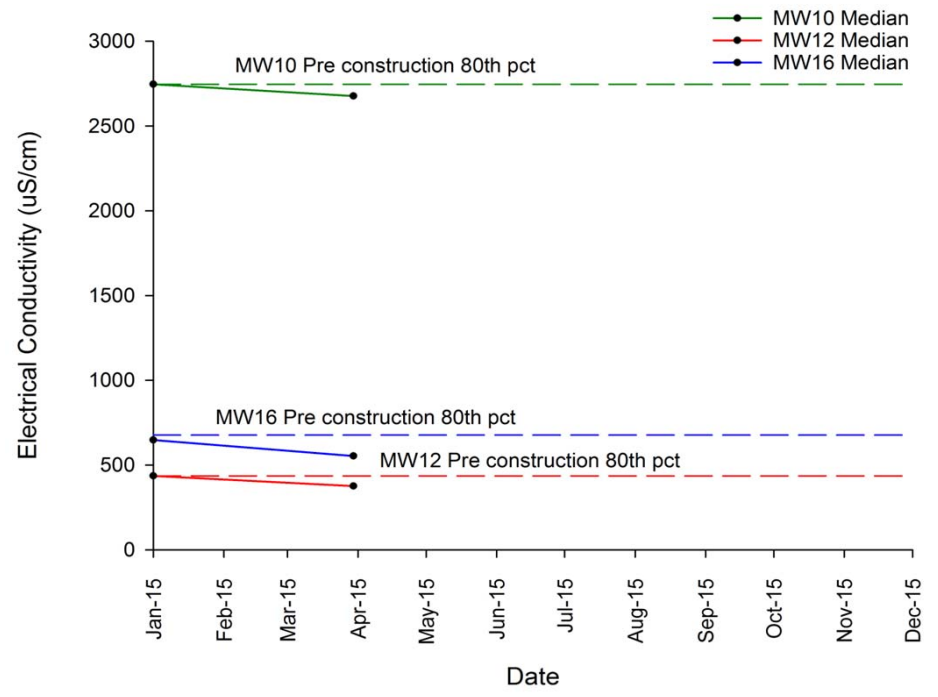
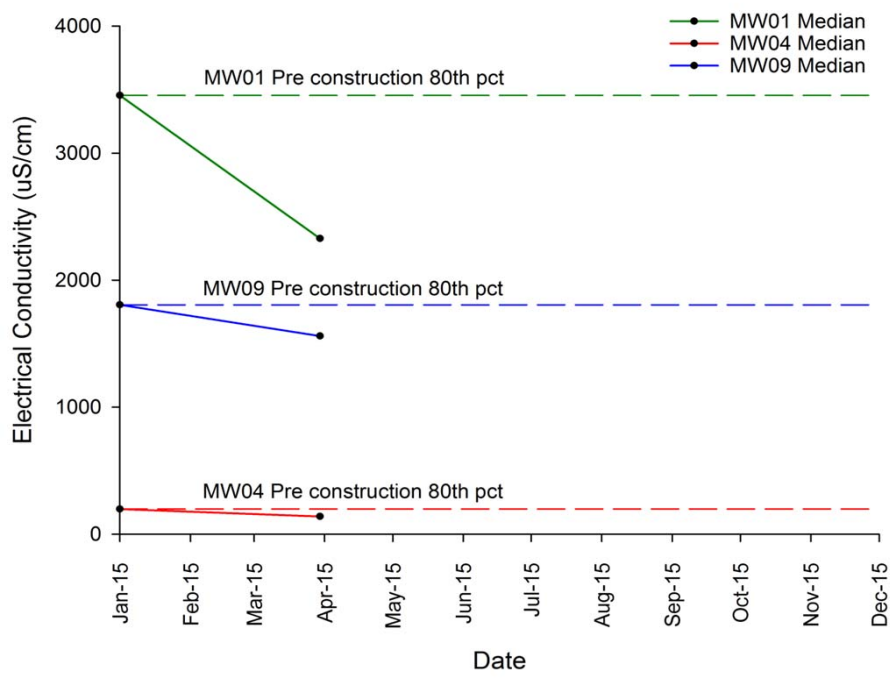
Summary of Quality Assurance / Quality Control Results

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.

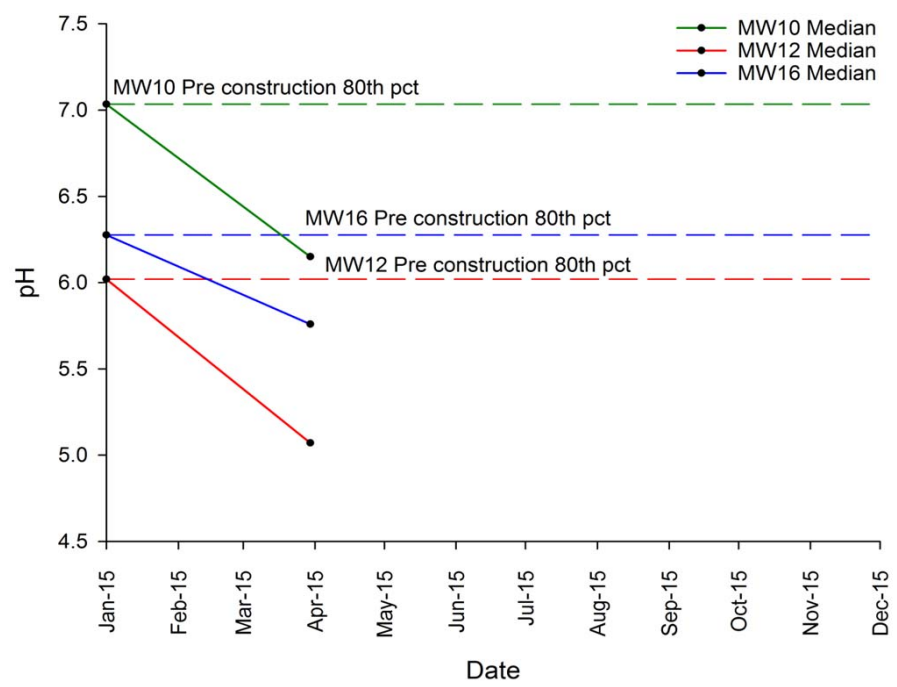
Attachment F - Control Charts and Result Graphs



Electrical Conductivity



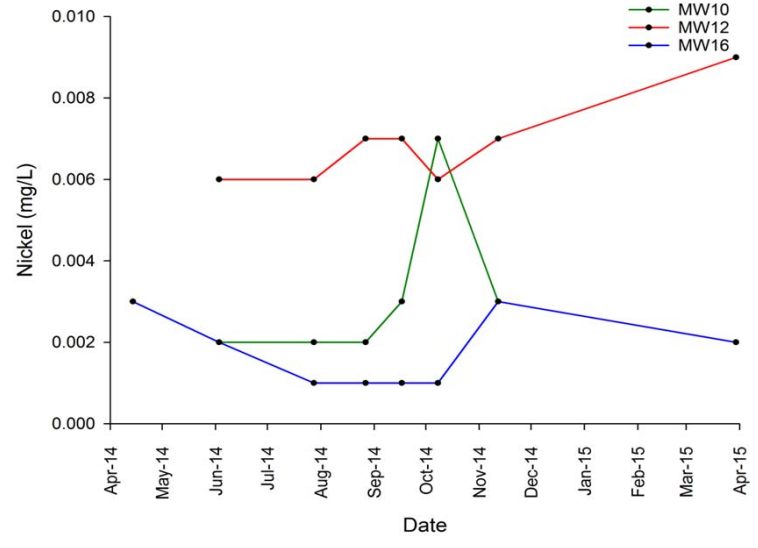
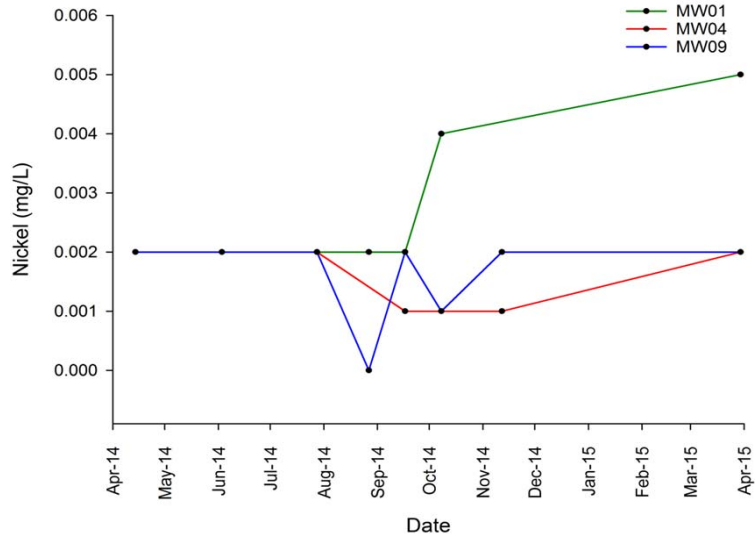
pH



