Fulton Hogan

SSI 6878 Albion Park Rail Bypass

Construction Compliance and Monitoring Report

Report 1
7 January 2019 – 7 July 2019

Contents

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Details of Revision and Amendment:

Document Control

The most current version of this report will be available on the Fulton Hogan database for all project personnel. Distribution of this report will be made through the Albion Park Rail Bypass project document control system 'Qantrol'.

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

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4	NSW Environmental Manager	22/10/2019	Sam Leigh
5	Roads and Maritime Environment Officer	22/10/2019	Peter Chudleigh
6	Roads and Maritime Project Manager	22/10/2019	Scott Fayers
7	DPIE endorsed Environmental Representative (ER)	22/10/2019	Toby Hobbs
8	Department of Planning, Industry & Environment	22/10/2019	Georgia Dragicevic

Report Approved By:

[redacted]

Matt Saviana

Project Director

[redacted]

Shannon Chisholm

Environment and Sustainability Manager

Compliance Report Declaration Form

Compliance Report Declaration Form	
Project	Albion Park Rail bypass
Project Application Number	SSI 6878
Description of Project	Extension of the M1 Princes Motorway between Yallah and Oak Flats to bypass Albion Park Rail
Project Address	1924 Illawarra Highway, Albion Park Rail, NSW, 2527
Proponent	Roads and Maritime
Title of Compliance Report	Construction Compliance and Monitoring Report – Report 1
Date	7 January 2019 – 7 July 2019

I declare that I have reviewed relevant evidence and prepared the contents of the attached Compliance Report and to the best of my knowledge:

- the Compliance Report has been prepared in accordance with all relevant conditions of consent;
- the Compliance Report has been prepared in accordance with the Compliance Reporting Post Approval Requirements;
- the findings of the Compliance Report are reported truthfully, accurately and completely;
- due diligence and professional judgement have been exercised in preparing the Compliance Report; and
- the Compliance Report is an accurate summary of the compliance status of the development.

Notes:

- Under section 10.6 of the Environmental Planning and Assessment Act 1979 a person must not include false or misleading information (or provide information for inclusion in) a report of monitoring data or an audit report produced to the Minister in connection with an audit if the person knows that the information is false or misleading in a material respect. The proponent of an approved project must not fail to include information in (or provide information for inclusion in) a report of monitoring data or an audit report produced to the Minister in connection with an audit if the person knows that the information is materially relevant to the monitoring or audit. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000; and
- The Crimes Act 1900 contains other offences relating to false and misleading information: section 307B (giving false or misleading information – maximum penalty 2 years' imprisonment or 200 penalty units, or both).

Name of Authorised Reporting Officer	**Adrian Rouse**
Title	**Senior Project Manager**
Signature	
Qualification	**Engineer**
Company	**Roads and Maritime Services**
Company Address	**90 Crown Street Wollongong NSW 2500**

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	5/09/2019	Draft submitted to RMS & ER	All	James Diamond	Shannon Chisholm
1	12/09/2019	Address comments from RMS & ER	All	James Diamond	Shannon Chisholm
2	27/09/2019	Address comments from RMS and ER	All	James Diamond	Shannon Chisholm
3	22/10/2019	Address comments from RMS and ER	All	James Diamond	Shannon Chisholm

Abbreviations

CEMP	Construction Environmental Management Plan
CPESC	Certified professional in erosion and sediment control
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
DPIE	Department of Planning, Industry and Environment
NBN	National Broadband Network
NSW	New South Wales
POEO Act	Protection of the Environment Operations Act 1997
SEPP	State Environmental Planning Policy
TMP	Traffic Management Plan
RBL	Rating Background Level
ROL	Road Occupancy Licence
NCR	Non-conformance report

1 Introduction

Roads and Maritime Services (Roads and Maritime) is extending the M1 Princes Motorway between Yallah and Oak Flats to bypass Albion Park Rail. The motorway completes the 'missing link' for a high standard road between Sydney and Bomaderry.

The project has been assessed under Part 5.1 (State significant infrastructure - now Division 5.2) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The NSW Department of Planning, Industry and Environment (DPIE) placed the '*Albion Park Rail bypass Environmental Impact Statement*' (Roads and Maritime, October 2015) (EIS) on public exhibition between 28 October and 27 November 2015. Submissions received during the exhibition were responded to in the *'Albion Park Rail Bypass Submissions and Preferred Infrastructure Report'* (Roads and Maritime, 2017) (SPIR). The report also assessed changes to the project from the EIS. Infrastructure Approval SSI-6678 was granted on the 30 January 2018 by the Minister for Planning.

Stage 2 of the Project is being delivered through a 'design and construct' contract. Fulton Hogan was appointed by Roads and Maritime on 11 June 2018 to deliver the project. The main construction compound and formal site address for the project is located at 1914 Illawarra Highway, Albion Park Rail, NSW, 2527.

The Project consists of a new motorway bypassing the Albion Park Rail township from the Oak Flats Interchange to Yallah, connecting with the existing Princes Highway at the Duck Creek bridge. This project, as part of the Princes Highway upgrade, would improve traffic flow and maximise the benefits of upgrading the Princes Motorway and Princes Highway corridor between Sydney and south of Nowra.

The key features of Stage 2 of the Project include:

- two lanes in each direction divided by a median (with capacity to upgrade to three lanes in each direction in future)
- three interchanges provided at Yallah, Albion Park and Oak Flats connecting the local road network with the motorway
- bridges to carry the motorway over Duck Creek, Macquarie Rivulet and Frazers Creek
- a bridge to carry the motorway over the South Coast Rail Line
- bridges to carry the motorway over the Princes Highway and Tongarra Road
- bridges to carry local roads and ramps over the motorway
- bridges to provide improved floodwater conveyance and flood immunity
- local road changes or upgrades, including Yallah Road between Larkins Lane and Princes Highway at Yallah, the motorway replacing the existing East West Link and a new local service road which runs parallel to the motorway on the southern side, connecting the Oaks Flats interchange with Croome
- improved pedestrian and cycle connections

The replacement of directly impacted sporting facilities at the Croom Regional Sporting Complex, including sporting fields and associated amenities have been completed separately under Stage 1 of the Project and are not detailed within this report.

Further details on the project background can be sourced from the project website at (http://www.rms.nsw.gov.au/projects/illawarra/albion-park-rail-bypass/index.html)

1.1 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 (CTP) required under the Minister's Condition of Approval (MCoA) A30.

This Construction Compliance Report provides a review of compliance for the six month period between 7 January 2019 and 7 July 2019.

MCoA A30 states:

Construction Compliance Reports must be prepared and submitted to the Secretary for information every six (6) months from the date of the commencement of works or within another timeframe agreed with the Secretary, for the duration of works. The Construction Compliance Reports must include (as applicable):

(a) a results summary and analysis of environmental monitoring;

(b) the number of any complaints received, including a summary of main areas of complaint, action taken, response given and proposed strategies for reducing the recurrence of such complaints;

(c) details of any review of, and minor amendments made to, the CEMP as a result of construction carried out during the reporting period;

(d) a register of any consistency assessments undertaken and their status;

(e) results of any environmental audits and details of any actions taken in response to the recommendations of an audit;

(f) a summary of all incidents notified in accordance with Condition A38 and Condition A41 of this approval; and

(g) any other matter relating to compliance with the terms of this approval or as requested by the Secretary.

This report also addresses MCoA C15, which states:

The results of the Construction Monitoring Programs must be submitted to the Secretary, and relevant regulatory agencies and Relevant Council(s), for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program.

The Construction Monitoring Report required under MCoA C15 is appended to this report in Appendix B.

1.2 Project Footprint

Figure 1-1: Albion Park Rail Bypass footprint and boundary

1.3 Key Project Personnel

Name	Position	Contact Details
Matthew Saviana	Fulton Hogan Project Director	[redacted]
Shannon Chisholm	Fulton Hogan Environment and Sustainability Manager	
James Diamond	Fulton Hogan Environmental Manager	
Sam Leigh	Fulton Hogan NSW Environmental Manager	
Peter Chudleigh	Roads and Maritime Environment Officer	
Scott Fayers	Roads and Maritime Project Manager	
Toby Hobbs	DPIE endorsed Environmental Representative (ER)	

2 Construction activities during reporting period

Project works are proceeding in accordance with the construction program. During the reporting period about 6% of the days were wet days. The total rainfall received on the project was significantly lower than the long term average.

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

2.1 Demolition and property adjustment

Property demolition works have been completed with all properties specified within the technical scope of works deconstructed except for the Tate Dairy and Farm house. Waste from this operation has been re-used or recycled where possible.

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

2.2 Utilities adjustments and diversions

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

Figure 2-1: Installation of underground services in Cut 1

2.3 Fencing

New fencing on the boundary of the project is 50 percent complete with a focus on fencing commercially operating agriculture properties to reduce project disruptions. Temporary fencing and/or delineation is installed around environmentally sensitive areas and retained vegetation within the project boundary in accordance with the Construction Environment Management Plan (CEMP).

Figure 2-2: Permenant boundary fencing with exclusion signage

2.4 Traffic

In order to safely carry out works traffic speeds have been reduced to eighty kilometres per hour on the Princes Motorway, sixty kilometres per hour on the Illawarra Highway, Tongarra Road and East West Link. Speeds are also modified on the adjacent roads as required during works to ensure public and construction staff safety is maintained under strict Road Occupancy Licence (ROL) conditions. Barriers, Variable Message Sign (VMS) boards and additional signage are being used throughout the project to manage traffic safely through the construction zone. Temporary lanes or ‘sidetracks” have been constructed on the Illawarra Highway to enable commencement of embankment or bridgeworks along the existing alignment.

Figure 2-3: Traffic control set-up

2.5 Earthworks

Bulk earthworks commenced with cut and fill operations across the project. At the end of the reporting period approximately 275,000m^3 of cut material has been placed. Approximately 260,000m^3 of engineering fill imported under Resource Recovery Exemption/Orders has been received by the project with material coming from local sources and major projects in Sydney. This material was supplemented by the use of local quarried products. The realignment for Frazers Creek # 1 was completed offline to establish vegetation prior to opening and to aid the installation of Bridge 7 piles and piers. Frazers Creek diversion # 3 bulk excavation has been completed prior to detailing of pools, riffles and placement of natural landscaping features to enhance riparian habitat.

2.6 Drainage

Drainage works have commenced with the focus on transverse drainage including pipe and box culverts to facilitate the carriage of clean waters from upstream of the project to the downstream waterways. At the end of reporting period approximately 625 lineal metres of pipeline had been layed.

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

Figure 2-4: Early installation of transverse drainage

2.7 Structures

The project includes the construction of 13 new bridges which cross creeks, floodplains, local roads and side roads.

Works to construct rock piling pads within Macquaire Rivulet and Frazers Creek #1 commenced, with piling completed at Bridges 1 (southern abutment), 5, 7, 8 and 11. Reinforced earth retaining wall panels and backfill at Bridge 5, Yallah Road commenced.

Stage 1 works of the protection slabs over the Eastern Gas Pipeline were completed during the reporting period with Stage 2 works to commence in a later reporting period.

Figure 2-5: Construction of piling platform at Macquarie Rivulet

Figure 2-6: Piling works at Macquarie Rivulet

Figure 2-7: Eastern Gas Pipeline protection works

2.8 Landscaping

The project commenced some landscaping works in the reporting period, with a focus placed on progressive rehabilitation of topsoiled batters. This is assisting in reducing air quality impacts from dust and reducing erosion risks to water quality.

Figure 2-8: Permanent landscaping of Cut 4 along new East West Link Road

Figure 2-9: Progressive stablisation of Fill 2 near Yallah

2.9 Sedimentation and erosion control

The project uses a multitude of erosion and sediment controls. These include

- Off-site water diversions

- Sediment fence
- Mulch bunds checks and filtration
- Sediment traps/check dams
- Soil binders to stabilise exposed surfaces
- Cut stump clearing near waterways
- The use of recycled and powdered gypsum for pre-treatment of site run-off into sediment basins

The number of sediment basins on the project reflects construction progress. The risk footprint is continually decreasing as the works progress and areas are stabilised.

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

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

Figure 2-10: Installation of sediment basin in Cut 5 near Oak Flats Interchange, prior to earthworks commencing

With regard to sediment basin management, the project continued to work diligently at treating and discharging stored site water back into the environment as efficiently as possible.

2.10 Temporary works

A range of temporary works activities are required to allow for safe and efficient construction of the Albion Park Rail bypass. In the reporting period this included temporary side roads, temporary services diversions, driveway accesses and temporary crossings across Duck Creek and Frazers Creek #1 and #3 to enable safe and time efficient haul roads and safe light vehicle access tracks.

Figure 2-11: Temporary creek crossing at Frazers Creek #3

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 plans. The EMS for the Project has been prepared 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. The Fulton Hogan EMS was audited in March 2019 by an external auditor which resulted in the recertification of the system.

3.2 Environmental management framework

The framework of the environmental management documents has been prepared in accordance with the requirements of ISO 14001, the Guidelines for the Preparation of an EMP (DIPNR, 2004), Roads and Maritime QA Specicification D&C G36, G38 and G40 and the Project approval.

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 (DIPNR, 2004);
- RMS Specification G36 – Environmental Protection (Management Systems);
- ISO 14001:2004 – Environmental Managements Systems;
- ISO 19011:2003 – Guidelines for Quality and/or Environmental Management Systems Auditing;
- NSW Minister for Planning Conditions of Approval (MCoA);
- EIS and SPIR; and
- Environment Protection License (EPL) requirements.

The CEMP was approved by the Department of Planning and Environment (now Department of Planning, Industry and Environment) in accordance with MCoA C3 on 7 December 2018.

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 were reviewed and endorsed by the Project ER in 2018, dates of revision for the plans are detailed in Table 3-1. A periodic review of the CEMP and sub-plans will be undertaken in accordance with the CEMP.

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

Plan Name	DPIE Approval Date	Consistent with MCOA	Latest revision date
Construction Environmental Management Plan	07 December 2018	Yes	Rev 9 December 2018
Flora and Fauna Management Sub Plan	07 December 2018	Yes	Rev 9 December 2018
Heritage Management Sub Plan	29 November 2018	Yes	Rev 8 December 2018
Noise and Vibration Management Sub Plan	07 December 2018	Yes	Rev 7 December 2018
Soil and Water Quality Management Sub Plan	07 December 2018	Yes	Rev 8 December 2018
Air Quality Management Sub Plan	07 December 2018	Yes	Rev 7 December 2018
Construction Waste and Energy Management Sub Plan	12 October 2018 Note: Provided to DPIE for information only	Yes	Rev 4 October 2018
Traffic and Transport Management Sub Plan	29 November 2018	Yes	Rev 11 December 2018
Contaminated Land Management Sub Plan	12 October 2018 Note: Provided to DPIE for information only	Yes	Rev 4 October 2018
Flooding and Hydrology Management Sub Plan	21 December 2018	Yes	Rev 11 June 2019

3.4 Consistency assessments

During the reporting period four Consistency Assessment were reviewedby the project ER and approved by Roads and Maritime.

Table 3-2: Summary of Consistency assessments

Report Title	Consistent with Infrastucture Approval Conditions	Date of RMS Approval
Consistency Assessment Report – Yallah Road	Yes	15 May

Underpass		2019
Minor Consistency Assessment Report - Main site compound pedestrian access	Yes	17 May 2019
Minor Consistency Assessment Report - Private Property Access Roads	Yes	12 June 2019
Minor Consistency Assessment Report – Proposed extension to Illawarra Hwy shared path	Yes	12 June 2019

3.5 Compliance auditing

Regular auditing of the management system is completed during construction. Auditing includes:

- Internal compliance audits undertaken by Fulton Hogan;
- External compliance audits undertaken by an independant auditor and Roads and Maritime appointed auditors.

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.

External audits have been conducted by Arcadis / APP and SNC Lavalin on behalf of Roads and Maritime. Arcadis / APP are engaged as the independent Project Verifier (PV) and SNC Lavalin were engaged by Roads and Maritime as specialist environmental auditors. The audit resulted in five Observations of Concern (OoC) and 1 Notible Practice. The OoC related to minor updates to the project induction and toolboxing of site teams on project protocols. The projects use of electronic platforms to undertake and document inspections was identified as a Notible Practice. All OoC have been closed out via updates to the project site induction and toolboxing project team via site wide toolbox meetings.

An external audit will be undertaken in the next reporting period by independent auditor. Table 3-3 summarise external audits conducted during the reporting period.

During the reporting period one internal audit was conducted by the Fulton Hogan State Environmental Manager, who is independent of the project. The audit was conducted on 6 Febuary 2019 and resulted in 2 OoC issued relating potential air quality impacts to neighbouring commercial properties and their air quality monitoring equipment. All OoC have been closed out via a review of site works in the area of concern and contacting the neighbouring commercial property and have the air quality monitoring equipment relocated. Table 3-4 summarise internal audits conducted during the reporting period.

Table 3-3: Summary of Independent Verifier Audits

No.	Date	Auditor	Type	Outcomes	Status
1	June 2019	Arcadis / APP and SNC Lavalin on behalf of Roads and Maritime	Bi-annually	5 OoC 1 Notible Practice	Closed

Table 3-4: Summary of Internal Audits

No.	Date	Auditor	Type	Outcomes	Status
1	Febuary 2019	Sam Leigh	CEMP Compliance	2 OoC	Closed

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

3.6 Compliance Management

During the reporting period, Stage 2 works for the Albion Park Rail bypass have had no non-compliances with the MCoA with the exception of one reported incident, detailed at Section 3.8 below. Appendix A of this report contains detailed information on the status and compliance of each specific condition for the the Albion Park Rail bypass.

3.7 Previous Report actions

As this is the first of the Construction Compliance Report for the project there are no previous actions.

3.8 Incidents

During the reporting period one event was recorded as a reportable incident. It is described in Table 3-5 below.

Table 3-5: Incidents

Date	Description	Corrective Actions	Status
4 April 2019	A number of trees were coppiced by subcontracted arborists in the vicinity of the proposed off road shared user path, Croome Reserve. This action occurred outside the approved project boundary.	Proposed corrective actions are detailed in correspondence to the Department on 3 May and 5 July 2019.	OPEN

3.9 Environmental Performance

The project implemented and maintained a high standard of environmental controls during the reporting period. Controls were planned and executed to industry best practice standards.

The project's environmental performance is reviewed and measured by Roads and Maritime, Project ER, NSW EPA, DPIE and NSW Department of Primary Industries - Fisheries.

The Project ER and Roads and Maritime environment staff reviewed the project 12 times in the reporting period. Those inspections assessed the project with eight 'green' and four 'amber' ratings using the Roads and Maritime traffic light environmental review system. According to the Roads and Maritime assessment standards the green rating indicates the 'site demonstrates good environmental management with no action required to avoid environmental harm'. An Amber rating indicates some issues representing a "medium" or "medium to high" risk ranking.

EPA and DPIE have visited site eight times to review the progress of works and implementation of erosion and sediment controls. Minor issues were raised during the inspections and all stakeholders were satisfied with the way the site was progressing.

Fulton Hogan held the second project Environmental Review Group (ERG) meeting in April 2019.

No significant environmental issues or concerns were raised by any agencies during the reporting period. All works have been conducted in accordance with EPL requirements and CEMP commitments.

3.10 Effectiveness of environmental controls

Effectiveness of environmental controls is evaluated by industry trained environmental engineers and scientists. Controls are planned prior to ground disturbance and installed before works start.

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 provide advice if required. In addition to this, all controls are inspected weekly as a minimum, during and after rainfall events.

Site controls are reviewed and reinforced as required in advance of predicted rainfall events. Prior to long weekends and shutdown periods extra controls are installed to make sure they are suitable for the time that workers are offsite.

Maintenance of controls occurs regularly during construction. Maintenance ensures controls are functioning properly and are fit for purpose.

In the reporting period, all erosion and sediment controls performed well during adverse weather. This minimised potential impacts on receiving catchments and adjacent sensitive receivers.

3.11 Environmental initiatives

The Albion Park Rail bypass construction team has adopted a 'Beyond Compliance' approach to the project. With the integration of Environment, Sustainability and Community Relations teams to identify both risk and opportunities to support positive environmental and community outcomes. This philosophy promotes a positive culture of excellence whereby the project aims to exceed the contract and legal requirements to create a legacy that all associated with the project will be proud of.

The 'Beyond Compliance' strategy has led to the development of goals for each construction zone to achieve during the project and helps build trust and establish relationships with the communities we work in.

During the reporting period, the 'Beyond Compliance' strategy achieved two significant results:

- Cultural ceremonies conducted on site including traditional singing, dancing and cleansing smoke resulting in increase in Aboriginal cultural awareness on site and development of an awareness film for the project induction;
- Monitoring and collection of seeds from the threatened species Chorizema Parviflorum (Illawarra Flame Pea) in advance of clearing operations. This has resulted in an 800% increase in seedstock for NSW PlantBank at Mount Annan Botanical Gardens.

3.12 Internal and external environmental inspections

The project completes many inspections to assess environmental performance and identify improvements.

Those inspections have resulted in environmental management improvements across the project. The improvements included new erosion and sediment control installations, improved site mitigations and general site improvements.

Table 3-6 summarises the inspections completed on the project. The inspections completed are consistent with the requirements of the project documents.

Table 3-6: Inspections

Inspection type	Attendees	Number of inspections
Weekly	Fulton Hogan staff; engineers, environmental, foreman, leading hands, labourers, superintendents, management	25
Wet weather	Fulton Hogan staff; engineers, environmental, foreman, leading hands, labourers, superintendents, management	16
Environmental Representative	Toby Hobbs Fulton Hogan environmental manager	12
Roads and Maritime	Peter Hawkins, Peter Chudleigh, David Ledlin Roads and Maritime project staff Toby Hobbs Fulton Hogan environmental staff	10
NSW EPA	Chris Kelly Fulton Hogan environmental staff	6
NSW DPIE	Jacqui McLeod, Joanne Glass, Jennifer Rowe Fulton Hogan environmental staff	2

One environmental review group (ERG) meeting was held during the reporting period. Table 3-7 lists attendees.

Table 3-7: Environmental Review Group Meeting attendees

Meeting Type	Attendees	Date
Environmental Review Group	David Ledlin (RMS) Peter Hawkins (RMS) Peter Chudleigh (RMS) Kamlish Prajapati (RMS) Jennifer Rowe (DPIE) Sally Perry (EPA) Chris Kelly (EPA) Kym McNamara (OEH) Adam De Clouett (Shellharbour City Council) Matthew Saviana (Fulton Hogan) Shannon Chisholm (Fulton Hogan) Mitch Tulloch (Fulton Hogan) Sam Leigh (Fulton Hogan) James Diamond (Fulton Hogan) Nathan Russell (Fulton Hogan) Jacob Cooper (Fulton Hogan)	9 April 2019

	Tom Dewhurst (Fulton Hogan) Toby Hobbs (Vantage Environmental Management) Cameron Weller (Hutchison Weller)	

4 Environmental monitoring

The Albion Park Rail bypass project 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 where necessary.

The results of environmental monitoring conducted during the reporting period are summarised in this section. In accordance with MCoA C12 and MCoA C15 a Construction Monitoring Report has been prepared at Appendix B.

Implementation of the standard mitigation measures listed the CEMP and sub plans ensure environmental impacts are minimised during construction. Based on the available data, no modification is required to the construction methods or environmental control measures being implemented onsite.

No additional or unscheduled monitoring outside that discussed in the Construction monitoring program is currently required to determine or verify a trend in impacts to surface water, groundwater, air quality and noise and vibration.

4.1 Water quality

The water quality monitoring program did not find any results related to construction impacts during this monitoring period. Stagnant water in creeks will alter the chemistry of the water due to an increase in bacteria and algal growth, which is not representative of the creek characteristics and therefore monitoring is undertaken during these conditions. No significant trends were identified in the monitoring data other than the declining groundwater levels due to very limited rainfall.

A visual assessment of the conditions at the monitoring point and nearby construction works are undertaken and any potential impacts to trigger level exceedances from construction are noted on the field sheets.

Exceedances against the trigger levels identified in the water quality monitoring program occurred during the reporting period however these exceedances were not related to contruction impacts and are discussed below.

- SW3US (Macquarie Rivulet) – Trigger level exceedance skewed due to sampling technique error in February resulting in high TSS result. Training regarding sample techniques undertaken by Fulton Hogan to ensure that technique error does not reoccur and therefore not considered to be an impact from construction works;
- SW3 (Macquarie Rivulet) – Minor trigger level exceeded in February however not related to construction due to limited exposed areas under construction at the time;
- SW4 (Frazers Ck) – Trigger level exceedance skewed due to sampling technique error in February resulting in high TSS result. Training regarding sample techniques undertaken by Fulton Hogan to ensure that technique error does not reoccur and therefore not considered to be an impact from construction works. Trigger level exceedance skewed due to low flow conditions and increased algal growth in May and therefore not considered to be an impact from construction works;
- SW6 (Frazers Ck) – Trigger level exceedance skewed due to sampling technique error in February resulting in high TSS result. Training regarding sample

techniques undertaken by Fulton Hogan to ensure that technique error does not reoccur and therefore not considered to be an impact from construction works;

- Three exceedances against the trigger level identified in the monitoring program have occurred during the reporting period for pH levels. Two of the three pH levels exceedances were still within the ANZECC/ARMCANZ (2000) guidelines for pH and one was marginally outside the ANZECC/ARMCANZ (2000) guidelines. The exceedances are not considered an impact from construction;
- Two exceedances against the trigger level identified in the monitoring program occurred during the reporting period for EC levels in GW5 and BH318 however, the EC levels are consistent with pre-construction levels that have been outside of ANZECC guideline levels for EC and are therefore not considered an impact from construction;
- Four exceedances against the trigger level identified in the monitoring program occurred during the reporting period for Height. The Heights are consistent with current environmental conditions and have a declining trend due to the limited rainfall received and are therefore not considered an impact from construction. Monitoring well GW3 has been dry since March 2018; and
- Three exceedances against the trigger level identified in the monitoring program occurred during the reporting period for Dissolved Metals. Copper, Nickel and Zinc concentrations have exceeded the nominated trigger levels due to a reduction in the groundwater level. As construction works had not commenced within the well location, the exceedances are not considered an impact from construction.

In the reporting period six surface water quality monitoring events were completed:

- 31 January 2019 (TSS, pH, visible oil and grease) – The results did not indicate construction impacts. Due to the dry weather conditions, five of the six Creek locations monitored ranged between nil to low flow conditions, resulting in stagnant water and slightly elevated suspended solid results due to plant and algal growth. Due to the project's limited area of disturbance, it was apparent that the results were not reflective of site runoff effecting the surrounding catchment due to the limited construction footprint, but rather the turbidity was associated with algal growth evident in the low flow or stagnant waters.
- 28 February 2019 (TSS, pH, visible oil and grease) – The results did not indicate any construction impacts. With the continuation of the dry weather conditions, four of the six Creek locations monitored again presented nil to very low flow conditions, resulting in further stagnant waters and subsequently no samples were taken. Due to the project's limited area of disturbance, it was determined that there was there was a reduced risk in site runoff effecting the surrounding catchment and the water quality conditions were unrelated to the Project.
- 15 March 2019 (TSS, pH, visible oil and grease) – There were no observed construction impacts noted during this monitoring event. With the below average rainfall that the project had received during February and the first half of March, a large portion of the rainfall received the previous day and during the monitoring event infiltrated into the ground across the project and surrounding catchments resulting in limited runoff. Four of the six Creek locations monitored continued to present nil to very low flow conditions resulting in stagnant water and no samples were taken for laboratory analysis. Frazers Creek presented low flow conditions, which resulted in higher than expected suspended solid results at SW6 due to

algal growth observed at the monitoring location and no results at SW4 and SW8 due to stagnant water conditions.

- 8 April 2019 (TSS, pH, visible oil and grease) – Even with the rainfall that the project received during the second half of March and into April, there were no observed construction impacts noted during this monitoring event. With the unseasonal heat and winds, the received rainfall infiltrated into the surrounding catchment or evaporated resulting in four of the six Creek locations observing nil to very low flow conditions. These conditions resulted in stagnant water and no samples were taken. Frazers Creek presented low flow conditions, which resulted in higher than expected suspended solid results at SW4 due to increased plant and algal growth, potentially as a result of adjacent agriculture and no results at SW6 and SW8.
- 29 May 2019 (TSS, pH, visible oil and grease) – With the below average rainfall the project has received, there were no observed construction impacts noted during this monitoring event. Four of the six Creek locations monitored presented nil to very low flow conditions resulting in stagnant water and no samples were taken. Frazers Creek presented low flow conditions, which resulted in higher than expected suspended solid results at SW4 similar to the previous months monitoring events and no results at SW6 and SW8. Macquarie Rivulet was also recorded as having low flow during the monitoring event.
- 5 June 2019 (TSS, pH, visible oil and grease) – Moderate rainfall was received prior to and during the monitoring event. As there had been an extended dry weather period during the month of May and into June ground conditions were very dry. The rain recorded on the fourth and fifth of June provided a small amount of relief to the surrounding catchments however flows at five of the Creek locations still presented low flow conditions with the exception of Macquarie Rivulet. Consequently, there were no observed construction impacts noted during this monitoring event assessing upstream against downstream conditions. Upstream results of Macquarie Rivulet (SW5A) returned elevated levels of suspended solids however, these levels reduced at SW3US and SW3, directly adjacent to the project boundary.

In the reporting period two groundwater monitoring events were completed:

- 29 March 2019 – No significant seasonal groundwater level fluctuations were observed and no significant trends were identified in the dataset. pH values were occasionally outside the ANZECC guideline of pH 6.5 – pH 8.5, with one of four pH results outside the guidelines represented by low pH values (i.e. pH<6.5) which is consistent with pre-construction level for GW5. Metal concentrations in groundwater were recorded above the ANZECC guideline including copper and zinc. As construction works had not commenced within the well location the exceedances are not considered an impact from construction; and
- 14 May 2019 – No significant seasonal groundwater level fluctuations were observed and no significant trends were identified in the dataset. pH values did exceed the trigger levels in the monitoring program however were still within ANZECC guidelines. Two of four pH results fell outside the ANZECC guidelines represented by high pH values (i.e. pH>8.5). These levels were slightly higher than the guideline at 8.7, which is above the background levels for GW5 and BH318. Metal concentrations in groundwater were recorded above the ANZECC guideline including copper and zinc. As construction works had not commenced within the well location the exceedances are not considered an impact from construction.

Groundwater monitoring well GW3 has been dry since March 2018.

4.2 Flora and fauna

During the reporting period the project ecologists carried out pre-clearing inspections, stag watches, hollow bearing tree inspections, two stage felling reviews, fauna rescues and relocations. The project has relocated 190 eels and 67 turtles during existing dam dewatering. The project collected 1,242 Eastern Flame Pea (*Chorizema parviflorum)* seeds prior to the commencement of clearing works for the Australian PlantBank, Australian Botanical Gardens. Other tree and grass seeds have been collected during the clearing process to be reused during revegetation works.

Fauna rescues occurred during the monitoring period. Diligent and caring project team members stopped works to prevent fauna being injured. The animals were then safely relocated to adjacent unaffected habitat areas.

Figure 5-2: Juvenile Sugar Glider rescued during two stage clearing process

4.3 Heritage

The Construction Heritage Management Plan Unexpected Finds Procedure was implemented after the discovery of animal bones and other non-Aboriginal heritage items. None of the unexpected finds observations resulted in a significant heritage find and works restarted following clearance from heritage specialists.

4.4 Air quality

The purpose of air quality monitoring during the construction phase is to determine impacts resulting from construction of the project only (i.e. road construction) and not other adjacent but unrelated sources, such as quarry or agricultural operations. The key emissions from road construction are generally dust and Particulate Matter (PM). Air quality goals relate to the total dust burden in the air and not just the dust from the

Project. Because of this, there needs to be some consideration of background levels, including the two major operational quarries adjacent to the project, when using these goals to assess impacts.

Industrial emissions are the dominant source of $PM_{2.5}$ emissions in Wollongong and Shellharbour LGAs, followed by domestic–commercial emissions (notably residential wood heating). Industrial and domestic–commercial sources contribute similar amounts of $PM_{2.5}$ emissions in Kiama LGA.

Industrial emissions are the most significant source of PM_{10} emissions, accounting for 75% to 86% of total PM_{10} emissions in the three LGAs, followed by domestic–commercial emissions, accounting for 10% to 13% of total emissions

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

The monthly dust deposition results are consistent with the anticipated impacts described in the Construction air quality monitoring program. During the reporting period, the annual averaging period levels for DMG1 and DMG Control were 2.4 g/m²/month and 1.7 g/m²/month respectively. These values show the results are below the 4 g/m²/month (Annual) anticipated maximum total deposited dust level and are consistent with pre-construction levels.

$PM_{2.5}$ and PM_{10} 24 hour particulate matter levels were greater than the criteria identified in the AQMP at various times during the current reporting period as shown in Table 1-10 of Appendix B. The rolling Annual Average for this reporting period $PM_{2.5}$ for RT1 and RT2 were 0.014mg/m^3 and 0.026mg/m^3 respectively and for PM_{10} for RT1 and RT2 were 0.016mg/m^3 and 0.028mg/m^3 respectively. Due to the exceedances for each month, the recorded rolling Annual Averages are greater than the criteria identified in the AQMP with the exception of PM_{10} at RT1. The rolling Annual Average for PM_{TSP} for RT1 and RT2 is 0.016mg/m^3 and 0.028mg/m^3 respectively which is also well below the criteria of 0.09 mg/m^3.

It is however noted that these monitoring results were less than or consistent with recorded ambient air quality levels across the Illawarra and the Greater Metropolitan Region and, as such, the results are considered to be reflective of regional background conditions, rather than construction impacts.

The air quality monitoring program did not find any results related to construction impacts during this monitoring period. Implementation of the standard mitigation measures listed in AQMP have ensured air quality impacts are minimised during construction.

4.5 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 Table 7-3 of the approved Noise and Vibration Management Plan.

No significant trends were identified in the recorded data. No exceedances against the trigger level identified in the monitoring program have occurred during the reporting period for noise levels.

Figure 5-3: Attended noise monitoring

Attended vibration monitoring has been conducted three times in response to community enquiries and on all occasions, levels were within acceptable parameters established in International Standards and adopted in the approved management plan.

Figure 5-4: Attended vibration monitoring

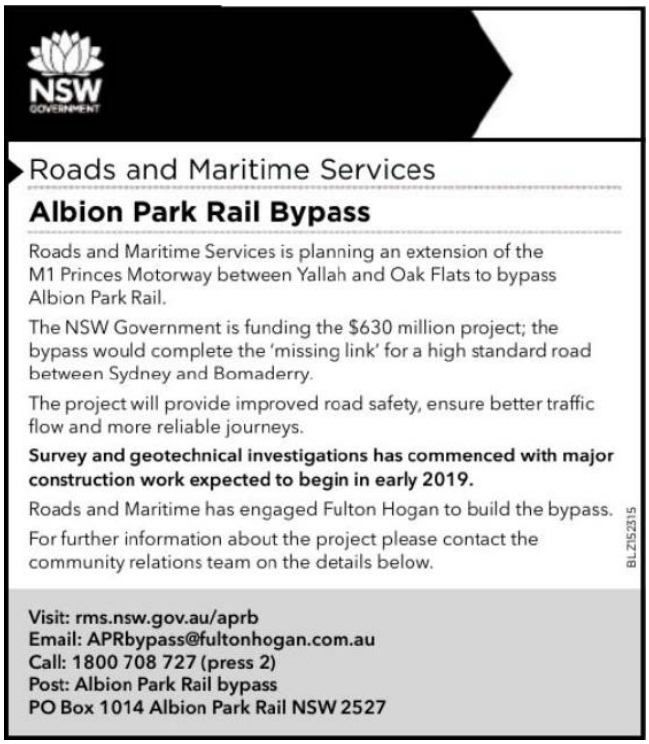
5 Community complaints

In accordance with MCoA B6, a complaints management system has been established on the project to address any community concerns, complaints and enquiries during the course of construction.

The complaints management system details the process for receiving, managing, responding and closing out enquiries and complaints about the project.

The following facilities are available for members of the public to make a complaint or enquiry:

- A 24 hour telephone number for the registration of complaints and enquiries about the project;
- A postal address to which written complaints and enquiries may be sent;
- An email address to which electronic complaints and enquiries may be transmitted; and
- A staffed community display centre open during construction hours available for face-to-face communication about the project.


NSW GOVERNMENT

Roads and Maritime Services

Albion Park Rail Bypass

Roads and Maritime Services is planning an extension of the M1 Princes Motorway between Yallah and Oak Flats to bypass Albion Park Rail.

The NSW Government is funding the $630 million project; the bypass would complete the 'missing link' for a high standard road between Sydney and Bomaderry.

The project will provide improved road safety, ensure better traffic flow and more reliable journeys.

Survey and geotechnical investigations has commenced with major construction work expected to begin in early 2019.

Roads and Maritime has engaged Fulton Hogan to build the bypass.

For further information about the project please contact the community relations team on the details below.

BL.ZIS2315

Visit: rms.nsw.gov.au/aprb
Email: APRbypass@fultonhogan.com.au
Call: 1800 708 727 (press 2)
Post: Albion Park Rail bypass
PO Box 1014 Albion Park Rail NSW 2527

Figure 6.1 - Advert printed in local newspapers

The project will continue to respond to and manage complaints made by stakeholders in accordance with AS-ISO 10002-2006 Complaints Handling. This system will be in place until eight weeks after the date of construction completion.

5.1 Number and types of complaints

During the reporting period, the community relations team logged 1,867 events, including telephone calls, meetings, emails, letters, doorknocks, staffed displays and visits to the community display centre. Of these events, 16 were recorded as complaints.

Of the 16 complaints, eight related to dust impacts, three related to vibration impacts, three related to traffic and mud-tracking impacts and two related to noise impacts.

January 2019 – no complaints:

During the month of January, no complaints were received.

February 2019 – one complaint:

The complaint related to dust and the impact of dust to a pool situated on the property in Haywards Bay. Weather conditions at the time had seen a number of dust storms impacting the region. Upon receipt of the complaint, the Fulton Hogan environment team investigated the property and work area and confirmed that appropriate dust mitigation measures were in place. The complainant was satisfied that the dust was unlikely to be caused by the project but requested that their concerns be noted and advised that they would call if they experienced any further impacts.

March 2019 – four complaints:

The first complaint related to perceived vibration impacts resulting in a claim for damage at a residential property in Albion Park Rail. Upon receipt of the complaint, the Fulton Hogan environment team investigated the property and surrounding work areas and confirmed that the damage to the property was not consistent with any work that had been undertaken in the area to date; work in the surrounding area was limited to potholing and fencing only. After being advised of the outcome of the investigation, the resident requested that the complaint be escalated to Roads and Maritime ; the results of which were consistent with Fulton Hogan's findings, stating that it is probable that the cracking is the result of the natural expansion and contraction of the soils under the property.

Two of these complaints related to perceived dust impacts associated with excavation activities in Yallah. Upon receipt of the complaints (received on the same day), the environment team investigated the area and found that dust was occurring while the water cart on site left to refill. The project team was advised to stop work during re-filling the water cart until an additional cart was available. Stakeholders were satisfied with the response and implementation of additional measures.

The fourth complaint was made by the same resident that had complained about dust impacts to a pool on their property in Haywards Bay. Upon receipt of the complaint, the Fulton Hogan environment team investigated the property and the surrounding work area and identified a temporary vehicle holding yard between the project zone and the property (not project related). Additional dust monitors installed in the area. Stakeholder was notified of additional measures and dust monitoring taking place.

April 2019 – seven complaints:

Three complaints related to dust; two were related to wheels from machinery stirring up dust in Yallah and one related to the establishment of an ancillary facility in Albion Park. Upon receipt of each of these complaints, the environment team investigated the work area/s to ensure appropriate mitigation measures were in place including ensuring that additional water carts were present during work.

Two complaints related to noise in Albion Park and Albion Park Rail. One complaint related to work during standard working hours on a Saturday and was received by email

the following Monday. Upon receipt of the complaint the community relations team contacted the stakeholder to explain standard work hours and advised that the telephone hotline is available on weekends during work to respond straight away. The second complaint related to a beeper being heard outside of standard hours near the Croom Regional Sporting Complex. Upon receipt of the complaint, the project superintendent confirmed that all site vehicles are fitted with squawkers instead of beepers.

One complaint related to perceived vibration due to construction of a new driveway as part of property works in Yallah. The environment team conducted vibration monitoring during construction of the driveway. Levels from monitoring confirm that vibration was below the threshold for cosmetic damage. Stakeholder was satisfied that vibration levels would not cause cosmetic damage.

The final complaint received in April related to traffic on the Illawarra Highway, specifically around trucks entering/exiting construction gates and traffic control holding up traffic during the day. Upon receipt of the complaint, the traffic team were notified and confirmed that they are investigating options to alleviate pressure on Illawarra Highway. A dedicated right hand turn lane has since been implemented so trucks can stop to turn into the site without impacting traffic.

May 2019 – one complaint:

A complaint was received (including photos) relating to trucks parking illegally on Macquarie Place in Haywards Bay. The project team reviewed the photos and confirmed that the trucks pictured where not engaged on the project, however the issue was raised in project toolbox meetings as a reminder that the area is not a suitable waiting area for trucks. Subcontractors were also emailed the same reminder. The complainant was advised of outcome and provided with the community hotline to contact the team with any further concerns.

June 2019 – two complaints:

One complaint related to rocks and mud on the Illawarra Highway. Upon receipt of the complaint, the project team was notified and confirmed that a sweeper is operating on the site and rock checks are being done daily by trucks exiting construction gates. An additional street sweeper has been engaged on the project since and the workforce is reminded frequently to check for rocks at daily pre-starts and toolbox meetings.

A second complaint related to perceived vibration due to works along the East West Link impacting a property on Jarrah Way in Albion Park Rail. Upon receipt of the complaint, the environment team investigated the property and the work area and confirmed that work in the area was limited to an underbore for underground service relocation along the East West Link. During work some rock was encountered which may have been felt by the resident however vibration levels were below the threshold for cosmetic damage to property. Vibration monitoring continued during work the following day to ensure levels remained below the threshold. The community relations team explained the findings and the process for making a claim if the resident believed that damage was caused by the project. No claim has been received.