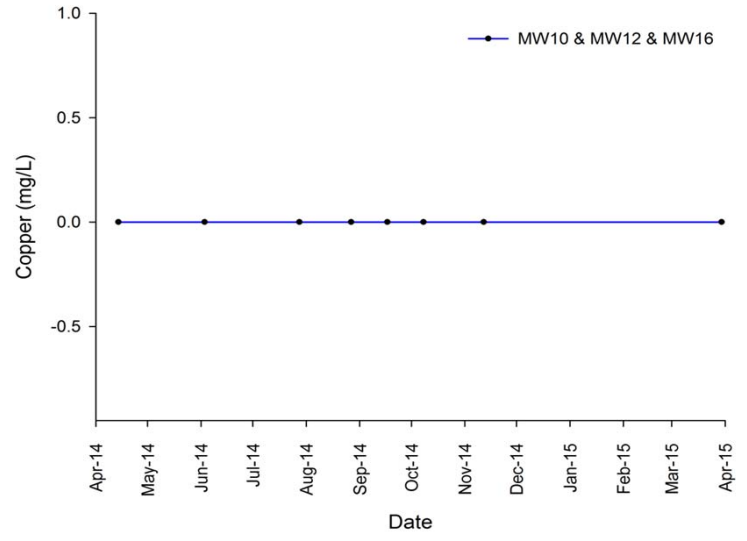
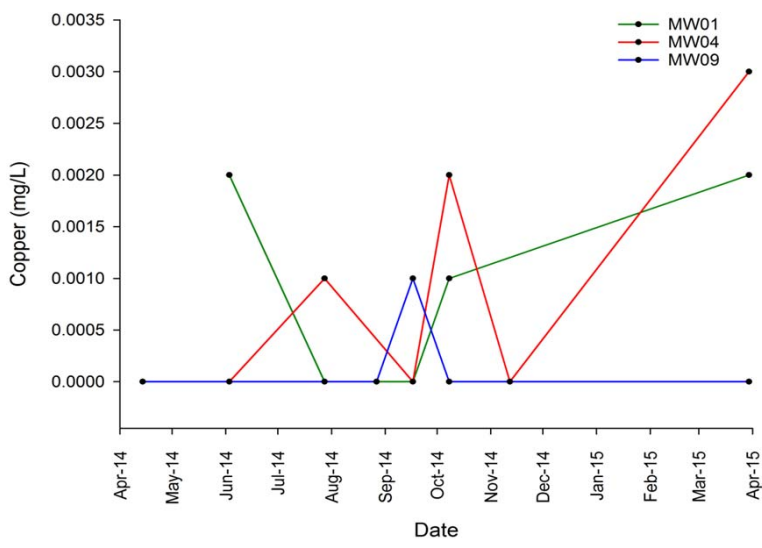


Attachment F Result Graphs

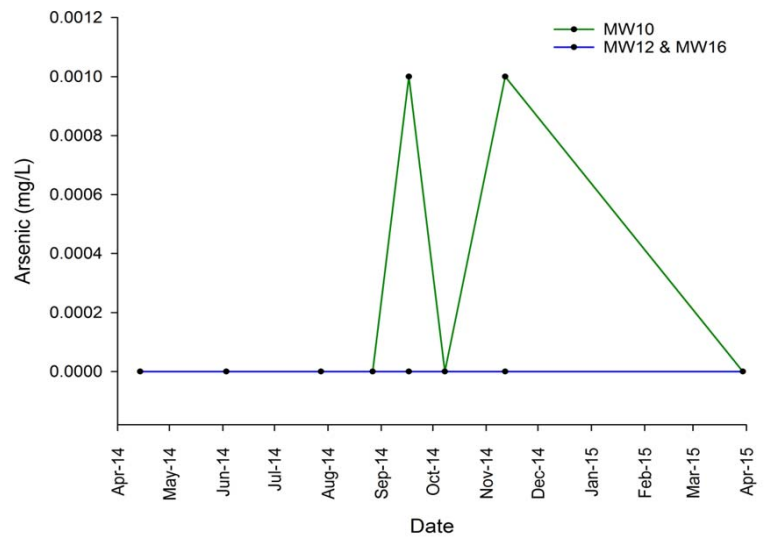
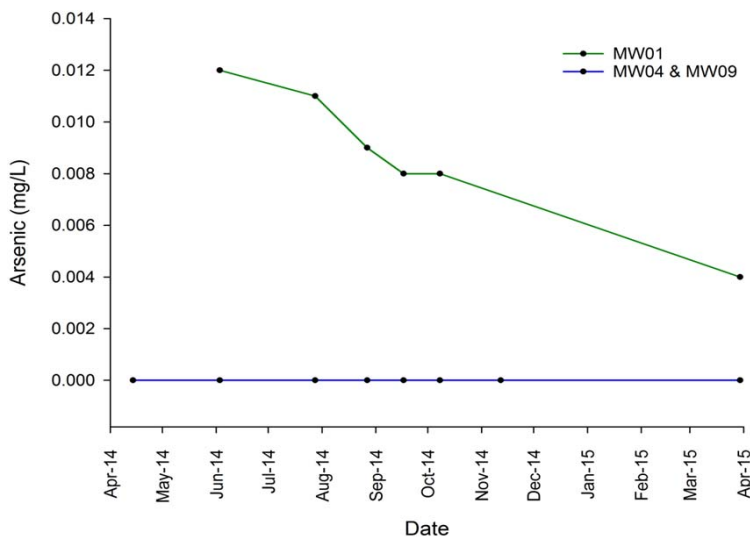
Nickel



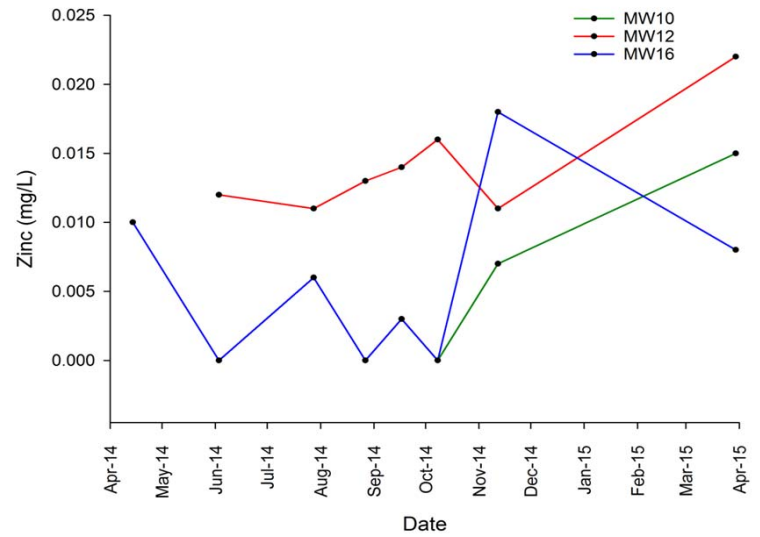
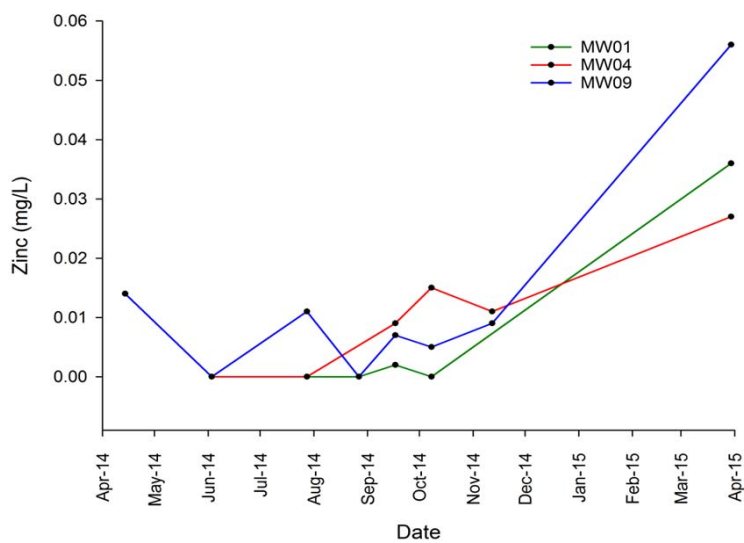
Copper



Arsenic



Zinc



26 August 2015

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

Our ref: 21/24306
209690
Your ref:

Dear James,

Groundwater Monitoring Event 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 Pty Ltd (GHD) completed a quarterly round of groundwater monitoring at six locations (namely MW01, MW04, MW09, MW10, MW12 and MW16) which is the second of its nature undertaken (the first was completed in March 2015).

This letter report documents the findings of second groundwater sampling (Event 2) undertaken since the commencement of construction.

2 Field and Analytical Program

The groundwater sampling was undertaken at the six nominated groundwater monitoring wells on 29 June 2015; refer to Figure 1, Attachment A, depicting the monitoring well locations. This quarterly groundwater sampling event was conducted in accordance with the sampling program and protocols provided in the following documents:

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

Groundwater field parameters were measured during sampling including temperature, pH, electrical conductivity (EC), dissolved oxygen (DO) and reduction-oxidation potential (redox). The readings are summarised in Table B1, Attachment B. GHD's detailed field record sheets and calibration certificates are provided in Attachment C and indicate suitable calibration of the water quality meter prior to use.

Water samples were submitted to a National Association of Testing Authorities (NATA) certified testing laboratory (Eurofins | Mgt) with the following analysis undertaken:

- Total Petroleum Hydrocarbons (TPH).
- Benzene, Toluene, Ethyl-benzene and Xylene (BTEX).
- Heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn) dissolved.

Each sample was field filtered prior to laboratory analysis for heavy metals.

One duplicate sample was collected, namely DUPL, from well MW04. GHD notes the amber sampling vial containing groundwater collected from well MW04 was broken in transit and therefore the laboratory was not able to analyse for some TPH components from this sample. Given no concentrations of these hydrocarbon fractions were detected, during the past sampling event, the loss of this sample is not considered critical.

3 Results and Discussion

This section presents control charts and discusses results (with regard to exceedances of criteria or inconsistencies in the groundwater results for Event 2) in accordance with the following:

- GHD's letter report limitations provided in Section 4.
- 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.

3.1 Groundwater Elevations

The rainfall within Broughton Creek catchment and the groundwater elevations within monitored wells are presented in Figure 2, Attachment A. The rainfall data was obtained from the NSW Office of Water website (<http://realtimedata.water.nsw.gov.au/water.stm>).

The recorded groundwater levels indicate the majority of wells are relatively stable with the exception of MW01, which showed an increasing groundwater elevation compared with the previous pre-construction observations (i.e. pre-December 2014). The increase in groundwater elevation at MW01 is interpreted as a response to the recorded rainfall. A decrease in groundwater elevation is the expected response associated with construction activities near to MW01. A longer-term response was evident in MW04, MW09, MW10, MW12, and MW16 standing water levels.

3.2 Groundwater Quality Sampling Results

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

There were no visual or olfactory signs of contamination observed at any of the sampling points during the groundwater investigation. Groundwater was generally described as clear to slightly cloudy (grey).

Groundwater laboratory 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 documents are provided in Attachment D.

Groundwater quality parameters and chemical concentrations outside of the ranges present within the screening criteria are summarised in Table 1, Attachment B. The findings suggest groundwater quality is above some screening criteria at a number of locations throughout the catchment. Naphthalene and Zinc concentrations were exceeded in the majority of samples. Electrical conductivity and pH readings were outside of the ADWG (Aesthetic) criteria indicating the groundwater is not suitable from an aesthetic drinking water perspective. All results are well below the ANZECC Stock Watering criteria indicating suitability for this purpose.

Table 1 Summary of Water Quality Screening

Analyte	Units	Screening Criteria	No. Locations Exceeding Adopted Criteria	Minimum value	Maximum value
pH (field)	pH units	6.5 - 8.5 (ADWG Aesthetic)	4	5.47 (MW12)	7.37 (MW01)
Electrical Conductivity (field)	us/cm	600 (ADWG Aesthetic)	3	143.9 (MW04)	2,369 (MW10)
Zinc dissolved (laboratory)	mg/L	0.008 (ANZECC 2000 Freshwater 95%)	5	0.006 (MW16)	0.053 (MW01)
Naphthalene (laboratory)	µg/L	16* (ANZECC 2000 Freshwater 95%)	6	<20 (all)	<20 (all)

Note: * EQL is greater than the criteria and not representative of an exceedance of criteria, trace analysis recommended in future.

Exceedances of these analytes were also reported during the pre-construction phase of monitoring. Further discussion of this rounds results with regards to pre-construction data are presented in Sections 3.2.1 and 3.2.2.

The laboratory limit for naphthalene reporting is slightly above the selected criteria for freshwater ecosystems. This is not considered to represent an issue as the concentrations in the well would need to be significantly above the reporting limit to be present at concentrations above criteria at down gradient ecosystems in surface water.

An assessment of the field quality control sampling is provided in Table B3, Attachment B and suggests that there were no unacceptable differences in the primary (MW04) and duplicate sample (DUPL) analysed.

A discussion of the field and laboratory quality assurance and quality control findings is provided in Attachment E.

3.2.1 Control Charts

In accordance with the assessment criteria documented in the monitoring plans and summarised in Section 2, the control charts have been developed for electrical conductivity (field) and pH (field). The remaining analytes with detectable concentrations have been assessed using other methods and are discussed in the following sections.

The groundwater control charts compare pre-construction (reference) data with construction and operation (test) data. The 'reference' data is presented as an 80th percentile of the pre-construction monitoring, while the 'test' data represent the median of the sampling. The control charts for Event 2 are presented in Attachment F.

The control charts suggest that the results are generally consistent with previous rounds. There are no exceedances of the 80th percentile reference data, which suggests that the wells are not being significantly influenced by construction works.

3.2.2 Results Graphs

The concentrations for dissolved heavy metals (with detectable concentrations) were plotted in time series to assess the changes pre and during construction and the emergence of trends. Control charts were considered unsuitable in this instance as metals data sets generally have a high percentage of values below detection limits. This resulted in identified exceedances in the control charts that were

associated with statistical issues rather than trends in the data. Time series results graphs were created for the following metals (which had detectable concentrations):

- Nickel.
- Copper.
- Arsenic.
- Zinc.

The results graphs for Event 2 are presented in Attachment F.

The results graphs for nickel and arsenic are well below the selected criteria human health and ecological criteria. Further to this, with the inclusion of the latest results, there does not appear to be any increasing trends. As such, any changes, whether associated with background variations or associated with construction activities are not representing a significant risk.

The results graphs for copper for wells MW01 and MW04 appeared to have had a significant increase in the first construction monitoring event (March 2015). The concentrations were above the selected ANZECC (2000) freshwater criteria for the protection of aquatic ecosystems but were less than half of the human health drinking water criteria of 2 mg/L. The results from the latest (July 2015) monitoring event suggest a reduction in concentration to within the range of pre-construction conditions (Pre-December 2014) and below the selected ANZECC (2000) aquatic ecosystems criteria. This suggests that there is no increasing trend associated with the emergence of impacts from construction and that the previously elevated concentrations were more likely to be associated with natural background variations.

The results graphs for zinc for wells MW01, MW04, MW09, MW10 and MW12 have elevated concentrations relative to pre-construction conditions (Pre-December 2014) and the selected ANZECC (2000) freshwater criteria for the protection of aquatic ecosystems. There is no human health value for zinc. Concentrations were reported above the freshwater aquatic ecosystems criteria during baseline monitoring, however, these were lower than those reported after commencement of construction. Concentrations in MW04, MW09 and MW12 have fallen in the latest monitoring event. This suggests that there is no increasing trend associated with the emergence of impacts from construction and that the previously elevated concentrations were more likely to be associated with natural background variations at these wells. Concentrations in MW01 and MW10, however, appear to have an ongoing upward trend since commencement of construction.

It is expected that the increasing trends are due to natural variation in background groundwater conditions, as opposed to construction activities, for the following reasons:

- Groundwater flow velocities are generally slow and therefore it is unlikely that 'construction impacted' groundwater would not have migrated to the wells at this stage.
- The metals present in groundwater are unlikely to be associated with construction activities.

Despite the above conclusions, it is plausible that the elevated concentrations could be associated with construction activities. As such, if elevated concentrations and increasing trends are present in following events a more detailed assessment of the trends should be considered.

Concentrations of TPH and BTEX (including naphthalene) were below detection and as such the results were not graphed.

Event 2 results suggest that construction works are currently having no significant impact on groundwater quality at the site, although further consideration of localised trends in metals may be required if the observed localised trends persist.

3.3 Recommendations

The next quarterly groundwater sampling event (Event 3) will be completed by GHD in September 2015.

There is elevated metals in groundwater in some wells relative to pre-construction conditions which are most likely to be variations in background conditions, however if successive monitoring indicates a consistent elevated trends, further investigations may be required. This may include recommendations to increase monitoring frequency to better resolve concentration variations of dissolved metals in groundwater.

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,

A handwritten signature in blue ink, appearing to be 'ALF'.

Ashlee La Fontaine
Environmental Scientist
02 9239 7122

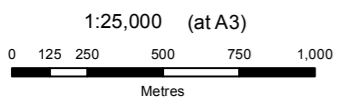
A handwritten signature in black ink, appearing to be 'S Charteris'.