1st to 7th July 2019 – one complaint:

One complaint related to dust caused by work on the project. The complaint was received from a business on Durgadin Drive concerned about dust impacting his business operations. Complainant acknowledged that he knows dust is coming from the two quarries however requested additional water cart to alleviate dust. The environment team investigated the complaint and confirmed that appropriate dust mitigation measures were in place. The team also noted that there is also a construction building site next door to the property. Additional water cart was sent to the work site and

business owner was satisfied with the provision of an additional water cart and measures in place.

In summary, the project has received relatively few compliants, two percent in total, during the first six months of construction compared to the logged events. All complaints were closed out with the complaintant. No emerging trends from received complaints have been identified and no additional action to what project team is undertaking is required.

5.2 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 January to July 2019. The project display centre, as managed by community consultation personnel, 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:

- Staffed Display – Illawarra Convoy;
- Staffed Display – Albion Park Show;
- Staffed Display – Albion Park Shopping Village;
- Staffed Display – Stockland Shellharbour;
- Community information session – Woolshed;
- Presentation – Albion Park Chamber of Commerce;
- Community information session – Woolshed;
- Staffed Display – Wings over Illawarra; and
- Community information session – Centenary Hall.

6 Summary

During the reporting period, Stage 2 works for the Albion Park Rail bypass have had no non-compliances with the MCoA with the exception of one reported incident. The project has progressed well in the first six months and implemented Beyond Compliance environmental initiatives across the alignment.

The next reporting period will be from 7 July 2019 to 7 January 2020 and will include further discussions of Beyond Compliance initiatives that the project teams have implemented and an update to the progress of the construction of the Albion Park Rail bypass.

Appendix A Project Compliance Reporting Table

Appendix A - Stage 2 Conditions of Approval Compliance Table

CoA	Condition of Approval (CoA)	Applicable to Stage 2?	Project Phase applicable to Condition	Stage 2 Compliance	Evidence of Stage 2 Pre-Construction Compliance/ Notes
PART A: ADMINISTRATIVE CONDITIONS					
GENERAL					
A1	The SSI must be carried out in accordance with: (a) the description of the SSI in the EIS as amended by the SPIR; and (b) the terms of this approval.	Yes	Construction and Operation	Compliant	The terms of the project approval and environmental mitigation measures described within the EIS as amended by the SPIR are addressed within the approved CEMP and sub plans for Stage 2 construction work. Works are being implemented in accordance with the CEMP (Rev 9) approved prior to construction by the Department, 7 December 2018.
A2	The SSI must be carried out in accordance with all procedures, commitments, preventative actions, performance criteria and mitigation measures set out in the EIS as amended by the SPIR unless otherwise specified in, or required under, this approval.	Yes	Construction and Operation	Compliant	The procedures, commitments, preventative actions, performance criteria and mitigation measures set out in the EIS as amended by the SPIR have been are addressed within the approved CEMP and sub plans for Stage 2 construction work. Works are being implemented in accordance with the CEMP approved prior to construction by the Department, 7 December 2018.
A3	In the event of an inconsistency between the EIS as amended by the SPIR or any other document required under this approval, and a term of this approval, the term of this approval prevails to the extent of the inconsistency. For the purpose of this condition, there will be an inconsistency between a term of this approval and any document if it is not possible to comply with both the term and the document.	Yes	Construction and Operation	Compliant	No inconsistency identified during the reporting period.
A4	The Proponent must comply with all requirements of the Secretary in relation to: (a) the environmental performance of the SSI; (b) any document or correspondence; (c) any notification given to the Secretary under the terms of this approval; (d) any audit of the construction or operation of the SSI; (e) compliance with the terms of this approval (including anything required to be done under this approval); and (f) the carrying out of any additional monitoring or mitigation measures.	Yes	Construction and Operation	Compliant	Stage 2 works are proceeding in accordance with the management plans approved by the Department prior to construction and all requirements of the Secretary are being complied with. Approval of the noted plans was provided by DP&E as follows: - Waste and Energy Management Sub-Plan - Rev 4 submitted for information 12 October 2018 - Contaminated Land Management Sub-Plan - Rev 4 submitted for information 12 October 2018 - Heritage Management Sub-Plan - Rev 8 approved 29 November 2018 - Traffic and Transport Management Sub-Plan - Rev 11 approved 29 November 2018 - Construction Environmental Management Plan (CEMP) - Rev 9 approved 7 December 2018 - Noise and Vibration Management Sub-Plan - Rev 6 approved 7 December 2018 - Flora and Fauna Management Sub-Plan - Rev 9 approved 7 December 2018 - Soil and Water Management Sub-Plan - Rev 8 approved 7 December 2018 - Air Quality Management Sub-Plan - Rev 7 approved 7 December 2018 - Flooding and Hydrology Management Sub-Plan - Rev 11 approved 21 December 2018.
A5	In the event that there are differing interpretations of the terms of this approval, including in relation to a condition of this approval, the Secretary's interpretation is final.	Yes	Construction and Operation	Compliant	No differing interpretations identified during the reporting period.
A6	Where the terms of approval provide the Secretary the discretion to alter the requirements of the approval, the Proponent must provide supporting evidence so that the Secretary can consider the need, environmental impacts and consistency of the alteration. *Note: Inaction and/or expedience will not be supported as justifications for need unless it can be demonstrated that there will beneficial environmental outcomes.*	Yes	Construction and Operation	Compliant	The terms of the approval were altered by the Secretary as detailed in Modification of Infrastructure Approval 1, Schedule 1, 25 October 2018. The Consolidated Instrument SSI 6878 Mod 1 has been made available to the public via the project information on both the RMS & DP&E websites. This relates to a request for clarification of conditions E51 and E75 in relation to building and structure condition surveys and road dilapidation surveys by RMS, 21 August 2018. The modification included definitions in relation to the expected timing required for compliance of these conditions.
A7	Without limitation, all strategies, plans, programs, reviews, audits, report recommendations, protocols and the like required by the terms of this approval must be implemented by the Proponent in accordance with all requirements issued by the Secretary from time to time in respect of them.	Yes	Construction and Operation	Compliant	Stage 2 construction works are being managed in accordance with the terms of approval and all management plans inclusive of programs, reviews, audits and the like are proceeding in accordance with the documentation approved by the Department prior to construction. The approved plans are implemented in accordance with all requirements issued by the Secretary as follows: - Construction Environmental Management Plan (CEMP) - Rev 9 approved 7 December 2018 - Heritage Management Sub-Plan - Rev 8 approved 29 November 2018 - Traffic and Transport Management Sub-Plan - Rev 11 approved 29 November 2018 - Waste and Energy Management Sub-Plan - Rev 4 submitted for information 12 October 2018 - Contaminated Land Management Sub-Plan - Rev 4 submitted for information 12 October 2018 - Noise and Vibration Management Sub-Plan - Rev 6 approved 7 December 2018 - Flora and Fauna Management Sub-Plan - Rev 9 approved 7 December 2018 - Soil and Water Management Sub-Plan - Rev 8 approved 7 December 2018 - Air Quality Management Sub-Plan - Rev 7 approved 7 December 2018 - Flooding and Hydrology Management Sub-Plan - Rev 11 approved 21 December 2018.
A8	Where the terms of this approval require consultation with identified parties, details of the consultation undertaken, matters raised by the parties, and how the matters were considered, must accompany the strategies, plans, programs, reviews, audits, protocols and the like submitted to the Secretary.	Yes	Construction and Operation	Compliant	Fulton Hogan manages a database of consultation with all identified parties, including details of consultation, matters raised and how the matters were considered.
A9	This approval lapses five (5) years after the date on which it is granted, unless works for the purpose of the SSI are commenced on or before that date.	Yes	Construction and Operation	Compliant	The State Significant Infrastructure Approval SSI6878 was granted 30 January 2018, marking the commencement of the five year approval duration under Condition A9. The Secretary's approval was received for the CEMP (Rev 9) and associated documents in December 2018 and detailed in evidence supplied under CoA A4 and A7. Construction of SSI 6878 commenced 7 January 2019 as advised to the Secretary by RMS, 8 January 2019.

A10	The Proponent is responsible for any breaches of the conditions of this approval resulting from the actions of all persons that it invites onto any site, including contractors, sub-contractors and visitors.	Yes	Construction and Operation	Compliant	NSW Roads and Maritime Services (RMS) are responsible for compliance with all conditions of approval. RMS has contracted Fulton Hogan Construction (FHC) Pty Ltd to deliver Stage 2 of the Albion Park Rail bypass via a Design and Construct Project Deed. The RMS Deed & associated contractual specifications requires FHC to comply with, carry out and fulfil the conditions and requirements of all Approvals (whether obtained by the Contractor or RMS) including those conditions and requirements which RMS is expressly or impliedly required under the terms of the Approvals to comply with, carry out and fulfil. FHC assist RMS in the management of all persons on site including sub-contractors and visitors.
CROOM REGIONAL SPORTING COMPLEX					
A11	The relocation of sporting facilities and associated components of the Croom Regional Sporting Complex are not subject to Part C and Part D of this approval, subject to: (a) no works be undertaken in Precinct 7 as identified in the EIS; (b) the preparation of a Construction Environmental Management Process (Plan), in consultation with relevant government agencies and Shellharbour City Council, and endorsed by the ER under Condition A24(d). The Plan must detail how the performance outcomes, commitments, mitigation and monitoring measures specified in the EIS as amended by the SPIR will be implemented and achieved during construction; and (c) the implementation of the approved Construction Environmental Management Process (Plan).	No	Construction	Not Triggered	Not applicable to Stage 2. Refer to Stage 1 Construction Compliance and Pre-Operational Compliance Report submitted 31 May 2019.
STAGING					
A12	The SSI may be delivered and operated in stages (including in relation to works undertaken in Croom Regional Sporting Complex). Where staged delivery or operation is proposed, a **Staging Report** (for either or both delivery and operation as the case requires) must be prepared and submitted to the Secretary for information. The **Staging Report** must be submitted to the Secretary no later than one month prior to the commencement of construction of the first of the proposed stages of construction (or if only staged operation is proposed, one month prior to the commencement of operation of the first of the proposed stages of operation), or within another timeframe agreed with the Secretary.	Yes	Construction and Operation	Compliant	A Staging Report has been prepared that details how the SSI will be staged. In accordance with CoA A24d, the Staging Report was endorsed by the ER, 16 February 2018. The Staging Plan was submitted to the Secretary for information, 19 February 2018.
A13	The **Staging Report** must: (a) if staged delivery is proposed, set out how the whole of the SSI will be staged, including general details of work and other activities to be carried out in each stage and the general timing of when the delivery of each stage will commence; (b) if staged operation is proposed, set out how the operation of the whole of the SSI will be staged, including general details of work and other activities to be carried out in each stage and the general timing of when operation of each stage will commence; (c) specify the relevant conditions of approval that apply to each stage and how compliance with those conditions will be achieved across and between each of the stages of the SSI; and (d) set out mechanisms for managing any cumulative impacts arising from the proposed staging.	Yes	Construction and Operation	Compliant	In accordance with CoA A24d, the Staging Report was endorsed by the ER, 16 February 2018. The Staging Plan was submitted to the Secretary for information, 19 February 2018. The Staging Report details how the SSI will be staged, detailing relevant conditions that apply to each stage, how compliance will be achieved and how cumulative impacts will be managed.
A14	The SSI must be staged in accordance with the **Staging Report,** as submitted to the Secretary.	Yes	Construction and Operation	Compliant	Stage 2 construction work is being implemented in accordance with the Staging Report as submitted to the Secretary for information, 19 February 2018.
A15	Where staging is proposed, the terms of this approval that apply or are relevant to the works or activities to be carried out in a specific stage must be complied with at the relevant time for that stage.	Yes	Construction and Operation	Compliant	Stage 2 construction work is being implemented in accordance with the Staging Report as submitted to the Secretary for information, 19 February 2018. All terms of SSI 6878 Mod 1 approval relevant to Stage 2 works are being complied with. A general exception applies to Conditions A11, E54 and E55 which relate to Stage 1 works for "Croom Regional Sporting Complex" and Part D "Operational Environmental Management".
ANCILLARY FACILITIES					
Appendix A - Stage 2 Conditions of Approval Compliance Table					
CoA	**Condition of Approval (CoA)**	**Applicable to Stage 2?**	**Project Phase applicable to Condition**	**Stage 2 Compliance**	**Evidence of Stage 2 Pre-Construction Compliance/ Notes**

A16	Ancillary facilities that are not identified by description and location in the EIS as amended by the SPIR must meet the following criteria, unless otherwise approved by the Secretary: (a) the facility is development of a type that would, if it were not for the purpose of the SSI, otherwise be exempt or complying development; or (b) the facility is located as follows: I. at least 50 metres from any waterway unless an erosion and sediment control plan is prepared and implemented so as not to adversely affect water quality in the waterway in accordance with Managing Urban Stormwater series; ii. within or adjacent to land upon which the SSI is being carried out unless it can be demonstrated that performance criteria established in this approval can be met and that there will be a reduction in impact at other sites and a reduction in the construction program; iii. with ready access to a road network; iv. to prevent heavy vehicles travelling on local streets or through residential areas in order to access the facility, except as identified in the EIS as amended by the SPIR; v. so as to be in accordance with the Interim Construction Noise Guideline (DECC 2009) or as otherwise agreed in writing with affected landowners and occupiers; vi. so as not to require vegetation clearing beyond the extent of clearing approved under other terms of this approval except as approved by the ER as minor clearing; vii. so as not to have any impact on heritage items (including areas of archaeological sensitivity) beyond the impacts identified, assessed and approved under other terms of this approval; viii. so as not to unreasonably interfere with lawful uses of adjacent properties that are being carried out at the date upon which establishment of the facility is to commence; ix. to enable operation of the ancillary facility during flood events and to avoid or minimise, to the greatest extent practicable, adverse flood impacts on the surrounding environment and other properties and infrastructure; and x. so as to have sufficient area for the storage of raw materials to minimise, to the greatest extent practicable, the number of deliveries required outside standard construction hours.	Yes	Construction	Compliant	The Project Ancillary Facilities Management Plan (Rev 7) approved by the Secretary, 16 November 2018. All ancillary sites have been established in accordance with the approved AFMP which maintains compliance with CoA A16. All facilities have been assessed for compliance using the approved documentation under AFMP Appendix G and records maintained on file as evidence. During the reporting period, Fulton Hogan established four ancillary sites (AS4, AS6, AS8, AS9) from nine sites assessed during the preparation of the Environmental Impact Statement (EIS) and Submissions and Preferred Infrastructure Report (SPIR). An additional 15 minor, temporary ancillary sites were also established in compliance with the requirements of Condition of Approval (CoA) A16. All ancillary sites are reviewed by RMS and the ER and are managed by Fulton Hogan in accordance with the provisions set out in the approved AFMP, CEMP and sub-plans.
A17	Before establishment of any ancillary facility, except in relation to the delivery of the Croom Regional Sporting Complex, the Proponent must prepare an **Ancillary Facilities Management Plan** which details the management of the ancillary facilities. The **Ancillary Facilities Management Plan** must be prepared in consultation with relevant government agencies and the Relevant Council(s) and submitted to the Secretary for approval one month prior its establishment. The **Ancillary Facilities Management Plan** must include: (a) a description of activities to be undertaken during construction, operational and decommissioning (including scheduling of construction); (b) a program for ongoing analysis of the key environmental risks arising from the activities described in subsection (a) of this condition, including an initial risk assessment undertaken prior to the commencement of construction of the SSI; and (c) details of how the activities described in subsection (a) of this condition will be carried out to: I. meet the performance outcomes stated in the EIS as amended by the SPIR; and ii. manage the risks identified in the risk analysis undertaken in subsection (b) of this condition.	Yes	Construction	Compliant	An Ancillary Facilities Management Plan (AFMP - Rev 7) was approved by the Secretary on 16 November 2018. The AFMP was prepared for Stage 2 works in accordance with CoA A17. The AFMP Appendix B details consultation with stakeholders and relevant agencies undertaken before establishment of any ancillary facility. The approved AFMP describes the activities undertaken during construction, operation and decommissioning and provides for the monitoring and assessment of key risks arising from use of the facilities to ensure compliance with performance outcomes set out in the EIS as amended by the SPIR. Ongoing monitoring is evidenced in weekly site environmental checklists and targeted site reviews of facilities with RMS and the ER.
A18	Minor ancillary facilities comprising lunch sheds, office sheds, and portable toilet facilities, that are not identified in the EIS as amended by the SPIR and which do not satisfy the criteria set out in **Condition A16** of this approval must satisfy the following criteria: (a) have no greater environmental and amenity impacts than those that can be managed through the implementation of environmental measures detailed in the CEMP required under Condition C1 of this approval; and (b) have been assessed by the ER to have: i. minimal amenity impacts to surrounding residences and businesses, after consideration of matters such as compliance with the ICNG, traffic and access impacts, dust and odour impacts, and visual (including light spill) impacts; ii. minimal environmental impact with respect to waste management and flooding; and iii. no impacts on biodiversity, soil and water, and heritage beyond those already approved under other terms of this approval.	Yes	Construction	Not Triggered	All minor ancillary facilities have been planned and established to satisfy the criteria set out in Condition A16 and assessment under CoA A18 has not been triggered during the reporting period. FHC has assessed 15 minor ancillary facilities which have been documented in accordance with the Ancillary Facilities Checklist - Appendix G of the approved AFMP (Rev 7). All minor ancillary facilities are inspected during periodic environmental inspections with RMS and the ER.
A19	Boundary fencing must be erected around ancillary facilities that are adjacent to sensitive receivers for the duration of construction unless otherwise agreed with the affected receiver(s).	Yes	Construction	Compliant	Boundary fencing has been erected for the ancillary sites where adjacent to sensitive receivers as part of the initial construction activities.
A20	Boundary fencing required under **Condition A19** of this approval must minimise visual, noise and air quality impacts on adjacent sensitive receivers.	Yes	Construction	Compliant	The ancillary site fencing adjacent to sensitive receivers utilises RMS project banner mesh which is regularly monitored and repaired as required after weather events such as high velocity winds. The banner mesh helps to minimise visual impacts, whilst other forms of fencing such as acoustic blankets attached to fencing helps reduce noise impacts to sensitive receivers. Air quality management is detailed against CoA E1.
A21	Ancillary facility AS10 must only be used for works associated with the Croom Regional Sporting Complex, and must be rehabilitated on the completion of those works. The construction access road near Swansea Farm House must be rehabilitated to its pre-construction condition, unless otherwise agreed with Shellharbour City Council.	No	Construction	Compliant	Ancillary facility AS10 is not being used for Stage 2 works. Completion of Stage 1 - construction of Croom Regional Sporting Complex was achieved in July 2019. Rehabilitation of AS10 is mostly complete, with rehabilitation of the site compound due to be completed by mid September 2019.
ENVIRONMENTAL REPRESENTATIVE					

A22	A suitably qualified and experienced Environmental Representative (ER) who is independent of the design and construction personnel must be nominated by the Proponent, approved by the Secretary and engaged for the duration of works of the SSI. Additional ERs may be engaged for the purpose of **Condition A24**, in which case the obligations to be carried out by an ER under the terms of this approval may be satisfied by any ER that is approved by the Secretary. The details of nominated ER(s) must be submitted to the Secretary for approval no later than one month prior to the commencement of works, or within another timeframe agreed with the Secretary.	Yes	Construction	Compliant	A suitably qualified experienced and independent ER has been appointed by RMS as follows: TOBY HOBBS Principal Vantage Environmental Management Pty Ltd PO Box 378 Albury NSW 2640 T (02) 6021 8655 M 0420 922 955 thobbs@venv.com.au Details of the nominated ER were submitted to the Secretary for approval on 31 January 2018. The ER's availability and independence was determined on 7 February 2018. The Secretary's approval of ER was received on 8 February 2018. An alternative ER will be appointed in the event that Toby Hobbs is away or unavailable. The alternative ER is: CAMERON WELLER Vantage Environmental Management Pty Ltd The details of the alternative ER were submitted to the Secretary for approval on 29 March 2018, and the Secretary' approval of the alternative ER was received on 9 April 2018.
A23	Works must not commence until an ER nominated under **Condition A22** of this approval in respect of such works has been approved by the Secretary.	Yes	Construction	Compliant	The Secretary's approval of the nominated ER and alternative ER was received on 8 February 2018 and 9 April 2018, respectively. Stage 2 construction works commenced on 7 January 2019.
A24	From commencement of works until completion of construction, the approved ER must: (a) receive and respond to communications from the Secretary in relation to the environmental performance of the SSI; (b) consider and inform the Secretary on matters specified in the terms of this approval; (c) consider and recommend any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community; (d) review all work and construction related documents required to be prepared under the terms of this approval, ensure they address any requirements in or under this approval and if so, endorse them prior to submission to the Secretary (if required to be submitted to the Secretary) or prior to implementation (if not required to be submitted to the Secretary); (e) regularly monitor the implementation of all work and construction related documents required by the terms of this approval for implementation in accordance with what is stated in the document and the terms of this approval; (f) as may be requested by the Secretary, help plan, attend or undertake Department audits of the SSI, briefings, and site visits; (g) if conflict arises between the Proponent and the community in relation to the environmental performance of the SSI, follow the procedure in the Community Communication Strategy approved under Condition B2 of this approval to attempt to resolve the conflict, and if it cannot be resolved, notify the Secretary; (h) review any draft consistency assessment that may be carried out by the Proponent, and provide advice on any additional mitigation measures required to minimise the impact of the work; (i) consider any minor amendments to be made to the CEMP, CEMP sub-plans and monitoring programs that comprise updating or are of an administrative nature, and are consistent with the terms of this approval and the CEMP, CEMP sub-plans and monitoring programs approved by the Secretary and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the terms of this approval; (j) assess the impacts of minor ancillary facilities as required by Condition A18 of this approval; and (k) prepare and submit to the Secretary and other relevant regulatory agencies, for information, a monthly Environmental Representative Report detailing the ER's actions and decisions on matters for which the ER was responsible in the preceding month (or other timeframe agreed with the Secretary). The Environmental Representative Report must be submitted within seven (7) days following the end of each month for the duration of the delivery of the SSI, or as otherwise agreed with the Secretary.	Yes	Construction	Compliant	Evidence of the ER actively fulfilling the requirements of CoA 24 is found in various forms of documentation including formal endorsement letters and email correspondence, document reviews, fortnightly site inspection records, routine monthly reporting and consistency assessment reviews.
COMPLIANCE TRACKING PROGRAM					
Appendix A - Stage 2 Conditions of Approval Compliance Table					
CoA	**Condition of Approval (CoA)**	**Applicable to Stage 2?**	**Project Phase applicable to Condition**	**Stage 2 Compliance**	**Evidence of Stage 2 Pre-Construction Compliance/ Notes**
A25	A **Compliance Tracking Program** to monitor compliance with the terms of this approval must be prepared, taking into consideration any staging of the SSI that is proposed in a **Staging Report** submitted in accordance with **Condition A12** and **Condition A13** of the approval.	Yes	Construction and Operation	Compliant	A Compliance Tracking Program (CTP) has been prepared to monitor compliance with the terms of the approval and take into consideration staging of the SSI as proposed in the Staging Report. The CTP was endorsed by the ER on 16 February 2018, and submitted to the Secretary for information, 18 February 2018.
A26	The **Compliance Tracking Program** must be endorsed by the ER and then submitted to the Secretary for information prior to the commencement of works or within another timeframe agreed with the Secretary.	Yes	Construction and Operation	Compliant	A Compliance Tracking Program (CTP) has been prepared to monitor compliance with the terms of the approval and take into consideration staging of the SSI as proposed in the Staging Report. The CTP was endorsed by the ER, 16 February 2018 and submitted to the Secretary for information, 18 February 2018. Stage 2 construction works commenced on 7 January 2019.
A27	The **Compliance Tracking Program** in the form required under **Condition A25** of this approval must be implemented for the duration of works and for a minimum of one (1) year following commencement of operation, or for a longer period as determined by the Secretary based on the outcomes of independent environmental audits, **Environmental Representative Reports** and regular compliance reviews submitted through **Compliance Reports**. If staged operation is proposed, or operation is commenced of part of the SSI, the **Compliance Tracking Program** must be implemented for the relevant period for each stage or part of the SSI.	Yes	Construction and Operation	Compliant	The Compliance Tracking Program (CTP) has been incorporated into Section 3 of the approved CEMP (Rev 9) under "Monitoring, Inspections and Auditing". This table is evidence of compliance tracking.
CONSTRUCTION COMPLIANCE REPORTING					

A28	A **Pre-Construction Compliance Report** must be prepared and submitted to the Secretary for information no later than one month before the commencement of works or within another timeframe agreed with the Secretary. The **Pre-Construction Compliance Report** must include: (a) details of how the terms of this approval that must be addressed before the commencement of works have been complied with: and (b) the commencement date for works.	Yes	Construction	Compliant	The Pre-Construction Compliance Report (PCCR, Rev 5) was endorsed by the ER and submitted for information to the Secretary, 2 October 2018. The PCCR detailed an anticipated construction start date of 2 November 2018, however the milestone of Albion Park Rail bypass Stage 2 construction works commencement was confirmed to the Department 8 January 2019 as 7 January 2019.
A29	Works must not commence until the **Pre-Construction Compliance Report** has been submitted to the Secretary.	Yes	Construction	Compliant	The Pre-Construction Compliance Report (PCCR, Rev 5) was endorsed by the ER and submitted for information to the Secretary, 2 October 2018. Albion Park Rail bypass Stage 2 construction works commenced, 7 January 2019.
A30	**Construction Compliance Reports** must be prepared and submitted to the Secretary for information every six (6) months from the date of the commencement of works or within another timeframe agreed with the Secretary, for the duration of works. The **Construction Compliance Reports** must include (as applicable): (a) a results summary and analysis of environmental monitoring; (b) the number of any complaints received, including a summary of main areas of complaint, action taken, response given and proposed strategies for reducing the recurrence of such complaints; (c) details of any review of, and minor amendments made to, the CEMP as a result of construction carried out during the reporting period; (d) a register of any consistency assessments undertaken and their status; (e) results of any environmental audits and details of any actions taken in response to the recommendations of an audit; (f) a summary of all incidents notified in accordance with Condition A38 and Condition A41 of this approval; and (g) any other matter relating to compliance with the terms of this approval or as requested by the Secretary.	Yes	Construction	Compliant	The Construction Compliance Report # 1 (7 January - 7 July 2019) addresses the requirements of this condition inclusive of: a) Environmental monitoring; b) Complaints management; c) CEMP implementation, review and updates; d) Consistency assessment status; e) Audit results and actions implemented; f) Incident management and reporting; and g) Compliance with the terms of approval. This tracking table is evidence of compliance monitoring in accordance with CoA A30 (g).
d)					
A31	A **Pre-Operation Compliance Report** must be prepared and submitted to the Secretary for information no later than one month before the commencement of operation (or stage of operation) or within another timeframe agreed with the Secretary. The **Pre-Operation Compliance Report** must include: (a) details of how the terms of this approval that must be addressed before the commencement of operation have been complied with; and (b) the commencement date for operation.	Yes	Operation	Not Triggered	Stage 2 is presently under construction.
A32	Operation (or stage of operation) must not commence until the **Pre-Operation Compliance Report** has been submitted for information to the Secretary.	Yes	Operation	Not Triggered	Stage 2 is presently under construction.
AUDITING					
A33	An **Environmental Audit Program** for independent environmental auditing against the terms of this approval must be prepared in accordance with *AS/NZS ISO 19011:2014 - Guidelines for Auditing Management Systems* and submitted to the Secretary for information no later than one month before the commencement of works except in relation to the works at the Croom Regional Sporting Complex, or within another timeframe agreed with the Secretary.	Yes	Construction and Operation	Compliant	The Environmental Audit Program was endorsed by the ER and submitted to the Department, 20 September 2018. The Department provided an acknowledgement letter, 26 September 2018. Albion Park Rail bypass Stage 2 Construction works commenced, 7 January 2019.
A34	The **Environmental Audit Program**, as submitted to the Secretary**,** must be implemented for the duration of the works except in relation to the works at the Croom Regional Sporting Complex.	Yes	Construction and Operation	Compliant	Fulton Hogan acknowledges the requirements outlined within the Environmental Audit Program (EAP - Rev 4) provided to the Secretary, 20 September 2018. An independent audit is scheduled during reporting period 2 (08 July 2019 - 07 January 2020) and then each 12 months for the duration of the Stage 2 works.
A35	All independent environmental audits of the SSI must be conducted by a suitably qualified, experienced and independent team of experts in auditing and be documented in an **Environmental Audit Report** which: (a) assesses the environmental performance of the SSI, and its effects on the surrounding environment; (b) assesses whether the project is complying with the terms of this approval; (c) reviews the adequacy of any document required under this approval; and (d) recommends measures or actions to improve the environmental performance of the SSI, and improvements to any document required under this approval.	Yes	Construction and Operation	Compliant	Fulton Hogan acknowledges the requirements outlined within the Environmental Audit Program (EAP - Rev 4) provided to the Secretary, 20 September 2018. An independent audit is scheduled during reporting period 2 (08 July 2019 - 07 January 2020) and then each 12 months for the duration of the Stage 2 works. The scope of works and tender documentation for procurement of an independent audit team references the "Independent Audit" Post Approvals Requirements guidance document (NSW DP&E, June 2018) to achieve general consistency with the Department's requirements inclusive of all components relating to CoA A35.
A36	The **Environmental Audit** must be carried out within 12 months of works commencing except in relation to the works at the Croom Regional Sporting Complex, and annually thereafter during the delivery of the SSI, and within 12 months of the commencement of operation and then as required by the Secretary.	Yes	Construction and Operation	Not Triggered	Fulton Hogan acknowledges the requirements outlined within the Environmental Audit Program (EAP - Rev 4) provided to the Secretary, 20 September 2018. Albion Park Rail bypass Stage 2 construction works commenced, 7 January 2019. An independent audit is scheduled during reporting period 2 (08 July 2019 - 07 January 2020) i.e. within the 12 month period of work commencing and then each 12 months for the duration of the Stage 2 works.
A37	The Proponent must submit a copy of the **Environmental Audit Report** to the Secretary with a response to any recommendations contained in the audit report within six (6) weeks of completing the audit, or within another timeframe agreed with the Secretary.	Yes	Construction and Operation	Not Triggered	An independent audit is scheduled during reporting period 2 (08 July 2019 - 07 January 2020) and then each 12 months for the duration of the Stage 2 works. Fulton Hogan expect to provide the first audit report within 6 weeks of completing the audit during reporting period 2 (08 July 2019 - 07 January 2020).
INCIDENT NOTIFICATION					
A38	The Secretary must be notified as soon as possible and in any event within 24 hours of any incident associated with the delivery of the SSI.	Yes	Construction and Operation	Compliant	Provisions for incident notification to the Secretary as soon as possible and in any event within 24 hours of any incident associated with the delivery of the SSI are described in the CEMP. The CEMP (Rev 9) was approved by the Secretary on 7 December 2018. One incident occurred on 8 April 2019 and was reported to the Secretary, 9 April 2019.
A39	Notification of an incident under **Condition A38** of this approval must include the time and date of the incident, details of the incident and must identify any non-compliance with this approval.	Yes	Construction and Operation	Compliant	Detailed incident reporting has been submitted to the Department's Compliance Team as required.

A40	Any requirements of the Secretary or relevant government authority (as determined by the Secretary) to address the cause or impact of an incident reported in accordance with **Condition A38** of this approval, must be met within the timeframe determined by the Secretary or relevant government authority.	Yes	Construction and Operation	Compliant	Fulton Hogan and RMS have supplied all requested information to the Department and relevant authorities within the requested time frames. This is evidenced in emails, letters and reports to the Department and relevant authorities.
A41	If statutory notification is given to the EPA as required under the POEO Act in relation to the SSI, such notification must also be provided to the Secretary within 24 hours after the notification was given to the EPA.	Yes	Construction and Operation	Not Triggered	No statutory notification has been provided to NSW EPA in relation to environmental incidents within the reporting period. As a courtesy, NSW EPA were notified on 9 April 2019 about the incident referred to at CoA A38.
PART B: COMMUNITY INFORMATION AND REPORTING					
COMMUNITY INFORMATION, COMMUNICATION AND INVOLVEMENT					
B1	A **Community Communication Strategy** must be prepared to facilitate communication between the Proponent and the community (including Relevant Council(s), adjoining affected landowners and businesses, and others directly impacted by the SSI), during the delivery of the SSI and for a minimum of 12 months following the completion of the SSI.	Yes	Construction and Operation	Compliant	A Community Consultation Strategy (CCS) has been prepared to facilitate communication between Fulton Hogan and the community. The CCS (Rev 6) was endorsed by the ER, 13 November 2018 and approved by the Secretary, 14 November 2018. The CCS describes the methods used to facilitate communication between Roads and Maritime Services (RMS), Fulton Hogan, key stakeholders and the community.
Appendix A - Stage 2 Conditions of Approval Compliance Table					
CoA	**Condition of Approval (CoA)**	**Applicable to Stage 2?**	**Project Phase applicable to Condition**	**Stage 2 Compliance**	**Evidence of Stage 2 Pre-Construction Compliance/ Notes**
B2	The Community Communication Strategy must: (a) identify people or organisations to be consulted during the delivery of the project; (b) set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the SSI; (c) identify opportunities to provide accessible information regarding regularly updated site activities, schedules and milestones at each construction site; (d) identify opportunities for the community to visit construction sites (taking into consideration workplace health and safety requirements); (e) involve construction personnel from each construction site in engaging with the local community; (f) provide for the formation of issue or location-based community forums, that focus on key environmental management issues of concern to the relevant community(ies) for the SSI; and (g) set out procedures and mechanisms: i. through which the community can discuss or provide feedback to the Proponent; ii. through which the Proponent will respond to enquiries or feedback from the community; and iii. to resolve any issues and mediate any disputes that may arise in relation to the environmental management and delivery of the SSI.	Yes	Construction and Operation	Compliant	Compliance with CoA B2 is detailed as follows: (a) CCS Section 2.2 identifies key stakeholders including people, organisations and community groups to be consulted during delivery of the project. (b) CCS Section 3.2 details potential issues and impacts to the community and outlines the communication strategy adopted to address and minimise these including setting out procedures for the regular distribution of accessible information relevant to the project. (c) CCS Section 5.4 outlines activities and tools used to provide accessible information to stakeholders and the community about the project. (d) A community display centre has been established within the main site compound, and is accessible to the public to make face-to-face enquiries and/or complaints about the project. The display centre is staffed and open Monday to Fridays between 9am and 5pm (excluding public holidays). (e) Construction personnel from each discipline are involved in engaging with the local community through a range of mechanisms, including providing site tours, participating in community information sessions, stakeholder presentations and community involvement activities such as Book Week and Planet Ark National Tree Day. (f) Five community information sessions have been held during the reporting period, including location specific (street) meetings, open public forums, Aboriginal Focus Group meetings and staffed displays. (g) CCS Section 5.5.1 details the facilities established on the project through which the community may discuss or provide feedback on the project, including a toll free community information line, community email address and postal address. These facilities are included on all printed or digital communication materials sent to the community. A Complaints Management Strategy has also been prepared and approved which sets out procedures and mechanisms in place to resolve any issues or mediate disputes in relation to the environmental management and delivery of the project.
B3	The **Community Communication Strategy** must be submitted to the Secretary for approval no later than one (1) month before commencement of any works, or within another timeframe agreed with the Secretary.	Yes	Construction and Operation	Compliant	The Community Consultation Strategy for Stage 2 (CCS Rev 6) was endorsed by the ER, 13 November 2018 and approved by the Secretary, 14 November 2018. The Albion Park Rail bypass Stage 2 Construction works commenced on 7 January 2019.
B4	Work for the purposes of the SSI must not commence until the **Community Communication Strategy** has been approved by the Secretary.	Yes	Construction and Operation	Compliant	The Community Consultation Strategy for Stage 2 (CCS Rev 6) was endorsed by the ER, 13 November 2018 and approved by the Secretary, 14 November 2018. The Albion Park Rail bypass Stage 2 Construction works commenced on 7 January 2019.
B5	The **Community Communication Strategy**, as approved by the Secretary, must be implemented for the duration of the works and for 12 months following the completion of construction.	Yes	Construction and Operation	Compliant	The project team commenced implementation of the Community Consultation Strategy (CCS - Rev 3) on 14 November 2018. Since implementation of the CCS, 2,291 events have been recorded in the project's stakeholder database Consultation Manager, including incoming and outgoing phone calls, emails and letters; notifications and letterbox drops; door knocks; visits to the display centre; face-to-face meetings; and community information and involvement activities. 13 community information and involvement activities have been held since commencement of the project, including Aboriginal Focus Group meetings, staffed information displays, community information sessions, sound lab sessions, presentations and education and awareness events. Fulton Hogan acknowledge that implementation of the CCS will be ongoing until 12 months after completion of the works.
COMPLAINTS MANAGEMENT SYSTEM					
B6	A **Complaints Management System** must be prepared and submitted to the Secretary for information prior to the commencement of any works in respect of the SSI and must be implemented and maintained for the duration of works and for a minimum for 12 months following completion of construction of the SSI.	Yes	Construction and Operation	Compliant	The Complaints Management System (CMS) was submitted to DP&E for information on 19 September 2018 to address the requirements of CoA B6 and has been implemented since commencement of project activities. The CMS describes the approach adopted by the project team for handling complaints related to works associated with the project. Section 1.3 of the CMS details the scope of the complaints management system. It is anticipated that implementation of the CMS will be ongoing until 12 months after completion of the works.