Stefan Charteris
Senior Hydrogeologist
02 9239 7472

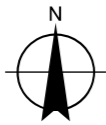
Attachment A - Figures

Figure 1: Groundwater Sampling Locations

Figure 2: Rainfall vs Groundwater Elevations in Monitoring Wells



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



LEGEND

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



Roads and Maritime Services
 Water Quality Monitoring

Job Number | 61-24306
 Revision | A
 Date | 28 Apr 2015

Groundwater Sampling Locations

Figure 1

\\ghdnet\ghd\AU\Sydney\Projects\21\24306\GIS\Maps\MXD\21_24306_2002_GroundWatersamplingLocations.mxd
 © 2010. While GHD has taken care to ensure the accuracy of this product, GHD and DATA CUSTODIAN, make no representations or warranties about its accuracy, completeness or suitability for any particular purpose.
 GHD and DATA CUSTODIAN, cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason.
 Data Source: NSW Department of Lands: DTDB and DCDB - 2012. Created by: mweber

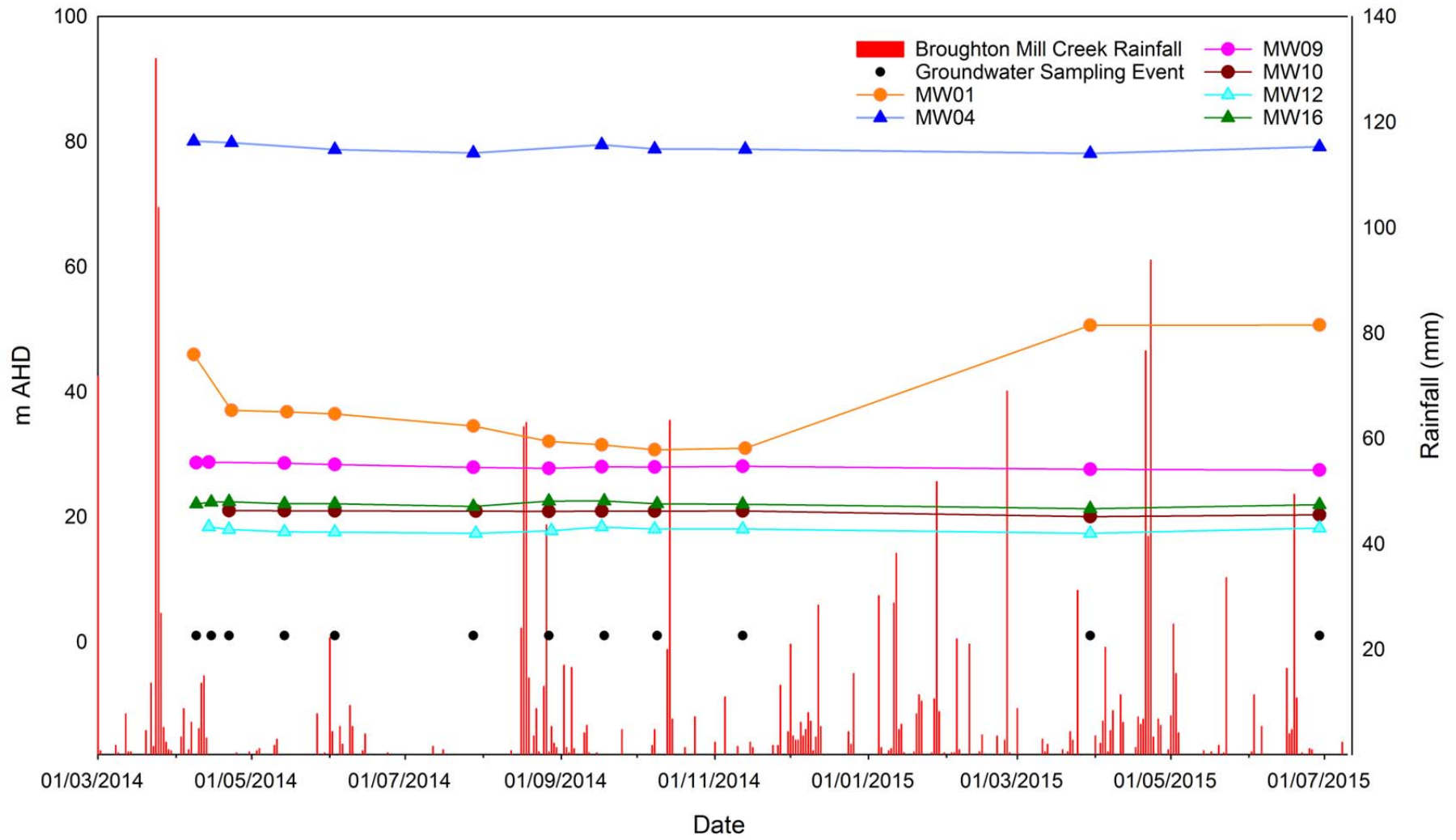


Figure 2 Rainfall vs Groundwater Elevations in Monitoring Wells

Attachment B - Tabulated Results

Table B1: Event 2 – Field Parameters

Table B2: Event 2 – Analytical Results

Table B3: Event 2 – RPD Results



Attachment B
Table B1
Event 2 - Field Parameters

	Field				
	Dissolved Oxygen (Field)	Electrical Conductivity (Field)	pH (Field)	Redox (Field)	Temperature (Field)
	mg/L	µS/cm	pH Units	mV	oC
EQL					
ADWG 2011 Aesthetic		600	6.5-8.5		
ADWG 2011 Health					
ANZECC 2000 - Stock Watering					
ANZECC 2000 FW 95%			6.5 - 8.5		

Field ID	Date	SampleCode					
MW01	29/06/2015	MW01_29 Jun 15 -	6.96	2330	7.37	149.7	16.7
MW04	29/06/2015	MW04_29 Jun 15 -	0.61	143.9	5.75	186.6	17.3
MW09	29/06/2015	MW09_29 Jun 15 -	0.19	1606	6.34	142.4	17.5
MW10	29/06/2015	MW10_29 Jun 15 -	7.76	2369	6.7	68.5	17
MW12	29/06/2015	MW12_29 Jun 15 -	4.97	346.8	5.47	170.1	17.5
MW16	29/06/2015	MW16_29 Jun 15 -	0.16	505	5.86	146.5	16.9



**Attachment B
Table B2
Event 2 Analytical Results**

	Heavy Metal							Organic										TPH				Volatile				
	Arsenic (Filtered) mg/L	Cadmium (Filtered) mg/L	Chromium (III+VI) (Filtered) mg/L	Copper (Filtered) mg/L	Lead (Filtered) mg/L	Mercury (Filtered) mg/L	Nickel (Filtered) mg/L	Zinc (Filtered) mg/L	C6-C10 minus BTEX (F1) µg/L	C6 - C10 Fraction µg/L	>C10-C16 minus Naphthalene (F2) µg/L	>C10 - C16 Fraction µg/L	>C16 - C34 Fraction (F3) µg/L	>C34 - C40 Fraction (F4) µg/L	C6 - C 9 Fraction µg/L	Naphthalene µg/L	C10 - C14 Fraction µg/L	C15 - C28 Fraction µg/L	C29 - C36 Fraction µg/L	C10 - C36 (Sum of Total) µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene (o) µg/L	Xylene (m & p) µg/L	Xylene Total µg/L
EQL	0.001	0.0002	0.001	0.001	0.001	0.0001	0.001	0.001	20	20	50	50	100	100	20	20	50	100	100	100	1	1	1	1	2	3
ADWG 2011 Aesthetic				1				3													25	3			20	
ADWG 2011 Health	0.01	0.002		2	0.01	0.001	0.02														1	800	300		600	
ANZECC 2000 FW 95%	0.013	0.0002	0.001	0.0014	0.0034	0.0006	0.011	0.008							16						950			350		
ANZECC 2000 Stock Watering	0.5	0.01	1	0.5	0.1	0.002	1	20																		
Field ID	Date																									
MW01	29/06/2015	0.002	<0.0002	<0.001	0.001	<0.001	<0.0001	0.003	0.053	<20	<20	<50	<50	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<3
MW04	29/06/2015	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	0.001	0.01	<20	<20	<50	<50	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<3
MW09	29/06/2015	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.03	<20	<20	<50	<50	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<3
MW10	29/06/2015	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	0.003	0.031	<20	<20	<50	<50	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<3
MW12	29/06/2015	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	0.006	0.019	<20	<20	<50	<50	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<3
MW16	29/06/2015	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	0.002	0.006	<20	<20	<50	<50	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<3



**Attachment B
Table B3
Event 2 RPD Results**

Fulton Hogan
Berry to Foxground
Water Quality Monitoring Program

Field Duplicates (WATER)
Filter: Lab_Report_Number in('463584')

Lab Report Number	463584	463584	
Field ID	MW04	DUPL	RPD
Sampled Date/Time	29/06/2015	29/06/2015	

Method_T	ChemName	Units	EQL			
Heavy Met	Arsenic (Filtered)	mg/l	0.001	<0.001	<0.001	0
	Cadmium (Filtered)	mg/l	0.0002	<0.0002	<0.0002	0
	Chromium (III+VI) (Filtered)	mg/l	0.001	<0.001	<0.001	0
	Copper (Filtered)	mg/l	0.001	<0.001	<0.001	0
	Lead (Filtered)	mg/l	0.001	<0.001	<0.001	0
	Mercury (Filtered)	mg/l	0.0001	<0.0001	<0.0001	0
	Nickel (Filtered)	mg/l	0.001	0.001	<0.001	0
	Zinc (Filtered)	mg/l	0.001	0.01	0.01	0
al						
Organic	C6 - C10 Fraction	µg/l	20	<20	<20	0
	C6 - C 9 Fraction	µg/l	20	<20	<20	0
Volatile	Benzene	µg/l	1	<1	<1	0
	Toluene	µg/l	1	<1	<1	0
	Ethylbenzene	µg/l	1	<1	<1	0
	Xylene (o)	µg/l	1	<1	<1	0
	Xylene (m & p)	µg/l	2	<2	<2	0
	Xylene Total	µg/l	3	<3	<3	0

*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 C - Field Sheets and Calibration Certificates

GROUNDWATER PURGING AND SAMPLING FIELD SHEET



PROJECT DETAILS

Project Number: 21/24306	Borehole ID: MW01
Project Name: Foxground to Berry Bypass	Sample ID: MW01
Client: Fulton Hogan	Date: 29/6/15
Site: Foxground to Berry Bypass	Sampler: JC JD
Well Condition (i.e road box, locked etc): locked	Purge Method: Low Flow
Depth to Water Table Pre-purge (from TOC): 1.307m	Sample Method: Low Flow
Depth of PSH (from TOC):	Casing Type: PVC
Depth to Bottom of Casing (BOC) from TOC: 22.875m	Well Diameter: 50mm
Casing Stickup:	Calculated Bore Volume(L):
Depth to Water Table Post - purge (from TOC): 9.301m	QA Collected:

FIELD PARAMETERS (RECORDED USING YSI Pro Plus)

Time	Volume (L)	Depth to Water from TOC(m)	D.O (mg/L)	E.C (us/cm)	pH	Eh (mv)	Temp (°C)	Comments
9.27	1	2.200	7.66	2232	6.72	170.3	15.6	clear
9.31	2	2.857	7.20	2235	6.83	167.5	15.7	clear
9.33	4	3.611	6.90	2231	6.91	165.1	15.6	clear
9.35	6	4.090	6.85	2221	7.03	161.6	15.4	clear
9.40	7	4.549	6.90	2227	7.15	157.9	15.3	clear
9.42	8	5.091	7.25	2263	7.20	156.0	15.7	clear
9.45	10	5.771	7.09	2326	7.25	154.3	16.3	clear
9.48	12	7.115	7.25	2314	7.32	151.6	16.6	clear
9.51	13	7.676	7.01	2322	7.35	150.7	16.7	"
9.53	15	8.199	6.96	2330	7.37	149.7	16.7	"

Post Sample Parameters

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Number of Bottles: 4

Comments: Construction activity above well on top of hill.

Well Volume Calculation (50mm diameter) 3.8xH (H=height of water column)

GROUNDWATER PURGING AND SAMPLING FIELD SHEET



PROJECT DETAILS

Project Number: 21/24306	Borehole ID: MW04
Project Name: Foxground to Berry Bypass	Sample ID: MW04
Client: Fulton Hogan	Date: 29/6/15
Site: Foxground to Berry Bypass	Sampler: JC JD
Well Condition (i.e road box, locked etc): <i>locked</i>	Purge Method: Low Flow
Depth to Water Table Pre-purge (from TOC): <i>0.830 m</i>	Sample Method: Low Flow
Depth of PSH (from TOC):	Casing Type: PVC
Depth to Bottom of Casing (BOC) from TOC: <i>7.590 m</i>	Well Diameter: 50mm
Casing Stickup:	Calculated Bore Volume(L):
Depth to Water Table Post - purge (from TOC): <i>2.322 m</i>	QA Collected:

FIELD PARAMETERS (RECORDED USING YSI Pro Plus)

Time	Volume (L)	Depth to Water from TOC(m)	D.O (mg/L)	E.C (us/cm)	pH	Eh (mv)	Temp (°C)	Comments
10.37	1.1	1.639	0.91	146.3	7.52	171.0	17.3	slightly turbid (grey)
10.39	3	1.788	0.57	143.6	6.96	178.2	17.3	" "
10.40	5	1.822	0.50	143.6	6.75	180.8	17.3	" "
10.41	7	1.917	0.49	144.1	6.50	181.6	17.3	" "
10.43	9	1.992	0.50	143.6	6.35	182.1	17.3	" "
10.45	11	2.043	0.63	143.6	6.11	184.7	17.3	cloudy (slightly)
10.49	14	2.104	0.60	143.7	6.01	185.7	17.3	" "
10.51	16	2.120	0.58	143.8	5.92	187.2	17.3	" "
10.53	18	2.111	0.57	143.9	5.86	187.0	17.3	" "
10.54	20	2.132	0.59	143.9	5.82	186.9	17.3	" "
10.56	22	2.167	0.74	143.9	5.81	185.7	17.4	" "
10.58	24	2.184	0.61	143.9	5.75	186.6	17.3	a little less cloudy

Post Sample Parameters

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Number of Bottles: *8* Comments: *DUPL, outside of PVC casing / within metal protection casing filled with water.*

Well Volume Calculation (50mm diameter) 3.8xH (H=height of water column)

Construction on site

GROUNDWATER PURGING AND SAMPLING FIELD SHEET



PROJECT DETAILS		Borehole ID
Project Number: 21/24306		MW12
Project Name: Foxground to Berry Bypass		Sample ID: MW12
Client: Fulton Hogan		Date: 29/6/15
Site: Foxground to Berry Bypass		Sampler: JC JD
Well Condition (i.e road box, locked etc): <i>locked</i>		Purge Method: Low Flow
Depth to Water Table Pre-purge (from TOC): <i>6.190m</i>		Sample Method: Low Flow
Depth of PSH (from TOC):		Casing Type: PVC
Depth to Bottom of Casing (BOC) from TOC: <i>10.676m</i>		Well Diameter: 50mm
Casing Stickup:		Calculated Bore Volume(L):
Depth to Water Table Post - purge (from TOC): <i>7.345m</i>		QA Collected:

FIELD PARAMETERS (RECORDED USING YSI Pro Plus)

Time	Volume (L)	Depth to Water from TOC(m)	D.O (mg/L)	E.C (us/cm)	pH	Eh (mv)	Temp (°C)	Comments
1.47	1	6.580	1.84	357.5	7.27	142.4	18.2	Slightly cloudy (grey)
1.49	2	6.090	1.62	351.0	6.68	161.5	18.1	" "
1.52	4	7.019	3.07	348.5	6.21	170.4	18.0	" "
1.54	6	7.139	3.90	347.1	5.96	173.3	17.8	" "
1.57	8	7.230	4.20	347.0	5.75	176.4	17.7	" "
1.59	10	7.319	3.69	347.3	5.59	177.2	17.6	" "
2.02	12	7.400	4.56	346.4	5.51	172.7	17.5	" "
2.04	13	7.420	4.77	346.7	5.49	171.5	17.5	" "
2.06	14	7.471	4.97	346.8	5.47	170.1	17.5	

Post Sample Parameters

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Number of Bottles: *4* Comments:

Well Volume Calculation (50mm diameter) 3.8xH (H=height of water column)



AirMet Scientific P/L
7-11 Ceylon Street
Nunawading
Victoria 3131, Australia

Calibration Certificate

This document hereby certifies that this instrument detailed has been calibrated to the parameters listed below.

Certificate Print Date: 27 October, 2014

Call ID: 00164934

Calibration Date: 27 October, 2014

Arrow Job Code: 206745.