B7	The **Complaints Management System** must include a **Complaints Register** to be maintained recording information on all complaints received about the SSI during the carrying out of any works associated with the SSI, and for a minimum of 12 months following the completion of construction. The Complaints Register must record the: (a) number of complaints received; (b) number of people affected in relation to a complaint; and (c) nature of the complaint and means by which the complaint was addressed and whether resolution was reached, with or without mediation.	Yes	Construction and Operation	Compliant	The Complaints Management System (CMS) Section 2.2 highlights the project's approach to recording, investigating and handling all community and stakeholder complaints relating to the project. Information about all complaints are recorded in both the project Complaints Register and stakeholder database Consultation Manager. Information contained in the register, including the number of complaints received, number of people affected and nature of the complaint/s, is summarised in a monthly report which is made available to the ER and RMS at the end of each month or as required. Both RMS and the ER are notified immediately of any complaint or issue that has the potential to attract media or political attention, or requires escalation or advice to the Department.
B8	The **Complaints Register** must be provided to the Secretary upon request, within the timeframe stated in the request.	Yes	Construction and Operation	Not Triggered	No request has been received. The ER provides a summary of complaints to the Department in the ER's monthly report submission.
B9	The following facilities must be made available within one (1) month from the date of this approval or within another timeframe agreed with the Secretary, and for 12 months following the completion of construction: (a) a 24 hour telephone number for the registration of complaints and enquiries about the SSI; (b) a postal address to which written complaints and enquires may be sent; (c) an email address to which electronic complaints and enquiries may be transmitted; and (d) a mediation system for complaints unable to be resolved.	Yes	Construction and Operation	Compliant	The Complaints Management System (CMS) Section 2.1 details the facilities in place for receiving complaints. These facilities include a toll free community information line (available 24 hours a day, 7 days a week); an email address to allow the community to transmit electronic complaints, and a postal address to send written complaints to the project team. The telephone number was established by Roads and Maritime Services in October 2015 and is managed by Fulton Hogan during construction of the project. The telephone number will be available for the duration of the project and for 12 months following completion of construction. All enquiries, feedback and complaints are registered in the project's stakeholder database, Consultation Manager. CMS Section 2.4.1 details the project's approach to complaint escalation for complaints unable to be resolved or requiring mediation.
B10	The telephone number, postal address and email address required under **Condition B9** of this approval must be published in a newspaper circulating in the local area prior to the commencement of works and published in the same way again prior to the commencement of operation. This information must also be provided on the website required under **Condition B11** of this approval.	Yes	Construction and Operation	Compliant	In compliance with CoA B10, the project telephone number, postal address and email address were published prior to commencement of works as follows: - Wednesday 26 September 2018, Illawarra Mercury (page 23) - Wednesday 26 September 2018, South Coast Register (page 31) - Wednesday 3 October 2018, The Advertiser incorporating the Lake Times (page 26) This information is also available on the project website at rms.nsw.gov.au/aprb under 'project contact' section and is included on all printed notifications, contact cards, newsletters and written materials sent to the community. Albion Park Rail bypass Stage 2 construction works commenced on 7 January 2019.
PROVISION OF ELECTRONIC INFORMATION					
B11	A website providing information in relation to the SSI must be established before the commencement of works and maintained during the delivery of the SSI, and for a minimum of 12 months following the completion of construction or within another timeframe agreed with the Secretary. The following up-to-date information (excluding confidential, private and commercial information) must be published and maintained on the website or dedicated pages: (a) information on the current implementation status of the SSI; (b) a copy of the documents listed in Table 2 of this approval, and any documentation relating to any modifications made to the SSI or the terms of this approval; (c) a copy of this approval in its original form, a current consolidated copy of this approval (that is, including any approved modifications to its terms), and copies of any approval granted by the Minister to a modification of the terms of this approval; (d) a copy of each statutory approval, licence or permit required and obtained in relation to the SSI; and (e) a current copy of each document required under the terms of this approval and any endorsements, approvals or requirements from the ER and Secretary, all of which must be published prior to the commencement of any works to which they relate or prior to their implementation as the case may be.	Yes	Construction and Operation	Compliant	Roads and Maritime Services has established a website for the project (www.rms.nsw.gov.au/apr) Community Consultation Strategy (CCS) Section 5.4.1 outlines the approach to maintaining up to date information on the project website, including: (a) information on the current status of the project via the 'latest news' section of the website. This section is updated as required to notify the community of construction activities, project milestones and events. (b) a copy of the documents listed in Table 2, which can be found in the 'project documents' section of the website. (c) a copy of the NSW Government Infrastructure Approval SSI6878, which can be found in the 'project documents' section of the website. (d) copies of licences and permits required in relation to the project, including a link on the home page of the website to the Environment Protection Licence (EPL 21139), available on the Fulton Hogan website at www.fultonhogan.com/managementplans/albion-park-rail-bypass/ (e) a copy of each document required under the terms of approval, which can be found in the 'project documents' section of the website under 'Conditions of Approval Project Documents'.
PART C: CONSTRUCTION ENVIRONMENTAL MANAGEMENT					
C1	A **Construction Environmental Management Plan** (**CEMP**) must be prepared in accordance with the Department's *Guideline for the Preparation of Environmental Management Plans* to detail how the performance outcomes, commitments and mitigation measures specified in the EIS as amended by the SPIR will be implemented and achieved during construction.	Yes	Construction	Compliant	The CEMP was prepared in accordance with the Guideline for the Preparation of Environmental Management Plans and submitted to DP&E, 19 September 2018. Stage 2 works are proceeding in accordance with the management plans approved by the Department prior to construction and all requirements of the Secretary are being complied with. Approval of the noted plans was provided by the Secretary as follows: - Heritage Management Sub-Plan - Rev 8 approved 29 November 2018 - Traffic and Transport Management Sub-Plan - Rev 11 approved 29 November 2018 - Construction Environmental Management Plan (CEMP) - Rev 9 approved 7 December 2018 - Noise and Vibration Management Sub-Plan - Rev 6 approved 7 December 2018 - Flora and Fauna Management Sub-Plan - Rev 9 approved 7 December 2018 - Soil and Water Management Sub-Plan - Rev 8 approved 7 December 2018 - Air Quality Management Sub-Plan - Rev 7 approved 7 December 2018 - Flooding and Hydrology Management Sub-Plan - Rev 11 approved 21 December 2018 - Waste and Energy Management Sub-Plan - Rev 4 submitted as information 12 October 2018 - Contaminated Land Management Sub-Plan - Rev 4 submitted as information 12 October 2018
Appendix A - Stage 2 Conditions of Approval Compliance Table					
CoA	**Condition of Approval (CoA)**	**Applicable to Stage 2?**	**Project Phase applicable to Condition**	**Stage 2 Compliance**	**Evidence of Stage 2 Pre-Construction Compliance/ Notes**

<table>
<tr>
<td>C2</td>
<td>The CEMP must provide:
(a) a description of activities to be undertaken during construction (including the scheduling of construction);
(b) details of environmental policies, guidelines and principles to be followed in the construction of the SSI;
(c) a schedule for compliance auditing;
(d) a program for ongoing analysis of the key environmental risks arising from the activities described in subsection (a) of this condition, including an initial risk assessment undertaken before the commencement of construction of the SSI;
(e) details of how the activities described in subsection (a) of this condition will be carried out to:
i. meet the performance outcomes stated in the EIS as amended by the SPIR; and
ii. manage the risks identified in the risk analysis undertaken in subsection (d) of this condition;
(f) an inspection program detailing the activities to be inspected and frequency of inspections;
(g) a protocol for managing and reporting any:
i. incidents; and
ii. manage the risks identified in the risk analysis undertaken in subsection (d) of this condition;
(h) procedures for rectifying any non-compliance with this approval identified during compliance auditing, incident management or at any time during construction;
(i) a list of all the CEMP Sub-plans required in respect of construction, as set out in Condition C4. Where staged construction of the SSI is proposed, the CEMP must also identify which CEMP Sub-plan applies to each of the proposed stages of construction;
(j) a description of the roles and environmental responsibilities for relevant employees and their relationship with the ER;
(k) for training and induction for employees, including contractors and sub-contractors, in relation to environmental and compliance obligations under the terms of this approval; and
(l) for periodic review and update of the CEMP and all associated plans and programs.</td>
<td>Yes</td>
<td>Construction</td>
<td>Compliant</td>
<td>The CEMP (Rev 9) was approved by the Secretary, 7 December 2018.
The approved management plans provide all information required by CoA C2 as set out below: C2a) CEMP Sections 2.1, 2.3, 2.4
C2b) CEMP Sections 3.1.2, 3.1.2, 3.1.4
C2c) CEMP Section 3.7.3
C2d) CEMP Sections 3.1.1, 3.1.2, 3.1.5, 3.7, Appendix A2
C2e) CEMP Sections 3.1.1, 3.1.2, 3.1.4, 3.1.5, Appendix A2, Appendices B1-B9 (CEMP sub-plans) C2f) CEMP Section 3.7.1
C2g) CEMP Sections 3.6, 3.8 C2h) CEMP Section 3.8
C2i) CEMP Section 4 C2j) CEMP Section 3.2 C2k) CEMP Section 3.4
C2l) CEMP Sections 1.6, 3.10.</td>
</tr>
<tr>
<td>C3</td>
<td>The CEMP must be endorsed by the ER and then submitted to the Secretary for approval no later than one (1) month before the commencement of construction or within another timeframe agreed with the Secretary.</td>
<td>Yes</td>
<td>Construction</td>
<td>Compliant</td>
<td>The CEMP was submitted to DP&E, 19 September 2018.
The CEMP (Rev 9) was endorsed by the ER, 5 December 2018. The Secretary approved the CEMP (Rev 9), 7 December 2018. Stage 2 construction works commenced on 7 January 2019.
This is evidenced in formal letters to the Department, 8 January 2019 and in email correspondence.</td>
</tr>
<tr>
<td>C4</td>
<td>The following CEMP Sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP Sub-plan and be consistent with the CEMP referred to in Condition C1.
Table 3: CEMP Sub-plan Consultation Requirements
<table>
<tr><th></th><th>Required CEMP Sub-plan</th><th>Relevant government agencies to be consulted for each CEMP Sub-plan</th></tr>
<tr><td>a)</td><td>Traffic and transport</td><td>Relevant Council(s)</td></tr>
<tr><td>b)</td><td>Noise and vibration</td><td>EPA</td></tr>
<tr><td>c)</td><td>Fauna and Flora</td><td>OEH and DPI Fisheries</td></tr>
<tr><td>d)</td><td>Soil and water</td><td>EPA and DPI Water and Fisheries</td></tr>
<tr><td>e)</td><td>Heritage</td><td>OEH, Relevant Council(s), Registered Aboriginal Parties</td></tr>
<tr><td>f)</td><td>Flooding and Hydrology</td><td>OEH and Relevant Council(s)</td></tr>
</table></td>
<td>Yes</td>
<td>Construction</td>
<td>Compliant</td>
<td>The CEMP and Sub-plans have been prepared in consultation with relevant government agencies and was approved by the Secretary as detailed under CoA C1.
CEMP Section 1.3 identifies a list of Agencies or representatives who contributed to the preparation of the CEMP during the consultation period. Consultation was sought from:
- Wollongong City Council
- Shellharbour City Council
- NSW Environment Protection Authority (EPA)
- NSW Office of Environment and Heritage (OEH)
- NSW Department of Primary Industries Fisheries
- NSW Department of Primary Industries Water (formerly NSW Office of Water)
- Registered Aboriginal Parties.
This is evidenced in Appendix A5 of the approved CEMP which includes all details of the stakeholders input during preparation of the CEMP and sub-plans.</td>
</tr>
<tr>
<td>C5</td>
<td>The CEMP Sub-plans must state how:
(a) the environmental performance outcomes identified in the EIS as amended by the SPIR as modified by these conditions will be achieved;
(b) the mitigation measures identified in the EIS as amended by the SPIR as modified by these conditions will be implemented;
(c) the relevant terms of this approval will be complied with (in particular Part E of this approval);
(d) the identification of the relevant environmental specific training and induction processes for construction personnel; and
(e) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.</td>
<td>Yes</td>
<td>Construction</td>
<td>Compliant</td>
<td>The approved CEMP Sub-plans have been approved by the Secretary as they provide relevant information regarding implementation throughout the sub-plans as required by CoA C5.
Specific references are set out below:
<table>
<tr><th>Sub-plan</th><th>AQMP</th><th>SWMP</th><th>NVMP</th><th>FFMP</th><th>HMP</th><th>TTMP</th><th>FHMP</th></tr>
<tr><td>C5 (a)</td><td>Section 2.4</td><td>Section 2.4</td><td>Section 2.4</td><td>Section 2.4</td><td>Section 2.4</td><td>Section 2.3</td><td>Section 2.4</td></tr>
<tr><td>C5 (b)</td><td>Section 6</td><td>Section 6</td><td>Section 8</td><td>Section 6</td><td>Section 6</td><td>Section 4</td><td>Section 6</td></tr>
<tr><td>C5 (c)</td><td>Section 3.3</td><td>Section 3.2</td><td>Section 3.2</td><td>Section 3.2</td><td>Section 3.2</td><td>Section 4.3</td><td>Section 3.2</td></tr>
<tr><td>C5 (d)</td><td>Section 7.2</td><td>Section 7.2</td><td>Section 9.2</td><td>Section 7.2</td><td>Section 7.2</td><td>Section 25</td><td>Section 7.2</td></tr>
<tr><td>C5 (e)</td><td>Section 5</td><td>Section 5</td><td>Section 6</td><td>Section 4.1</td><td>Section 5</td><td>Section 21</td><td>Section 5</td></tr>
</table></td>
</tr>
<tr>
<td>C6</td>
<td>The CEMP Sub-plans must be developed in consultation with relevant government agencies identified in Table 3 of Condition C4 of this approval. Where an agency(ies) request(s) is not included, the Proponent must provide the Secretary justification as to why. Details of all information requested by an agency to be included in a CEMP Sub- plan as a result of consultation, including copies of all correspondence from those agencies, must be provided with the relevant CEMP Sub-Plan.</td>
<td>Yes</td>
<td>Construction</td>
<td>Compliant</td>
<td>The CEMP Sub-plans have been prepared in consultation with relevant government agencies and was approved by the Secretary as detailed under CoA C1.
CEMP Section 1.3 identifies a list of Agencies or representatives who contributed to the preparation of the CEMP during the consultation period. Consultation included:
- Wollongong City Council (WCC)
- Shellharbour City Council (SCC)
- NSW Environment Protection Authority (EPA)
- NSW Office of Environment and Heritage (OEH)
- NSW Department of Primary Industries Fisheries
- NSW Department of Primary Industries Water (formerly NSW Office of Water)
- Registered Aboriginal Parties.
This is evidenced in Appendix A5 of the approved CEMP which includes all details of the stakeholders input during preparation of the CEMP and sub-plans.</td>
</tr>
</table>

C7	Any of the **CEMP Sub-plans** may be submitted to the Secretary for approval along with, or subsequent to, the submission of the **CEMP** but in any event, no later than one (1) month before commencement of construction.	Yes	Construction	Compliant	The CEMP sub-plans were approved by the Secretary as below: - Heritage Management Sub-Plan - Rev 8 approved 29 November 2018 - Traffic and Transport Management Sub-Plan - Rev 11 approved 29 November 2018 - Noise and Vibration Management Sub-Plan - Rev 6 approved 7 December 2018 - Flora and Fauna Management Sub-Plan - Rev 9 approved 7 December 2018 - Soil and Water Management Sub-Plan - Rev 8 approved 7 December 2018 - Air Quality Management Sub-Plan - Rev 7 approved 7 December 2018 - Flooding and Hydrology Management Sub-Plan - Rev 11 approved 21 December 2018 - Waste and Energy Management Sub-Plan - Rev 4 submitted for information 12 October 2018 - Contaminated Land Management Sub-Plan - Rev 4 submitted for information 12 October 2018 Stage 2 construction works commenced on 7 January 2019. No works were conducted that influenced potential flooding or hydrology impacts for more than one month after approval of the FHMP. This is evidenced in the construction program, site inspection notes, photographic records, EWMS preparation and "Works around Waterways" workshop documentation which occurred with relevant agencies, 8 March 2019.
C8	Construction must not commence until the **CEMP** and all **CEMP Sub-plans** have been approved by the Secretary. The **CEMP** and **CEMP Sub-plans**, as approved by the Secretary, including any minor amendments approved by the ER must be implemented for the duration of construction. Where the SSI is being staged, construction of that stage is not to commence until the relevant CEMP and sub-plans have been approved by the Secretary, unless otherwise agreed by the Secretary.	Yes	Construction	Compliant	Albion Park Rail bypass Stage 2 construction works commenced, 7 January 2019. Stage 2 works are proceeding in accordance with the management plans approved by the Department prior to construction and all requirements of the Secretary are being complied with. Approval of the noted plans was provided by the Department as follows: - Construction Environmental Management Plan (CEMP) - Rev 9 approved 7 December 2018 - Heritage Management Sub-Plan - Rev 8 approved 29 November 2018 - Traffic and Transport Management Sub-Plan - Rev 11 approved 29 November 2018 - Noise and Vibration Management Sub-Plan - Rev 6 approved 7 December 2018 - Flora and Fauna Management Sub-Plan - Rev 9 approved 7 December 2018 - Soil and Water Management Sub-Plan - Rev 8 approved 7 December 2018 - Air Quality Management Sub-Plan - Rev 7 approved 7 December 2018 - Flooding and Hydrology Management Sub-Plan - Rev 11 approved 21 December 2018 CEMP implementation is ongoing and is evidenced by annual reviews, independent audit reports and ongoing liaison with the ER regarding matters of environmental management and compliance with the approved plans.
CONSTRUCTION MONITORING PROGRAMS					
C9	The following **Construction Monitoring Programs** must be prepared in consultation with the relevant government agencies identified for each **Construction Monitoring Program** to compare actual performance of construction of the SSI against performance predicted performance: **Table 4: Construction Monitoring Program Consultation Requirements** a) Air Quality — EPA b) Groundwater — DPI Water c) Surface Water — EPA and DPI Fisheries d) Noise — EPA	Yes	Construction	Compliant	The requirements of the Construction Monitoring Programs (CMPs) noted in CoA C9 Table 4 were approved by the Secretary, 7 December 2018. During preparation of the CMPs, consultation was sought from: - NSW Environment Protection Authority (EPA) - NSW Department of Primary Industries Water (formerly NSW Office of Water) - NSW Department of Primary Industries Fisheries This is evidenced in Appendix A5 of the approved CEMP which includes all details of the stakeholders input during preparation of the CEMP, sub-plans and CMPs.
C10	Each **Construction Monitoring Program** must provide: (a) details of baseline data available; (b) details of baseline data to be obtained and when; (c) details of all monitoring of the project to be undertaken; (d) the parameters of the project to be monitored; (e) the frequency of monitoring to be undertaken; (f) the location of monitoring; (g) the reporting of monitoring results; (h) procedures to identify and implement additional mitigation measures where results of monitoring are unsatisfactory; and (i) any consultation to be undertaken in relation to the monitoring programs.	Yes	Construction	Compliant	The requirements of the Construction Monitoring Programs (CMPs) noted in CoA C10 were approved by the Secretary, 7 December 2018. The CEMP Sub-plans identify the monitoring program requirements of CoA C10 as outlined in Section 3.7.2 of the CEMP (Rev 9). CMPs have been incorporated into the respective CEMP sub-plan as follows: - Air quality monitoring is detailed in CEMP Appendix B6 (AQMP - Appendix A) - Ground Water Monitoring is detailed in CEMP Appendix B4 (SWMP - Appendix B) - Surface Water Monitoring is detailed in CEMP Appendix B4 (SWMP - Appendix B) - Noise Monitoring is detailed in CEMP Appendix B3 (NVMP - Section 9.3).

Appendix A - Stage 2 Conditions of Approval Compliance Table

CoA	Condition of Approval (CoA)	Applicable to Stage 2?	Project Phase applicable to Condition	Stage 2 Compliance	Evidence of Stage 2 Pre-Construction Compliance/ Notes
C11	The **Construction Monitoring Programs** must be developed in consultation with relevant government agencies as identified in **Table 4** of **Condition C9** of this approval and must include, to the written satisfaction of the Secretary, information requested by an agency to be included in a **Construction Monitoring Programs** during such consultation. Details of all information requested by an agency including copies of all correspondence from those agencies, must be provided with the relevant **Construction Monitoring Program**.	Yes	Construction	Compliant	The CMPs have been incorporated in the relevant CEMP Sub-plans as permitted by CoA C16. CMP consultation with relevant government agencies identified in CoA C9 Table 4 was undertaken as part of CEMP consultation, recorded in Appendix A5 of the CEMP (Rev 9). The CEMP, Sub-plans inclusive of CMPs were approved by the Secretary, 7 December 2018.
C12	The Construction Monitoring Programs must be endorsed by the ER and then submitted to the Secretary for approval at least one (1) month before the commencement of construction or within another timeframe agreed with the Secretary.	Yes	Construction	Compliant	The ER first endorsed the respective CEMP sub-plans inclusive of CMPs as follows: - Air quality monitoring program - CEMP Appendix B6 (AQMP Rev 7): 5 December 2018 - Ground Water Monitoring program - CEMP Appendix B4 (SWMP Rev 8): 5 December 2018 - Surface Water Monitoring program - CEMP Appendix B4 (SWMP Rev 8): 5 December 2018 - Noise Monitoring program - CEMP Appendix B3 (NVMP Rev 6): 13 November 2018 Minor amendments were made to the CNVMP and endorsed by the ER 13 December 2018. The CEMP was submitted to the Department, 19 September 2018 and The CEMP Sub-plans and CMPs noted above were approved by the Secretary, 7 December 2018. Albion Park Rail bypass Stage 2 construction works commenced, 7 January 2019.

C13	Construction must not commence until the Secretary has approved all of the required **Construction Monitoring Programs**, and all relevant baseline data for the specific construction activity has been collected.	Yes	Construction	Compliant	The CEMP Sub-plans and CMPs noted in CoA C9 Table 4 were approved by the Secretary, 7 December 2018. Albion Park Rail bypass Stage 2 construction works commenced, 7 January 2019. Relevant baseline data has been collected and is evidenced in monitoring records and relevant monitoring reports.
C14	The **Construction Monitoring Programs**, as approved by the Secretary, including any minor amendments approved by the ER, must be implemented for the duration of construction and for any longer period as set out in the monitoring program or specified by the Secretary, whichever is the greater.	Yes	Construction	Compliant	Stage 2 works are proceeding in accordance with the management plans approved by the Secretary prior to construction and all requirements of the CMP are being complied with. Environmental monitoring data is being recorded, reviewed and reported monthly. This is evidenced in monitoring records and relevant monitoring reports . The Construction Compliance Report # 1 (7 January - 7 July 2019) demonstrates implementation as required by CoA C14 and A30.
C15	The results of the **Construction Monitoring Programs** must be submitted to the Secretary, and relevant regulatory agencies and Relevant Council(s), for information in the form of a **Construction Monitoring Report** at the frequency identified in the relevant **Construction Monitoring Program**.	Yes	Construction	Compliant	Stage 2 works are proceeding in accordance with the management plans approved by the Secretary prior to construction and all requirements of the CMP are being complied with. Environmental monitoring data is being recorded, reviewed and reported. The Construction Compliance Report # 1 (7 January - 7 July 2019) includes the necessary information for construction monitoring reporting requirements under CoA C15 and is incorporated as Appendix B within the CCR for the same reporting period.
C16	Where a relevant **CEMP Sub-plan** exists, the relevant **Construction Monitoring Program** may be incorporated into that **CEMP Sub-plan.**	Yes	Construction	Compliant	The relevant CMP has been incorporated into the appropriate CEMP Sub-plan. The CEMP Sub-plans and CMPs noted in CoA C9 Table 4 were approved by the Secretary, 7 December 2018.
PART D: OPERATIONAL ENVIRONMENTAL MANAGEMENT					
OPERATIONAL ENVIRONMENTAL MANAGEMENT					
D1	An **Operational Management Plan (OEMP)** must be prepared in accordance with the Department's *Guideline for the Preparation of Environmental Management Plans* to detail how the performance outcomes, commitments and mitigation measures made and identified in the EIS as amended by the SPIR will be implemented and achieved during operation. This condition (**Condition D1**) does not apply if **Condition D2** of this approval applies.	Yes	Operation	Not Triggered	
D2	An **OEMP** is not required for the SSI if the Proponent has an **Environmental Management System** (**EMS**) or equivalent as agreed with the Secretary, and can demonstrate, to the written satisfaction of the Secretary at least one (1) month prior to the commencement of operation or within another timeframe agreed with the Secretary, that through the **EMS**: (a) the performance outcomes, commitments and mitigation measures, made and identified in the EIS as amended by the SPIR, and these conditions of approval can be achieved; (b) issues identified through ongoing risk analysis can be managed; and (c) procedures are in place for rectifying any non-compliance with this approval identified during compliance auditing, incident management or any other time during operation.	Yes	Operation	Not Triggered	
D3	The **OEMP** or **EMS** or equivalent as agreed with the Secretary, must be submitted to the Secretary for information no later than one (1) month before the commencement of operation or within another timeframe agreed with the Secretary.	Yes	Operation	Not Triggered	
D4	Where an **OEMP** is required, the Proponent must include the following **OEMP Sub-plans** in the **OEMP**: **Table 5: OEMP Sub-plan Consultation Requirements** | | Required OEMP Sub-plan | Relevant government agencies to be consulted for each OEMP Sub-plan | | a) | Noise and vibration | EPA | | b) | Soil and Water | EPA, DPI Water and Fisheries | | c) | Traffic and Transport | Relevant Council(s) | | d) | Flooding | OEH and Relevant Council(s) |	Yes	Operation	Not Triggered	
D5	Each of the **OEMP Sub-plans** must include the information set out in **Condition D2** of this approval.	Yes	Operation	Not Triggered	
D6	The **OEMP Sub-plans** must be developed in consultation with relevant government agencies as identified in **Table 5** of **Condition D4.** Where an agency(ies) request(s) is not included in an OEMP sub-plan, the Proponent must provide to the Secretary justification as to why**.** Details of all information requested by an agency to be included in an **OEMP Sub-plan** as a result of consultation**,** including copies of all correspondence from those agencies, must be provided with the relevant **OEMP Sub-Plan**.	Yes	Operation	Not Triggered	
D7	The **OEMP Sub-plans** must be submitted to the Secretary as part of the **OEMP.**	Yes	Operation	Not Triggered	
D8	The **OEMP** or **EMS** or equivalent as agreed with the Secretary, as submitted to the Secretary and amended from time to time, must be implemented for the duration of operation and the **OEMP** or **EMS** must be made publicly available prior to the commencement of operation.	Yes	Operation	Not Triggered	
OPERATIONAL MONITORING PROGRAM					
Transport and Access					

D9	Within 12 months and 5 years of the commencement of operation of the SSI, or within another timeframe agreed to by the Secretary, the Proponent must prepare a **Road Network Performance Report** to confirm the operational traffic impacts of the project on surrounding roads and intersections. The review must be carried out in consultation with the Relevant Councils, and include: (a) an updated traffic analysis, including traffic modelling if required, of movements on the surrounding road network; (b) an assessment of the level of service at key intersections and sections of the road network; (c) mitigation measures to manage any actual or predicted traffic performance impacts; and (d) a comparison of the pre-construction and post construction road network performance for all road users. The assessment must be based on actual traffic counts, and take into consideration the Tripoli Way and Yallah Road projects, should they be operational, and the Illawarra Highway Corridor Strategy should it be adopted by RMS, during the review periods. The Road Network Performance Report must be submitted to the Secretary and Relevant Council(s) for information within 60 days of its completion or as otherwise agreed by the Secretary, and made publicly available. The Proponent is responsible for the implementation of the identified measures under Condition D9(c). Note: Identified mitigation measures may need to be further assessed under the Environmental Planning and Assessment Act, 1979. Works will need to meet relevant design standards and be subject to independent road safety audits.	Yes	Operation	Not Triggered	
Operational Noise					
Appendix A - Stage 2 Conditions of Approval Compliance Table					
CoA	**Condition of Approval (CoA)**	**Applicable to Stage 2?**	**Project Phase applicable to Condition**	**Stage 2 Compliance**	**Evidence of Stage 2 Pre-Construction Compliance/ Notes**
D10	Within 12 months of the commencement of operation of the SSI, except for the Croom Regional Sporting Complex, or as otherwise agreed by the Secretary, the Proponent must undertake monitoring of operational noise to compare actual noise performance of the SSI against the noise performance predicted in the review of noise mitigation measures required by **Condition E46.** The Proponent must prepare an Operational Noise Compliance Report to document this monitoring. The Report must include, but not necessarily be limited to: (a) noise monitoring to assess compliance with the operational noise levels predicted in the review of operational noise mitigation measures required under Condition E46; (b) a review of the operational noise levels in terms of criteria and noise goals established in the NSW Road Noise Policy 2011; (c) methodology, location and frequency of noise monitoring undertaken, including monitoring sites at which SSI 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 SSI 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 noise monitoring and 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 mitigation measures; and (g) identification of additional measures to those identified in the review of noise mitigation measures required by Condition E46, that would be implemented with the objective of meeting the criteria outlined in the NSW Road Noise Policy 2011, when these measures would be implemented and how their effectiveness would be measured and reported to the Secretary and the EPA. The Operational Noise Report must be submitted to the Secretary and the EPA within 60 days of completing the operational noise monitoring or as otherwise agreed by the Secretary, and made publicly available.	Yes	Operation	Not triggered	
PART E: KEY ISSUE CONDITIONS					
AIR QUALITY					
E1	In addition to the performance outcomes, commitments and mitigation measures specified in the EIS as amended by the SPIR, all feasibly and reasonably practicable measures must be implemented to minimise the emission of dust and other air pollutants during works and operation of the SSI.	Yes	Construction	Compliant	Management of air quality impacts is addressed in the CEMP Air Quality Management Sub-plan as approved by the Secretary, 7 December 2018. All reasonable and feasibly practicable measures are being implemented during the stage 2 works, inclusive of traditional dust suppression techniques such as water carts and the use of enhanced erosion controls including application of soil binding polymers and progressive stabilisation of earthworks which significantly reduces dust emissions. This is evidenced in site inspection records, ER site inspection notes, EPA inspection notes and through air quality monitoring records.
AVIATION					

E2	The SSI must be delivered and operated to comply with the Code 2 (Runway 08/26) and Code 3 (Runway 16/34) OLS for the Illawarra Regional Airport, except as provided for under Condition E3 and Condition E7.	Yes	Detailed design	Compliant	Code 2 & Code 3 compliance is detailed in the Aviation Management Plan (AMP - Rev 5) inclusive of Method of Working Plan in Sections 2.4, 5 and 6.1.5. Compliance with Code 2 and Code 3 within the detailed design is specifically detailed in specialist reports as follows: - OLS Intrusion Aeronautical Study, Final Report, Albion Park Rail (Doc. Ref. APR-JJR-AR-01-RPT-0001, Revision 2 dated 02 April 2019 was prepared in consultation with CASA, Air Services Australia (AsA), Shellharbour City Council, the Illawarra Regional Airport and Roads and Maritime Services (RMS). The report was endorsed by the ER 8 April 2019. - Technical Note No 31 "Intrusions into the OLS" documents compliance in regard to the locations and heights of all obstacle intrusions into the Obstacle Limitation Surface (OLS) across the design of the Albion Park Rail bypass (Stage 2). The OLS design has been modelled in detail using design software and approval by Shellharbour City Council (SCC) / Illawarra Regional Airport of the surface provided by Airport Surveys, 09 October 2018 was received by email, 14 October 2018.
E3	An **Aviation Method of Working Plan** must be developed for the Illawarra Regional Airport by an appropriately qualified expert in aviation safety in consultation with the airport operator. The Plan must provide details of any proposed works that may impact on airport operations and events. The plan must include: (a) identification of works likely to cause a hazard to or impact on aircraft and airport operations including but not limited to, intrusions into the Code 2 (Runway 08/26) and Code 3 (Runway 16/34) OLS, dust and debris, wildlife hazards, lighting and light spill, glare and reflection, and impacts from plant and equipment on aviation infrastructure (such as communication, navigation and surveillance facilities and structures); (b) identification and consultation with appropriate operators of impacted aviation infrastructure and instrument flight procedures at the airport, and known flight scheduling; (c) procedures to ensure that the runways can operate when required; (d) procedures to ensure impacts resulting in the closures or restriction of operations at either runway are limited to a duration considered reasonable in consultation with the airport operator; (e) mitigation measures for the management of those impacts and hazards to aircraft and airport operations from works; and (f) monitoring of the effectiveness of mitigation measures to ensure impacts and hazards to aircraft and airport operations is managed at all times throughout the works. The Plan must be must be made publicly available prior to the commencement of any works that impact the operation of the Illawarra Regional Airport or within two weeks of any update to the Plan.	Yes	Construction	Compliant	An Aviation Method of Working Plan for the Illawarra Regional Airport (IRA) has been prepared in consultation with IRA Manager, by a qualified expert in aviation safety. This is evidenced in monthly meeting minutes, acceptance of the plan by IRA 22 October 2018 and in Aviation Management Plan (AMP) Section 3.2. The Aviation Management Plan incorporating the Method of Working Plan was endorsed by the ER, 17 December 2018. Compliance with CoA E3 is detailed as follows: E3(a): AMP Section 6.1; Method of Working Plan (MoWP) Section 3; OLS Intrusion Aeronautical Study, Final Report, Albion Park Rail (Doc. Ref. APR-JJR-AR-01-RPT-0001, Revision 2 dated 02 April 2019; and Technical Note No 31 "Intrusions into the OLS". E3(b): AMP Section 3.2 E3(c): MoWP Section 3.1.7 E3(d): MoWP Sections 3 and 4 E3(e): MoWP Sections 3 and 4 E3(f): MoWP Sections 6.3 Compliance with CoA E3 is evidenced in email correspondence, minutes of meetings, inspections records and records of NOTAMS issued by IRA.
E4	Should any works have the potential to interfere with aircraft operations, CASA, ASA, the Airport Operator and aircraft operators must be advised at least two weeks in advance of such works. All appropriate notices as may be required of these stakeholders including **Notices to Airmen (NOTAM)**, must be prepared and received 3 days prior to the carrying out of the works.	Yes	Construction	Compliant	The requirements of CoA E4 are detailed in the Aviation Management Plan (AMP - Rev 5) inclusive of Method of Working Plan in Sections 3.3, 3.4, 6.1.5, 7.1, 7.2 and the Method of Working Plan required under CoA E3. Fulton Hogan has a dedicated management resource to regularly consult with the Illawarra Airport Manager with at least 2 weeks forward advice of works that may represent potential for interaction with aircraft. The IRA Manager determines if a NOTAM is required. Evidence is demonstrated in regular emails and formal NOTAM review meeting minutes with SCC / IRA and records of NOTAMS issued by IRA.
E5	Works must not impede the running of the Wings Over Illawarra Air Show (nominally the first weekend of May (12:00 am Thursday to 11:59 pm Sunday)). This includes the full operation of Runway 16/34 for the duration of the Air Show. Consultation must be undertaken with Shellharbour City Council to address this matter at least two weeks prior to the Air Show.	Yes	Construction	Compliant	The Wings Over the Illawarra Air Show took place on 4 and 5 May 2019 unimpeded by the project. Fulton Hogan ensured compliance with CoA C5 through consultation with the Illawarra Regional Airport (IRA) Manager and Shellharbour City Council (SCC). Works were planned so that no activities intruded the OLS on 2, 3, 4 and 5 May. This is evidenced in email correspondence, telephone records, the construction program and site diaries.
E6	All lighting associated with works (including outside standard construction hours) and operation of the SSI, including lighting associated with the Croom Regional Sporting Complex, must comply with Section 9.21 of the *Manual of Standards Part 139 – Aerodromes* (as updated from time to time) and the *National Airports Safeguarding Framework Guideline E 'Managing the Risk of Distraction to Pilots from Lighting in the Vicinity of Airports."*	Yes	Detailed design and Construction	Compliant	Compliance with CoA E6 is detailed in the Aviation Management Plan (AMP - Rev 5) inclusive of Method of Working Plan in Sections 5 and 7.2. Consideration of CoA E6 identified constraints such as lighting intensity, light pole heights and luminaire upcast angle for all temporary and permanent lighting design as detailed within the ITS and Street Lighting Report (Rev 4), 12 April 2019. A specific MOS 129 assessment has been detailed in Section 3.4.7 and includes photometric testing results such as intensity and elevation angles. Additionally the OLS Intrusion Aeronautical Study Figure 26 identifies the IRA lighting zones and photometric test results for the road lighting which were reviewed to confirm compliance of the proposed fittings with MOS Part 139 Section 9.2.1 .
E7	Where an intrusion into the Code 2 (Runway 08/26) and Code 3 (Runway 16/34) OLS is unavoidable during operation of the SSI, an **OLS Intrusion Aeronautical Study** for each intrusion must be prepared by an appropriately qualified expert in aviation safety. Each Study must identify all intrusions height and location information, assess risks to ongoing aviation safety and demonstrate how these risks will be satisfactorily managed.	Yes	Detailed design	Compliant	The OLS Intrusion Aeronautical Study, Final Report, Albion Park Rail (Doc. Ref. APR-JJR-AR-01-RPT-0001, Revision 2 dated 02 April 2019 was prepared in consultation with and provided to CASA, Air Services Australia (AsA), Shellharbour City Council, the Illawarra Regional Airport and Roads and Maritime Services (RMS). This study has assessed current, designed and future airspace potential intrusions inclusive of shielding associated with road infrastructure (including bridges & temporary traffic intrusions), ITS and street lighting, signage line marking and road furniture, utilities such as mobile phone towers and overhead power lines, landscaping, fencing, and miscellaneous structures. The report was endorsed by the ER 8 April 2019.

E8	Vegetation and landscaping other than groundcover within the road reserve must not intrude into the Code 2 (Runway 08/26) and Code 3 (Runway 16/34) OLS.	Yes	Detailed design and Construction	Compliant	The OLS Intrusion Aeronautical Study, Final Report, Albion Park Rail (Doc. Ref. APR-JJR-AR-01-RPT-0001, Rev 2, 02 April 2019 recognises landscaping constraints in relation to compliance with CoA E8. OLS restrictions have been considered in the landscape design for the project and are illustrated in the cross sections in Chapter 5 of the Urban Design & Landscape Character Strategy, 20 December 2018. The design response has been either to limit the presence of trees or the scale of trees in most cases. During construction, Fulton Hogan regularly consults with Illawarra Regional Airport regarding OLS compliance as evidenced in emails, meeting minutes, risk assessments and safe work method statements.
E9	Mitigation measures described in section 4 of the Albion Park Rail Bypass SPIR, Appendix B Addendum Aviation Assessment, September 2017, Hyder Cardno Joint Venture, must be implemented, except as required by this approval.	Yes	Detailed design and Construction	Compliant	The OLS Intrusion Aeronautical Study, Final Report, Albion Park Rail (Doc. Ref. APR-JJR-AR-01-RPT-0001, Rev 2, 02 April 2019 is consistent with the requirements of CoA E9 and E10. Mitigation measures relevant to Stage 2 APRB are addressed in Tale 2 of the Aviation Management Plan (AMP - Rev 5) inclusive of Aviation Method of Working Plan (MOWP) required under CoA E3. This is evidenced in detailed design reports referred to in CoAE8 and in emails, meeting minutes, MOWP, NOTAMs, risk assessments and safe work method statements.

Appendix A - Stage 2 Conditions of Approval Compliance Table

CoA	Condition of Approval (CoA)	Applicable to Stage 2?	Project Phase applicable to Condition	Stage 2 Compliance	Evidence of Stage 2 Pre-Construction Compliance/ Notes
E10	During detailed design, any amendments to structures identified in the *Albion Park Rail Bypass SPIR, Appendix B Addendum Aviation Assessment, September 2017, Hyder Cardno Joint Venture,* will require further windshear and turbulence assessment in accordance with the NASF Guideline B 'managing the Risk of Building Generated Windshear and Turbulence at Airports. This additional assessment must be undertaken in consultation with CASA, Shellharbour City Council and the Airport Operator.	Yes	Detailed design	Compliant	The OLS Intrusion Aeronautical Study, Final Report, Albion Park Rail (Doc. Ref. APR-JJR-AR-01-RPT-0001, Revision 2 dated 02 April 2019 was prepared in consultation with CASA, Air Services Australia (AsA), Shellharbour City Council and the airport operator. The report was endorsed by the ER 8 April 2019. The document is consistent with the requirements of Condition E7 (and associated requirements under conditions E2, E6, E8, E9 and E10). Windshear and turbulence assessment compliance is detailed in Table 1 and Table 2 under "design compliance" in the report detailed in Table 20. Further details are provided in Section O of the report.
BIODIVERSITY					
E11	The Proponent must offset impacts to the Plant Community Types and Endangered Population specified in the *Albion Park Rail, Biodiversity Addendum, ngh environmental, December 2017,* in accordance with the requirements of the *NSW Biodiversity Offsets Policy for Major Projects* (OEH, 2014), *the Framework for Biodiversity Assessment 2014* , or as otherwise agreed by the Secretary in consultation with OEH.	Yes	Construction	Not Triggered	Roads and Maritime Services recognises this requirement and will ensure it is complied with.
E12	The Proponent must submit a progress report to the Secretary which identifies offsets required and evidence that they are achievable, or alternatively provide details on how the offset requirements will be met using the Biodiversity Conservation Fund. This report must be provided to the Secretary for information prior to any impacts on vegetation communities and the Eastern Flame Pea endangered population, except those within the Croom Regional Sporting Complex.	Yes	Construction	Compliant	A Biodiversity Offset Progress Report was endorsed by the ER, 22 June 2018 and was submitted to the Secretary, 22 June 2018.
E13	Within 24 months of the submission of the progress report (as required under **Condition E12**), or as otherwise agreed by the Secretary, the Proponent must finalise and submit to the Secretary for approval, a **Biodiversity Offset Package**. The Package must be prepared in consultation with OEH and confirm how the impacts of the SSI will be offset. The Package must be consistent with the biodiversity offset strategy requirements of the *NSW Biodiversity Offsets Policy for Major Projects* (OEH, 2014), unless otherwise agreed by OEH. The Package must include, but not necessarily be limited to: (a) details on the biodiversity credits (including number and type) identified to offset the impacts of the SSI and evidence that they be attained and secured in accordance with the NSW Biodiversity Offsets Policy for Major Projects (OEH, 2014); and (b) for offsets not secured through the retirement of biodiversity credits, details on how offset requirements will be met.	Yes	Construction	Not Triggered	Roads and Maritime Services recognises this requirement and will ensure it is complied with.
E14	Should supplementary measures be proposed, the Package must also provide details on: (a) the management and monitoring requirements for compensatory habitat works and other biodiversity offset measures proposed to ensure that outcomes of the package are achieved, including: i. the monitoring of condition of species and ecological communities at offset (including translocation) locations, ii. the methodology for the monitoring programs(s), including the number and location of offset monitoring sites, and the sampling frequency at these sites, iii. provisions for the annual reporting of the monitoring results to the Department, OEH and the public for a set period of time, as determined in consultation with OEH, and iv. timing and responsibilities for the implementation of the supplementary measures; and (b) processes and/or measures that would be implemented to ensure that any land offsets are protected and managed in perpetuity. The supplementary measures must be implemented by the Proponent according to the timeframes set out in the Biodiversity Offset Package.	Yes	Construction	Not Triggered	Roads and Maritime Services recognises this requirement and will ensure it is complied with.
E15	All required offsets must be secured in consultation with the OEH, within 12 months of the approval of the Biodiversity Offset Package or within another timeframe agreed with the Secretary. The Proponent must submit to the Secretary a copy of the credit retirement report issued by the OEH once the offsets are retired, within one month of receiving the report.	Yes	Construction	Not Triggered	Roads and Maritime Services recognises this requirement and will ensure it is complied with.