Next Calibration Due: 27 April, 2015

Customer: GHD Pty Ltd	Type: Water Meter
Model: WATERMETER	Serial No: 13J100151
Description: Generic water meter	

Sensor	Serial No	Standard Solutions	Certified	Solution # (Bottle #)	Instrument Reading	Units
Dissolved Oxygen				230	0	%
EC		Electro solution		LG1689	2750	ms
Ph		Rowe Scientific Ph4		LK2362	4.05	Ph
Ph		Rowe Scientific Ph7		LF1041	6.96	Ph
Ph		Rowe Scientific Ph10		LL1545	10.00	Ph
Redox		Zobell 231		KH1997/KH1995	226.2	mV
Temp		Brand 1 Temp			23	Degrees

Completed by: Kurt Avallone

Signed: 

Australian Standard Alarm Levels

Attachment D - Laboratory Certificates



Sydney
 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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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 Page 1 of 1

Company Name : GHD Pty Ltd	Contact Name : Stefan Charteris 02 9239 7472	Purchase Order :	COC Number :
Office Address : Level 15, 133 Castlereagh Street, Sydney NSW 2000	Project Manager : Stefan Charteris	PROJECT Number : 21/2430601	Eurofins mgt quote ID : 15553TGND
	Email for results : stefan.charteris@ghd.com	PROJECT Name : Foxground to Berry	Data output format:

Special Directions & Comments :	Analytes										Some common holding times (with correct preservation). <small>For further information contact Eurofins</small>			
	TPH	BTEX	Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)								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

Eurofins mgt DI water batch number:																				Containers:								Sample comments:		
Sample ID	Date	Matrix		TPH	BTEX	Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)																1LP	200ml	125P	1LA	40mL vial	125mL A	Jar		
1	MW01	29/06/15	w	x	x	x																	1			1	2			
2	MW04	29/06/15	w	x	x	x																	1			1	2			Metals have been field filtered.
3	MW09	29/06/15	w	x	x	x																	1			1	2			
4	MW10	29/06/15	w	x	x	x																	1			1	2			
5	MW12	29/06/15	w	x	x	x																	1			1	2			
6	MW16	29/06/15	w	x	x	x																	1			1	2			
7	DUPL	29/06/15	w	x	x	x																	1			1	2			
8																														
9																														
10																														
11																														
12																														
13																														
14																														
15																														
16																														

Relinquished By: Jane Curran	Received By:	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Date & Time : 30/06/2015 11 am	Date & Time :		1 DAY <input type="checkbox"/> 2 DAY <input type="checkbox"/> 3 DAY <input type="checkbox"/>	<input type="checkbox"/> Courier <input type="checkbox"/> Hand Delivered <input type="checkbox"/> Postal	Report number:
Signature:	Signature:		5 DAY <input checked="" type="checkbox"/> 10 DAY <input type="checkbox"/> Other:	Courier Consignment # :	

Seen 01 JUL 2015 09:27

Sample Receipt Advice

Company name: **GHD Pty Ltd NSW**
Contact name: **Stefan Charteris**
Project name: **FOXGROUND TO BERRY**
Project ID: **21/2430601**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jul 1, 2015 9:27 AM**
Eurofins | mgt reference: **463584**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 8.6 degrees Celsius.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

MW04 AMBER GLASS BROKEN UPON RECEIPT, C10-40 TRH CANCELLED

Contact notes

If you have any questions with respect to these samples please contact:

Charl Du Preez on Phone : or by e.mail: charldupreez@eurofins.com.au

Results will be delivered electronically via e.mail to Stefan Charteris - stefan.charteris@ghd.com.

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 **463584-W**
Project name **FOXGROUND TO BERRY**
Project ID **21/2430601**
Received Date **Jul 01, 2015**

Client Sample ID			MW01 Water	MW04 Water	MW09 Water	MW10 Water
Sample Matrix			S15-JI00401	S15-JI00402	S15-JI00403	S15-JI00404
Eurofins mgt Sample No.			Jun 29, 2015	Jun 29, 2015	Jun 29, 2015	Jun 29, 2015
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	-	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	-	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	-	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	-	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	104	97	103	103
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.02	mg/L	< 0.02	-	< 0.02	< 0.02
TRH C6-C10	0.02	mg/L	< 0.02	-	< 0.02	< 0.02
TRH C6-C10	0.02	mg/L	-	< 0.02	-	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	-	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	-	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	-	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	-	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	-	< 0.1	< 0.1
Volatile Organics						
Naphthalene ^{N02}	0.02	mg/L	-	< 0.02	-	-
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	0.002	< 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	0.003	0.001	< 0.001	0.003
Zinc (filtered)	0.001	mg/L	0.053	0.010	0.030	0.031

Client Sample ID			MW12 Water	MW16 Water	DUPL Water
Sample Matrix			S15-JI00405	S15-JI00406	S15-JI00407
Eurofins mgt Sample No.			Jun 29, 2015	Jun 29, 2015	Jun 29, 2015
Date Sampled					
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1
BTEX					
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	100	101	105
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene ^{N02}	0.02	mg/L	< 0.02	< 0.02	< 0.02
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1
Heavy Metals					
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.006	0.002	< 0.001
Zinc (filtered)	0.001	mg/L	0.019	0.006	0.010

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 - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Jul 02, 2015	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Jul 01, 2015	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Jul 02, 2015	7 Day
Volatile Organics - Method: USEPA 8260 - MGT 350A Volatile Organics by GCMS	Melbourne	Jul 01, 2015	7 Day
Metals M8 filtered - Method: USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury	Melbourne	Jul 01, 2015	28 Day

Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 463584 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jul 1, 2015 9:27 AM Due: Jul 8, 2015 Priority: 5 Day Contact Name: Stefan Charteris
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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Metals M8 filtered	BTEX	Total Recoverable Hydrocarbons	BTEX and Volatile TRH
Laboratory where analysis is conducted								
Melbourne Laboratory - NATA Site # 1254 & 14271					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				
MW01	Jun 29, 2015		Water	S15-JI00401	X	X	X	
MW04	Jun 29, 2015		Water	S15-JI00402	X			X
MW09	Jun 29, 2015		Water	S15-JI00403	X	X	X	
MW10	Jun 29, 2015		Water	S15-JI00404	X	X	X	
MW12	Jun 29, 2015		Water	S15-JI00405	X	X	X	
MW16	Jun 29, 2015		Water	S15-JI00406	X	X	X	
DUPL	Jun 29, 2015		Water	S15-JI00407	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

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

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							
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							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	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							
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							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	115			70-130	Pass	
TRH C10-C14	%	92			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	118			70-130	Pass	
Toluene	%	114			70-130	Pass	
Ethylbenzene	%	111			70-130	Pass	
m&p-Xylenes	%	116			70-130	Pass	
Xylenes - Total	%	116			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	81			75-125	Pass	
TRH C6-C10	%	105			70-130	Pass	
TRH >C10-C16	%	99			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic (filtered)	%	89			80-120	Pass	
Cadmium (filtered)	%	89			80-120	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium (filtered)			%	89			80-120	Pass	
Copper (filtered)			%	87			80-120	Pass	
Lead (filtered)			%	89			80-120	Pass	
Mercury (filtered)			%	84			70-130	Pass	
Nickel (filtered)			%	89			80-120	Pass	
Zinc (filtered)			%	90			80-120	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-JI00509	NCP	%	110			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M15-JI00509	NCP	%	113			70-130	Pass	
Toluene	M15-JI00509	NCP	%	105			70-130	Pass	
Ethylbenzene	M15-JI00509	NCP	%	112			70-130	Pass	
m&p-Xylenes	M15-JI00509	NCP	%	117			70-130	Pass	
o-Xylene	M15-JI00509	NCP	%	98			70-130	Pass	
Xylenes - Total	M15-JI00509	NCP	%	111			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M15-JI00509	NCP	%	78			70-130	Pass	
TRH C6-C10	M15-JI00509	NCP	%	100			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S15-JI00403	CP	%	112			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S15-JI00403	CP	%	112			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S15-JI00407	CP	%	88			70-130	Pass	
Cadmium (filtered)	S15-JI00407	CP	%	88			70-130	Pass	
Chromium (filtered)	S15-JI00407	CP	%	86			70-130	Pass	
Copper (filtered)	S15-JI00407	CP	%	83			70-130	Pass	
Lead (filtered)	S15-JI00407	CP	%	87			70-130	Pass	
Mercury (filtered)	S15-JI00407	CP	%	98			70-130	Pass	
Nickel (filtered)	S15-JI00407	CP	%	85			70-130	Pass	
Zinc (filtered)	S15-JI00407	CP	%	76			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M15-JI00240	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	S15-JI00401	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S15-JI00401	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S15-JI00401	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M15-JI00240	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M15-JI00240	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M15-JI00240	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M15-JI00240	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M15-JI00240	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	M15-JI00240	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M15-JI00240	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
TRH C6-C10	M15-JI00240	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
TRH C6-C10 less BTEX (F1)	M15-JI00240	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
TRH >C10-C16	S15-JI00401	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	S15-JI00401	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	S15-JI00401	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	S15-JI00407	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	S15-JI00407	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	S15-JI00407	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	S15-JI00407	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	S15-JI00407	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury (filtered)	S15-JI00407	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	S15-JI00407	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	S15-JI00407	CP	mg/L	0.010	0.010	2.0	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.

Authorised By

Charl Du Preez	Analytical Services Manager
Carroll Lee	Senior Analyst-Organic (VIC)
Carroll Lee	Senior Analyst-Volatile (VIC)
Emily Rosenberg	Senior Analyst-Metal (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

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Company Name: GHD Pty Ltd NSW Address: Level 15, 133 Castlereagh Street Sydney NSW 2000 Project Name: FOXGROUND TO BERRY Project ID: 21/2430601	Order No.: Report #: 463584 Phone: 02 9239 7100 Fax: 02 9239 7199	Received: Jul 1, 2015 9:27 AM Due: Jul 8, 2015 Priority: 5 Day Contact Name: Stefan Charteris
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Eurofins | mgt Client Manager: Charl Du Preez

Sample Detail					Metals M8 filtered	BTEX	Total Recoverable Hydrocarbons	BTEX and Volatile TRH
Laboratory where analysis is conducted								
Melbourne Laboratory - NATA Site # 1254 & 14271					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				
MW01	Jun 29, 2015		Water	S15-JI00401	X	X	X	
MW04	Jun 29, 2015		Water	S15-JI00402	X			X
MW09	Jun 29, 2015		Water	S15-JI00403	X	X	X	
MW10	Jun 29, 2015		Water	S15-JI00404	X	X	X	
MW12	Jun 29, 2015		Water	S15-JI00405	X	X	X	
MW16	Jun 29, 2015		Water	S15-JI00406	X	X	X	
DUPL	Jun 29, 2015		Water	S15-JI00407	X	X	X	

Attachment E - Laboratory Quality Assurance and Quality Control Results

Field Program Groundwater

Intra-laboratory duplicate samples were collected and analysed as part of the groundwater 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 C_o = Analyte concentration of the original sample
 C_d = 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. Groundwater QA/QC results are presented in Table B3, Attachment B.