E16	During vegetation clearing, timber and root balls must be retained for reuse in habitat enhancement and rehabilitation work. The retained timber and root balls may be used on or off the SSI site. The Proponent must consult with community and Landcare groups and government agencies to determine if retained timber and root balls can be used for environmental rehabilitation projects, before pursuing other disposal options.	Yes	Construction	Compliant	Management of root balls for reuse within the project as habitat enhancement and rehabilitation works is addressed in the CEMP Flora and Fauna Management Sub-plan. During the reporting period, implementation of the FFMP has resulted in many examples of coarse woody debris reused in the landscape, in open forest and riparian zones. This is evidenced in site photos, emails and ER monthly reports. Fulton Hogan has also provided government agencies, community and Landcare groups with the opportunity to utilise timber or root balls for off site rehabilitation works. This is evidenced in email offers to Wollongong City Council, Shellharbour City Council, NSW Local Land Services, NSW OEH, NSW EPA, NSW DPI Fisheries, NSW Office of Water, NSW TAFE, Illawarra Local Aboriginal Land Council and Landcare Illawarra.
FLOODING AND HYDROLOGY					
E17	The design of the motorway must achieve a 100 year ARI flood immunity (minimum) for the extent of the SSI, except for the low point south of the existing Duck Creek bridge which must achieve a 50 year ARI flood immunity.	Yes	Detailed design	Compliant	The development of the detailed design for drainage considers hydraulic analysis as documented the Flooding and Scour Assessment Report (FSAR - Rev 3). The FSAR was endorsed by the ER 4 February 2019 and issued to the Department for information, 4 February 2019. The FSAR details consideration of CoA E17 at Table 7 and Sections 3.5.6, 3.7.6 and 3.8.5. Compliance with CoA E17 is further demonstrated in flood figures provided in the FSAR Appendices A, B, C and D.
E18	Where the flood model(s) of the Duck Creek or Macquarie Rivulet or Horsley Creek floodplains have been updated and made available to the Proponent by the Relevant Council(s) and prior to the commencement of each stage of construction, the Proponent must undertake further flood modelling of the SSI. The flood models must be operated by experienced flood modellers and be consistent with the policies and practices of the Relevant Council(s).	Yes	Detailed design	Not Triggered	Roads and Maritime Services have not been provided with updated flood models for the specific floodplains.
E19	The design of the detention basins adjacent to the new East-West Link Road must maintain (or increase) the flood immunity of the existing East West Link Road and ensure that the flood consequence category (risk to downstream residents) of the new basin (including hazards associated with dam-break) is not increased.	Yes	Detailed design	Compliant	Compliance with CoA E19 is documented in the Flooding and Scour Assessment Report (FSAR - Rev 3) Table 7 and Section 3.8. Key design conformance checks are provided at Section 3.8.5. The FSAR was endorsed by the ER 4 February 2019 and issued to the Department for information, 4 February 2019. The design of the detention basins adjacent the new East West Link Road is also evidenced in the FSAR Appendix I, Detailed Design Technical Note 7 - Dams Safety Assessment, which provides analysis on the safe design and dam failure risks of Croom Road and Green Meadows detention basins.
E20	The Proponent must consult the Shellharbour City Council and the Dam Safety Committee in the design of the new Green Meadows Basin and if required, the basin bounded by Croom Road, the motorway and the East West Link Road.	Yes	Detailed design	Compliant	Evidence of consultation with the Dam Safety Committee (DSC) and Shellharbour City Council (SCC) is provided at Section 6 of the FSAR (Rev 3). The FSAR design considerations are detailed at Section 3.8.1 for Croom Road detention basin and at Section 3.8.2 for Green Meadows detention basin. Compliance with CoA E20 is evidenced in email correspondence, transmittals, project design group meeting minutes and meeting minutes between the project and SCC, 30 January 2019 "Update on Design and Opportunity to Raise Concerns or Issues."
E21	The Proponent must ensure the detailed design of the SSI is undertaken in consultation with the Shellharbour City Council and not impact any of the recommendations of the Horsley Creek Floodplain Risk Management Study and Plan (FRMS&P) 2017, except as described in the EIS as amended by the SPIR.	Yes	Detailed design	Compliant	The development of the detailed design for drainage considered hydraulic analysis as documented the Flooding and Scour Assessment Report (FSAR - Rev 3). The FSAR details consideration of CoA E21 compliance at Table 7 and Sections 3.8.3 - 3.8.5. This is evidenced in email correspondence, transmittals, project design group meeting minutes and meeting minutes between the project and SCC, 30 January 2019 "Update on Design and Opportunity to Raise Concerns or Issues."
E22	Prior to construction commencing (except works related to Croom Regional Sporting Complex), the Proponent must undertake an assessment of the flood access into and out of Albion Park, including areas of frequent inundation in the vicinity of Taylors Road and the Illawarra Highway, Tongarra Road and East West Link. The assessment must be prepared in consultation with Shellharbour City Council and must demonstrate that the SSI does not reduce flood access to Albion Park more than as described in the EIS as amended by the SPIR.	Yes	Detailed design	Compliant	The development of the detailed design for drainage considered hydraulic analysis as documented the Flooding and Scour Assessment Report (FSAR - Rev 3). The FSAR details consideration of CoA E22 compliance at Table 7, Section 3.9 and Figure 32. Evidence of consultation with Shellharbour City Council (SCC) is provided at Section 6 of the FSAR and in email correspondence, transmittals, project design group meeting minutes and meeting minutes between the project and SCC, 30 January 2019 "Update on Design and Opportunity to Raise Concerns or Issues."
E23	Measures identified in the EIS, as amended by the SPIR, to maintain or improve flood characteristics must be incorporated into the detailed design of the SSI. The incorporation of these measures into the detailed design must be reviewed and endorsed by a suitably qualified and experienced person in consultation with directly affected landowners, OEH, SES and Relevant Council(s). The review must be documented and provided to the Secretary, OEH, SES and Relevant Council(s) prior to construction commencing in areas affected by increased flooding impacts. For any construction stages where detailed design starts later than 12 months from the date of this approval or otherwise agreed by the Secretary, the flood modelling must incorporate updated flood modelling undertaken under Condition E18.	Yes	Detailed design	Compliant	The development of the detailed design for drainage considered hydraulic analysis as documented in the Flooding and Scour Assessment Report (FSAR - Rev 3). Measures identified in the EIS and SPIR to maintain or improve flood characteristics have been incorporated and refined in the detailed design. As a consequence there are no areas of increased flooding impacts modelled associated with the Stage 2 detailed design. The FSAR details consideration of CoA E23 compliance at Table 7 and Sections 3.9, 3.5.4, 3.7.1 and 3.7.2. The FSAR was endorsed by the ER 4 February 2019 and issued to the Department for information, 4 February 2019. The FSAR Section 6 details consultation with relevant Councils, OEH and SES. Additional consultation with individual affected landowners was not required because the detailed design modifications did not result in any increased flooding impacts in comparison to impacts identified in the EIS and SPIR.

Appendix A - Stage 2 Conditions of Approval Compliance Table

CoA	Condition of Approval (CoA)	Applicable to Stage 2?	Project Phase applicable to Condition	Stage 2 Compliance	Evidence of Stage 2 Pre-Construction Compliance/ Notes

E24	For Properties 1, 2 and 3 (identified in Technical Paper 3 of the EIS, as amended by Volume 3 of the SPIR) the measures identified in environmental management measure HF06 must be completed prior to construction commencing in areas affected by increased flooding impacts, unless otherwise agreed by the Secretary.	Yes	Construction	Compliant	Compliance with CoA E24 is detailed in the Flooding and Scour Assessment Report (FSAR - Rev 3) Table 7 and Sections 3.5.4, 3.7.1 and 3.7.2. The REMM HF06 is described in Table 3-2. Prior to commencement of construction of Stage 2 works, 7 January 2019, detailed flood modelling of potential impacts to properties 1, 2 and 3 was performed during detailed design development. The flood model assessments are presented in Figures 16, 20 and 21. Additional environmental management measures are not required because the detailed design modifications have not resulted in any increased flooding impacts in comparison to impacts identified in the EIS and SPIR.
E25	Flood information including flood reports, models and geographic information system outputs, and work as executed information from a registered surveyor certifying finished ground levels and the dimensions and finished levels of all structures that have been constructed for the SSI within the flood prone land, must be provided to the OEH, SES and Relevant Council(s). The OEH, SES and Relevant Council(s) must be notified in writing that the information is available no later than three (3) months following the completion of construction. Information requested by the OEH, SES or Relevant Council(s) must be provided no later than six months following the completion of construction and be provided with that information or within another timeframe agreed with the OEH, SES or Relevant Council(s).	Yes	Construction	Not Triggered	Stage 2 is presently under construction
HERITAGE					
E26	Impacts to heritage, unless approved, must be avoided and minimised. Where impacts are unavoidable, works must be undertaken in accordance with the Construction Heritage Management Sub Plan required by **Condition C4 (e),** except those within the Croom Regional Sporting Complex.	Yes	Construction	Compliant	No unapproved impacts to heritage items have occurred during the reporting period. Compliance with CoA E26 has been achieved through design development, careful construction planning, exclusion fencing and project staff education and is evidenced in site photos, records, inspection notes and ER monthly reports. An updated Aboriginal Heritage Information Management System (AHIMS) search was conducted, 23 December 2018 prior to construction commencement and found that no new Aboriginal heritage items had been identified since the EIS and SPIR heritage assessments. Heritage aspects and impacts are addressed in the CEMP Heritage Management Sub-plan (HMP- Rev 8) approved by the Secretary, 29 November 2018. Implementation of the HMP has resulted in a number of approved impacts being avoided or reduced through design refinements and careful construction planning. This is evidenced by avoiding all impacts to Aboriginal heritage area YTOF AS05 and significantly reducing impacts to non-Aboriginal heritage areas such as Boles Meadows and the Swansea dairy heritage curtilage. Heritage items are also detailed in the approved CEMP (Rev 9) Appendix A6, Sensitive Area Plan, approved by the Secretary 7 December, 2018. The mapped sensitive areas have been identified and protected through high visibility flagging and signage as "Environmental Protection Areas" in accordance with Environmental Work Method Statement 006 "Early Installation of Environmental Protection Measures".
E27	This approval does not allow the Proponent to harm, modify, or otherwise impact human remains uncovered during the construction and operation of the SSI.	Yes	Construction	Compliant	Compliance with CoA E27 is maintained through implementation of the Unexpected Heritage Finds and Human Remains Procedure at Appendix A of the CEMP Heritage Management Sub-plan (HMP- Rev 8) approved by the Secretary, 29 November 2018. Awareness of this procedure has been promoted through targeted toolbox training in areas of known sensitivity for possible historic Aboriginal burials, such as Macquarie Rivulet. CoA E27 compliance is evidenced by filed photographs, site inspections, reports and emails between the Fulton Hogan, RMS, NSW OEH and NSW Police following the discovery of bone fragments on site.
E28	The Proponent must implement the mitigation measures described in: (a) Tables 11 and 12 of the Albion Park Rail Bypass SPIR, Appendix G Addendum Statement of Heritage Impact, September 2017; and (b) Table 6 and section 7.0 of the Albion Park Rail Bypass Project PACHCI Stage 3, Aboriginal Cultural Heritage Assessment Report, Report to HCJV, October 2015. except as required by this approval.	Yes	Construction	Compliant	Implementation of the mitigation measures referred to by CoA is ongoing and in accordance with the approved Heritage Management Sub-plan (HMP - Rev 8), approved by the Secretary, 29 November 2018. In relation to **CoA E28 (a)**, Fulton Hogan has consulted with the project archaeologist, RMS, the ER and the NSW Heritage Council via NSW OEH regarding implementation of mitigation measures proposed in Table 12 - ID No's HH02 and HH03 of the SPIR Appendix G Addendum Statement of Heritage Impact (Artefact, Sept 2017). - In satisfying HH02, the project archaeologist had limited success in conducting archival recording of the existing Boles Meadows homestead due to partial resistance from the homeowner. This has been recorded in the report "Boles Meadows Homestead and Terrys Meadows Homestead Archival Recording 18 December 2018". - In satisfying HH03, on 27 February 2019, the Heritage Council advised that the project archaeologist's proposed excavation and salvage methodology was deemed appropriate and pre-construction archaeological works proceeded at the site of the former Tongarra Rd Homestead. A report was produced and submitted to the Heritage Council, 25 March 2019. - Archaeological investigations are yet to take place adjacent to the Illawarra Highway at the Boles property and if permission is granted by the property owner, Fulton Hogan anticipate completing the works in reporting period 2. In relation to **CoA E28 (b)**, Fulton Hogan is managing compliance through the implementation of the mitigation measures identified in Table 6-1 of the HMP.

E29	The Aboriginal culturally sensitive area associated with the Macquarie Rivulet area directly adjoining the construction footprint must be protected for the duration of works.	Yes	Construction	Compliant	Implementation of the mitigation measures referred to by CoA is ongoing and in accordance with the approved Heritage Management Sub-plan (HMP - Rev 8), approved by the Secretary, 29 November 2018. The culturally sensitive areas of Macquarie Rivulet adjacent to the site have been protected through installation of temporary steel fencing, high visibility flagging and signage. The areas have been designated "Environmental Protection Areas" in accordance with Environmental Work Method Statement 006 "Early Installation of Environmental Protection Measures" and project Sensitive Area Plan, Appendix A6 of the approved CEMP (Rev 9). These measures are regularly inspected by the site Environment Team, RMS and the ER to ensure ongoing compliance with CoA E29 and are evidenced in site photos, inspection records and ER reports.
E30	Salvage of sites YTOF AS 4 and YTOF AS 5 must be undertaken in accordance with the salvage methodology described in Section 6 of *Albion Park Rail Bypass Project PACHCI Stage 3, Aboriginal Cultural Heritage Assessment Report, Report to HCJV, October 2015* .	Yes	Construction	Compliant	Impacts have been avoided to YTOF AS05 and the area has been protected through the installation of permanent rural fencing. It is further identified as a sensitive area with high visibility flagging and signage stating "Environmental Protection Area - Keep Out" in accordance with Environmental Work Method Statement 006 "Early Installation of Environmental Protection Measures". Impacts to YTOF AS04 could not be fully avoided during detailed design. In accordance with the Aboriginal Cultural Heritage Assessment Report (Oct 2015), the project archaeologist undertook representative sampling with Aboriginal participants across 29 square metres of the site. These works were conducted under the guidance of Environmental Work Method Statement 005 "Aboriginal Artefact Salvage Works" endorsed by the ER 4 December 2018. During salvage, compliance with CoA E30 was verified during inspections of YTOF AS4 hand excavations and sieving by the ER, RMS and representatives of NSW OEH. Further evidence is recorded in site inspection notes, photos, emails and the December 2018 ER report.
E31	Following completion of all salvage works required under **Condition E30**, the Proponent must prepare a **Heritage Report** in accordance with any guidelines and standards required by the Heritage Council of NSW, OEH or Registered Aboriginal Parties (as relevant).The Report must provide details of any archival recording, further historical research either undertaken or to be carried out, and archaeological excavations (with artefact analysis and identification of a final repository for finds) carried out for the SSI.	Yes	Construction	Compliant	Compliance with CoA E31 is ongoing as not all final consultation has been completed. A lithic analysis was conducted on all salvaged artefacts and a report was produced entitled "Salvage Excavation Program for Aboriginal Site YTOF AS4" (February 2019). NSW OEH has been provided a copy of the draft report and the draft has also been issued to all Registered Aboriginal Participants. It is expected that the report will be presented to the Aboriginal Focus Group (AFG) at AFG Meeting 2 in the next reporting period and consultation will commence regarding community wishes around care and potential repatriation of the salvaged materials.
E32	The **Heritage Report** must be submitted to the Secretary, and for Aboriginal heritage to the OEH or Registered Aboriginal Parties (as relevant), and for non-Aboriginal heritage to the OEH the Relevant Council and local Historical Society, for information no later than 12 months after the completion of the work referred to in **Conditions E26** to **E31** or within another timeframe agreed by the Secretary.	Yes	Construction	Not Triggered	Compliance with CoA E32 is ongoing. Fulton Hogan anticipate providing all relevant reports as required under CoA E32 within 12 months after completion of the relevant works. It is anticipated that following the AFG Meeting 2, a period of approximately one month will be provided for comments to be received on the content of the draft AS4 Salvage Excavation Report. Upon confirmation of the reports status as final, the report will be provided to the Department, OEH and Registered Aboriginal Parties. Non-Aboriginal heritage reports will be provided to the Department, NSW OEH (Heritage Council), RMS, the appropriate local Council and local Historical Society (as relevant)
E33	Prior to conducting acoustic treatment at any heritage item, the advice of a suitably qualified and experienced built heritage expert must be obtained and implemented, to ensure any such work does not have an adverse impact on the heritage significance of the item	Yes	Construction	Not Triggered	No acoustic treatments have been applied to heritage listed properties during the reporting period. A number of properties that are listed within either the Wollongong or Shellharbour Local Environmental Plans for local heritage significance have been identified during the assessment of properties that may qualify for acoustic treatment. Where landowner approval was granted, these properties have been assessed by built heritage specialists. Where it is determined that operational noise impacts warrant at house treatment, Fulton Hogan will liaise with the property owners, the acoustic consultants and heritage specialist to determine measures that may be appropriate for implementation to ensure compliance with CoA E33.

Appendix A - Stage 2 Conditions of Approval Compliance Table

CoA	Condition of Approval (CoA)	Applicable to Stage 2?	Project Phase applicable to Condition	Stage 2 Compliance	Evidence of Stage 2 Pre-Construction Compliance/ Notes
E34	An **Unexpected Heritage Finds and Human Remains Procedure** must be prepared to manage unexpected heritage finds in accordance with any guidelines and standards prepared by the Heritage Council of NSW or OEH. The Procedure must undertake consultation with the RAPs in the event that previously unidentified Aboriginal heritage is discovered. The Procedure must be prepared by a suitably qualified and experienced heritage specialist in consultation with OEH and or the Heritage Council of NSW and submitted to the Secretary for information no later than one month prior to the commencement of works or within another timeframe agreed with the Secretary.	Yes	Construction	Compliant	Compliance with CoA E34 is evidenced in the project Unexpected Heritage Finds and Human Remains Procedure at Appendix A of the CEMP Heritage Management Sub-plan (HMP- Rev 8) approved by the Secretary, 29 November 2018. Stage 2 construction works commenced on 7 January 2019. During development of the procedure, use of the guidance provided in the RMS Unexpected Heritage Items Heritage Procedure 02 (Nov, 2015) was supported by NSW OEH, endorsed by the ER, 29 June 2018 and provided to the Department 9 July 2018. Consultation with OEH is recorded in Appendix of the CEMP (Rev 9) approved by the Secretary 7 December 2018
E35	The **Unexpected Heritage Finds and Human Remains Procedure**, as submitted to the Secretary, must be implemented for the duration of works. *Note: Human remains that are found unexpectedly during works are under the jurisdiction of the NSW State Coroner and must be reported to the NSW Police immediately* .	Yes	Construction	Compliant	In accordance with the requirements of CoA E35, the Unexpected Heritage Finds and Human Remains Procedure has been implemented on every occasion that site workers have encountered bone fragments, potential artefacts or relics. During the reporting period, the procedure was implemented on 6 occasions and all bone discoveries have been confirmed by skeletal remains experts as non-human. CoA E35 compliance is evidenced by photographs, site inspections, reports and emails between the Fulton Hogan, RMS, NSW OEH and NSW Police following the discovery of bone fragments, potential artefacts or relics on site.
NOISE AND VIBRATION					

Standard Construction Hours					
E36	Works must only be undertaken during the following construction hours: (a) 7:00am to 7:00pm Mondays to Fridays, inclusive; (b) 8:00am to 5:00pm Saturdays; and (c) at no time on Sundays or public holidays.	Yes	Construction	Compliant	Working hours are detailed in the CEMP Noise and Vibration Management Sub-Plan (Rev 6) approved by the Secretary, 7 December 2018. These working hours are promoted through the site induction and referred to in all public information notifications and associated collateral. Works performed outside of these hours are conducted in compliance with the NSW EPA Environment Protection Licence 21139 as permitted by CoA E38 (e).
E37	Except as permitted by an EPL, activities resulting in impulsive or tonal noise emissions must only be undertaken: (a) between the hours of 8:00 am to 6:00 pm Monday to Friday; (b) between the hours of 8:00 am to 1:00 pm Saturday; and (c) in continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block. For the purposes of this condition, 'continuous' includes any period during which there is less than a one hour respite between ceasing and recommencing any of the work the subject of this condition.	Yes	Construction	Compliant	Working hours are detailed in the CEMP Noise and Vibration Management Sub-Plan (Rev 6) approved by the Secretary, 7 December 2018. The requirement of CoA E37 is detailed in the NVMP Chapter 8 and mitigation measure NVMM26. The NVMP are informed and guided by the Interim Construction Noise Guidelines (NSW DECC, 2009) in relation to impulsive or tonal noise management. Any works performed outside of these hours are conducted in compliance with the NSW EPA Environment Protection Licence 21139 as permitted by CoA E38 (e).
E38	Notwithstanding **Condition E36,** works associated with the SSI may be undertaken outside the specified hours in the following circumstances: (a) for the delivery of materials required by the NSW Police Force or other authority for safety reasons; or (b) where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or (c) where it causes LAeq(15 minute) noise levels: i. no more than 5 dB(A) above the rating background level at any residence in accordance with the Interim Construction Noise Guideline (DECC, 2009), and ii. no more than the noise management levels specified in Table 3 of the Interim Construction Noise Guideline (DECC, 2009) at other sensitive land uses, and iii. continuous or impulsive vibration values at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.2 of Assessing Vibration: a technical guideline (DEC, 2006), and iv. intermittent vibration values at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.4 of Assessing Vibration: a technical guideline (DEC, 2006), or (d) no more than 15dBA above the night time rating background level at any residence during the night time period, when measured using the LAeq(1 minute) noise descriptor; or (e) where different hours are permitted or required under an EPL in force in respect of the works, in which case those hours must be complied with.	Yes	Construction	Compliant	Working hours are detailed in the CEMP Noise and Vibration Management Sub-Plan (NVMP - Rev 6) approved by the Secretary, 7 December 2018. The working hours referred to in CoA E36 are promoted through the site induction and referred to in all public information notifications and associated collateral. In accordance with CoA E38(e) the NVMP Appendix C "Out of Hours Work Approval Procedure" Fulton Hogan has been implemented for works complying with the NSW EPA Environment Protection Licence 21139 during the reporting period. Compliance with the procedure is evidenced in consultation records detailing liaison with NSW EPA and potentially affected receivers.
E39	The Proponent must ensure that all works for the delivery of the SSI are coordinated with utility works, including those works undertaken by third parties, to minimise cumulative impacts of noise and vibration and provides maximise respite for affected sensitive receivers.	Yes	Construction	Compliant	The requirement of CoA E39 is detailed in the Noise and Vibration Management Sub-Plan, Chapter 8 and mitigation measure NVMM2. Significant management effort has been invested in consulting and coordinating with utilities works along the project, particularly along the M1 and Illawarra Highway to reduce the potential for cumulative impacts and inconvenience to motorists and residents. This is evidenced in email correspondence, letters, meeting minutes and community notifications.
E40	On becoming aware of the need for emergency works in accordance with **Condition E38** the Proponent must notify the ER and the EPA (if an EPL applies) of the need for those works. The Proponent must also use its best endeavours to notify all affected sensitive receivers of the likely impact and duration of those works.	Yes	Construction	Not Triggered	No emergency works were required within the reporting period.
Construction Vibration					
E41	The SSI must be delivered with the aim of achieving the vibration goals detailed in CoA E41. (a) for structural damage to heritage structures, the vibration limits set out in the German Standard DIN 4150-3: Structural Vibration – Part 3 Effects of vibration on structures; (b) for damage to other buildings and/or structures, the vibration limits set out in the British Standard BS 7385- 1:1990 – Evaluation and measurement of vibration in buildings—Guide for measurement of vibration and evaluation of their effects on buildings (and referenced in Australian Standard 2187.2 – 2006 Explosives – Storage and use – Use of explosives); and (c) for human exposure, the acceptable vibration values set out in Assessing Vibration: A Technical Guideline (Department of Environment and Conservation, 2006).	Yes	Construction	Compliant	Vibration management is addressed in the CEMP Noise and Vibration Management Sub-Plan (Rev 6) approved by the Secretary, 7 December 2018. Compliance with CoA E41 is detailed within the NVMP as follows: E41 (a): CNVMP Sections 5.5, 7.5, 9.3.2, Tables 5-3, 5-5, 5-8, 5-11, 7-13, 7-14, 8-1 and 9-1 E41 (b): CNVMP Sections 5.5, 7.5.2, 5.5, 9.3.2, Tables 5-3, 5-5, 5-8, 5-11, 7-13, 7-14 and 9-1 E41 (c): CNVMP Sections 7.5.2, Tables 5-5, 5-6, 5-7, 5-10 During the reporting period, no vibratory compaction work or rock breaking occurred within 50m of residential buildings. No activities have occurred within safe working distances for cosmetic damage, Compliance is evidenced through environmental inspection records and vibration monitoring records.
E42	Blasting associated with the SSI must only be undertaken during the hours detailed in CoA E42. (a) 9:00am to 5:00pm, Monday to Friday, inclusive; (b) 9:00am to 1:00pm on Saturday; and (c) at no time on Sunday or public holidays. 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. Blasting may be undertaken outside the above hours where: (a) no sensitive receivers would be impacted by blasting; or (b) an agreement has been made with potentially affected receivers.	Yes	Construction	Not Triggered	Blasting is addressed in the CEMP Noise and Vibration Management Sub-Plan (Rev 6) approved by the Secretary, 7 December 2018. No blasting has occurred within the reporting period.

<table>
<tr><td>E43</td><td>Air blast overpressure generated by blasting associated with the SSI must not exceed the criteria specified in Table 6 of CoA E43 when measured at the most affected residence or other sensitive receiver.
Note: a sensitive site includes houses and low rise residential buildings, theatres, schools and other similar buildings occupied by people

Table 6: Airblast overpressure limits for human comfort<table><tr><th>Receiver</th><th>Type of blasting operations</th><th>Airblast Overpressure Limit</th></tr><tr><td>Sensitive site</td><td>Blasting operations lasting more than 12 months or more than 20 blasts</td><td>115 dBL for 95% of blasts per year
120 dBL maximum limit</td></tr><tr><td>Sensitive site</td><td>Blasting operations lasting less than 12 months or less than 20 blasts in total</td><td>120 dBL for 95% of blasts per year
125 dBL maximum limit</td></tr><tr><td>Occupied non-sensitive sites, such as factories and commercial premises</td><td>All blasting</td><td>125 dBL maximum limit.
For sites containing equipment sensitive to vibration, the vibration level should be kept below manufacturer's specifications or levels that can be shown to adversely affect the equipment operation</td></tr></table></td><td>Yes</td><td>Construction</td><td>Not Triggered</td><td>Blasting is addressed in the CEMP Noise and Vibration Management Sub-Plan (Rev 6) approved by the Secretary, 7 December 2018.
No blasting has occurred in the reporting period.</td></tr>
<tr><td colspan="6">Appendix A - Stage 2 Conditions of Approval Compliance Table</td></tr>
<tr><th>CoA</th><th>Condition of Approval (CoA)</th><th>Applicable to Stage 2?</th><th>Project Phase applicable to Condition</th><th>Stage 2 Compliance</th><th>Evidence of Stage 2 Pre-Construction Compliance/ Notes</th></tr>
<tr><td>E44</td><td>Ground vibration generated by blasting associated with the SSI must not exceed the criteria specified in Table 7 and Table 8 of CoA E44 when measured at the most affected residence or other sensitive receiver.
Note: a sensitive site includes houses and low rise residential buildings, theatres, schools and other similar buildings occupied by people.

Table 7: Ground vibration limits for human comfort<table><tr><th>Receiver</th><th>Type of blasting operations</th><th>Peak component particle velocity (mm/s)</th></tr><tr><td>Sensitive site</td><td>Blasting operations lasting more than 12 months or more than 20 blasts</td><td>5 mm/s for 95% of blasts per year
10 mm/s maximum limit</td></tr><tr><td>Sensitive site</td><td>Blasting operations lasting less than 12 months or less than 20 blasts in total</td><td>10 mm/s maximum limit</td></tr><tr><td>Occupied non-sensitive sites, such as factories and commercial premises</td><td>All blasting</td><td>25 mm/s maximum limit.
For sites containing equipment sensitive to vibration, the vibration level should be kept below manufacturer's specifications or levels that can be shown to adversely affect the equipment operation</td></tr></table>Table 8: Ground vibration limits for control of damage to structures<table><tr><th>Receiver</th><th>Type of blasting operations</th><th>Peak component particle velocity (mm/s)</th><th></th></tr><tr><td>Other structures or architectural elements that include masonry, plaster and plasterboard in their construction [1]</td><td></td><td>15 mm/s 4 Hz to 15 Hz, except for heritage structures where a frequency dependent vibration criteria would be determined in accordance with AS 2187.2 – 2006.</td><td>20 mm/s 15 Hz and above</td></tr><tr><td>Reinforced or framed structures. Industrial and heavy commercial buildings [2]</td><td>All blasting</td><td>50 mm/s at 4 Hz and above</td><td></td></tr><tr><td>Unreinforced or light framed structure. Residential or light commercial type building [2]</td><td>All blasting</td><td>15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz</td><td>20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above</td></tr><tr><td>Unoccupied structures of reinforced concrete or steel construction</td><td>All blasting</td><td>100 mm/s maximum, where agreed with the structure owner.</td><td></td></tr><tr><td>Infrastructure service structures, such as pipelines, powerlines, cables and reservoirs.</td><td>All blasting</td><td>Limits to be determined by structural design methodology in consultation with the infrastructure service provider.</td><td></td></tr></table></td><td>Yes</td><td>Construction</td><td>Not Triggered</td><td>Blasting is addressed in the CEMP Noise and Vibration Management Sub-Plan (Rev 6) approved by the Secretary, 7 December 2018.
No blasting has occurred in the reporting period.</td></tr>
<tr><td>E45</td><td>The blasting criteria specified in the tables in Conditions E43 and E44 may be exceeded where the Proponent has obtained the written agreement of the landowner to increase the relevant criteria. In obtaining the agreement, the Proponent must make available to the landowner the details as further specified in CoA E45.
(a) details of the proposed blasting program and justification for the proposed increase in blasting criteria including alternatives considered (where relevant);
(b) an assessment of the environmental impacts of the increased blasting criteria 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; and
(c) details of the blast management, mitigation and monitoring procedures to be implemented.
The Proponent must provide a copy of the landowner written agreement to the Secretary and the EPA, including details of the consultation undertaken (with clear identification of proposed blast limits and potential property impacts, prior to commencing blasting at the higher limits.
Unless otherwise agreed by the Secretary, the following exclusions apply:
(a) The landowner may terminate at any time an agreement made with the Proponent to increase the blasting criteria, should concerns made by the landowner about the blasting criteria be unresolved. Where an agreement is terminated, the Proponent must not exceed the criteria specified in the tables in Conditions E43 and E44 for future blasting that affects the property; and
(b) the blasting limit agreed to under any agreement must not exceed a maximum Peak Particle Velocity vibration level of 25 mm/s or maximum Air blast Overpressure level of 125 dBL.</td><td>Yes</td><td>Construction</td><td>Not Triggered</td><td>Blasting is addressed in the CEMP Noise and Vibration Management Sub-Plan (Rev 6) approved by the Secretary, 7 December 2018.
No blasting has occurred in the reporting period.</td></tr>
<tr><td colspan="4">Operational Noise Mitigation Report</td><td></td></tr>
</table>

E46	The Proponent must undertake a review of the operational noise mitigation measures proposed to be implemented for the SSI. The review must be prepared in consultation with the EPA and submitted to the Secretary for approval prior to construction commencing, except for the Croom Regional Sporting Complex works, unless otherwise agreed by the Secretary. The review must comply with the details as further specified in CoA E46. (a) confirm the operational noise predictions of the SSI based on detailed design. The operational noise assessment shall be based on an appropriately calibrated noise model (which has incorporated additional noise monitoring, where necessary for calibration purposes); (b) review the suitability of the operational noise mitigation measures identified in the EIS as amended by the SPIR. The review must take into account the detailed design of the SSI and where necessary, refine the proposed measures with the objective of meeting the criteria outlined in the NSW Road Noise Policy (DECCW 2011), based on the operational noise performance of the SSI predicted under (a) above; (c) where necessary, investigate additional noise mitigation measures to achieve the criteria outlined in the NSW Road Noise Policy (DECCW, 2011); and (d) investigate noise mitigation measures to achieve the criteria outlined in the Industrial Noise Policy (DECCW 2011) for the Croom Regional Sporting Complex. Note: noise barriers that may penetrate the OLS must comply with the requirements of Condition E7.	Yes	Construction and Operation	Compliant	The Operational Noise Mitigation Report (ONMR - Rev 3) was submitted to the EPA for review and comment. Evidence of consultation is detailed in the ONMR Appendix 7 including email correspondence between Fulton Hogan and NSW EPA and a letter from EPA dated 30 November 2018. The ONMR (Rev 3A) was submitted to the Department, 2 April 2019 and approved by the Secretary, 10 May 2019. Compliance with CoA E46 is detailed as follows: E46 (a) ONMR Sections 2.2, 4.4, 4.6 and Appendix 2. E46 (b) ONMR Sections 4.6 and 5.1 E46 (c) Section 5.1 E46 (d) The Operational Noise Mitigation Report for the Croom Regional Sporting Complex was submitted to the Department by Roads and Maritime Services on the 5 November 2018.
E47	Operational noise mitigation measures identified in **Condition E46** (such as at-property architectural treatments) that will not be affected by construction works, must be implemented within six (6) months of the commencement of construction, except for the Croom Regional Sporting Complex works or at other times during construction to minimise construction noise impacts. These measures must be detailed in the **Construction Noise and Vibration Management Plan** for the SSI, unless otherwise agreed by the Secretary. Where early implementation of noise mitigation measures are not proposed, the Proponent must comply with the requirements as further outlined in CoA E47. Where early implementation of noise mitigation measures are not proposed, the Proponent must submit to the Secretary a report providing justification as to why, along with details of temporary measures that would be implemented to reduce construction noise impacts, until such time that the operational noise mitigation measures identified in Condition E46 are implemented. The report must be provided to the Secretary for approval prior to the commencement of construction which would affect the identified receivers.	Yes	Construction and Operation	Compliant	At property architectural treatment is addressed in the CEMP Noise and Vibration Management Sub-Plan (NVMP - Rev 6) approved by the Secretary, 7 December 2018. The approach to early implementation of noise mitigation measures, including at-house acoustic treatments is outlined in the NVMP Section 7.4 and the Operational Noise Management Report (ONMR - Rev 3) Section 3.1.2. Fulton Hogan are actively working with residents to facilitate treatment of 26 properties where the construction noise levels exceed the relevant daytime construction noise targets by more than 10dB. While these 26 residences are prioritised Fulton Hogan is also pursuing the balance of residences to ensure at-house acoustic treatments are completed as soon as practicable. Details of the consultation process are listed below: - 151 at-house treatment inspections/scoping reports by acoustic consultants. - 224 other interactions regarding at-house treatments (FH) - 26 face-to-face interactions regarding at-house treatments (FH) - 25 signed agreements from residents - 12 offers declined by residents Consultation with property owners regarding at property treatments is ongoing. As this condition is wholly dependent on reaching agreement with property owners, Fulton Hogan anticipate further discussion with the Department regarding the constraints to with CoA E47 that are beyond the projects influence.
PROPERTY AND LANDUSE					
E48	Where the viability of existing agricultural operations are identified to be impacted by the land requirements of the SSI, the Proponent must, at the request of the landowner, employ a suitably qualified and experienced independent agricultural expert, to assist in identifying alternative farming opportunities for the land. Where the Proponent has commenced the requirements of this condition, prior to determination, the Proponent may rely on these activities to fulfil this requirement.	Yes	Construction	Compliant	In 2015, RMS engaged Neil Moss (Scibus) to investigate current dairy operations and identify opportunities to augment dairy operations to minimise impacts from the SSI. Following this study, and at the request of property owners, John Mulvany (OMJ Agricultural Consulting) was engaged to also review the agricultural impacts of the project on dairy operations and consider possible augmentation options. This process was undertaken with direction from the property owners at each stage. Input from both specialists has been used to assist in identifying alternative farming opportunities for the land. Note that both these studies are commercially sensitive documents and are not for public exhibition. The studies will be retained by RMS.
E49	Unencumbered access to private property must be maintained during construction, unless otherwise agreed with the landowner in advance. A landowner's access that is physically affected by the SSI must be reinstated to at least an equivalent standard, in consultation with the landowner.	Yes	Construction	Compliant	The construction team are very mindful of providing unencumbered access to private property at all times. This is achieved through diligent implementation of the CCS, careful construction planning and communication with neighbouring landowners as evidenced in records contained within the Consultation Manager database. Access to private property has been addressed in the Construction Traffic and Access Management Plan Section 6.5.2 as required under CoA E65. All property adjustments have been designed and are planned to be constructed in accordance with CoA E49.
E50	The SSI must be delivered 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 landowner.	Yes	Construction	Compliant	Access to private property has been addressed in the Construction Traffic and Access Management Plan required under CoA E65. Compliance with CoA E50 is achieved through open and ongoing consultation with neighbouring property owners. Avoiding disruption to agricultural operations is a key topic when meeting with three property owners in particular (dairy operation, cattle grazing, horse agistment) and evidence is found in Consultation Manager database, records of meetings and emails.
Building and Structure Condition Survey					

E51	**Building and Structure Condition Survey Reports** must be undertaken for all building and structures identified in the EIS, as amended by the SPIR as being at risk of damage. The surveys must be prepared before the commencement of works that could cause damage to buildings and structures in the vicinity of those works. The results of the surveys must be documented in a **Building and Structure Condition Survey Report** for each building or structure surveyed. These surveys must be undertaken by a suitably qualified person. Copies of **Building and Structure Condition Survey Reports** must be provided to the landowners of the building and structures surveyed, and if agreed by the landowner, the Relevant Councils, within three weeks of completing the surveys and no later than one month prior to the commencement of works.	Yes	Construction	Compliant	62 Building and Structure Condition Surveys Reports have been performed by suitably qualified independent consultants at least 3 weeks prior to that work being undertaken. The Building Condition Surveys reports have been provided to the landowners of the buildings and structures surveyed.
Appendix A - Stage 2 Conditions of Approval Compliance Table					
CoA	**Condition of Approval (CoA)**	**Applicable to Stage 2?**	**Project Phase applicable to Condition**	**Stage 2 Compliance**	**Evidence of Stage 2 Pre-Construction Compliance/ Notes**
E52	After completion of the works, condition surveys of all building and structures for which pre-construction condition surveys were undertaken in accordance with **Condition E51** must be undertaken by a suitably qualified person. The results of the surveys must be documented in a **Building and Structure Condition Survey Report** for each building and structure surveyed. Copies of **Building and Structure Condition Survey Reports** must be provided to the landowners of the buildings and structures surveyed, and if agreed by the landowner, the Relevant Council(s), within three weeks of completing the surveys and no later than three (3) months following the completion of the works.	Yes	Following Construction	Not Triggered	Stage 2 is presently under construction.
E53	Any damage caused to property as a result of the SSI must be rectified or the landowner compensated, within a reasonable timeframe, with the costs borne by the Proponent. This condition does not limit any claims that the landowner may have against the Proponent.	Yes	Construction	Not Triggered	No damage to property as a result of the SSI was identified within the reporting period.
Croom Regional Sporting Complex					
E54	The replacement sporting infrastructure and buildings must be of a comparable scale to existing facilities, unless that infrastructure or building is approved under the EP&A Act.	No	Construction	Not Triggered	Not applicable to Stage 2. Refer to Stage 1 Construction Compliance and Pre-Operational Compliance Report submitted 31 May 2019.
E55	The facilities and associated infrastructure and landscaping identified in the Croom Regional Sporting Complex Detailed Design dated 15 November 2017, must be delivered and be operational prior to any impact to the corresponding existing facilities, unless otherwise agreed by the Secretary following consultation with Shellharbour City Council and the relevant sporting group(s).	No	Construction	Not Triggered	Not applicable to Stage 2. Refer to Stage 1 Construction Compliance and Pre-Operational Compliance Report submitted 31 May 2019.
SOILS					
E56	Erosion and sediment controls must be installed and appropriately maintained to minimise water pollution. When implementing such controls, any relevant guidance in the *Managing Urban Stormwater* series must be considered.	Yes	Construction	Compliant	Erosion and sediment controls are addressed in the Soil and Water Management Sub-Plan - Rev 8 approved, 7 December 2018. Appendix A of the SWMP (Rev 8) provides overarching Primary Erosion and Sediment Control Plans (ESCP) and Standard Blue Book Drawings. The ESCP forms part of the NSW EPA Environment Protection Licence 21139. Implementation is ongoing and progressive. Guidance has sought from CPESCP for the development of Progressive Erosion and Sediment Control Plans in accordance with best practice including guidance provided in the Managing Urban Stormwater series. This is verified by inspection notes from a Certified Professional in Erosion and Sediment Control, NSW EPA, NSW RMS and the ER. Evidence of compliance is found in weekly site inspections, pre-rainfall checks, photographs and post-rainfall inspection records.
Contaminated Land					
E57	A **Site Contamination Report**, documenting the outcomes of Stage 1 and Stage 2 contamination assessments of land upon which the SSI is to be carried out, that is suspected, or known to be, contaminated must be prepared by a suitably qualified and experienced person in accordance with guidelines made or approved under the *Contaminated Land Management Act 1997* (NSW).	Yes	Construction	Compliant	In 2017, Hyder Cardno Joint Venture (HCJV) was engaged by Roads and Maritime to prepare site contamination reports for seven areas as part of the Albion Park Rail bypass, including PAEC01-Rail Corridor, PAEC02-Industrial Estate, PAEC03-Nursery, PAE05-Quarry Entrances, PAEC06-Princes Highway Fly Tip, PAECA1-Noise Mounds and PAECA2-Southern Envirocycle System. The findings of the Site Contamination Reports have been documented in the Contaminated Land Management Sub-Plan (CLMP - Rev 4) submitted to the Department for information 12 October 2018. In April 2018, the Department and NSW EPA were made aware of the discovery of historic illegal landfilling at Yallah during Stage 2 works and the proposed implementation of a Remedial Action Plan (RAP). The subsequent contamination assessments are deemed to comply with the requirement for a Site Contamination Report under CoA E57. As a result of investigations, the following three reports have been produced and provided to NSW EPA: - Stage 2 - Detailed Site Investigations (DSI) PAEC02 Cut No.1 - Stage 2 - Detailed Site Investigations (DSI) The Island Fill No.1 - Remedial Action Plan - Asbestos in Soil (ASBINS RAP), Albion Park Rail Bypass. All reports have been prepared by suitably experienced and qualified consultants from ENRS Pty Ltd.

E58	If a **Site Contamination Report** prepared under Condition E57 finds such land contains contamination, a site audit is required to determine the suitability of a site for a specified use. If a site audit is required, a **Site Audit Statement** and **Site Audit Report** must be prepared by a NSW EPA Accredited Site Auditor. Contaminated land must not be used for the purpose approved under the terms of this approval until a **Site Audit Statement** is obtained that declares the land is suitable for that purpose and any conditions on the **Site Audit Statement** have been complied with.	Yes	Construction	Compliant	The ENRS Pty Ltd assessments and development of the Remedial Action Plan (RAP) referenced at CoA E57 have been overseen by an independent NSW EPA accredited Site Auditor from Cavvanba Pty Ltd. The implementation of the RAP will be subject to a statutory contaminated site audit during the next reporting period (08 July 2019 - 07 January 2020). Fulton Hogan anticipates that as a result of the audit, a Site Audit Statement and Site Audit Report will be produced by the EPA accredited Site Auditor in compliance with CoA E58. This is evidenced in email correspondence, Interim advice from the Contaminated Sites Auditor and in notifications to NSW EPA and Wollongong City Council.
E59	A copy of the **Site Audit Statement** and **Site Audit Report** must be submitted to the Secretary and Relevant Council(s) for information no later than one (1) month before the commencement of operation.	Yes	Construction	Not Triggered	It is anticipated that the EPA accredited Site Auditor will issue a Site Audit Statement (SAS) and Site Audit Report (SAR) during the next reporting period (08 July 2019 - 07 January 2020) following verification that the Remedial Action Plan has been appropriately implemented and all required measures have been completed. The SAS and SAR will be submitted to the Secretary in accordance with the requirements of this condition.
E60	An **Unexpected Contaminated Land and Asbestos Finds Procedure** must be prepared and must be followed should unexpected contaminated land or asbestos be excavated or otherwise discovered during works.	Yes	Construction	Compliant	The Unexpected Contaminated Land and Asbestos Finds Procedure (UCLAFP) was endorsed by the ER on 20 August 2018. Awareness of the requirements of the UCLAFP has been developed through toolbox training and display of the procedure in highly visible areas within the site compound. The procedure has been followed each time material has been discovered that was suspected of being contaminated or including asbestos containing material as detailed at CoA E61.
E61	**The Unexpected Contaminated Land and Asbestos Finds Procedure** must be implemented throughout the delivery of the project.	Yes	Construction	Compliant	A number of isolated incidents of suspected contamination such as dumped debris generally comprising Asbestos Containing Material (ACM) have been identified during construction and two significant areas of ACM contamination (detailed under CoA E57-59) have been identified during the reporting period. The Unexpected Contaminated Land and Asbestos Finds Procedure (UCLAFP) was implemented six times during the reporting period, with notifications to RMS on each occasion. This is evidenced in emails submitted in the RMS EIR624 form with notification of the event.
SUSTAINABILITY					
E62	A **Sustainability Strategy** for the delivery for the SSI, except for the Croom Regional Sporting Complex works must be prepared in accordance with the Infrastructure Sustainability Council of Australia infrastructure rating tool or other justified rating mechanism.	Yes	Construction	Compliant	The Project Sustainability Strategy (Rev 1) was prepared in accordance with guidance from the Infrastructure Sustainability Council of Australia (ISCA) and was endorsed by the ER, 8 October 2018. The ISCA rating tool is being used during implementation of the design and construction phases of the Stage 2 works.
E63	The **Sustainability Strategy** must be submitted to the Secretary for information prior to the commencement of works, except for the Croom Regional Sporting Complex works, or within another timeframe agreed with the Secretary, and must be implemented throughout the delivery of the SSI. The Sustainability Strategy must include items (a)-(c) as detailed in CoA E63. (a) details of the sustainability objectives and targets for the design and delivery of the SSI; (b) details of the sustainability initiatives which will be investigated and / or implemented; and (c) a description of how the strategy will be implemented for the SSI.	Yes	Construction	Compliant	The Sustainability Strategy was submitted to the Secretary for information, 8 October 2018. Stage 2 construction works commenced on 7 January 2019. The Sustainability Strategy identifies the requirements of CoA E63 as follows: E62 a) Section 3 E62 b) Section 4.4 E62 c) Section 9.
TRAFFIC AND TRANSPORT					
E64	The SSI must be designed, delivered and operated to meet relevant road design standards, and ensure that it does not adversely impact network connectivity, or the safety and efficiency of the road network in the vicinity of the SSI.	Yes	Detailed design, Construction and Operation	Compliant	The requirements of CoA 64 include reference to three distinct phases of the project. Compliance is detailed as follows: - Detailed Design: Development of the road geometry and alignment along with design standards and relevant criteria is documented in the Detailed Design Road Alignment Report Rev 4 Section 2. Section 3 describes the overall design and how relevant road design standards have been met. - Delivery of the works: During construction, compliance is achieved through implementation of the CEMP Traffic and Transport Management Sub-plan (TTMP - Rev 9). The TTMP (Rev 9) was endorsed by the ER, 13 November 2018 and approved by the Secretary, 28 November 2018. The TTMP details key traffic management and safety issues and consideration of how the works will not adversely impact network connectivity or efficiency of the road network in the vicinity of the project. - Road operation will be addressed by Roads and Maritime Services (RMS) in a later reporting period.
E65	Vehicles used in the delivery of the project must not use local roads unless no suitable alternatives are available. Where local roads are used, these must be identified in a **Construction Traffic and Access Management Plan**.	Yes	Construction	Compliant	The CEMP Traffic and Transport Management Sub-plan (TTMP - Rev 9), Appendix A 'Construction Traffic and Access Management Plan' (CTAMP) details the local roads required to be used for the delivery of the Project due to the absence of any alternatives in Section 5.3 and Figure 1. The use of local roads has been minimised and are only used where direct access to the work sites are required, such as East West Link, Croome Road, Tongarra Road and Yallah Road. This is evidenced in project Vehicle Movement Plans (VMP) and toolbox training for all delivery drivers. The VMPs establish vehicular movements and prohibits construction vehicle use on local roads unless there is no suitable alternative.

Appendix A - Stage 2 Conditions of Approval Compliance Table

CoA	Condition of Approval (CoA)	Applicable to Stage 2?	Project Phase applicable to Condition	Stage 2 Compliance	Evidence of Stage 2 Pre-Construction Compliance/ Notes

E66	During the delivery of the SSI, measures must be implemented to maintain pedestrian and vehicular access to, and parking in the vicinity of, businesses and affected properties. Alternative pedestrian and vehicular access, and parking arrangements must be developed in consultation with affected businesses.	Yes	Construction	Compliant	Measures to maintain pedestrian and vehicular access are addressed in the Construction Traffic and Transport Management Plan (TTMP - Rev 9) and Appendix A, the Construction Traffic and Access Management Plan (CTAMP). Relevant sections of the approved CTAMP address CoA E66 requirements as follows: Section 5.7 details existing pedestrian and cycle infrastructure; Section 6.2 identifies pedestrian access needs and provisions; Section 6.4 details impacts to parking in the vicinity of businesses and affected properties; Section 6.5.2 details maintenance of property access for businesses and affected properties. Evidence of implementation may be found in Fulton Hogan quality documentation relating to submission of Vehicle Movement Plans, Traffic Control Plans, Pedestrian and cyclist movement plans as approved by RMS in accordance with G10 specifications.
E67	Signage and directions to businesses must be provided before, and for the duration of, any disruption during the delivery of the SSI	Yes	Construction	Not Triggered	To date, no disruption to any businesses has occurred. No business related signage or way finding has been required during the reporting period.
E68	Operational signage must be provided along the project alignment to inform motorists of services and Council and community assets within the vicinity of the SSI including the Illawarra Regional Airport, community facilities and tourist areas, in accordance with the *Guide: Signposting* (RTA July 2007) and *Tourist Signposting Guide* (RMS and Destination NSW 2012).	Yes	Operation	Compliant	Operational signage will be constructed as part of the Stage 2 works in a future reporting period in accordance with Guide: Signposting (RTA July 2007) and Tourist Signposting Guide (RMS and Destination NSW 2012). Compliance with CoA E68 is documented in Final Detailed Design "Signage, Line marking and Road Furniture Report" Rev 4, Sections 3.4, 3.5 and 3.6.
E69	The Proponent must implement the off-road shared path pedestrian and cyclist facilities connections indicated in Figure 3-8 and 3-9 of Appendix A of the SPIR, in consultation with the Relevant Council(s) and Bicycle NSW.	Yes	Detailed design and Construction	Compliant	As part of the detailed design development Fulton Hogan has included designs for the off-road shared path pedestrian and cyclist facilities connections indicated in Figure 3-8 and 3-9 of Appendix A of the SPIR. Compliance with CoA E69 is documented in the following Final Detailed Design documents: - "Road Alignment Report" Rev 4, Sections 3.7, Table 3-23, Fig 3-12 - "Signage, Line marking and Road Furniture Report" Rev 4, Sections 3.5.2, 3.5.3, 3.7.6 and 3.6. - "Urban Design and Landscape Character Strategy" (UDLCS), Section 4.7 Consultation with Shellharbour City Council (SCC) and Wollongong City Council (WCC) are evidenced in design review meeting minutes and project design updates. Consultation with Bicycle NSW is evidenced in email correspondence and telephone records whereby support for the Illawarra Bicycle User Group (I-BUG) was confirmed.
E70	The Proponent must provide improved connectivity for cyclist and pedestrians between Croome Lane and Darcy Dunster Reserve.	Yes	Detailed design and Construction	Compliant	As part of the detailed design development Fulton Hogan has included designs for the off-road shared path pedestrian and cyclist facilities between Croome Lane and Darcy Dunster Reserve. Compliance with CoA E70 is documented in "Road Alignment Report" Rev 4, Sections 3.7 "Active Transport Design", Table 3-23 and Fig 3-12 and "Urban Design and Landscape Character Strategy" (UDLCS), Section 4.7 "Connectivity".
E71	The Proponent must investigate options to minimise the interaction between pedestrians, cyclist and cattle.	Yes	Detailed design	Compliant	As part of the detailed design development Fulton Hogan has included designs for minimising the interactions between pedestrian, cyclists and cattle. This has been achieved through design of cattle proof fencing and a grade separated shared path at Bridges 7 and 14 to avoid interactions with cattle underpasses. Compliance with CoA E71 is documented in the Detailed Design Road Alignment Report (Rev 4), Sections 3.7 and 5 and within the Fencing Design Report (Rev 3), Sections 3.4 and 3.6.
E72	The Proponent must implement the facilities consistent with the reasonable requirements of the Relevant Council(s) and Bicycle NSW, prior to the operation of the SSI, unless otherwise agreed by the Secretary.	Yes	Construction	Compliant	Consultation with the relevant Councils and Bicycle NSW has been undertaken in accordance with CoA E72 and is ongoing via the monthly Traffic Steering Group meetings which include representation from RMS, Council, Police and the Illawarra Bicycle User Group. Compliance with CoA E72 is documented in the following Final Detailed Design documents: - "Road Alignment Report" Rev 4, Sections 3.7, Table 3-23, Fig 3-12 - "Signage, Line marking and Road Furniture Report" Rev 4, Sections 3.5.2, 3.5.3, 3.7.6 and 3.6.
E73	The SSI must be designed to not preclude delivery of the Tripoli Way and Yallah Road projects. Consultation with the Relevant Council(s) must be undertaken during detailed design of the SSI to facilitate future integration with these projects. Current traffic modelling and assessment, and the result of the **Road Network Performance Review Plan** required under **Condition D9** must be provided to the relevant road authority for their consideration in the development of the Tripoli Way and Yallah Road projects.	Yes	Detailed design	Compliant	Compliance with CoA E73 is documented in the Detailed Design Road Alignment Report (Rev 4), Sections 2.8.8, 3.3.5, 3.4 and 9. The projects 'future third lane strategy' for the Albion Park Interchange provides for a tie-in to allow for connection to the potential future bypass of Albion Park along Tripoli Way which is under planning by Shellharbour City Council. Additionally, the bridge superstructures have been designed for the four-lane configuration with consideration of future widening requirements to accommodate the additional median side lanes. The results of the Road Network Performance Review Plan required under Condition D9 must be provided to the relevant road authority for their consideration in the development of the Tripoli Way and Yallah Road projects in a future reporting period.
E74	The Proponent must consult with Wollongong City Council and the Tallawarra Lands developer on the timing of the proposed closure of Cormack Avenue.	No	Detailed design and Construction	Not Triggered	Not applicable to Stage 2 works.
E75	Before any local road is used by a heavy vehicle for the purpose of constructing the SSI, a **Road Dilapidation Report** must be prepared for the road. The report must be prepared by a suitably qualified person before commencement of the works that have the potential to damage local roads (and associated infrastructure). Copies of the **Road Dilapidation Report** must be provided to the Relevant Council(s) within three weeks of completing the surveys and no later than one (1) month before the use of local roads by heavy vehicles of construction of the SSI.	Yes	Construction	Compliant	Road Dilapidation Reports have been prepared for all roads potentially impacted by the project works and heavy vehicles associated with the construction of the SSI. The condition of each road has been recorded in video by specialist consultants AusDilaps and provided to the relevant Councils, via RMS prior to commencement of use of those roads by heavy vehicles.

E76	If damage to roads occurs as a result of works associated with the SSI, the Proponent must rectify the damage so as to restore the road to at least the condition it was in pre-works, unless otherwise agreed by the Relevant Council(s).	Yes	Construction	Not Triggered	No damage to roads as a result of the SSI was identified within the reporting period. Fulton Hogan monitor the condition of the roads and will co-operate with Roads and Maritime, Wollongong City Council and Shellharbour City Council and its personnel or contractors in carrying out maintenance of existing roads. If damage to roads occurs as a result of works associated with the SSI, Fulton Hogan will rectify the damage so as to restore the road to at least the condition that was recorded during the dilapidation survey unless this is otherwise agreed by the Relevant Councils.
URBAN D	**ESIGN AND VISUAL AMENITY**				
E77	The SSI must be designed to retain as many trees as possible. Where trees are to be removed on areas that are zoned for residential, commercial or industrial, the Proponent must provide a net increase in the number of replacement trees. Replacement trees must be planted within the SSI boundary, unless otherwise agreed by the Secretary.	Yes	Detailed design	Compliant	The project design has sought to reduce the project footprint and associated clearing required by refining the approved concept road alignment and drainage infrastructure to conserve treed areas. This is specifically evidenced in modifications to: - Drainage plans detailed in the Detailed Design Drainage Report (Rev 4), where Critically Endangered Ecological Communities (CEEC) previously approved for impacts have been conserved at Yallah and Croome Reserve. - Local Roads detailed in the Detailed Design Road Alignment Report (Rev 4), where road alignment plans have been adjusted to reduce tree clearing on the east side of the main alignment. The Urban Design and Landscape Character Strategy (UDLCS), Section 7.2 outlines the extent of clearing required as part of the project and the strategy for compliance with CoA E77. Subject to OLS restrictions from Illawarra Regional Airport, replacement plantings will be undertaken in the general location of the site from which they are removed and provides for a net increase in trees. Section 6 (LD-01-0010) of the Landscape Design package further outlines the landscape requirements adopted as part of the project, including extent of clearing, number of trees proposed, revegetation and planting strategy during construction. All replacement trees have been designed to be planted within the project boundary.
E78	Replacement trees are to have a variable pot size consistent with the pot sizes specified in the Relevant Council(s) plans / programs/ strategies for vegetation management, street planting, or open space landscaping, unless otherwise agreed by the Secretary. This condition does not apply to landscaping associated with the Croom Regional Sporting Complex.	Yes	Detailed design and Construction	Compliant	Compliance with CoA E78 is detailed in the Landscape Design package Master Plant List (LD-01-0021) which details the size, density and application rates of plants; including grasses, shrubs, ground covers, wetland plants and trees to be planted as part of the Stage 2 works. Appendix B of the Urban Design and Landscape Character Strategy (USLCS) and Section 7.3 provide further evidence of consultation with the relevant City Councils.
E79	The **Urban Design and Landscape Character Strategy** must be finalised based on the detailed design, and in accordance with the commitments made in *Technical Paper 10 – Landscape character and visual amenity* of the EIS and the SPIR. The Urban Design and Landscape Character Strategy must incorporate monitoring and maintenance procedures for the built elements, rehabilitated vegetation (including the requirements of Condition E77) and landscaping (including visual screening and weed control) and performance indicators, responsibilities, timing and duration and contingencies where rehabilitation of vegetation and landscaping measures fail. The Strategy does not include the Croom Regional Sporting Complex works as subject to Condition E55.	Yes	Detailed design and Construction	Compliant	The Urban Design and Landscape Character Strategy (UDLCS) demonstrates compliance with CoA E79 in Section 8. During the reporting period, a draft Landscape Management Plan was also developed by Fulton Hogan's landscape architecture consultants, TRACT. It is anticipated that this document will guide future maintenance activities as part of the Operations and Maintenance Manual.

Appendix A - Stage 2 Conditions of Approval Compliance Table

CoA	Condition of Approval (CoA)	Applicable to Stage 2?	Project Phase applicable to Condition	Stage 2 Compliance	Evidence of Stage 2 Pre-Construction Compliance/ Notes
E80	The **Urban Design and Landscape Character Strategy** must be finalised in consultation with the Relevant Council(s) and the community.	Yes	Detailed design	Compliant	The Urban Design and Landscape Character Strategy (USLCS) Section 7.3 and Appendix B provide evidence of consultation with the relevant City Councils during development of the Strategy. The UDLCS was exhibited on the project website during November and December 2018, along with staffed pop-up displays at Albion Park Shopping Village, Illawarra Convoy event, Stockland Shellharbour and an unstaffed display at the Roads and Maritime Services Regional Office in Wollongong. Attendees at these pop-up displays were able to view hard copies of the UDLCS and were provided with information about how to access the online version and provide feedback. Feedback was sought directly from Wollongong City Council and Shellharbour City Council. Details about the UDLCS and community feedback period were included in a community newsletter, November 2018 which was distributed to around 3,000 properties and emailed to around 250 stakeholders. The newsletter was also uploaded to the project website, 20 November 2018. A media release advising the exhibition of the UDLCS was issued by Member for Kiama, Gareth Ward, 19 November and was also featured in the Illawarra Mercury, 19 November. An online survey was uploaded to the project website, 20 November 2018 seeking feedback on the UDLCS and included questions relating to design, cyclist connectivity, heritage, cultural values and urban development. Targeted information sessions were further held with key stakeholder groups to provide information on the UDLCS, including residents and businesses in Yallah, the Albion Park Chamber of Commerce and the Illawarra Bicycle User Group. A total of 66 submissions were received during the exhibition period.
E81	The **Urban Design and Landscape Character Strategy** must be made publicly available and submitted to the Secretary for information prior to the commencement of works that require community consultation, unless otherwise agreed by the Secretary. The Strategy shall incorporate evidence of consultation on the proposed urban design and landscape measures and the monitoring and maintenance procedures. *Note: Works that are subject to community consultation include those design and landscaping details that are not required to meet the other requirements of this approval and/or specific technical criteria. For example, it does not include structures or landscaping works associated with riparian areas, fauna crossings and the like.*	Yes	Detailed design	Compliant	The Urban Design and Landscape Character Strategy (UDLCS) was endorsed by the ER and provided to the Secretary 4 February 2019. The UDLCS was also exhibited for public review on the project website during November and December 2018, along with staffed pop-up displays at Albion Park Shopping Village, Illawarra Convoy, Stockland Shellharbour and an unstaffed display at the Roads and Maritime Services Regional Office in Wollongong. The UDLCS Community consultation report was uploaded to the project website in June 2019.

E82	Operational noise barriers must be designed to minimise visual and amenity impacts and be designed in accordance with the *Noise wall design guideline – Design guideline to improve the appearance of noise walls in NSW, Roads and Maritime Services, March 2016.*	Yes	Construction and Operation	Compliant	The project includes one operational noise mound, located along the northern side of the East West Link. The noise mound has been designed at approximately five meters high and has been designed in accordance with the Noise wall design guideline - Design guideline to improve the appearance of noise walls in NSW, Roads and Maritime Services, March 2016. The noise mound is a key element in the integration of a noise attenuation structure within the landscape. Planting will consist of canopy trees at the toe of the embankment to enhance screening and visual amenity .
UTILITIES	**AND SERVICES**				
E83	Utilities, services and other infrastructure potentially affected by the delivery of the SSI must be identified before works affecting them commence, to determine the requirements for access to, diversion protection, and/or support of such services. The relevant owner and/or provider of services must be consulted to make suitable arrangements for access to diversion, protection, and/or support of the affected infrastructure as required. The Proponent must ensure that disruption to any service is minimised and be responsible for advising local residents and businesses affected before any planned disruption of service occurs.	Yes	Construction	Compliant	All potentially impacted utilities and services have been identified before commencement of any works affecting them. All utility owners have been consulted with regard to access, diversion, protection and/or support of such services as follows: **Utility Owner / Provider** / **Utility Package** / **Approval Date** Endeavour Energy / Electrical Package 1 / 27-Dec-18 Endeavour Energy / Electrical Package 2 / 5-Nov-18 Endeavour Energy / Electrical Package 3 / 3-Dec-18 Endeavour Energy / Electrical Package 4 / 25-Oct-18 Endeavour Energy / Electrical Package 5 / 10-Dec-18 Endeavour Energy / Electrical Package 6 / 19-Feb-19 Endeavour Energy / Electrical Package 8B / 18-Apr-19 Sydney Water / Water Main relocation - Stage 3 / For a future reporting period Sydney Water / Cleary Bros Sewer / For a future reporting period Sydney Water / Cleary Bros Sewer / For a future reporting period Jemena / High Pressure Gas relocation / 20-Sep-18 Jemena / Eastern Gas Pipeline protection / 12-Dec-18 Sydney Trains / 33KV relocation / 21-Feb-19 Sydney Trains / DTRS/Signals/Comms relocations / 18-Oct-18 Telstra / Comms relocations / 26-Oct-18 NBN Co / Comms relocations / 23-Nov-18 All utilities and services have been identified in the Infrastructure Utility Coordination Plans (Detailed Design - Rev 2) and Detailed Design ITS and Street Lighting Report (Rev 4). Management of communication and consultation with the local residents regarding impacted utilities is described in the Community Communication Strategy (CCS).
WASTE					
E84	Waste generated in the delivery of the SSI must be dealt with in accordance with the following priorities: (a) waste generation is to be avoided and where avoidance is not reasonably practicable, waste generation is to be reduced; (b) where avoiding or reducing waste is not possible, waste is to be re-used, recycled, or recovered; and (c) where re-using, recycling or recovering waste is not possible, waste is to be treated or disposed of at a waste management facility or premises lawfully permitted to accept the materials.	Yes	Construction	Compliant	Waste management for Stage 2 is addressed in the Waste and Energy Management Sub-Plan (WEMP - Rev 4) submitted to the Department for information 12 October 2018. Compliance with CoA E84 is detailed in the Project induction and implementation of the WEMP as follows: E84 (a): Sections 5.1 and 5.1.1, Chapter 6 including mitigation measures WEMM 1, 4 and 5 E84 (b): Sections 5.1 and 5.1.2, Chapter 6 including mitigation measures WEMM 1 and 6-18 E84 (c): Sections 5.1 and 5.1.5, Chapter 6 including mitigation measures WEMM 1, 7-11, 15, 19 and 20.
E85	Waste generated outside the site must not be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence or waste exemption under the *Protection of the Environment Operations Act 1997,* if such a licence is required in relation to that waste.	Yes	Construction	Compliant	Waste management for Stage 2 is addressed in the Waste and Energy Management Sub-Plan (WEMP - Rev 4) submitted to the Department for information 12 October 2018. Compliance with CoA E85 is evidenced through implementation of the WEMP as follows: Chapter 6 mitigation measure: WEMM3. Fulton Hogan regularly consults with NSW EPA to ensure ongoing compliance. This is evidenced in email records, minutes of meetings and in a formal letter from NSW EPA, 8 April 2019. Wastes generated outside the project that comply with a current NSW EPA Resource Recovery Order (RRO) and Resource Recovery Exemption (RRE) and may be lawfully used as engineering fill are utilised in Stage 2 works under strict management protocols detailed in the project Material Import Approval Process, Import Checklist and associated due diligence documentation. The implementation of these measures is ongoing.
E86	All waste materials removed from the SSI site must only be directed to a waste management facility or premise lawfully permitted to accept the materials or in accordance with a Resource Recovery Exemption or Order issued under the *Protection of the Environment Operations (Waste) Regulation 2014* , or to any other place that can lawfully accept such waste.	Yes	Construction	Compliant	Waste management for Stage 2 is addressed in the Waste and Energy Management Sub-Plan (WEMP - Rev 4) submitted to the Department for information 12 October 2018. Compliance with CoA E86 is detailed in the Project induction and the WEMP Sections 5.1.5, 5.3 and 5.4 as well as Chapter 6 including mitigation measures WEMM 6-10 and 15. This is evidenced in the project waste register, waste disposal dockets and the Section 143 Notice records.
E87	All waste must be classified in accordance with the EPA's *Waste Classification Guidelines* , with appropriate records and disposal dockets retained for audit purposes.	Yes	Construction	Compliant	Waste management for Stage 2 is addressed in the Waste and Energy Management Sub-Plan (WEMP - Rev 4) submitted to the Department for information 12 October 2018. Compliance with CoA E87 is detailed in the Project induction and the WEMP Sections 5.2 and 5.4 as well as Chapter 6 including mitigation measures WEMM 8-10. This is evidenced in waste classification reports, waste disposal dockets and the Section 143 Notice records.
WATER					

E88	Strategies for the management of Acid Sulfate Soils during works must be implemented.	Yes	Construction	Compliant	All acid sulfate soils encountered are managed in accordance with the CEMP Soil and Water Management Sub Plan (SWMP - Rev 8), endorsed by the ER, 5 December 2018. The SWMP (Rev 8) was approved by the Secretary 7 December 2018. Strategies implemented during construction are detailed in Sections 4.1.4 and 5.1 of the SWMP and Appendix C "Acid Sulfate Soil Management Procedure". Implementation is evidenced in geotechnical documentation, site inspection records and site photos and laboratory analysis records of neutralisation.
E89	Where available and practicable, and of appropriate chemical and biological quality, stormwater, recycled water or other water sources shall be used in preference to potable water for the delivery of the SSI, including dust control.	Yes	Construction	Compliant	Compliance with CoA E89 is evidenced through the site actions in accordance with the CEMP Soil and Water Management Sub Plan (SWMP - Rev 8), endorsed by the ER, 5 December 2018. The SWMP (Rev 8) was approved by the Secretary, 7 December 2018. Where practicable, alternate water sources have been utilised in consultation with NSW Resources Access Regulator (formerly NSW Office of Water) and NSW DPI Fisheries. The use of stormwater, recycled water or other water sources is detailed in the SWMP and is evidenced on site at water cart overhead filling stations using non-potable water. In the reporting period, dust suppression water was sourced from dams requiring dewatering, captured rainfall runoff in sediment basins and from Macquarie Rivulet, in preference to the Sydney Water potable supply.

Appendix A - Stage 2 Conditions of Approval Compliance Table

CoA	Condition of Approval (CoA)	Applicable to Stage 2?	Project Phase applicable to Condition	Stage 2 Compliance	Evidence of Stage 2 Pre-Construction Compliance/ Notes
E90	Drainage feature crossings (permanent and temporary watercourse crossings and stream diversions) and drainage swales and depressions must be undertaken in accordance with relevant guidelines and designed by a suitably qualified and experienced person in consultation with DPI Fisheries and the EPA.	Yes	Construction	Compliant	Fulton Hogan and RMS have met with DPI Fisheries, DPI Water and EPA to discuss the drainage design, temporary and permanent crossings and the realignment of Frazers Creek on matters of fish passage and riparian landscaping. Designs of the crossings and the realignments of Frazers creek have been submitted to the agencies during the detailed design and construction phases and regular updates have been provided during construction. Evidence of this consultation is included in Appendix A5 of the CEMP, consultation records regarding preparation of the Environmental Work Method Statement 11 "Working in or Near Waterways", minutes of the "Works around Waterways" workshop, 8 March 2019, emailed construction updates, ER monthly reports, site inspection notes and site photos.
E91	The realignment of Frazers Creek must be undertaken in consultation with and meet the reasonable requirements of DPI Fisheries.	Yes	Construction	Compliant	Fulton Hogan and RMS have met with DPI Fisheries, DPI Water and EPA and discussed the realignment of Frazers Creek. Design of the Creek realignments at Frazers 1 and 3 have been submitted and endorsed by NSW DPI Fisheries. Evidence of this consultation is included in Appendix A5 of the CEMP, minutes of the "Works around Waterways" workshop, 8 March 2019, Environment Review Group meeting minutes, email records, construction updates, ER monthly reports, site inspection notes, and site photos.

Appendix B Construction Monitoring Program Report

Fulton Hogan

SSI 6878 Albion Park Rail Bypass

Construction Monitoring Report

Report 1
7 January 2019 – 7 July 2019

Contents

Appendices

1 Environmental monitoring

In accordance with Condition of Approval (CoA) C14, the Albion Park Rail bypass project is implementing a range of environmental monitoring programs as set out within the framework of the Construction Environmental Management Plan and monitoring programs contained within the associated sub-plans as detailed below:

- Air Quality Monitoring Program - CEMP Appendix B6 (AQMP Rev 7)
- Ground Water Monitoring Program - CEMP Appendix B4 (SWMP Rev 8)
- Surface Water Monitoring Program - CEMP Appendix B4 (SWMP Rev 8)
- Noise Monitoring Program - CEMP Appendix B3 (NVMP Rev 6).

Consistent with CoA C16, the Construction Monitoring Programs (CMP's) have been incorporated into the respective sub-plans to guide all environmental monitoring and document the findings. The results of these monitoring activities are to be used in establishing trends and drive improvements, where necessary.

The Secretary of the NSW Department of Planning, Industry and Environment (then DP&E now DPIE), approved the CEMP sub-plans and CMPs noted above on 7 December 2018.

The results of the construction monitoring described herein for reporting period #1 (7 January – 7 July 2019) are to be provided to the Secretary, relevant agencies and Councils for information in compliance with CoA C15.

Construction monitoring location maps can be found in Annexure A.

1.1 Water quality

1.1.1 Introduction

The purpose of water quality monitoring during the construction phase is to determine potential impacts resulting from construction of the project only (i.e. road construction) and does not detail other sources of potential impacts, such as agricultural operations or upstream developments.

The approved Soil and Water Management sub-plan (SWMP) describes the potential impacts from road construction activities as being most likely to result from erosion and sediment control failures and spills originating from construction plant and activities. The Construction water quality monitoring program established in the CEMP Appendix B4 SWMP sets out the requirements for water monitoring as below:

Surface water

Surface water monitoring focuses on the parameters associated with road construction and include:

- Total suspended solids (TSS)
- pH
- Visible oil and grease.

Groundwater

Groundwater monitoring focuses on the parameters associated with road construction and include:

- pH
- electrical conductivity
- temperature
- no visible oil and grease
- dissolved metals for GW2 only, which is located in a PASS risk area.

Groundwater levels are also measured at each groundwater monitoring location.

Figure 1-1: Water quality monitoring of Macquarie Rivulet

Following consultation with the NSW EPA, NSW Natural Resource Access Regulator, formerly NSW Department of Primary Industries (NSW Office of Water), and NSW Department of Primary Industries (Fisheries), trigger levels have been included in the Construction Water Quality Monitoring Program (WQMP). Implementation of the standard mitigation measures listed in Construction SWMP have ensured surface water and groundwater impacts have been minimised during construction.

In the reporting period, six surface water and two groundwater monitoring campaigns were completed. The water quality monitoring program did not find any results related to construction impacts during this monitoring period.

1.1.2 Surface Water monitoring results

The below tables present the recorded levels plotted against trigger levels set out in the Construction water quality monitoring program. In the event that a trigger level exceedance has been identified, the Environmental Manager will investigate the issue to determine possible causes and to develop appropriate mitigation measures.

No Oil and Grease was visible during the six monitoring events. No significant trends were identified in the data below.

Table 1-1: Surface water quality monitoring trigger levels and results for pH

No.	pH							Number of results outside Trigger Level
	Trigger Level (greater than for two consecutive monitoring events)	31/01/19	28/02/19	15/03/19	8/04/19	29/05/19	5/06/19	
SW1	**<6.6 and >7.9 (< 6.9 and >8.4 for SW3)**	7	No sample	No sample	7.1	No sample	7.6	0
SW2		7.2	No sample	No sample	No sample	No sample	7.2	0
SW2 Downstream		No sample	No sample	No sample	No sample	No sample	7.1	0
SW3 Upstream		No sample	7.8	7.3	7.3	7.9	7.2	0
SW3		7.1	8	7.1	7.3	7.9	7.1	0
SW4		6.9	7.7	No sample	7.2	6.7	7.2	0
SW5A		7.2	7.8	7.3	6.8	6.9	7.4	0
SW6		6.8	7.2	7	7	7.1	7.3	0
SW7		7.2	7.3	7.4	No sample	7.1	7.5	0
SW8		No sample	No sample	No sample	No sample	No sample	6.9	0
SW9		6.9	No sample	No sample	No sample	No sample	6.8	0

No exceedances against the trigger level identified in the monitoring program have occurred during the reporting period for pH levels. A 'No Sample' result is due to stagnant water during monitoring. Stagnant water in creeks will alter the chemistry of the water due to an increase in bacteria and algal growth, which is not representative of the creek and therefore monitoring was not undertaken.

Table 1-2: Surface water quality monitoring trigger levels and results for TSS

No.	Total Suspended Solids (mg/L)							Number of results exceeding Trigger Level
	Trigger level (greater than for two consecutive monitoring events)	31/01/19	28/02/19	15/03/19	8/04/19	29/05/19	5/06/19	
SW1	**7.42**	11	No sample	No sample	<5	No sample	<5	0
SW2	**8.5**	5	No sample	No sample	No sample	No sample	16	0
SW2 Downstream	**8.5**	No sample	No sample	No sample	No sample	No sample	19	0
SW3 Upstream	**9.4**	No sample	414	14	<5	<5	9	1
SW3	**9.4**	11	14	7	<5	<5	7	1
SW4	**10.7**	14	128	No sample	17	28	5	2
SW5A	**6.9**	7	<5	12	<5	<5	11	0

SW6	**8.3**	27	322	14	<5	<5	6	1
SW7	**33.9**	46	<5	<5	No sample	<5	12	0
SW8	**91.2**	No sample	No sample	No sample	No sample	No sample	22	0
SW9	**6.7**	10	No sample	No sample	No sample	No sample	5	0

Exceedances against the TSS trigger levels for each creek are outlined below and discussed in section 1.1.3:

- SW3US (Macquarie Rivulet) – Trigger level exceedance skewed due to sampling technique error in February resulting in high TSS result. Training regarding sample techniques undertaken by Fulton Hogan to ensure that technique error does not reoccur and therefore not considered to be an impact from construction works;
- SW3 (Macquarie Rivulet) – Minor trigger level exceeded in February however not related to construction due to limited exposed areas under construction at the time;
- SW4 (Frazers Ck) – Trigger level exceedance skewed due to sampling technique error in February resulting in high TSS result. Training regarding sample techniques undertaken by Fulton Hogan to ensure that technique error does not reoccur and therefore not considered to be an impact from construction works. Trigger level exceedance skewed due to low flow conditions and increased algal growth in May and therefore not considered to be an impact from construction works; and
- SW6 (Frazers Ck) – Trigger level exceedance skewed due to sampling technique error in February resulting in high TSS result. Training regarding sample techniques undertaken by Fulton Hogan to ensure that technique error does not reoccur and therefore not considered to be an impact from construction works.

A ‘No Sample’ result is due to stagnant water during monitoring. Stagnant water in creeks will alter the chemistry of the water due to an increase in bacteria and algal growth, which is not representative of the creek characteristics and therefore monitoring not undertaken.

A visual assessment of the conditions at the monitoring point and nearby construction works are undertaken and any potential impacts to trigger level exceedances from construction are noted on the field sheets.

1.1.3 Surface Water monitoring discussion

Each monitoring event is discussed below in relation to potential impacts from construction.

- 31 January 2019 (TSS, pH, visible oil and grease) – The results did not indicate construction impacts. Due to the dry weather conditions, five of the six Creek locations monitored ranged between nil to low flow conditions, resulting in stagnant water and slightly elevated suspended solid results due to plant and algal growth. Due to the project’s limited area of disturbance, it was apparent that the results were not reflective of site runoff effecting the surrounding catchment due to the limited construction

footprint, but rather the turbidity was associated with algal growth evident in the low flow or stagnant waters.

- 28 February 2019 (TSS, pH, visible oil and grease) – The results did not indicate any construction impacts. With the continuation of the dry weather conditions, four of the six Creek locations monitored again presented nil to very low flow conditions, resulting in further stagnant waters and subsequently no samples were taken. Due to the project's limited area of disturbance, it was determined that there was there was a reduced risk in site runoff effecting the surrounding catchment and the water quality conditions were unrelated to the Project.
- 15 March 2019 (TSS, pH, visible oil and grease) – There were no observed construction impacts noted during this monitoring event. With the below average rainfall that the project had received during February and the first half of March, a large portion of the rainfall received the previous day and during the monitoring event infiltrated into the ground across the project and surrounding catchments resulting in limited runoff. Four of the six Creek locations monitored continued to present nil to very low flow conditions resulting in stagnant water and no samples were taken for laboratory analysis. Frazers Creek presented low flow conditions, which resulted in higher than expected suspended solid results at SW6 due to algal growth observed at the monitoring location and no results at SW4 and SW8 due to stagnant water conditions.
- 8 April 2019 (TSS, pH, visible oil and grease) – Even with the rainfall that the project received during the second half of March and into April, there were no observed construction impacts noted during this monitoring event. With the unseasonal heat and winds, the received rainfall infiltrated into the surrounding catchment or evaporated resulting in four of the six Creek locations observing nil to very low flow conditions. These conditions resulted in stagnant water and no samples were taken. Frazers Creek presented low flow conditions, which resulted in higher than expected suspended solid results at SW4 due to increased plant and algal growth, potentially as a result of adjacent agriculture and no results at SW6 and SW8.
- 29 May 2019 (TSS, pH, visible oil and grease) – With the below average rainfall the project has received, there were no observed construction impacts noted during this monitoring event. Four of the six Creek locations monitored presented nil to very low flow conditions resulting in stagnant water and no samples were taken. Frazers Creek presented low flow conditions, which resulted in higher than expected suspended solid results at SW4 similar to the previous months monitoring events and no results at SW6 and SW8. Macquarie Rivulet was also recorded as having low flow during the monitoring event.
- 5 June 2019 (TSS, pH, visible oil and grease) – Moderate rainfall was received prior to and during the monitoring event. As there had been an extended dry weather period during the month of May and into June ground conditions were very dry. The rain recorded on the fourth and fifth of June provided a small amount of relief to the surrounding catchments however flows at five of the Creek locations still presented low flow conditions with the exception of Macquarie Rivulet. Consequently, there were no observed construction impacts noted during this monitoring event

assessing upstream against downstream conditions. Upstream results of Macquarie Rivulet (SW5A) returned elevated levels of suspended solids however, these levels reduced at SW3US and SW3, directly adjacent to the project boundary.

1.1.4 Groundwater monitoring results

The below tables show the recorded data plotted against trigger levels set out in the Construction water quality monitoring program. In the event that a trigger level exceedance has been identified the Environmental Manager will investigate the issue to determine possible causes and to develop appropriate mitigation measures.

Monitoring of GW1 was not undertaken, as the monitoring well was unable to be located. No construction had commenced in the locality of the monitoring well and therefore concluded that not impact from construction identified. A new monitoring well was installed in a nearby location and monitoring of the new well be included in the next monitoring report. Monitoring well GW3 has been dry since March 2018 and therefore has no groundwater to monitor.

No Oil and Grease was visible during the two monitoring events.

No significant trends were identified in the data below other than the declining groundwater levels due to very limited rainfall.

Table 1-3: Groundwater quality monitoring trigger levels and results for pH

No.	pH			Number of results exceeding Trigger Level
	Trigger Level (greater than for two consecutive monitoring events)	**29/03/2019**	**14/05/2019**	
GW1	6.7	N/A	N/A	N/A
GW2	6.8	7.9	7.5	1
GW3	7.2	Well Dry	Well Dry	0
GW4	6.6	7.4	7.0	1
GW5	4.2	4.1	8.8	0
BH318	6.8	7.3	8.7	1

Three exceedances against the trigger level identified in the monitoring program have occurred during the reporting period for pH levels. Two of the three pH levels exceedances were still within the ANZECC/ARMCANZ (2000) guidelines for pH and one was marginally outside the ANZECC/ARMCANZ (2000) guidelines. The exceedances are not considered an impact from construction.

Table 1-4: Groundwater quality monitoring trigger levels and results for EC

No.	Electrical Conductivity (mS/cm)			Number of results exceeding Trigger Level
	Trigger level (greater than for two consecutive monitoring events)	29/03/2019	14/05/2019	
GW1	2.2	N/A	N/A	N/A
GW2	1.3	1.3	1.5	0
GW3	1.3	Well Dry	Well Dry	0
GW4	2.4	2.3	2.3	0
GW5	17.0	21.0	21.5	1
BH318	5.1	5.2	5.4	1

Two exceedances against the trigger level identified in the monitoring program occurred during the reporting period for EC levels in GW5 and BH318 however, the EC levels are consistent with pre-construction levels that have been outside of ANZECC guideline levels for EC and are therefore not considered an impact from construction.

Table 1-5: Groundwater quality monitoring trigger levels and results for Temperature

No.	Temperature (°C)			Number of results exceeding Trigger Level
	Trigger level (greater than for two consecutive monitoring events)	29/03/2019	14/05/2019	
GW1	21.2	N/A	N/A	N/A
GW2	17.7	18.7	17.2	0
GW3	18.4	Well Dry	Well Dry	0
GW4	18.3	19.5	17.84	0
GW5	19.1	Probe error	18.6	0
BH318	18.3	Probe error	18.4	0

Table 1-6: Groundwater quality monitoring trigger levels and results for Height

No.	Height (m) to Top of Casing (TOC)			Number of results exceeding Trigger Level
	Trigger level (greater than for two consecutive monitoring events)	29/03/2019	14/05/2019	
GW1	6.31	N/A	N/A	N/A
GW2	1.69	2.09	2.15	1
GW3	6.91	Well Dry	Well Dry	N/A
GW4	6.20	6.97	6.85	1

GW5	6.83	7.57	7.6	1
BH318	5.01	5.35	5.4	1

Four exceedances against the trigger level identified in the monitoring program occurred during the reporting period for Height. The Heights are consistent with current environmental conditions and have a declining trend due to the limited rainfall received and are therefore not considered an impact from construction. Monitoring well GW3 has been dry since March 2018.

Table 1-7: Groundwater quality monitoring trigger levels and results for Dissolved Metals at GW2

No.	Dissolved Metal (mg/L)			Number of results exceeding Trigger Level
	Trigger level (greater than for two consecutive monitoring events)	29/03/2019	14/05/2019	
Arsenic	0.0013	0.002	0.001	0
Cadmium	0.0001	<0.0001	<0.0001	0
Chromium	0.001	<0.001	0.001	0
Copper	0.002	0.09	0.02	1
Nickel	0.003	0.007	0.012	1
Lead	0.001	<0.001	<0.001	0
Zinc	0.01	0.058	0.181	1
Mercury	0.0001	<0.0001	<0.0001	0

Three exceedances against the trigger level identified in the monitoring program occurred during the reporting period for Dissolved Metals. Copper, Nickel and Zinc concentrations have exceeded the nominated trigger levels due to a reduction in the groundwater level. As construction works had not commenced within the well location, the exceedances are not considered an impact from construction.

Groundwater monitoring results indicate consistency with pre-construction levels.