There were no discrepancies in GHD's adopted criterion for RPDs calculated for the intra laboratory duplicate pairs for the analytes tested.

Laboratory Program

The NATA certified laboratory utilised for this assessment (i.e. 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 provided as Attachment D. In summary:

- All samples were noted to be correctly preserved.
- Samples were received on the 01 July 2015, two days after sampling on the 29 June 2015, and extracted within allocated holding times.

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.

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.

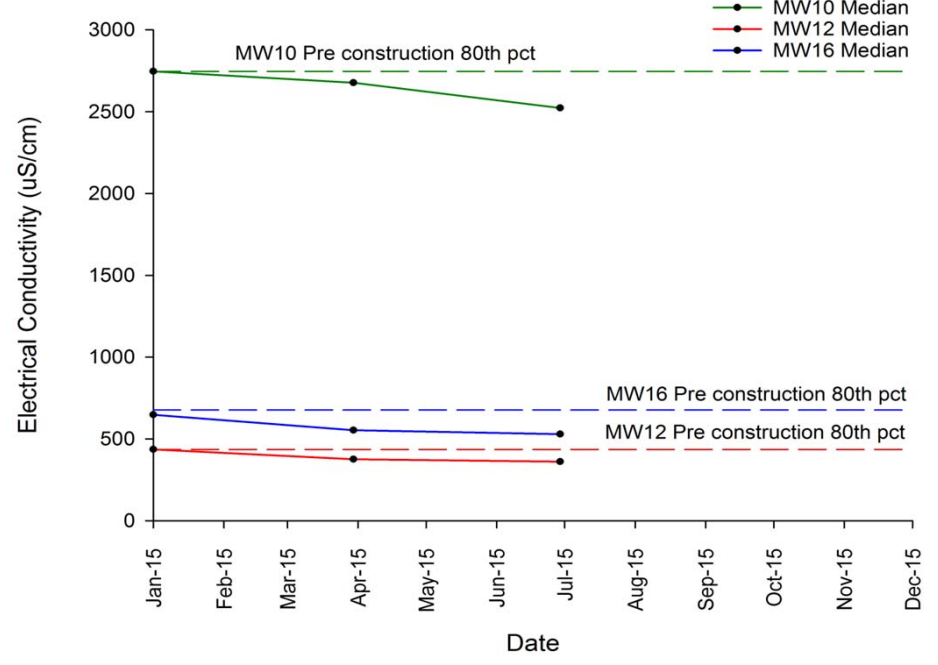
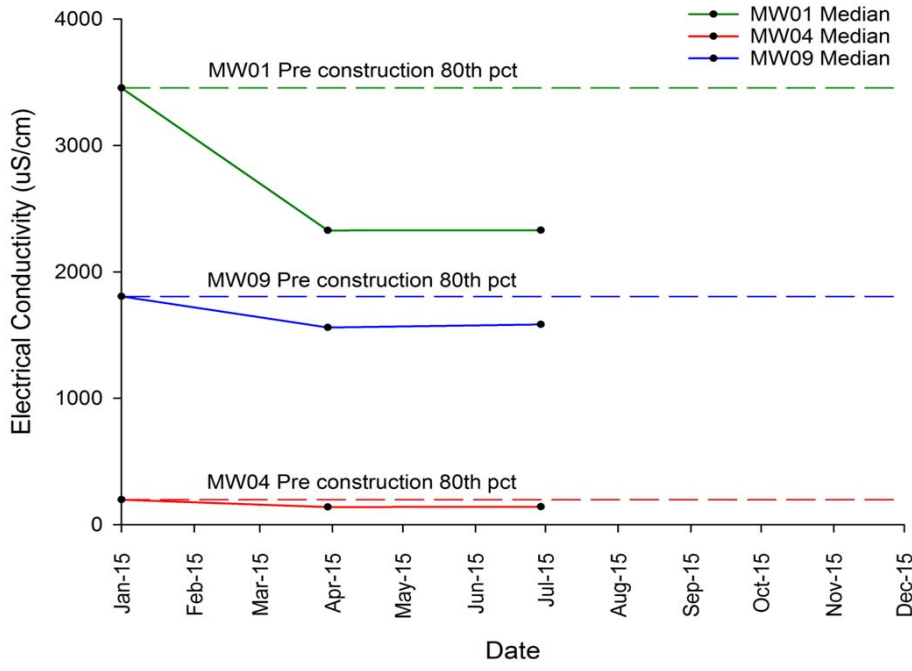
Attachment F - Control Charts and Result Graphs

Control Charts: Electrical Conductivity, pH, Nickel, Copper, Arsenic and Zinc

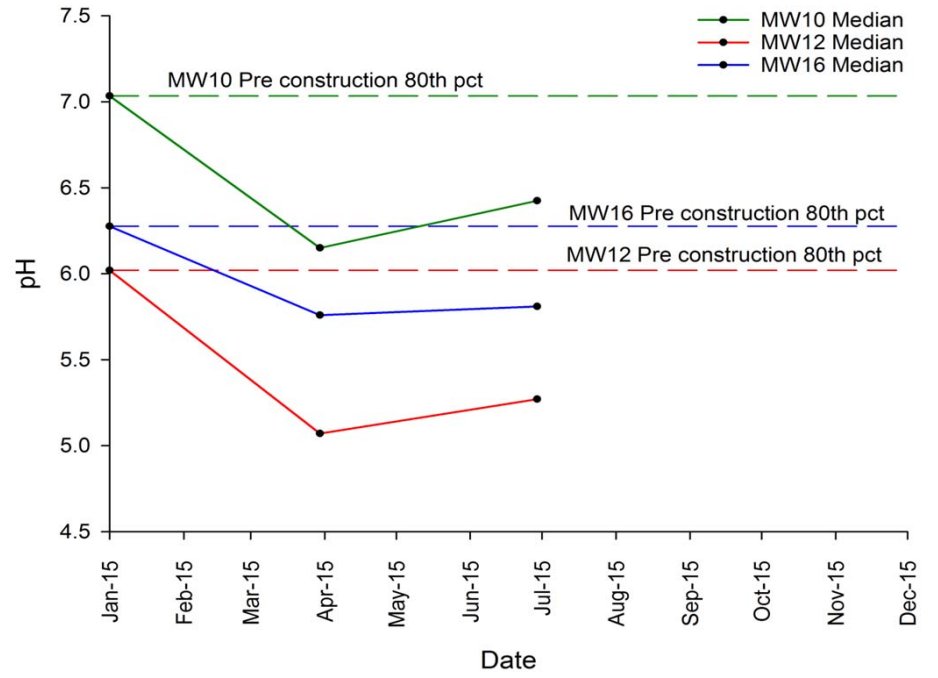
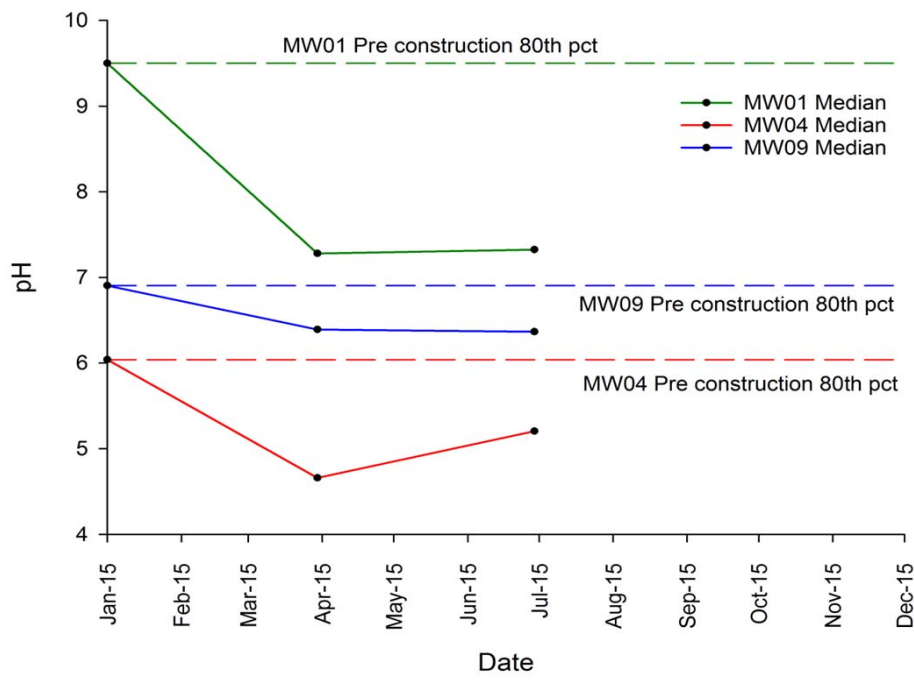
Result Graphs: Nickel, Copper, Arsenic, Zinc