1.1.5 Groundwater monitoring discussion

Each monitoring event is discussed below in relation to potential impacts from construction.

- 29 March 2019 – No significant seasonal groundwater level fluctuations were observed and no significant trends were identified in the dataset. pH values were occasionally outside the ANZECC guideline of pH 6.5 – pH 8.5, with one of four pH results outside the guidelines represented by low pH values (i.e. pH<6.5) which is consistent with pre-construction level for GW5. Metal concentrations in groundwater were recorded above the ANZECC guideline including copper and zinc. As construction works had not commenced within the well location the exceedances are not considered an impact from construction.
- 14 May 2019 – No significant seasonal groundwater level fluctuations were observed and no significant trends were identified in the dataset. pH values

did exceed the trigger levels in the monitoring program however were still within ANZECC guidelines. Two of four pH results fell outside the ANZECC guidelines represented by high pH values (i.e. pH>8.5). These levels were slightly higher than the guideline at 8.7, which is above the background levels for GW5 and BH318. Metal concentrations in groundwater were recorded above the ANZECC guideline including copper and zinc. As construction works had not commenced within the well location the exceedances are not considered an impact from construction.

Groundwater monitoring well GW3 has been dry since March 2018.

1.1.6 Water quality monitoring conclusion

Implementation of the standard mitigation measures listed in Table 6-1 of the SWMP ensures surface water and groundwater impacts are minimised during construction. Based on the available data and observed water quality during the reporting period, no modification is deemed to be required to the construction methods or environmental control measures being implemented onsite, with the exception of the surface water sampling technique error. The error occurred due to cross contamination with sediments on the side of the creek bank whilst taking the grab sample. The Environmental Manger undertook onsite training in the correct sampling technique with the use of a sampling pole and work task observations during the following sampling event. Various Fulton Hogan staff members completed an Environmental Sampling Training course by an independent testing organisation to ensure that the correct sampling techniques are used during monitoring events.

No additional or unscheduled monitoring is currently required to determine or verify a trend in water quality impacts. Whilst exceedances have been identified during the monitoring events, they are deemed not to be related to construction works. The reduced rainfall has limited the flows in the creeks and levels in groundwater, which has affected the water quality of during monitoring events. Where investigations do confirm a clear and unambiguous impact resulting from the construction of the project has occurred, the Environmental Manager, in consultation with the project team, will modify construction methods used or conduct unscheduled monitoring to further verify the exceedance, where relevant.

Surface Water Monitoring Reports and Groundwater Monitoring Reports can be found in Annexure B and Annexure C respectively.

1.2 Sediment Basin Discharge

The Project Environmental Protection Licence (EPL) prescribes water quality parameters to be measured and associated discharge criteria. For each sediment basin specified in the EPL, the concentration of a pollutant discharged at that point, must not exceed the concentration limits specified for that pollutant as shown in Table 1-1.

Table 1-8: Environmental Protection Licence concentration limits

Pollutant	Units of Measure	100 percentile concentration limit
Oil and Grease	Visible	Not Visible
pH	pH	6.5 – 8.5
Total Suspended Solids	Milligrams per litre	50

Fulton Hogan discharged twenty seven compliant sediment basins during the reporting period. No exceedances have been recorded against the EPL criteria. Sediment basin discharge data can be found on the Fulton Hogan website at the following link:

https://www.fultonhogan.com/managementplans/albion-park-rail-bypass/

1.3 Air quality

1.3.1 Introduction

The purpose of air quality monitoring during the construction phase is to determine impacts resulting from construction of the project only (i.e. road construction) and not other adjacent but unrelated sources, such as quarry or agricultural operations. The key emissions from road construction are generally dust and Particulate Matter (PM). The EPA sets goals for ambient dust concentrations and dust deposition, which is a measure of the impacts of nuisance. Air quality goals relate to the total dust burden in the air and not just the dust from the Project. Because of this, there needs to be some consideration of background levels, including the two major operational quarries adjacent to the project, when using these goals to assess impacts. Particle levels ($PM_{2.5}$ and PM_{10}) do exceed national standard levels from time to time. Particle pollution included primary particles released directly from sources, and secondary particles produced by chemical reactions between gases or between gases and other particles in the air. The comparison of $PM_{2.5}$ has been found to typically include ammonium sulphate, sea salt, black carbon, organic matter and soil. This indicates that particle and gaseous emissions from natural and human-made sources contribute to ambient $PM_{2.5}$ conditions. Exceedances of particle standards often coincide with regional dust storms or bushfire/back burning events.

Major source groups contributing to $PM_{2.5}$ and PM_{10} emissions in Kiama, Shellharbour and Wollongong LGAs are industrial sources (i.e. EPA-licensed industry), on-road mobile sources (e.g. cars and trucks), non-road mobile sources (e.g. bulldozers, haul trucks, ships and locomotives), domestic–commercial sources (e.g. residential heating), commercial activities (e.g. service stations) and natural sources (e.g. vegetation, bushfires and sea salt). The major sources of particle emissions are industrial (70% of $PM_{2.5}$ and 81% of PM_{10} emissions) and domestic-commercial sources (12% of $PM_{2.5}$ and 20% of PM_{10} emissions). Iron and steel production and mining and extractive activities account for the bulk of industrial emissions. Residential wood heating accounts for over 90% of particle emissions from domestic-commercial sources. Due to increases in residential wood heating, OEH have noted a 24% increase in fire particle emissions from domestic-commercial sources.

Industrial emissions are the dominant source of $PM_{2.5}$ emissions in Wollongong and Shellharbour LGAs, followed by domestic–commercial emissions (notably residential wood heating). Industrial and domestic–commercial sources contribute similar amounts of $PM_{2.5}$ emissions in Kiama LGA.

Industrial emissions are the most significant source of PM_{10} emissions, accounting for 75% to 86% of total PM_{10} emissions in the three LGAs, followed by domestic–commercial emissions, accounting for 10% to 13% of total emissions.

The top individual source types contributing to $PM_{2.5}$ and PM_{10} emissions by LGA are:

- Kiama – non-metallic mineral mining and quarrying, and residential wood heating
- Shellharbour – non-metallic mineral mining and quarrying, and residential wood heating
- Wollongong – basic ferrous metal manufacturing and residential wood heating.

Figure 1-2: Real time monitor

Deposited dust is monitored monthly during construction using gravimetric Dust Monitoring Gauges (DMG) to assess compliance with the criteria detailed in Table 1-9. Particulate Matter ($PM_{2.5}$, PM_{10} and TSP) is monitored on a real-time continuous basis. The parameters monitored are those identified in the Air Quality Management Plan (AQMP) and include:

Table 1-9: Air quality monitoring criteria for $PM_{2.5}$, PM_{10}, total suspended particulates and deposited dust[a].

Pollutant	Averaging Period	Concentration	
		pphm	$\mu g/m^3_d$
$PM_{2.5}$	24 hours	-	25
	Annual	-	8
PM_{10}	24 hours	-	50
	Annual	-	25
Total Suspended Particulates (TSP)	Annual	-	90
		$g/m^2/month_c$	**$g/m^2/month_d$**
Deposited dust[b]	Annual	2	4

Note:

a) Adapted from Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (EPA 2016).
b) Dust is assessed as insoluble solids as defined by AS 3580.10.1-2003 (AM-19).
c) Maximum increase in deposited dust level due to the project
d) Total cumulative concentrations and deposition rates due to the project plus background levels due to all other sources.

A trigger level has been included at Table A-2 of the Construction air quality monitoring program to protect the PM_{10} 24 hour standard criterion identified of 50 $\mu g/m^3$. The real time response trigger level provides a system to warn construction personnel when short-term average periods indicate that the 24-hour criterion may be exceeded. The real time monitoring system is used to trigger implementation of additional mitigation measures as identified in construction air quality monitoring program. This allows proactive dust management to control 24-hour and ultimately annual average impacts.

Implementation of the standard mitigation measures listed in the AQMP have ensured air quality impacts are minimised during construction.

1.3.2 Results

In general, Air Quality levels recorded at the Projects monitoring stations are consistent with the Illawarra and Greater Metropolitan Region. The relationship between ambient air quality and air emissions is influenced by a range of factors including meteorology, topography (surrounding terrain), chemical reactions of pollutants in the air and source location and type. This should be kept in mind when interpreting the emissions data presented.

The monthly dust deposition results are consistent with the anticipated impacts described in the Construction air quality monitoring program. During the reporting period, the annual averaging period levels for DMG1 and DMG Control were 2.4 g/m^2/month and 1.7 g/m^2/month respectively. These values show the results are below the 4 g/m^2/month (Annual) anticipated maximum total deposited dust level and are consistent with pre-construction levels.

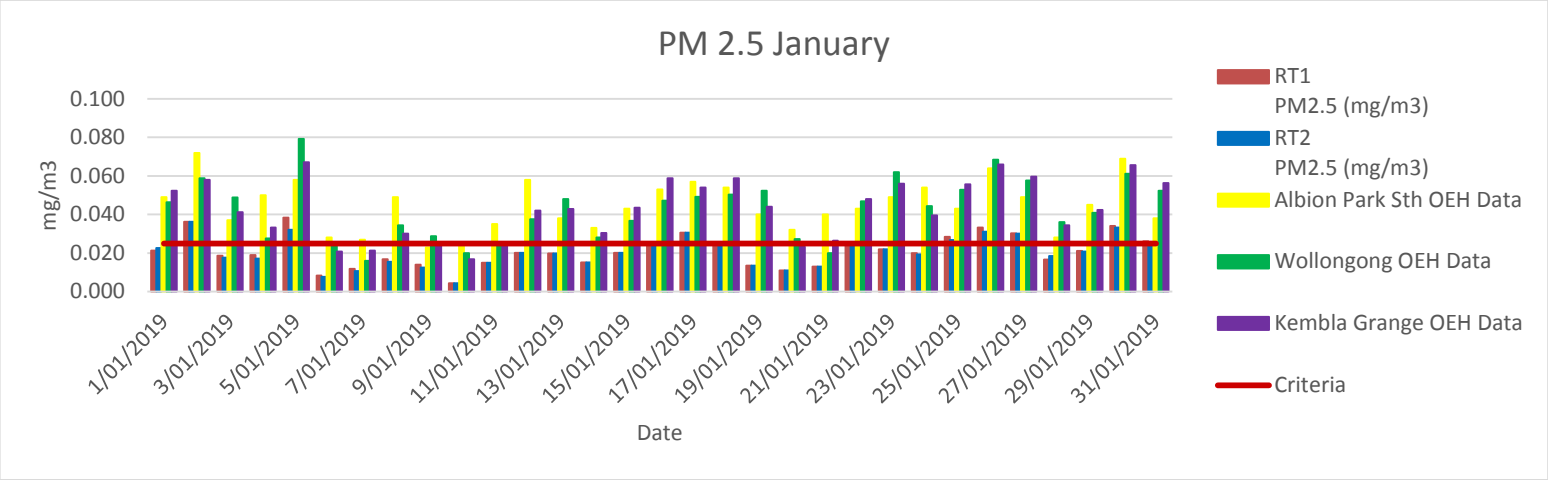
$PM_{2.5}$ and PM_{10} 24 hour particulate matter levels were greater than the criteria identified in the AQMP at various times during the current reporting period as shown in Table 1-10. The rolling Annual Average for this reporting period for $PM_{2.5}$ for RT1 and RT2 was 0.014mg/m^3 and 0.026mg/m^3 respectively and for PM_{10}

for RT1 and RT2 was 0.016mg/m^3 and 0.028mg/m^3 respectively. Due to the exceedances for each month, the recorded rolling Annual Averages are greater than the criteria identified in the AQMP with the exception of PM_{10} at RT1. The rolling Annual Average for PM_{TSP} for RT1 and RT2 is 0.016mg/m^3 and 0.028mg/m^3 respectively which is also well below the criteria of 0.09mg/m^3.

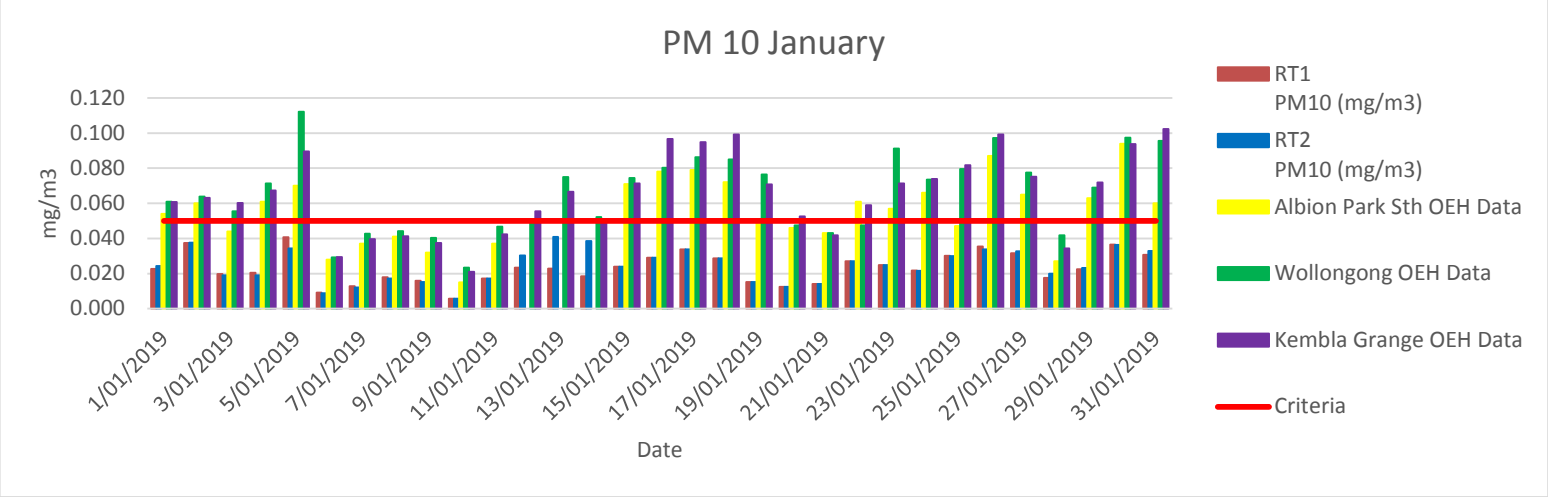
It is however noted that these monitoring results were less than or consistent with recorded ambient air quality levels across the Illawarra and the Greater Metropolitan Region and, as such, the results are considered to be reflective of regional background conditions, rather than construction impacts. Further, monthly dust deposition monitoring results were less than the nominated project criteria.

Table 1-10: PM Exceedance data

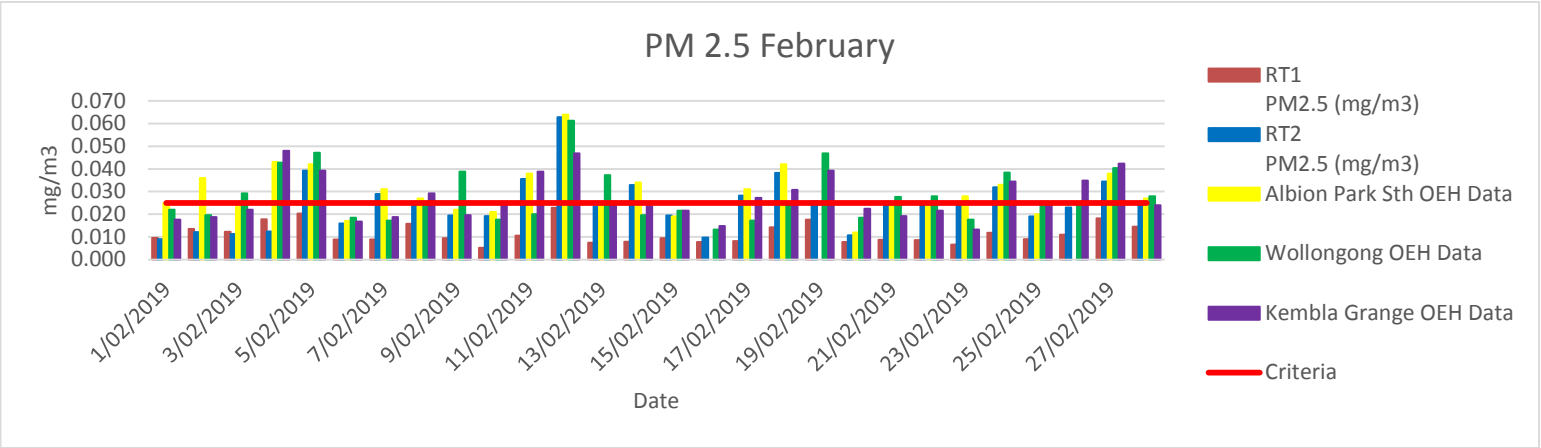
Monitoring Station/Pollutant	Number of Exceedances/Month					
	Jan	Feb	Mar	Apr	May	Jun
RT1 PM2.5 (mg/m3)	10	0	1	1	6	0
RT2 PM2.5 (mg/m3)	10	10	17	12	20	5
Albion Park Sth OEH PM2.5 (mg/m3) Data	29	14	17	15	24	9
Wollongong OEH PM2.5 (mg/m3) Data	26	14	15	16	18	8
Kembla Grange OEH PM2.5 (mg/m3) Data	25	12	15	14	17	5
RT1 PM10 (mg/m3)	0	0	0	0	1	0
RT2 PM10 (mg/m3)	0	3	4	1	1	0
Albion Park Sth OEH PM10 (mg/m3) Data	17	5	5	2	2	0
Wollongong OEH PM10 (mg/m3) Data	20	10	11	3	0	1
Kembla Grange OEH PM10 (mg/m3) Data	22	11	11	5	14	3



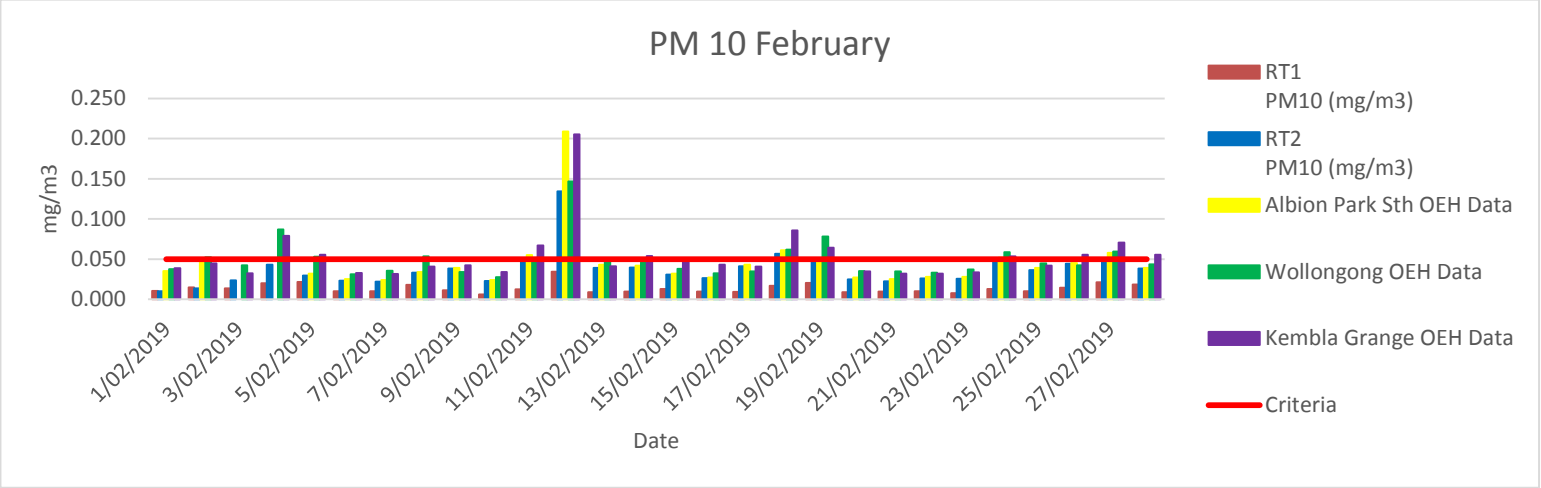
Graph 1-1: $PM_{2.5}$ January 24hr Average



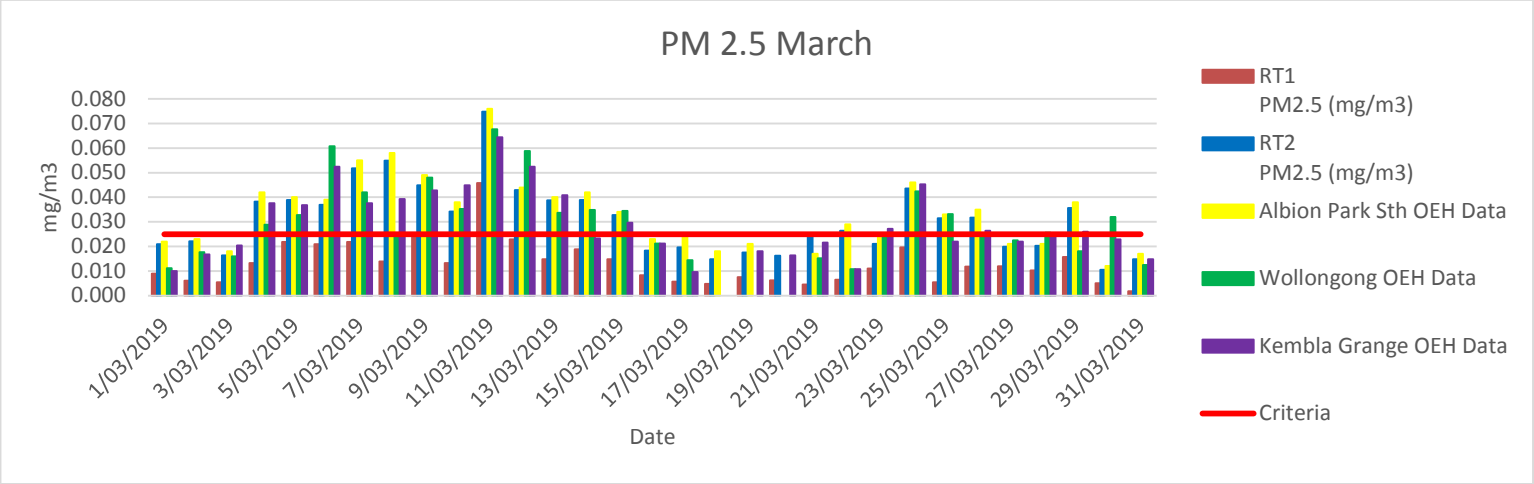
Graph 1-2: PM_{10} January 24hr Average



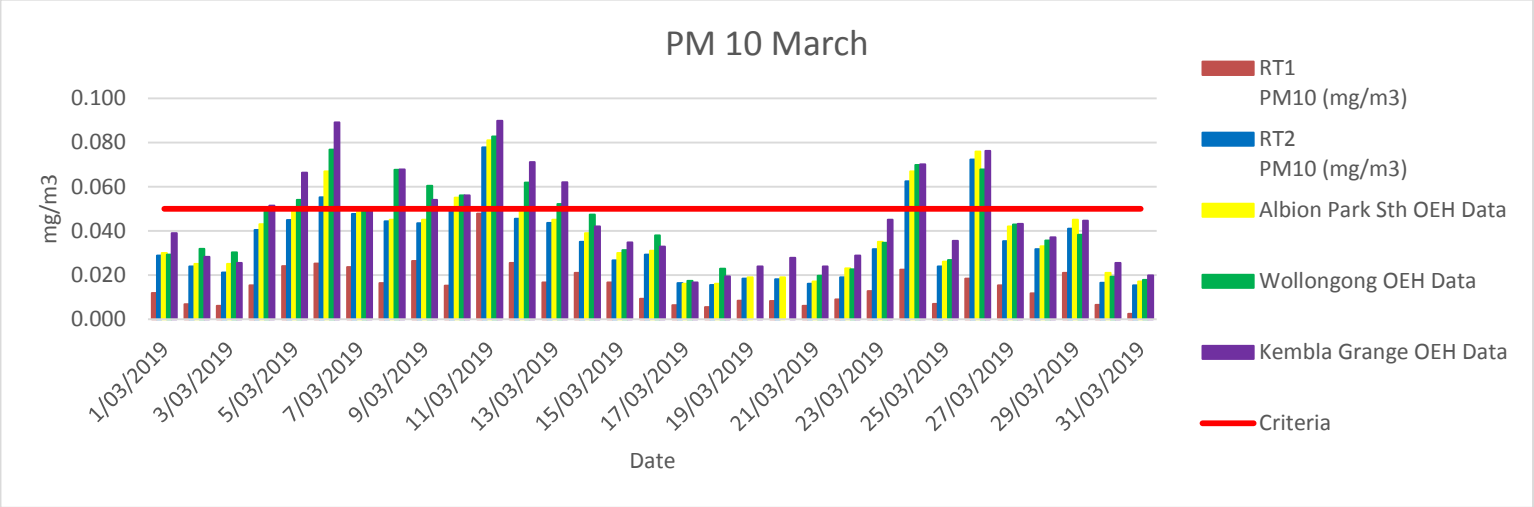
Graph 1-3: $PM_{2.5}$ February 24hr Average



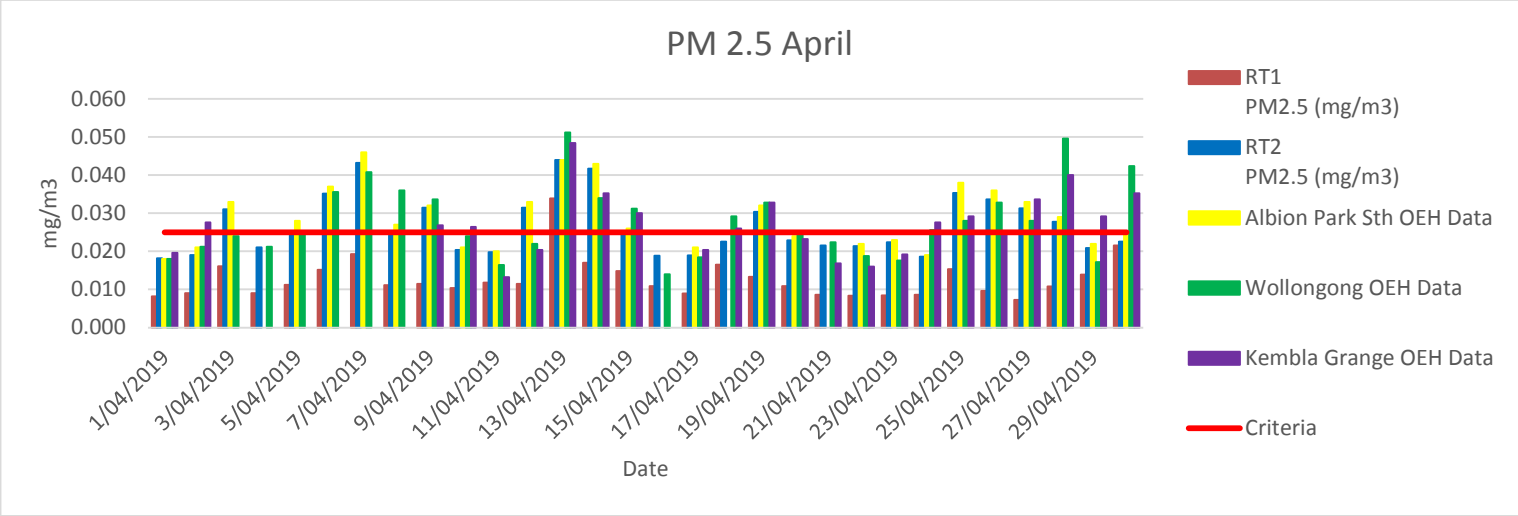
Graph 1-4: PM_{10} February 24hr Average



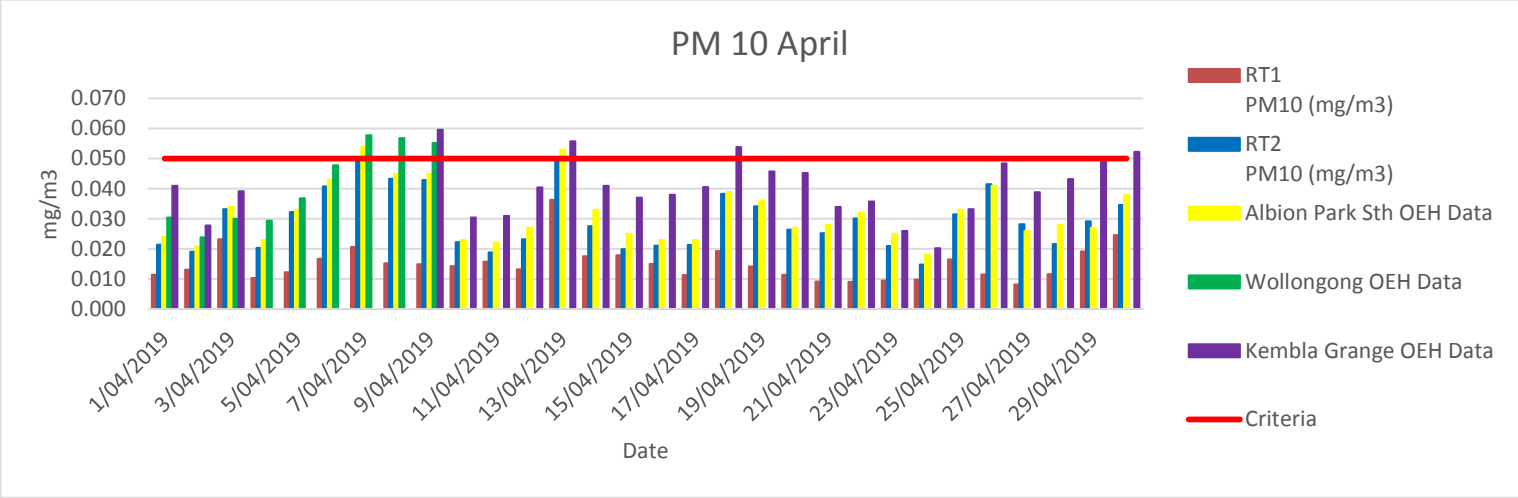
Graph 1-5: $PM_{2.5}$ March 24hr Average



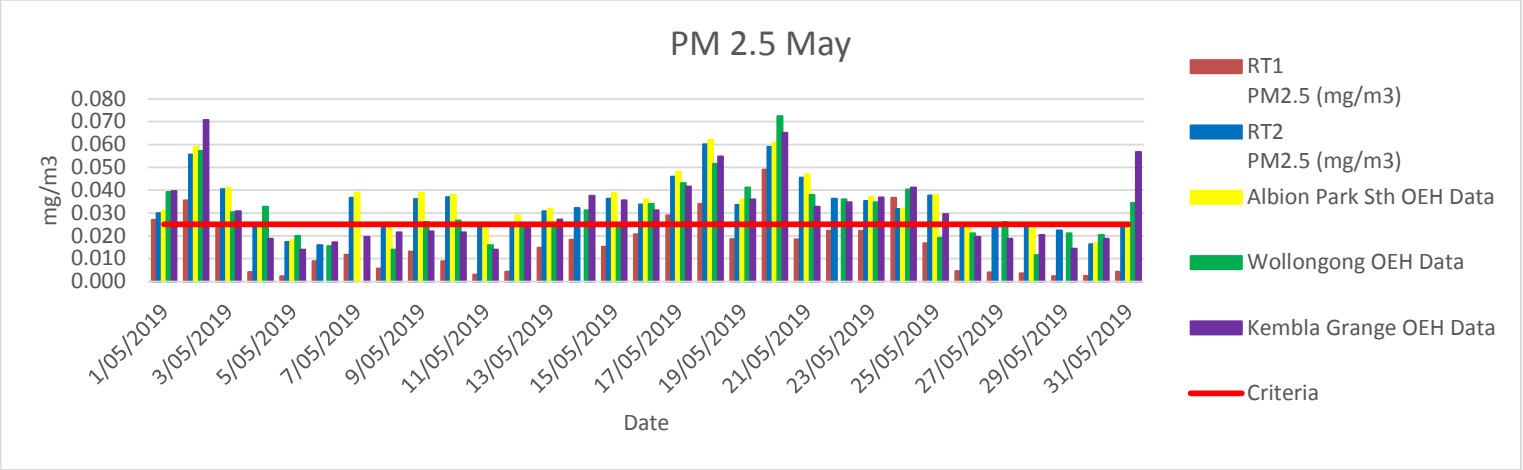
Graph 1-6: PM_{10} March 24hr Average



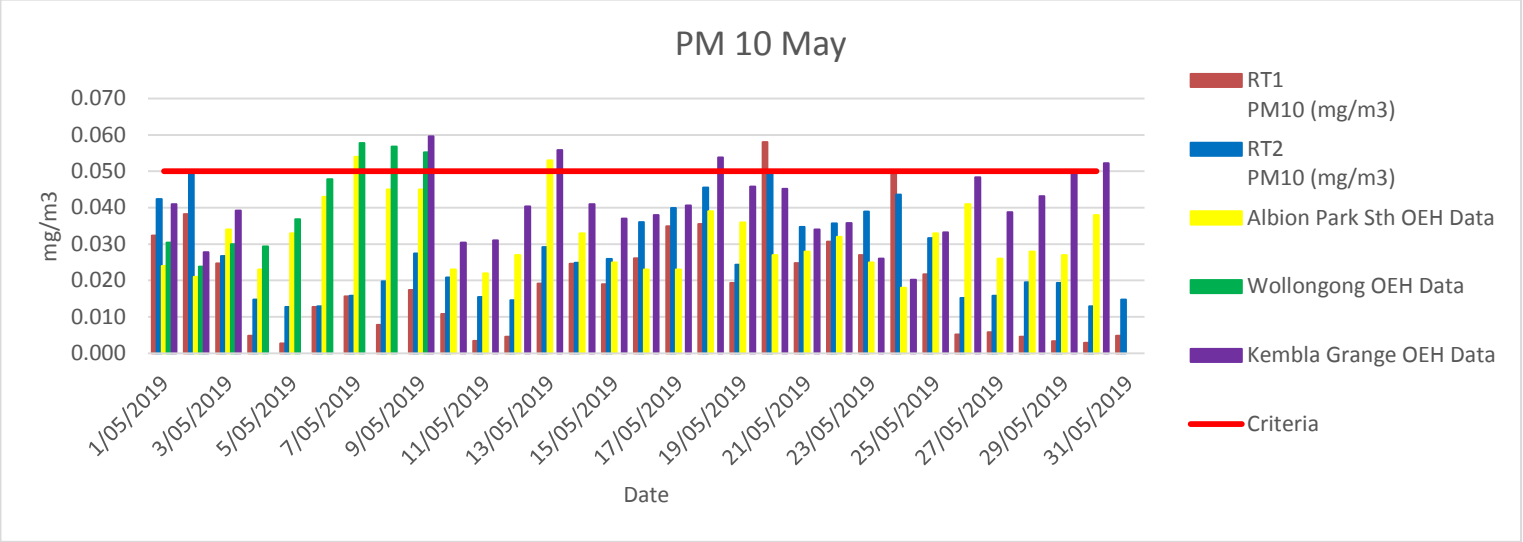
Graph 1-7: $PM_{2.5}$ April 24hr Average



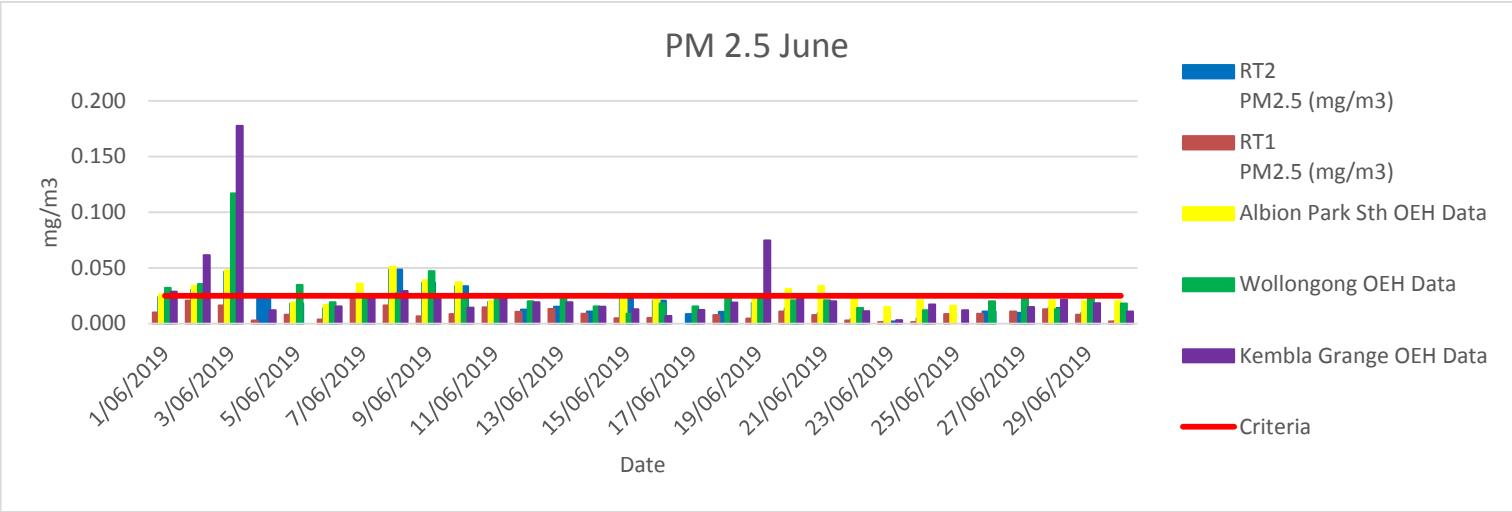
Graph 1-8: PM_{10} April 24hr Average



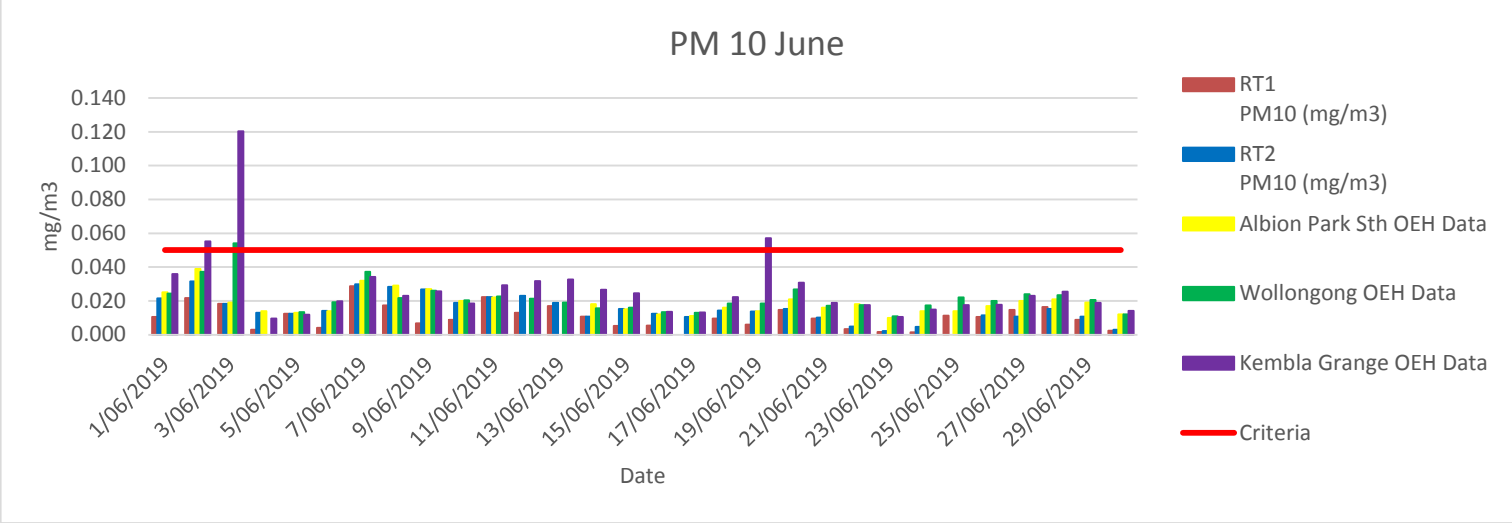
Graph 1-9: $PM_{2.5}$ May 24hr Average



Graph 1-10: PM_{10} May 24hr Average



Graph 1-11: $PM_{2.5}$ June 24hr Average

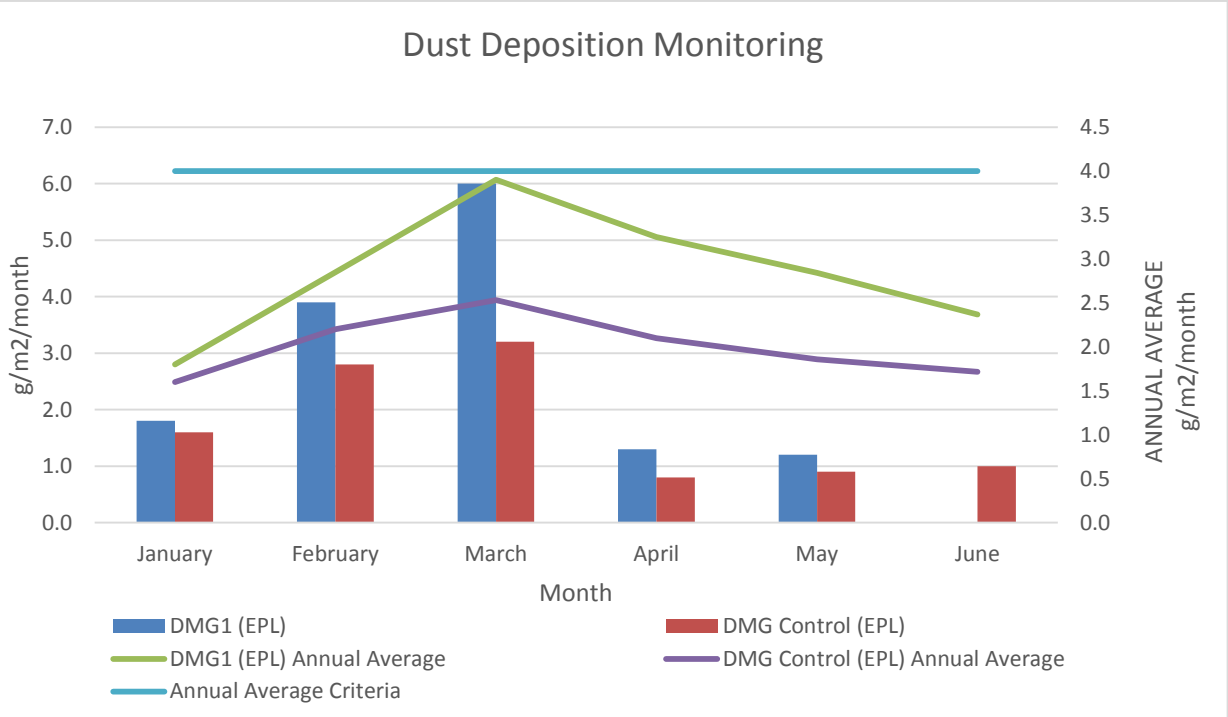


Graph 1-12: PM_{10} June 24hr Average

Table 1-11: Deposited dust criteria and recorded data

Month	Date Started	Date Finished	Criteria (g/m²/ month) Annual	DMG 1 34 Princes Highway Yallah (g/m²/ month)	DMG Control Cnr Ash Ave and Tongarra Rd, Albion Park Rail (g/m²/ month)	Comments
January	22/12/18	22/01/19		1.8	1.6	
February	22/01/19	21/02/18		3.9	2.8	
March	21/02/19	20/03/19		6.0	3.2	DMG1 Impacted from adjacent business and gauge has been relocated to the western side of the project
April	20/03/19	18/04/19		1.3	0.8	
May	18/04/19	20/05/19		1.2	0.9	
June	20/05/19	21/06/19		No result	1.0	DMG1 damage during monitoring period. No result recorded.
Annual Average to June 2019			**4**	**2.4**	**1.7**	

No exceedances against the criteria identified in the monitoring program have occurred during the reporting period for Deposited dust levels.



Graph 1-13: Average Annual Dust Deposition rolling results per month

1.3.3 Conclusion

$PM_{2.5}$ and PM_{10} 24 hour and Annual Average particulate levels were greater than the criteria identified in the AQMP at various times during the current reporting period as shown in Table 1-10. It is however noted that these monitoring results were less than or consistent with recorded ambient air quality levels across the Illawarra and the Greater Metropolitan Region and, as such, the results are considered to be reflective of regional background conditions, rather than construction impacts. The rolling Annual Average for $PM_{2.5}$ for RT1 and RT2 is 0.014mg/m^3 and 0.026mg/m^3 respectively and for PM_{10} for RT1 and RT2 is 0.016mg/m^3 and 0.028mg/m^3 respectively. Due to the exceedances for each month, the recorded rolling Annual Averages are greater than the criteria identified in the AQMP with the exception of PM_{10} at RT1.The rolling Annual Average for PM_{TSP} for RT1 and RT2 is 0.016mg/m^3 and 0.028mg/m^3 respectively which is well below the criteria of 0.09mg/m^3. Further, monthly dust deposition monitoring results were less than the nominated project criteria. Implementation of the standard mitigation measures listed in Table 6-1 of the AQMP ensure air quality impacts are minimised during construction. Modifications of work practises have occurred during the reporting period including changes to the construction methods and environmental control measures and these have assisted in mitigating air quality impacts from the project.

1.4 Noise and vibration

1.4.1 Introduction

The NVMP has been developed in consultation with NSW EPA in accordance with CoA C4. Management levels and goals recommend when assessing construction noise and vibration are outlined in:

- The Interim Construction Noise Guideline (ICNG)
- The Roads and Maritime Construction Noise and Vibration Guideline (CNVG)
- Assessing Vibration: A technical guideline
- The ANZECC, Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration.

Construction activities generate noise and vibration of varying levels depending on the activities being carried out and the proximity to sensitive receivers such as residential areas. The type of work carried out during construction often involves the use of large plant and machinery, sometimes moving along the project alignment and sometimes working in a fixed location, which can cause varying noise and vibration at nearby receivers. These aspects of construction can exacerbate noise levels from the works and their effects, causing annoyance to those affected.

Noise monitoring was conducted as part of the EIS for the Albion Park Rail Bypass Project in February and July 2015. The results of the monitoring of existing noise levels, referred to as rating background levels (RBL) are presented in Table 4-2 of the NVMP. The RBL is a measure of the typical background ambient noise level in the environment.

The Fulton Hogan Environmental Officer undertakes attended noise monitoring at nominated locations monthly during the construction phase of the Project as stated in section 9.3.3 and Table 9-1 of the NVMP. These locations have been selected, where possible, to coincide with locations where previous baseline monitoring

occurred during the EIS. For these locations, the EIS baseline noise monitoring data will be used as the baseline data for the construction noise monitoring. The recorded levels are consistent with the anticipated levels as described in Table 7-3 of the NVMP.

At times during the Project, Out of Hours Work (OOHW) are required due to restrictions around works near major roads, intersections and rail lines during standard hours. Attended monitoring has also been undertaken during approved OOHW. The recorded levels were consistent with the predicted levels shown in the corresponding noise assessments.

Effects of ground vibration on buildings resulting from construction may be segregated into the following three categories:

- Human exposure – disturbance to building occupants: vibration in which the occupants or users of the building are inconvenienced or possibly disturbed
- Effects on building contents – vibration where the building contents may be affected
- Effects on building structures – vibration in which the integrity of the building or structure itself may be prejudiced.

1.4.2 Results

The below table displays recorded data plotted against Noise Management Levels (NML) set out in Table 5-4 of the NVMP. Noise monitoring is undertaken to assess the influence of specific noise sources such as construction works, however background noise sources can influence the attended monitoring session. $L(A)_{eq\ 15min}$ represents the continuous sound level recorded at the time of monitoring including external (i.e. not construction) influences such as traffic, heavy industry, commercial or private impacts. Const $L(A)_{eq}$ is the determined effect of construction noise during the monitoring event and plotted against the trigger levels to determine any potential impacts from construction. No significant trends were identified in the data below. No exceedances against the trigger level identified in the monitoring program have occurred during the reporting period for construction noise levels (Const L_{eq}).

Attended vibration monitoring has occurred three times in response to community enquiries and on all occasions, vibration levels were within acceptable parameters established in International Standards and adopted in the approved NVMP.

Table 1-12: Attended Noise monitoring data recorded against Noise Management Levels

LOCATION DESCRIPTION	Noise Management Levels (NML) (dB)	Jan (dB)		Feb (dB)		Mar (dB)		Apr (dB)		May (dB)		Jun (dB)	
		L(A)eq (15min)	Const L(A)eq	L(A)eq (15min)	Const L(A)eq	L(A)eq (15min)	Const L(A)eq	L(A)eq (15min)	Const L(A)eq	L(A)eq (15min)	Const L(A)eq	L(A)eq (15min)	Const L(A)eq
L1 - 20 Westwood Drive, Blackbutt (NCA1)	**58**	51	35	55	41	54	41	54	38	58	56	60	57
L2 - 78 Jarrah Way, Albion Park Rail (NCA2)	**55**	55	35	54	46	56	52	50	34	50	33	53	50
L3 - 17 Gumnut Street, Albion Park Rail (NCA2)	**55**	48	46	59	37	53	53	50	50	59	55	60	41
L4 - 152 Croome Road, Albion Park (NCA4)	**54**	66	42	69	38	70	43	63	46	66	46	69	43
L5 - 59 Burdekin Drive, Albion Park (NCA5)	**45**	66	34	60	35	69	36	60	33	59	32	65	36
L6 - 25 Fraser Crescent, Albion Park (NCA5)	**45**	53	39	48	34	47	38	48	45	49	31	50	37
L7 - 52 Tongarra Road, Albion Park (NCA8)	**62**	66	42	77	57	73	61	71	59	75	45	75	58
L8 - 24 Terry Street, Albion Park (NCA10)	**57**	71	41	72	47	75	54	70	43	68	44	69	40
L9 - 42 Larkins Lane, Yallah (NCA13)	**58**	59	42	68	49	61	57	59	42	60	56	53	50
L10 - 4 Semillon Place, Mount Brown (NCA15)	**64**	62	48	62	49	60	46	57	41	67	44	73	51

Results from monthly and out of hours attended monitoring can be found in Annexure D of this report.

Figure 1-3: Attended noise monitoring

Figure 1-4: Attended vibration monitoring

1.4.3 Conclusion

Implementation of the standard mitigation measures listed in Table 8-1 and 8-2 of the NVMP ensure noise and vibration impacts are minimised during construction. Based on the available data, no modification is required to the construction methods or environmental control measures being implemented onsite.

1.5 Summary

Implementation of the standard mitigation measures listed in the CEMP and sub plans ensure environmental impacts are minimised during construction. Based on the available data, no modification is required to the construction methods or environmental control measures being implemented onsite.

The Environmental Manger undertook onsite training in the correct sampling technique with the use of a sampling pole and work task observations during the following sampling event. Various Fulton Hogan staff members completed an Environmental Sampling Training course by an independent testing organisation to ensure that the correct sampling techniques are used during monitoring events.

$PM_{2.5}$ and PM_{10} 24 hour particulate levels were greater than the criteria identified in the AQMP at various times during the current reporting period.

These monitoring results were less than or consistent with recorded ambient air quality levels across the Illawarra and the Greater Metropolitan Region and, as such, the results are considered to be reflective of regional background conditions, rather than construction impacts directly from the project. Further, monthly dust deposition and annual average particulate monitoring results were less than the nominated project criteria.

No additional or unscheduled monitoring outside that discussed in the Construction monitoring program is currently required to determine or verify a trend in impacts to surface water, groundwater, air quality and noise and vibration. Where investigations do confirm a clear and unambiguous impact resulting from the construction of the project, the Environmental Manager, in consultation with the project team, will modify construction methods used or conduct unscheduled monitoring to further verify the exceedance, where relevant.

Annexure A Construction Monitoring Location Maps

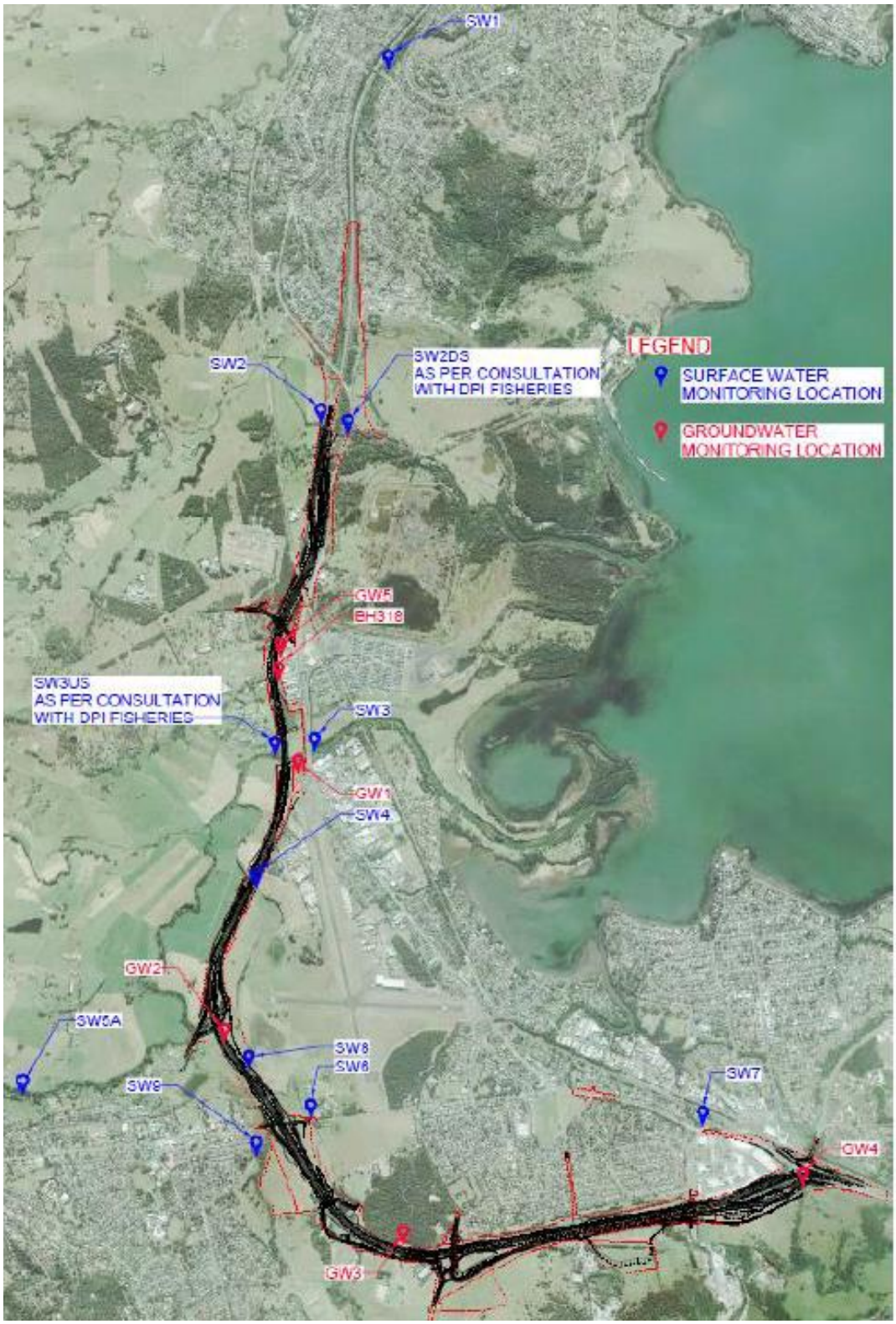


Figure A-1: Construction water quality monitoring network

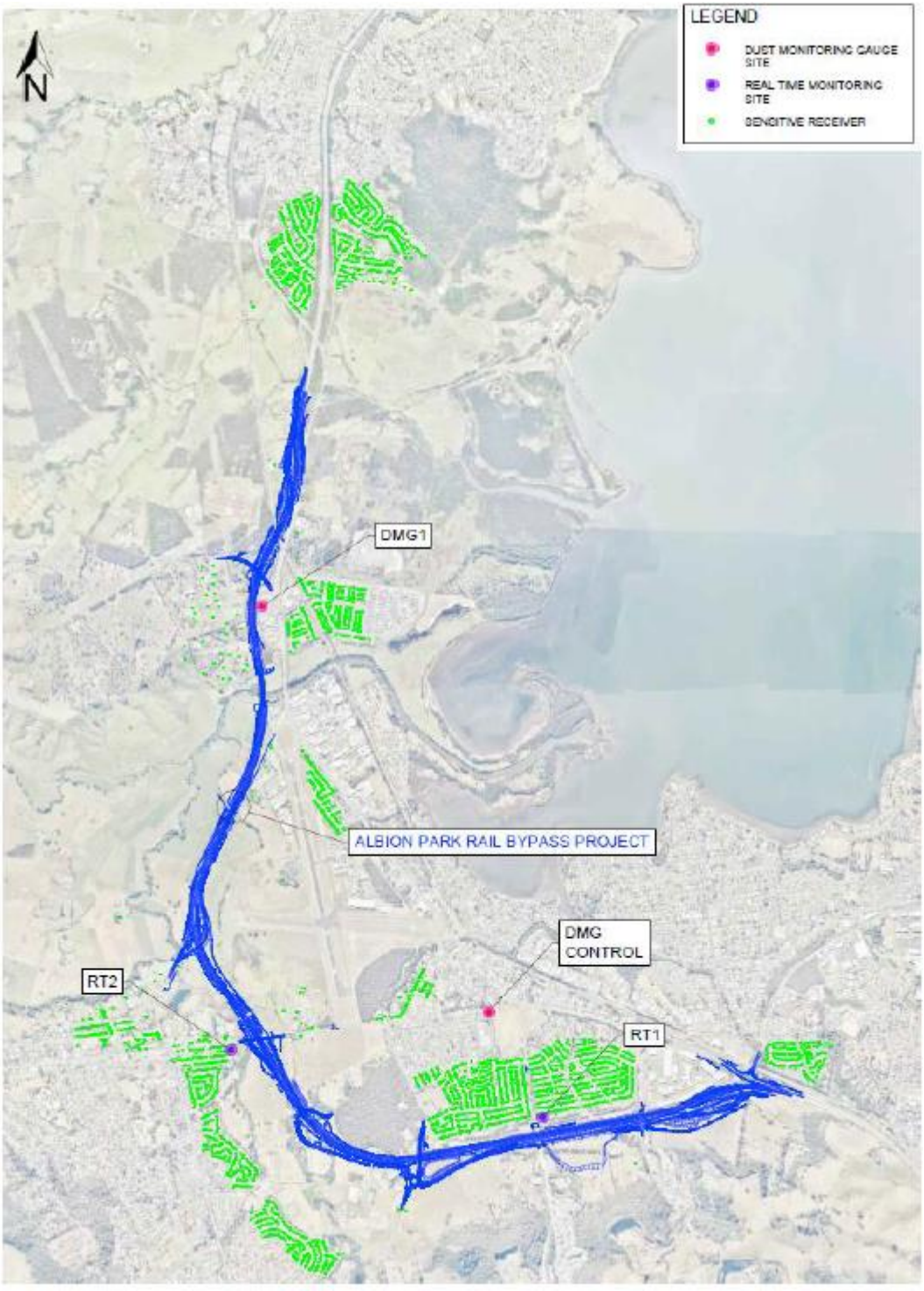


Figure A-2: Construction air quality monitoring network

Figure A-3: Construction noise monitoring locations and catchment areas

Annexure B Surface Water Monitoring Reports

Surface Water Monitoring

Construction Event 1

The purpose of water quality monitoring during the construction phase is to determine impacts resulting from construction of the project only (i.e. road construction) and not other unrelated sources, such as agricultural operations. The potential impacts from road construction activities will most likely result from erosion and sediment control loss and spills.

Date of Monitoring: 31st January 2019

Rainfall Monitoring is shown below.

Albion Park Airport AWS	
Date:	Rainfall Received:
31/01/2019	Nil

Scope and Limitations

During the construction phase of the project, surface water quality will be monitored at the same locations as the baseline-monitoring program. Surface water quality will be monitored at nine locations (i.e. SW1-SW4, SW5A, SW6 to SW9).

In addition to the nine surface water monitoring locations identified for the baseline program (WSP, 2018), surface water quality will be monitored downstream of the bridge works at Duck Creek (i.e. SW2DS) and upstream of the bridge works at Macquarie Rivulet (i.e. SW3US) following feedback from DPI Fisheries during a consultation meeting on 26 June 2018. As a result, there will now be a total of 11 construction surface water quality monitoring locations for the project. This report presents the information collected during the monitoring event with some discussion on field observations and results with respect to upstream vs downstream conditions.

Field Programme

Surface water sampling was undertaken at all surface locations where flow conditions allowed a representative sample to be taken. This monthly water sampling event was conducted in accordance with the sampling program and protocols provided in:

- 2018, Baseline Monitoring Program – Albion Park Rail Bypass;
- 2018 Appendix B4 Soil and Water Management Sub-plan Albion Park Rail bypass (Stage 2 – Princes Motorway between Yallah and Oak Flats) Appendix B Construction water quality monitoring program

Field parameter for Oil and grease of a visual inspections confirmed no impact.

Water samples were submitted to a NATA certified testing laboratory (Australian Laboratory services (ALS)) to be analysed for:

- Total suspended solids; and
- pH.

Weather Monitoring

The project is using the Bureau of Meteorology to monitor weather and rainfall.

Surface water sampling results

Results for the water quality monitoring event are located as attachments at the end of this document, they are:

- Attachment A, Location maps
- Attachment B, Tabulated results
- Attachment C, Field sheets, Field photos
- Attachment D, Laboratory results

Surface water locations

The upstream location represents the 'reference' (un-impacted) site while the down-stream locations represent the 'test' sites (potentially impacted sites during construction). By comparing upstream water quality with down-stream water quality, potential impacts from construction are assessed.

Table 1 Surface water locations within specific surface water bodies

Surface water	Upstream of Alignment (reference site)	Downstream of Alignment (test site)
Brooks Creek	SW1	-
Duck Creek	SW2	SW2DS
Macquarie Rivulet	SW3US and SW5A	SW3
Frasers Creek	SW4	-
Frasers Creek	-	SW6
Horsley Inlet	-	SW7
Frasers Creek	-	SW8
Tributary of Frasers Creek	SW9	-

Results summary

In general, the results did not indicate construction impacts. Due to the dry weather conditions, five of the six Creek locations monitored ranged between nil to low flow conditions, resulting in stagnant water and slightly elevated suspended solid results. Due to the project's limited area of disturbance, it was apparent that the results

were not reflective of site runoff effecting the surrounding catchment due to the limited construction footprint, but rather the turbidity was associated with algal growth evident in the low flow or stagnant waters.

Brooks Creek: Showed no impacts from construction. The creek had low flows.

Duck Creek: Showed no impacts from construction. The creek had low to no flow, which resulted in a non-sample downstream monitoring location.

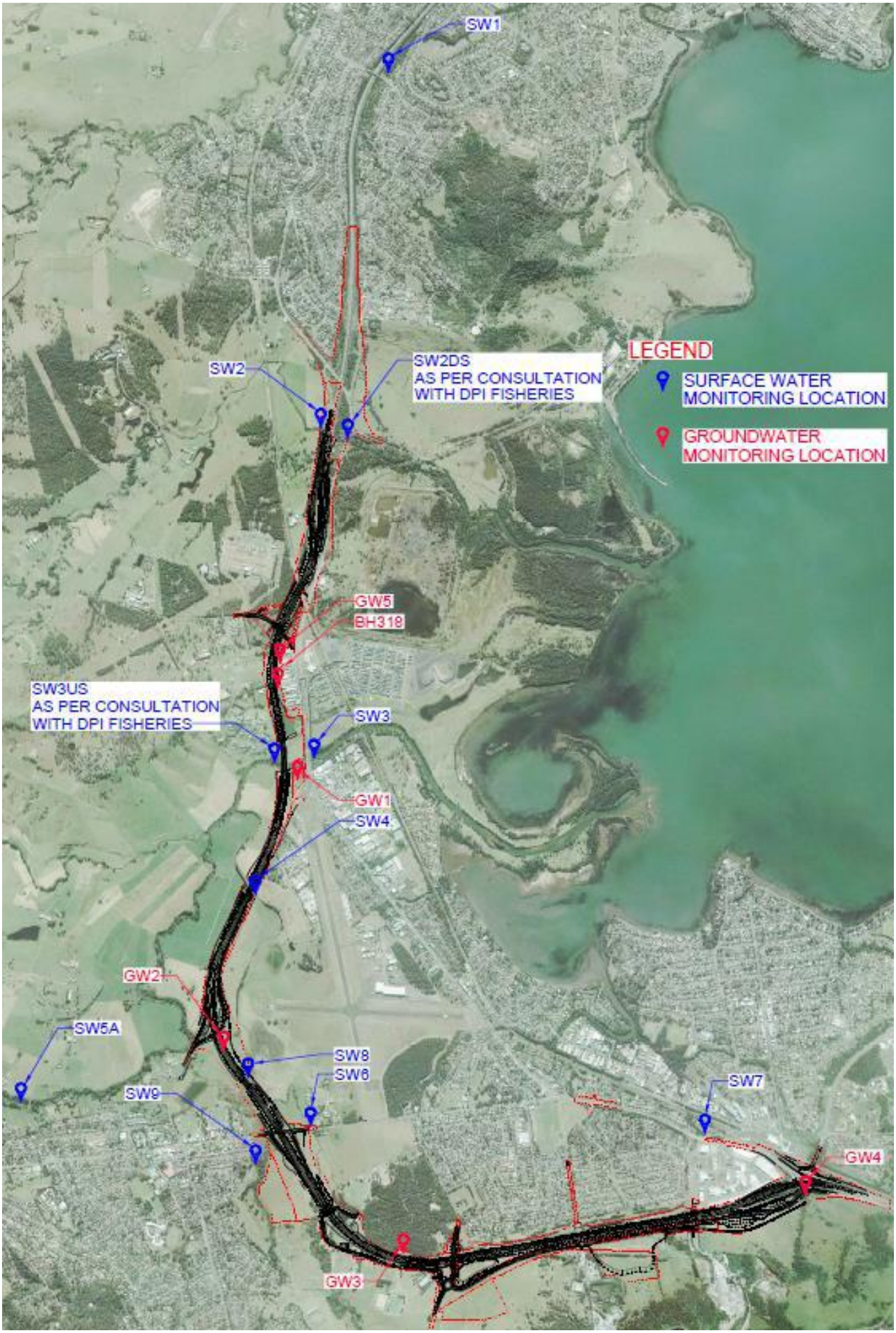
Macquarie Rivulet: Showed no impacts from construction. The creek had low to moderate flow. Upstream and downstream monitoring location showed a minor increase in TSS.

Frasers Creek: Showed no impacts from construction. The creek had low to no flow, which resulted in higher than expected TSS levels.

Horsley Inlet: Showed no impacts from construction. The creek had low to no flow, which resulted in higher than expected TSS levels due to the highly stagnate water in the creek.

Frasers Creek Tributary: Showed no impacts from construction. The creek had low to no flow, which resulted in higher than expected TSS levels. There was also evidence of a visible oil sheen on the surface that was of a naturally occurring tannin oil.

Attachment A, Location maps



Attachment B, Tabulated results

No.	Date	Time	pH	Total Suspended Solids (mg/L)
SW1	31/01/2019	8:30am	7.0	11
SW2	31/01/2019	9:32am	7.2	5
SW2DS	31/01/2019	-	-	-
SW3US	31/01/2019	-	-	-
SW3	31/01/2019	10:17am	7.1	11
SW4	31/01/2019	10:45am	6.9	14
SW5A	31/01/2019	11:02am	7.2	7
SW6	31/01/2019	11:47am	6.8	27
SW7	31/01/2019	12:23pm	7.2	46
SW8	31/01/2019	3:37pm	-	-
SW9	31/01/2019	11:30am	6.9	10

Attachment C, Field sheets

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW01

DATE: 31/1/2019 TIME: 8:21 am

SAMPLING OFFICERS: TD + JC

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: 85 Emerson Rd

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: Thick vegetation

SLOPE: moderate

EROSION: ~~moderate~~ no

OTHER: Evidence of weed spraying

FIELD MEASUREMENTS

pH: see lab report

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: low

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1	1	ice		

FIELD SUPERVISOR	CHECKED (SIGN & DATE)	
Tom Dewhurst	[redacted]	31/1/2019

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW02

DATE: 31/1/2019 TIME: 9:34

SAMPLING OFFICERS: TD + JC

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION:

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: Thick veg including weeds (lantana)

SLOPE: moderate

EROSION: no

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: low

COLOUR: clear with brownish tinge

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1	1	ice		

FIELD SUPERVISOR	CHECKED (SIGN & DATE)
Tom Dewhurst	31/1/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW03

DATE: 31/1/19 TIME: 10:12

SAMPLING OFFICERS: TD + JC

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION:

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: Yes thick

SLOPE: moderate

EROSION: Yes (on track down to river)

OTHER:

FIELD MEASUREMENTS

pH: See lab report

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: fast

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1	1	ice		

FIELD SUPERVISOR: Tom Dewhurst

CHECKED (SIGN & DATE): [redacted] 31/1/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW04

DATE: 31/1/19 TIME: 10:39

SAMPLING OFFICERS: TD

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION:

ENVIRONMENTAL OBSERVATIONS

WEATHER: sunny

VEGETATION: pastural

SLOPE: very minor

EROSION: no

OTHER:

FIELD MEASUREMENTS

pH: see lab report ↓

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: low

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1	1	ice		

FIELD SUPERVISOR	CHECKED (SIGN & DATE)	
Tom Dewhurst	[redacted]	31/1/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW05A

DATE: 31/1/19 TIME: 10:54

SAMPLING OFFICERS: T.D

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION:

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: dense

SLOPE: steep on south side gradual on north

EROSION: no

OTHER:

FIELD MEASUREMENTS

pH: See lab results

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: Fast

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1	1	ice		

FIELD SUPERVISOR	CHECKED (SIGN & DATE)	
Tom Dewhurst	[redacted]	31/1/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: 31/1/19

DATE: Jan 06 TIME: 11:42

SAMPLING OFFICERS: T.D

SAMPLING METHOD *(ie grab, bucket)*: (GRAB)

DETAILED SAMPLE LOCATION DESCRIPTION:

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: very little (pastural)

SLOPE: minor

EROSION: yes from car tracks

OTHER:

FIELD MEASUREMENTS

pH: See lab results

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: very slow

COLOUR:

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1	1	ice		

FIELD SUPERVISOR	CHECKED (SIGN & DATE)	
Tom Dewhurst	[redacted]	31/1/2019

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW07

DATE: 31/1/2019 TIME: 12:20

SAMPLING OFFICERS: T.D

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION:

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: Yes

SLOPE: moderate

EROSION: no

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: low

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1	1	ice		

FIELD SUPERVISOR	CHECKED (SIGN & DATE)	
Tom Denhurst	[redacted]	31/1/2019

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW08

DATE: 31/1/19 TIME: 3:37 PM

SAMPLING OFFICERS: TD

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION:

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION:

SLOPE:

EROSION:

OTHER:

FIELD MEASUREMENTS

pH: no water

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW:

COLOUR:

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS

FIELD SUPERVISOR: T Dewhurst

CHECKED (SIGN & DATE): 31/1/2019

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW09

DATE: 31/1/2019 TIME: 11:25

SAMPLING OFFICERS: T.D

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION:

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: minimal

SLOPE: no

EROSION: no

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: slow (stagnant)

COLOUR: yellow

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1	1	ice		

FIELD SUPERVISOR	CHECKED (SIGN & DATE)	
Tom Dewhurst	[redacted]	31/1/19

Attachment D, Laboratory results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EW1900407**	Page	: 1 of 4
Client	: **FULTON HOGAN PTY LTD**	Laboratory	: Environmental Division NSW South Coast
Contact	: JACOB COOPER	Contact	: Glenn Davies
Address	: LEVELI 3 - 90 BOURKE ROAD ALEXANDRIA NSW, AUSTRALIA 2015	Address	: 1/19 Ralph Black Dr, North Wollongong 2500 4/13 Geary Pl, North Nowra 2541 Australia NSW Australia
Telephone	: +61 02 8346 9400	Telephone	: 02 42253125
Project	: Albion Park Rail Bypass	Date Samples Received	: 31-Jan-2019 15:02
Order number	: ----	Date Analysis Commenced	: 31-Jan-2019
C-O-C number	: ----	Issue Date	: 12-Feb-2019 16:05
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 8		
No. of samples analysed	: 8		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	SW01	SW02	SW03	SW04	SW05A
			Client sampling date / time	31-Jan-2019 00:00	31-Jan-2019 00:00	31-Jan-2019 00:00	31-Jan-2019 00:00	31-Jan-2019 00:00
Compound	CAS Number	LOR	Unit	EW1900407-001	EW1900407-002	EW1900407-003	EW1900407-004	EW1900407-005
				Result	Result	Result	Result	Result
EA005FD: Field pH								
pH	----	0.1	pH Unit	**7.0**	**7.2**	**7.1**	**6.9**	**7.2**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**11**	**5**	**11**	**14**	**7**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**SW06**	**SW07**	**SW09**	**----**	**----**
			Client sampling date / time	31-Jan-2019 00:00	31-Jan-2019 00:00	31-Jan-2019 00:00	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EW1900407-006**	**EW1900407-007**	**EW1900407-008**	**--------**	**--------**
				Result	Result	Result	----	----
EA005FD: Field pH								
pH	----	0.1	pH Unit	**6.8**	**7.2**	**6.9**	**----**	**----**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**27**	**46**	**10**	**----**	**----**

Surface Water Monitoring

Construction Event 2

The purpose of water quality monitoring during the construction phase is to determine impacts resulting from construction of the project only (i.e. road construction) and not other unrelated sources, such as agricultural operations. The potential impacts from road construction activities will most likely result from erosion and sediment control loss and spills.

Date of Monitoring: 28th February 2019

Rainfall Monitoring is shown below.

Albion Park Airport AWS	
Date:	Rainfall Received:
28/02/2019	Nil

Scope and Limitations

During the construction phase of the project, surface water quality will be monitored at the same locations as the baseline-monitoring program. Surface water quality will be monitored at nine locations (i.e. SW1-SW4, SW5A, SW6 to SW9).

In addition to the nine surface water monitoring locations identified for the baseline program (WSP, 2018), surface water quality will be monitored downstream of the bridge works at Duck Creek (i.e. SW2DS) and upstream of the bridge works at Macquarie Rivulet (i.e. SW3US) following feedback from DPI Fisheries during a consultation meeting on 26 June 2018. As a result, there will now be a total of 11 construction surface water quality monitoring locations for the project. This report presents the information collected during the monitoring event with some discussion on field observations and results with respect to upstream vs downstream conditions.

Field Programme

Surface water sampling was undertaken at all surface locations where flow conditions allowed a representative sample to be taken. This monthly water sampling event was conducted in accordance with the sampling program and protocols provided in:

- 2018, Baseline Monitoring Program – Albion Park Rail Bypass;
- 2018 Appendix B4 Soil and Water Management Sub-plan Albion Park Rail bypass (Stage 2 – Princes Motorway between Yallah and Oak Flats) Appendix B Construction water quality monitoring program

Field parameter for Oil and grease of a visual inspections confirmed no impact.

Water samples were submitted to a NATA certified testing laboratory (Australian Laboratory services (ALS)) to be analysed for:

- Total suspended solids; and
- pH.

Weather Monitoring

The project is using the Bureau of Meteorology to monitor weather and rainfall.

Surface water sampling results

Results for the water quality monitoring event are located as attachments at the end of this document, they are:

- Attachment A, Location maps
- Attachment B, Tabulated results
- Attachment C, Field sheets, Field photos
- Attachment D, Laboratory results

Surface water locations

The upstream location represents the 'reference' (un-impacted) site while the down-stream locations represent the 'test' sites (potentially impacted sites during construction). By comparing upstream water quality with down-stream water quality, potential impacts from construction are assessed.

Table 1 Surface water locations within specific surface water bodies

Surface water	Upstream of Alignment (reference site)	Downstream of Alignment (test site)
Brooks Creek	SW1	-
Duck Creek	SW2	SW2DS
Macquarie Rivulet	SW3US and SW5A	SW3
Frasers Creek	SW4	-
Frasers Creek	-	SW6
Horsley Inlet	-	SW7
Frasers Creek	-	SW8
Tributary of Frasers Creek	SW9	-

Results summary

In general, the results did not indicate any construction impacts. With the continuation of the dry weather conditions, four of the six Creek locations monitored again presented nil to very low flow conditions, resulting in further stagnant waters and subsequently no samples were taken. Due to the project's limited area of disturbance, it was determined

that there was there was a reduced risk in site runoff effecting the surrounding catchment and the water quality conditions were unrelated to the Project.

Brooks Creek: Showed no impacts from construction. The creek had low to no flow, which resulted in no samples being taken.

Duck Creek: Showed no impacts from construction. The creek had low to no flow, which resulted in no samples being taken.

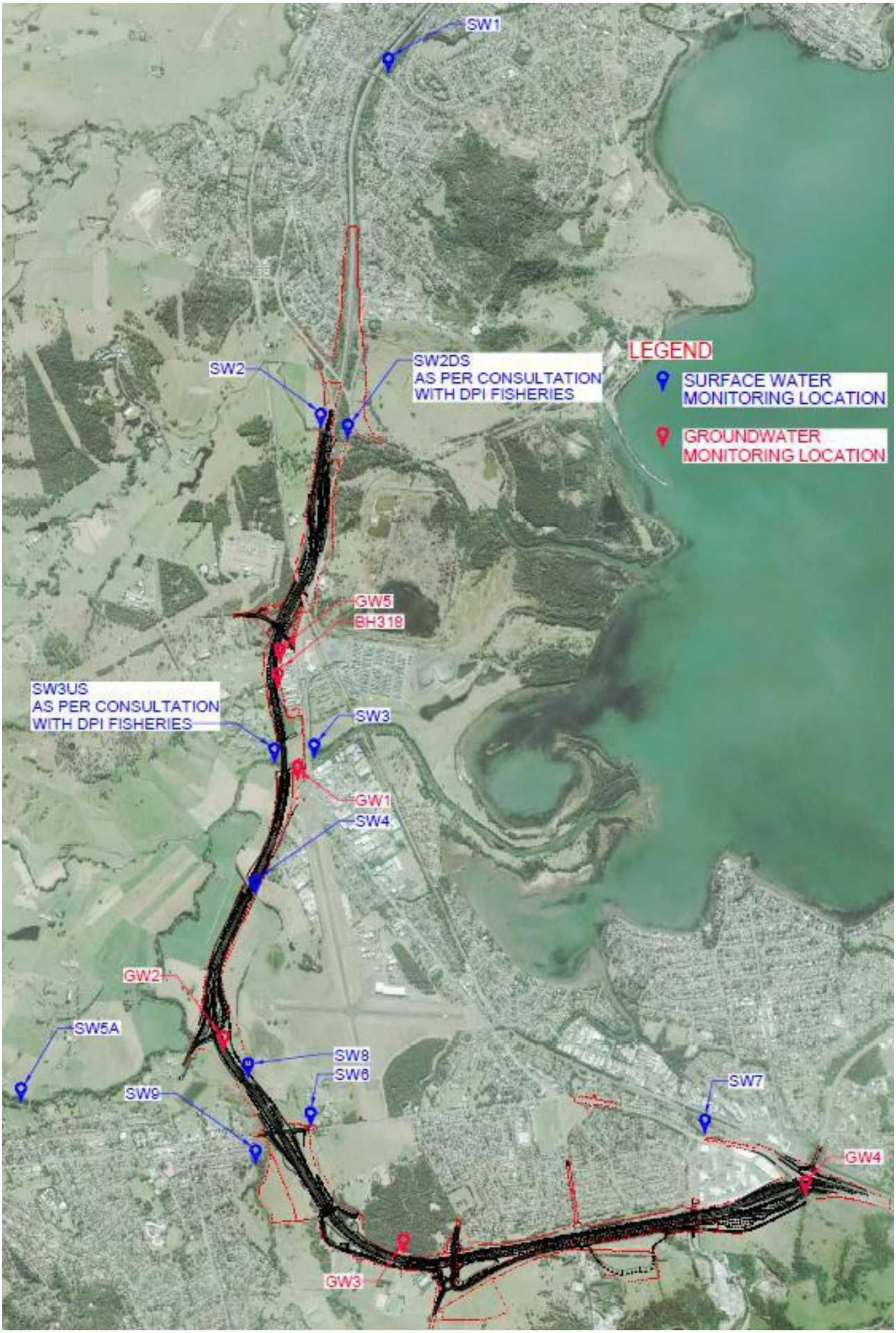
Macquarie Rivulet: Showed no impacts from construction. The creek had low flow. Results showed a very high TSS reading which was a result of sampling technique error during monitoring as field observations show that the water quality was clear.

Frasers Creek: Showed no impacts from construction. The creek had low flow. Results showed a very high TSS reading, which was a result of sampling technique error during monitoring as field observations show that the water quality was clear.

Horsley Inlet: Showed no impacts from construction. The creek had low flow.

Frasers Creek Tributary: Showed no impacts from construction. The creek had low to no flow, which resulted in no samples being taken

Attachment A, Location maps



Attachment B, Tabulated results

No.	Date	Time	pH	Total Suspended Solids (mg/L)
SW1	28/02/2019	9:55am	-	-
SW2	28/02/2019	10:03am	-	-
SW2DS	28/02/2019	10:03am	-	-
SW3US	28/02/2019	10:25am	7.8	414
SW3	28/02/2019	10:20am	8.0	14
SW4	28/02/2019	11:45am	7.7	128
SW5A	28/02/2019	12:30pm	7.8	<5
SW6	28/02/2019	1:05pm	7.2	322
SW7	28/02/2019	1:50pm	7.3	<5
SW8	28/02/2019	2:10pm	-	-
SW9	28/02/2019	2:20pm	-	-

Attachment C, Field sheets

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW01

DATE: 28/2/19 **TIME:** 9:55 a.m

SAMPLING OFFICERS: Tom Dewhurst & Sam Hack

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: North of Emerson Rd (Dapto)

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: dense, evidence of weed management

SLOPE: gradual

EROSION: none

OTHER:

FIELD MEASUREMENTS no sample taken due to no flow.

pH: ~~See lab results~~

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): ~~see lab results~~

FLOW OBSERVATIONS

FLOW: no flow

COLOUR: clear.

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
0	/	/		

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

Tom Dewhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW02 US/DS

DATE: 28/2/19 **TIME:** 10:03 ~~p.m~~ a.m

SAMPLING OFFICERS: T.D & SH

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: Duck Crk Up Stream + Down Stream

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: dense on both sides

SLOPE: moderate

EROSION: Minor

OTHER:

FIELD MEASUREMENTS no samples taken due to stagnant water.

pH:

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: none

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
✓	✓			

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

Tom Dewhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW03 DS

DATE: 28/2/19 **TIME:** 10:20

SAMPLING OFFICERS: T.D / SH

SAMPLING METHOD *(ie grab, bucket)*: (GRAB)

DETAILED SAMPLE LOCATION DESCRIPTION: down stream of works (mac Rivulet)

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: dense pasture

SLOPE: gentle

EROSION: minor

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: low

COLOUR: clear / brakish

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW03 DS)	1	ice		

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

T. Denhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: Sw03 us

DATE: 28/2/19 **TIME:** 10:25 a.m

SAMPLING OFFICERS: T.D & SH

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: up stream of works (mac rivulet)

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: dense pasture

SLOPE: gentle

EROSION: minor

OTHER:

FIELD MEASUREMENTS

pH: See lab results

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L): See lab results

FLOW OBSERVATIONS

FLOW: low

COLOUR: clear / brakish

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (Sw03 u.s)	1	ice		

FIELD SUPERVISOR Tom Dewhurst **CHECKED** (SIGN & DATE) [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW04

DATE: 28/2/19 **TIME:** 11:45

SAMPLING OFFICERS: T.D & O.S

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: South of Illawarra Hwy (Travers Cnr)

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: pasture

SLOPE: minor

EROSION: minimal

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: low to none

COLOUR: clear / slightly brown.