Electrical Conductivity



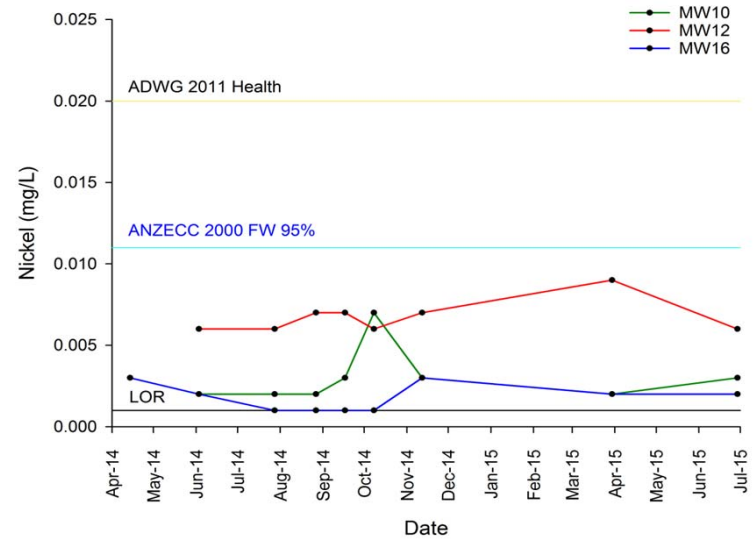
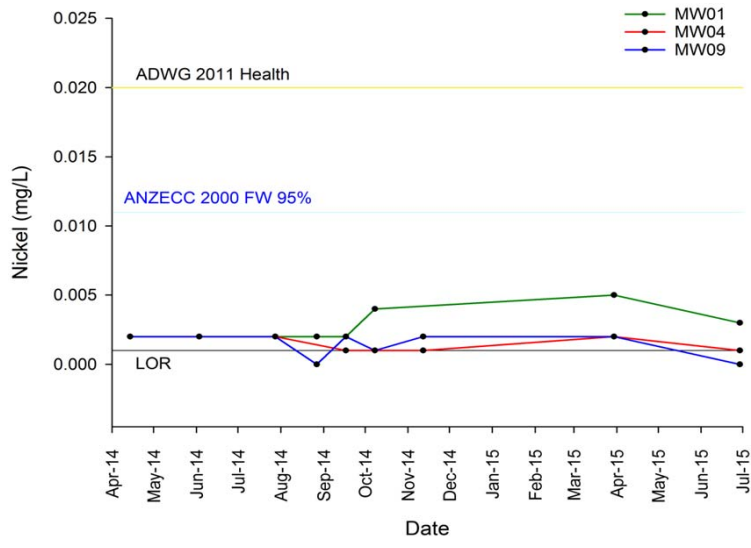
pH



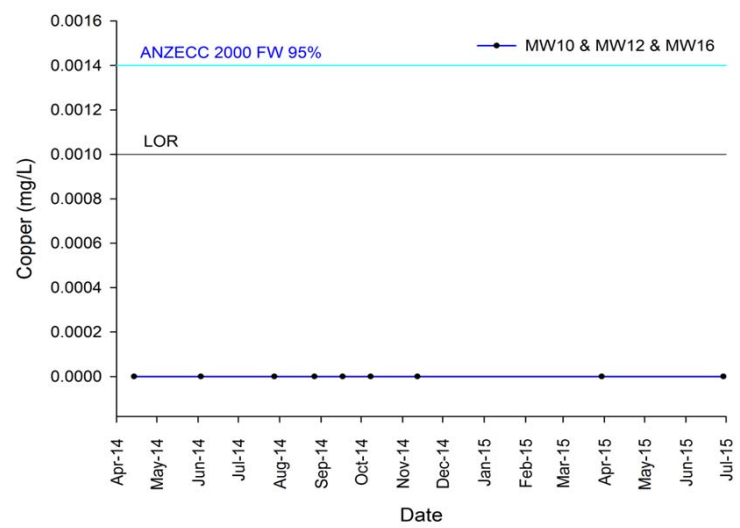
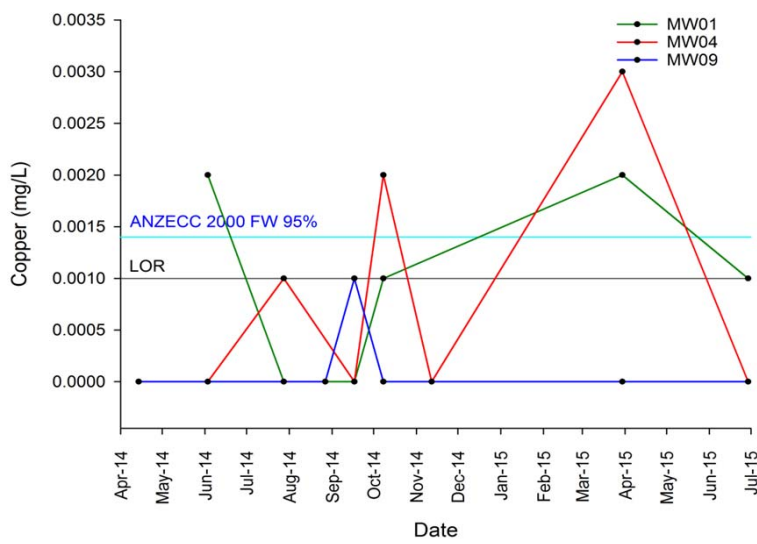


Attachment F Result Graphs

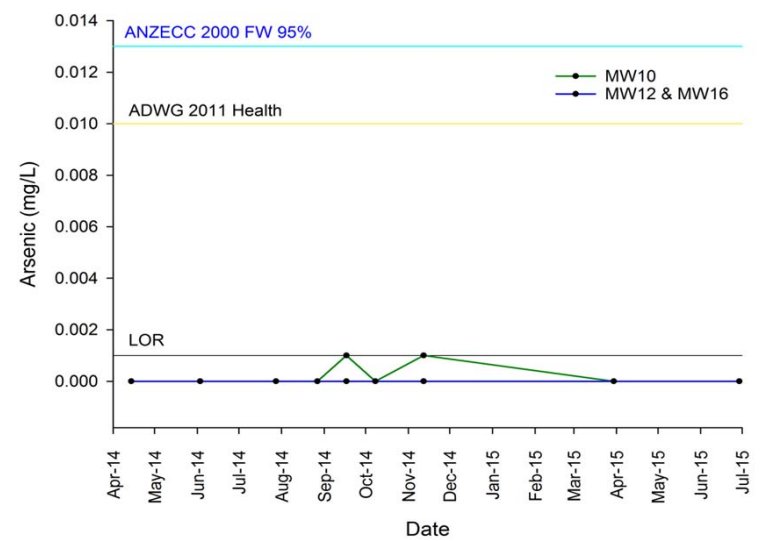
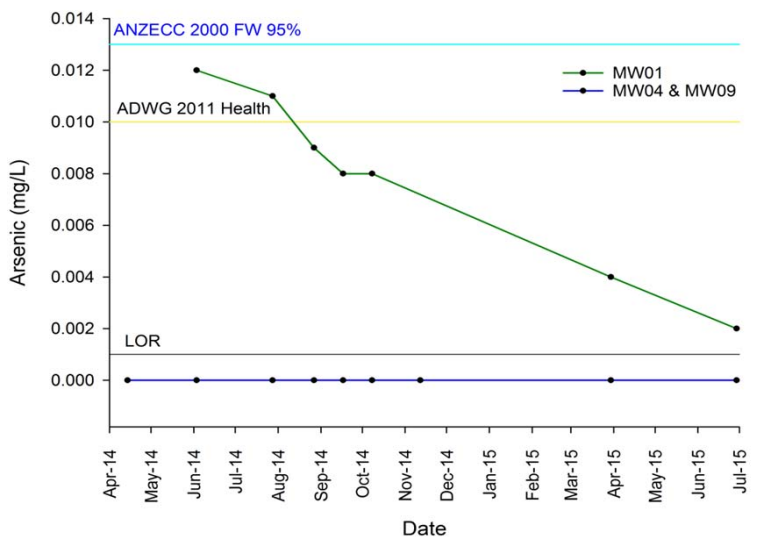
Nickel



Copper



Arsenic



Zinc