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW04)	1	ice		

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

Tom Dewhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW05 A

DATE: 28/2/19 **TIME:** 12:30 p.m

SAMPLING OFFICERS: T.D & SH

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: West of Calderwood Rd

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: dense grass

SLOPE: gradual

EROSION: minor

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: fast

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW05A)	1	ice		

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

Tom Dewhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW06

DATE: 28/2/19 **TIME:** 1:05 p.m

SAMPLING OFFICERS: J.D & SH

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: South of Tongariro Rd (Frasers Crk)

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: light grass

SLOPE: slight slope

EROSION: very minor erosion

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: slow

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW06)	1	ice		

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

Tom Dewhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW07

DATE: 28/2/19 **TIME:** 1:50 p.m

SAMPLING OFFICERS: ~~T.D~~ & O.S

SAMPLING METHOD *(ie grab, bucket)*: (GRAB)

DETAILED SAMPLE LOCATION DESCRIPTION: down stream of work at Horsley Inlet

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: moderate

SLOPE: low

EROSION: minor

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: low

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW07)	1	ice		

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

Tom Dewhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW08

DATE: 28/2/19 **TIME:** 2.10 p.m

SAMPLING OFFICERS: T.D & STL

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: In flood plain east of Illawarra Hwy

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: pasture

SLOPE: —

EROSION: —

OTHER:

FIELD MEASUREMENTS no sample taken due to no water present at monitoring site

pH: —

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L): —

FLOW OBSERVATIONS

FLOW: — N/A

COLOUR: N/A

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
—	—	—		

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

Tom Dewhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW09

DATE: 28/2/19 **TIME:** 2:20 p.m

SAMPLING OFFICERS: T.D & S.H

SAMPLING METHOD *(ie grab, bucket):* ~~GRAB~~

DETAILED SAMPLE LOCATION DESCRIPTION: East of Stapleton Ave

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: Yes

SLOPE: none

EROSION: none

OTHER:

FIELD MEASUREMENTS

pH: — No measurement taken due to water being stagnant

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): —

FLOW OBSERVATIONS

FLOW: none

COLOUR: —

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW09)	1			

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

Tom Dewhurst [redacted] 28/2/19

Attachment D, Laboratory results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EW1900841**	Page	: 1 of 4
Client	: **FULTON HOGAN PTY LTD**	Laboratory	: Environmental Division NSW South Coast
Contact	: MR JAMES DIAMOND	Contact	: Glenn Davies
Address	: LEVEL 3 - 90 BOURKE ROAD ALEXANDRIA NSW, AUSTRALIA 2015	Address	: 1/19 Ralph Black Dr, North Wollongong 2500 4/13 Geary Pl, North Nowra 2541 Australia NSW Australia
Telephone	: +61 02 8346 9400	Telephone	: 02 42253125
Project	: Albion Park Rail Bypass	Date Samples Received	: 28-Feb-2019 15:52
Order number	:	Date Analysis Commenced	: 28-Feb-2019
C-O-C number	: ----	Issue Date	: 05-Mar-2019 13:52
Sampler	: TOM DEWHURST		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 6		
No. of samples analysed	: 6		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- pH data supplied by ALS Wollongong.
- pH tests completed on day of receipt.

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**SW03**	**SW03 US**	**SW04**	**SW05 A**	**SW06**
			Client sampling date / time	28-Feb-2019 00:00	28-Feb-2019 00:00	28-Feb-2019 00:00	28-Feb-2019 00:00	28-Feb-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EW1900841-001**	**EW1900841-002**	**EW1900841-003**	**EW1900841-004**	**EW1900841-005**
				Result	Result	Result	Result	Result
EA005FD: Field pH								
pH	----	0.1	pH Unit	**8.0**	**7.8**	**7.7**	**7.8**	**7.2**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**14**	**414**	**126**	<5	**322**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**SW07**	----	----	----	----
				Client sampling date / time	28-Feb-2019 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EW1900841-006**	--------	--------	--------	--------
					Result	----	----	----	----
EA005FD: Field pH									
pH	----	0.1	pH Unit		**7.3**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		<5	----	----	----	----

Surface Water Monitoring

Construction Event 3

The purpose of water quality monitoring during the construction phase is to determine impacts resulting from construction of the project only (i.e. road construction) and not other unrelated sources, such as agricultural operations. The potential impacts from road construction activities will most likely result from erosion and sediment control loss and spills.

Date of Monitoring: 15th March 2019

Rainfall Monitoring is shown below.

Albion Park Airport AWS	
Date:	Rainfall Received:
15/03/2019	19.8mm

Scope and Limitations

During the construction phase of the project, surface water quality will be monitored at the same locations as the baseline-monitoring program. Surface water quality will be monitored at nine locations (i.e. SW1-SW4, SW5A, SW6 to SW9).

In addition to the nine surface water monitoring locations identified for the baseline program (WSP, 2018), surface water quality will be monitored downstream of the bridge works at Duck Creek (i.e. SW2DS) and upstream of the bridge works at Macquarie Rivulet (i.e. SW3US) following feedback from DPI Fisheries. As a result, there will now be a total of 11 construction surface water quality monitoring locations for the project.

This report presents the information collected during the monitoring event with some discussion on field observations and results with respect to upstream vs downstream conditions.

Field Programme

Surface water sampling was undertaken at all surface locations where flow conditions allowed a representative sample to be taken. This monthly water sampling event was conducted in accordance with the sampling program and protocols provided in:

- 2018, Baseline Monitoring Program – Albion Park Rail Bypass;
- 2018 Appendix B4 Soil and Water Management Sub-plan Albion Park Rail bypass (Stage 2 – Princes Motorway between Yallah and Oak Flats) Appendix B Construction water quality monitoring program

Field parameter for Oil and grease of a visual inspections confirmed no impact.

Water samples were submitted to a NATA certified testing laboratory (Australian Laboratory services (ALS)) to be analysed for:

- Total suspended solids; and
- pH.

Weather Monitoring

The project is using the Bureau of Meteorology to monitor weather and rainfall.

Surface water sampling results

Results for the water quality monitoring event are located as attachments at the end of this document, they are:

- Attachment A, Location maps
- Attachment B, Tabulated results
- Attachment C, Field sheets
- Attachment D, Laboratory results

Surface water locations

The upstream location represents the 'reference' (un-impacted) site while the down-stream locations represent the 'test' sites (potentially impacted sites during construction). By comparing upstream water quality with down-stream water quality, potential impacts from construction are assessed.

Table 1 Surface water locations within specific surface water bodies

Surface water	Upstream of Alignment (reference site)	Downstream of Alignment (test site)
Brooks Creek	SW1	-
Duck Creek	SW2	SW2DS
Macquarie Rivulet	SW3US and SW5A	SW3
Frasers Creek	SW4	-
Frasers Creek	-	SW6
Horsley Inlet	-	SW7
Frasers Creek	-	SW8
Tributary of Frasers Creek	SW9	-

Results summary

There were no observed construction impacts noted during this monitoring event. With the below average rainfall that the project had received during February and the first half of March, a large portion of the rainfall received the previous day and during the monitoring event infiltrated into the ground across the project and surrounding catchments resulting in limited runoff. Four of the six Creek locations monitored continued to present nil to very low flow conditions

resulting in stagnant water and no samples were taken for laboratory analysis. Frazers Creek presented low flow conditions, which resulted in higher than expected suspended solid results at SW6 due to algal growth observed at the monitoring location and no results at SW4 and SW8 due to stagnant water conditions.

Brooks Creek: Showed no impacts from construction. The creek had low to no flow, which resulted in no samples being taken.

Duck Creek: Showed no impacts from construction. The creek had low to no flow, which resulted in no samples being taken.

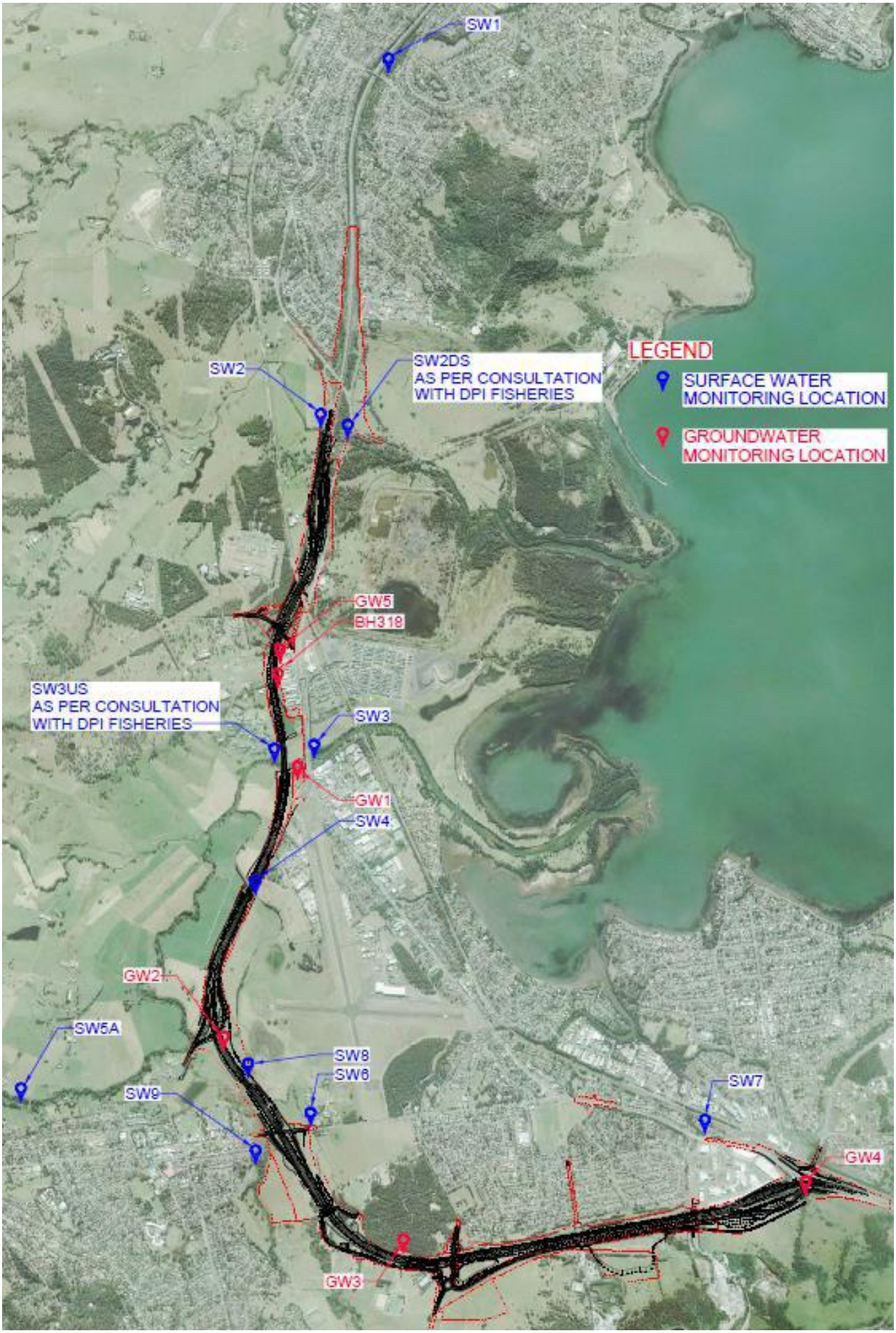
Macquarie Rivulet: Showed no impacts from construction. The creek had moderate flows. TSS results showed a slight decrease between upstream and downstream.

Frasers Creek: Showed no impacts from construction. The creek had low to no flow, which resulted in higher than expected TSS levels at SW6 and no results in the other 2 monitoring locations.

Horsley Inlet: Showed no impacts from construction. The creek had low flow.

Frasers Creek Tributary: Showed no impacts from construction. The creek had low to no flow, which resulted in no samples being taken.

Attachment A, Location maps



Attachment B, Tabulated results

No.	Date	Time	pH	Total Suspended Solids (mg/L)
SW1	15/03/2019	9:55am	-	-
SW2	15/03/2019	10:03am	-	-
SW2DS	15/03/2019	10:03am	-	-
SW3US	15/03/2019	10:25am	7.3	14
SW3	15/03/2019	10:20am	7.1	7
SW4	15/03/2019	11:45am	-	-
SW5A	15/03/2019	12:30pm	7.3	12
SW6	15/03/2019	1:05pm	7.0	14
SW7	15/03/2019	1:50pm	7.4	<5
SW8	15/03/2019	2:10pm	-	-
SW9	15/03/2019	2:20pm	-	-

Attachment C, Field sheets

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW01

DATE: 28/2/19 **TIME:** 9:55 a.m

SAMPLING OFFICERS: Tom Dewhurst & Sam Hack

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: North of Emerson Rd (Dapto)

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: dense, evidense of weed management

SLOPE: gradual

EROSION: none

OTHER:

FIELD MEASUREMENTS no sample taken due to no flow.

pH: ~~See lab results~~

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): ~~see lab results~~

FLOW OBSERVATIONS

FLOW: no flow

COLOUR: clear.

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
0	/	/		

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

Tom Dewhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW02 US/DS

DATE: 28/2/19 **TIME:** 10:03 ~~p.m~~ a.m

SAMPLING OFFICERS: T.D & SH

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: Duck Crk up Stream + Down Stream

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: dense on both sides

SLOPE: moderate

EROSION: Minor

OTHER:

FIELD MEASUREMENTS no samples taken due to stagnant water.

pH:

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: none

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS

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

Tom Dewhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW03 DS

DATE: 28/2/19 **TIME:** 10:20

SAMPLING OFFICERS: T.D / SH

SAMPLING METHOD *(ie grab, bucket)*: (GRAB)

DETAILED SAMPLE LOCATION DESCRIPTION: down stream of works (mac Rivulet)

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: dense pasture

SLOPE: gentle

EROSION: minor

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: low

COLOUR: clear / brakish

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW03 DS)	1	ice		

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

T. Dewhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: Sw03 us

DATE: 28/2/19 **TIME:** 10:25 a.m

SAMPLING OFFICERS: T.D & SH

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: up stream of works (mac rivulet)

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: dense pasture

SLOPE: gentle

EROSION: minor

OTHER:

FIELD MEASUREMENTS

pH: See lab results

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L): See lab results

FLOW OBSERVATIONS

FLOW: low

COLOUR: clear / brakish

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (Sw03 u.s)	1	ice		

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

Tom Dewhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW04

DATE: 28/2/19 **TIME:** 11:45

SAMPLING OFFICERS: T.D & O.S

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: South of Illawarra Hwy (Travers Cnr)

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: pasture

SLOPE: minor

EROSION: minimal

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: low to none

COLOUR: clear / slightly brown.

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW04)	1	ice		

FIELD SUPERVISOR Tom Dewhurst

CHECKED (SIGN & DATE) [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW05 A

DATE: 28/2/19 **TIME:** 12:30 p.m

SAMPLING OFFICERS: T.D & SH

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: West of Calderwood Rd

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: dense grass

SLOPE: gradual

EROSION: minor

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: fast

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW05A)	1	ice		

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

Tom Dewhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW06

DATE: 28/2/19 **TIME:** 1:05 p.m

SAMPLING OFFICERS: J.D & SH

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: South of Tongariro Rd (Frasers Crk)

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: light grass

SLOPE: slight slope

EROSION: very minor erosion

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: slow

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW06)	1	ice		

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

Tom Dewhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW07

DATE: 28/2/19 **TIME:** 1:50 p.m

SAMPLING OFFICERS: ~~T.D~~ & O.S

SAMPLING METHOD *(ie grab, bucket)*: (GRAB)

DETAILED SAMPLE LOCATION DESCRIPTION: down stream of work at Horsley Inlet

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: moderate

SLOPE: low

EROSION: minor

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: low

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW07)	1	ice		

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

Tom Dewhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW08

DATE: 28/2/19 **TIME:** 2.10 p.m

SAMPLING OFFICERS: T.D & STL

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: In flood plain east of Illawarra Hwy

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: pasture

SLOPE: —

EROSION: —

OTHER:

FIELD MEASUREMENTS no sample taken due to no water present at monitoring site

pH: —

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L): —

FLOW OBSERVATIONS

FLOW: — N/A

COLOUR: N/A

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
—	—	—		

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

Tom Dewhurst [redacted] 28/2/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW09

DATE: 28/2/19 **TIME:** 2:20 p.m

SAMPLING OFFICERS: T.D & S.H

SAMPLING METHOD *(ie grab, bucket):* ~~GRAB~~

DETAILED SAMPLE LOCATION DESCRIPTION: East of Stapleton Ave

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: Yes

SLOPE: none

EROSION: none

OTHER:

FIELD MEASUREMENTS

pH: — No measurement taken due to water being stagnant

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): —

FLOW OBSERVATIONS

FLOW: none

COLOUR: —

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW09)	1			

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

Tom Dewhurst [redacted] 28/2/19

Attachment D, Laboratory results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EW1900841**	Page	: 1 of 4
Client	: **FULTON HOGAN PTY LTD**	Laboratory	: Environmental Division NSW South Coast
Contact	: MR JAMES DIAMOND	Contact	: Glenn Davies
Address	: LEVEL 3 - 90 BOURKE ROAD ALEXANDRIA NSW, AUSTRALIA 2015	Address	: 1/19 Ralph Black Dr, North Wollongong 2500 4/13 Geary Pl, North Nowra 2541 Australia NSW Australia
Telephone	: +61 02 8346 9400	Telephone	: 02 42253125
Project	: Albion Park Rail Bypass	Date Samples Received	: 28-Feb-2019 15:52
Order number	:	Date Analysis Commenced	: 28-Feb-2019
C-O-C number	: ----	Issue Date	: 05-Mar-2019 13:52
Sampler	: TOM DEWHURST		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 6		
No. of samples analysed	: 6		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- pH data supplied by ALS Wollongong.
- pH tests completed on day of receipt.

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**SW03**	**SW03 US**	**SW04**	**SW05 A**	**SW06**
			Client sampling date / time	28-Feb-2019 00:00	28-Feb-2019 00:00	28-Feb-2019 00:00	28-Feb-2019 00:00	28-Feb-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EW1900841-001**	**EW1900841-002**	**EW1900841-003**	**EW1900841-004**	**EW1900841-005**
				Result	Result	Result	Result	Result
EA005FD: Field pH								
pH	----	0.1	pH Unit	**8.0**	**7.8**	**7.7**	**7.8**	**7.2**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**14**	**414**	**126**	<5	**322**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**SW07**	----	----	----	----
				Client sampling date / time	28-Feb-2019 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EW1900841-006**	--------	--------	--------	--------
					Result	----	----	----	----
EA005FD: Field pH									
pH	----	0.1	pH Unit		**7.3**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		<5	----	----	----	----

Surface Water Monitoring

Construction Event 4

The purpose of water quality monitoring during the construction phase is to determine impacts resulting from construction of the project only (i.e. road construction) and not other unrelated sources, such as agricultural operations. The potential impacts from road construction activities will most likely result from erosion and sediment control loss and spills.

Date of Monitoring: 8th April 2019

Rainfall Monitoring is shown below.

Albion Park Airport AWS	
Date:	Rainfall Received:
08/04/2019	Nil

Scope and Limitations

During the construction phase of the project, surface water quality will be monitored at the same locations as the baseline-monitoring program. Surface water quality will be monitored at nine locations (i.e. SW1-SW4, SW5A, SW6 to SW9).

In addition to the nine surface water monitoring locations identified for the baseline program (WSP, 2018), surface water quality will be monitored downstream of the bridge works at Duck Creek (i.e. SW2DS) and upstream of the bridge works at Macquarie Rivulet (i.e. SW3US) following feedback from DPI Fisheries. As a result, there will now be a total of 11 construction surface water quality monitoring locations for the project.

This report presents the information collected during the monitoring event with some discussion on field observations and results with respect to upstream vs downstream conditions.

Field Programme

Surface water sampling was undertaken at all surface locations where flow conditions allowed a representative sample to be taken. This monthly water sampling event was conducted in accordance with the sampling program and protocols provided in:

- 2018, Baseline Monitoring Program – Albion Park Rail Bypass;
- 2018 Appendix B4 Soil and Water Management Sub-plan Albion Park Rail bypass (Stage 2 – Princes Motorway between Yallah and Oak Flats) Appendix B Construction water quality monitoring program

Field parameter for Oil and grease of a visual inspections confirmed no impact.

Water samples were submitted to a NATA certified testing laboratory (Australian Laboratory services (ALS)) to be analysed for:

- Total suspended solids; and
- pH.

Weather Monitoring

The project is using the Bureau of Meteorology to monitor weather and rainfall.

Surface water sampling results

Results for the water quality monitoring event are located as attachments at the end of this document, they are:

- Attachment A, Location maps
- Attachment B, Tabulated results
- Attachment C, Field sheets
- Attachment D, Laboratory results

Surface water locations

The upstream location represents the 'reference' (un-impacted) site while the down-stream locations represent the 'test' sites (potentially impacted sites during construction). By comparing upstream water quality with down-stream water quality, potential impacts from construction are assessed.

Table 1 Surface water locations within specific surface water bodies

Surface water	Upstream of Alignment (reference site)	Downstream of Alignment (test site)
Brooks Creek	SW1	-
Duck Creek	SW2	SW2DS
Macquarie Rivulet	SW3US and SW5A	SW3
Frasers Creek	SW4	-
Frasers Creek	-	SW6
Horsley Inlet	-	SW7
Frasers Creek	-	SW8
Tributary of Frasers Creek	SW9	-

Results summary

Even with the rainfall that the project received during the second half of March and into April, there were no observed construction impacts noted during this monitoring event. With the unseasonal heat and winds, the received rainfall infiltrated into the surrounding catchment or evaporated resulting in four of the six Creek locations observing nil to very low flow conditions. These conditions resulted in stagnant water and no samples were taken. Frazers Creek presented

low flow conditions, which resulted in higher than expected suspended solid results at SW4 due to increased plant and algal growth, potentially as a result of adjacent agriculture and no results at SW6 and SW8.

Brooks Creek: Showed no impacts from construction. The creek had low to no flow, which resulted in no samples being taken.

Duck Creek: Showed no impacts from construction. The creek had low to no flow, which resulted in no samples being taken.

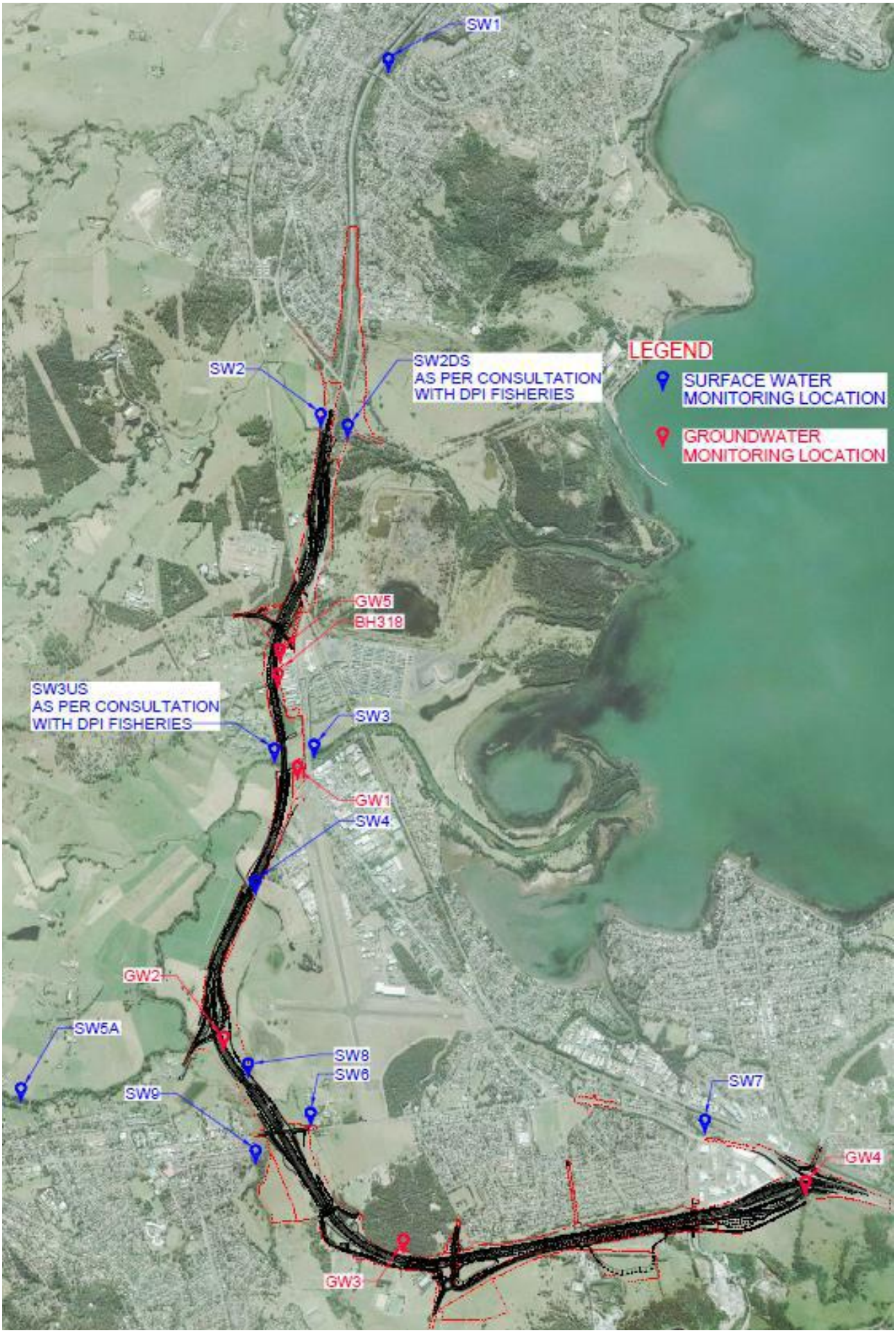
Macquarie Rivulet: Showed no impacts from construction. The creek had low flows.

Frasers Creek: Showed no impacts from construction. The creek had low to no flow, which resulted in higher than expected TSS levels at SW4 and no results in the other 2 monitoring locations.

Horsley Inlet: Showed no impacts from construction. The creek had low to no flow, which resulted in no samples being taken.

Frasers Creek Tributary: Showed no impacts from construction. The creek had low to no flow, which resulted in no samples being taken.

Attachment A, Location maps



Attachment B, Tabulated results

No.	Date	Time	pH	Total Suspended Solids (mg/L)
SW1	8/04/2019	12:30pm	7.1	<5
SW2	8/04/2019	12:10pm	-	-
SW2DS	8/04/2019	12:17pm	-	-
SW3US	8/04/2019	11:15am	7.3	<5
SW3	8/04/2019	10:30am	7.3	<5
SW4	8/04/2019	11:35am	7.2	17
SW5A	8/04/2019	10:45am	6.8	<5
SW6	8/04/2019	10:30am	7.0	<5
SW7	8/04/2019	9:00am	-	-
SW8	8/04/2019	9:30am	-	-
SW9	8/04/2019	10:00am	-	-

Attachment C, Field sheets

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW 01

DATE: 8/4/19 **TIME:** 12:30

SAMPLING OFFICERS: T. Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: North of Emerson Rd.

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: dense, evidence of weed management leaving soil disrupted.

SLOPE: gradual

EROSION: none

OTHER:

FIELD MEASUREMENTS

pH: 7.13

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: low to none

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW01	1	ice.	–	

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

Tom Dewhurst [redacted] 8/4/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW02

DATE: 8/4/19 TIME: 12:15

SAMPLING OFFICERS: T. Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: Duck Crk - No water sample taken due to limited amount of water

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny. V light wind

VEGETATION: Thick vegetation on both banks

SLOPE: moderate slope on each side

EROSION: None

OTHER:

FIELD MEASUREMENTS No sample taken due to no flow

pH:

VISIBLE OIL AND GREASE: (YES) / NO Natural oil visible

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: No flow

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1	1	ice	—	

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

Tom Dewhurst [redacted] 8/4/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW03DS

DATE: 8/4/19 **TIME:** 11:30

SAMPLING OFFICERS: T. Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: DOWN STREAM OF WORKS MAC RIVULET /

ENVIRONMENTAL OBSERVATIONS

WEATHER: SUNNY

VEGETATION: PASTURE

SLOPE: GENTLE / FLAT

EROSION: MINOR

OTHER:

FIELD MEASUREMENTS

pH: 7.3

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: LOW (INCOMING TIDE)

COLOUR: CLEAR / BRACKISH

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW03DS	1	ice		

FIELD SUPERVISOR Tom Dewhurst

CHECKED (SIGN & DATE) [redacted] 8/4/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW03US

DATE: 8/4/19 TIME: 11:15

SAMPLING OFFICERS: T. Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: UP STREAM OF WORKS, MAC V RIVULET

ENVIRONMENTAL OBSERVATIONS

WEATHER: SUNNY

VEGETATION: PASTURE

SLOPE: GENTLE / FLAT

EROSION: MINOR BANK EROSION

OTHER:

FIELD MEASUREMENTS

pH: 7.3

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: LOW, TIDAL (INCOMING TIDE)

COLOUR: CLEAR / BRAKISH

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW03US	1	ice		

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

Tom Dewhurst [redacted] 8/4/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW04

DATE: 8/4/19 **TIME:** 11:35

SAMPLING OFFICERS: T. Denhurst

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: South of Illawarra hwy. Fraser's Crk

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: pasture

SLOPE: gentle

EROSION: minimal

OTHER:

FIELD MEASUREMENTS

pH: 7.22

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: Low to none

COLOUR: clear / brown tinge

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW04	1	ice		

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

Tom Denhurst [redacted] 8/4/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW05A

DATE: 8/4/19 **TIME:** 10:45

SAMPLING OFFICERS: Tom Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION:

ENVIRONMENTAL OBSERVATIONS

WEATHER: SUNNY

VEGETATION: DENSE GRASS

SLOPE: GRADUAL

EROSION:

OTHER:

FIELD MEASUREMENTS

pH: 6.8

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: FAST

COLOUR: CLEAR

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW05A	1	ice		

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

Tom Dewhurst [redacted] 8/4/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW06

DATE: 8/4/19 TIME: 10:30

SAMPLING OFFICERS: Tom Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: South of Tongariro Rd @ Fraser's Creek

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny. V light wind

VEGETATION: light grass

SLOPE: slight slope

EROSION: very minor erosion

OTHER:

FIELD MEASUREMENTS

pH:

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: ~~Stg~~ slow

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW06	1	ice		

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

Tom Dewhurst [redacted]

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW07

DATE: 8/4/19 TIME: 9:00 a.m

SAMPLING OFFICERS: Tom Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: (GRAB)

DETAILED SAMPLE LOCATION DESCRIPTION: Down stream of works

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: vegetation (moderate) on both embankments

SLOPE: moderate to low slope

EROSION: No, very little

OTHER:

FIELD MEASUREMENTS

pH:

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: no flow

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
0	0			

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

Tom Dewhurst [redacted] 8/4/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW08

DATE: 8/4/19 TIME: 9:30 a.m

SAMPLING OFFICERS: T. ~~Dewhurst~~

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION:

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: pasture

SLOPE: no

EROSION: no

OTHER:

FIELD MEASUREMENTS no sample taken due to no water at site.

pH:

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: N/A (no water)

COLOUR: N/A

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
–	–			

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

[redacted] → Tom Dewhurst 8/4/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW09

DATE: 8/4/19 TIME: 10:00

SAMPLING OFFICERS: T. Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION:

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny

VEGETATION: Yes, small amount of vegetation around waterway

SLOPE: None

EROSION: None

OTHER:

FIELD MEASUREMENTS no measurements taken due to water being stagnant.

pH:

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: none, water stagnant

COLOUR:

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
0	0			

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

Tom Dewhurst [redacted] 8/4/19

Attachment D, Laboratory results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EW1901571**	Page	: 1 of 4
Client	: **FULTON HOGAN PTY LTD**	Laboratory	: Environmental Division NSW South Coast
Contact	: MR JAMES DIAMOND	Contact	: Glenn Davies
Address	: LEVEL 3 - 90 BOURKE ROAD ALEXANDRIA NSW, AUSTRALIA 2015	Address	: 1/19 Ralph Black Dr, North Wollongong 2500 4/13 Geary Pl, North Nowra 2541 Australia NSW Australia
Telephone	: +61 02 8346 9400	Telephone	: 02 42253125
Project	: Albion Park Rail Bypass	Date Samples Received	: 10-Apr-2019 16:01
Order number	: ----	Date Analysis Commenced	: 11-Apr-2019
C-O-C number	: ----	Issue Date	: 15-Apr-2019 11:51
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 6		
No. of samples analysed	: 6		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	SW01	SW03US	SW03DS	SW04	SW05A
				Client sampling date / time	08-Apr-2019 00:00	08-Apr-2019 00:00	08-Apr-2019 00:00	08-Apr-2019 00:00	08-Apr-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*		**EW1901571-001**	**EW1901571-002**	**EW1901571-003**	**EW1901571-004**	**EW1901571-005**
					Result	Result	Result	Result	Result
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		<5	<5	<5	**17**	<5

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**SW06**	----	----	----	----
				Client sampling date / time	08-Apr-2019 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EW1901571-006**	--------	--------	--------	--------
					Result	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		<5	----	----	----	----

Surface Water Monitoring

Construction Event 5

The purpose of water quality monitoring during the construction phase is to determine impacts resulting from construction of the project only (i.e. road construction) and not other unrelated sources, such as agricultural operations. The potential impacts from road construction activities will most likely result from erosion and sediment control loss and spills.

Date of Monitoring: 29th May 2019

Rainfall Monitoring is shown below.

Albion Park Airport AWS	
Date:	Rainfall Received:
29/05/2019	Nil

Scope and Limitations

During the construction phase of the project, surface water quality will be monitored at the same locations as the baseline-monitoring program. Surface water quality will be monitored at nine locations (i.e. SW1-SW4, SW5A, SW6 to SW9).

In addition to the nine surface water monitoring locations identified for the baseline program (WSP, 2018), surface water quality will be monitored downstream of the bridge works at Duck Creek (i.e. SW2DS) and upstream of the bridge works at Macquarie Rivulet (i.e. SW3US) following feedback from DPI Fisheries. As a result, there will now be a total of 11 construction surface water quality monitoring locations for the project.

This report presents the information collected during the monitoring event with some discussion on field observations and results with respect to upstream vs downstream conditions.

Field Programme

Surface water sampling was undertaken at all surface locations where flow conditions allowed a representative sample to be taken. This monthly water sampling event was conducted in accordance with the sampling program and protocols provided in:

- 2018, Baseline Monitoring Program – Albion Park Rail Bypass;
- 2018 Appendix B4 Soil and Water Management Sub-plan Albion Park Rail bypass (Stage 2 – Princes Motorway between Yallah and Oak Flats) Appendix B Construction water quality monitoring program

Field parameter for Oil and grease of a visual inspections confirmed no impact.

Water samples were submitted to a NATA certified testing laboratory (Australian Laboratory services (ALS)) to be analysed for:

- Total suspended solids; and
- pH.

Weather Monitoring

The project uses the Bureau of Meteorology to monitor weather and onsite Automatic Weather Stations to monitor rainfall.

Surface water sampling results

Results for the water quality monitoring event are located as attachments at the end of this document, they are:

- Attachment A, Location maps
- Attachment B, Tabulated results
- Attachment C, Field sheets
- Attachment D, Laboratory results

Surface water locations

The upstream location represents the 'reference' (un-impacted) site while the down-stream locations represent the 'test' sites (potentially impacted sites during construction). By comparing upstream water quality with down-stream water quality, potential impacts from construction are assessed.

Table 1 Surface water locations within specific surface water bodies

Surface water	Upstream of Alignment (reference site)	Downstream of Alignment (test site)
Brooks Creek	SW1	-
Duck Creek	SW2	SW2DS
Macquarie Rivulet	SW3US and SW5A	SW3
Frasers Creek	SW4	-
Frasers Creek	-	SW6
Horsley Inlet	-	SW7
Frasers Creek	-	SW8
Tributary of Frasers Creek	SW9	-

Results summary

With the below average rainfall the project has received, there were no observed construction impacts noted during this monitoring event. Four of the six Creek locations monitored presented nil to very low flow conditions resulting in stagnant water and no samples were taken. Frazers Creek presented low flow conditions, which resulted in higher than expected

suspended solid results at SW4 similar to the previous months monitoring events and no results at SW6 and SW8. Macquarie Rivulet was also recorded as having low flow during the monitoring event.

Brooks Creek: Showed no impacts from construction. The creek had low to no flow, which resulted in no samples being taken.

Duck Creek: Showed no impacts from construction. The creek had low to no flow, which resulted in no samples being taken.

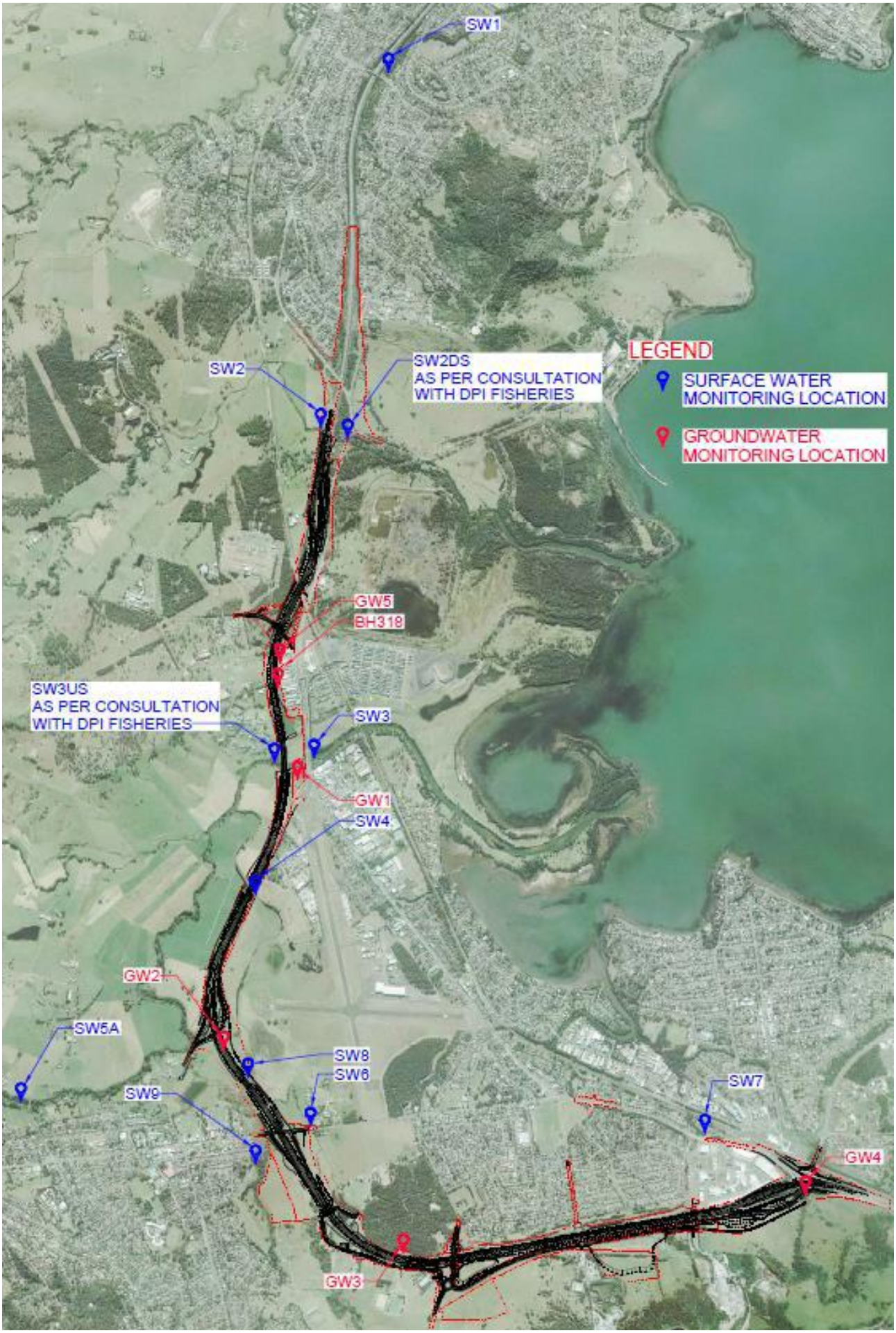
Macquarie Rivulet: Showed no impacts from construction. The creek had low flows.

Frasers Creek: Showed no impacts from construction. The creek had low to no flow, which resulted in higher than expected TSS levels at SW4 and no results in the other two monitoring locations.

Horsley Inlet: Showed no impacts from construction. The creek had low to no flow, which resulted in no samples being taken.

Frasers Creek Tributary: Showed no impacts from construction. The creek had low to no flow, which resulted in no samples being taken.

Attachment A, Location maps



Attachment B, Tabulated results

No.	Date	Time	pH	Total Suspended Solids (mg/L)
SW1	8/04/2019	12:30pm	-	-
SW2	8/04/2019	12:10pm	-	-
SW2DS	8/04/2019	12:17pm	-	-
SW3US	8/04/2019	11:15am	7.9	<5
SW3	8/04/2019	10:30am	7.9	<5
SW4	8/04/2019	11:35am	6.7	28
SW5A	8/04/2019	10:45am	6.9	<5
SW6	8/04/2019	10:30am	7.1	<5
SW7	8/04/2019	9:00am	7.1	<5
SW8	8/04/2019	9:30am	-	-
SW9	8/04/2019	10:00am	-	-

Attachment C, Field sheets

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW01

DATE: 29/5/19 TIME: 1:00 p.m

SAMPLING OFFICERS: T. Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: North of Emerson Rd (Dapto)

ENVIRONMENTAL OBSERVATIONS

WEATHER: overcast

VEGETATION: dense vegetation

SLOPE: gradual

EROSION: none

OTHER:

FIELD MEASUREMENTS no Sample taken due to no flow at monitoring point.

pH: /

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: none

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
-	/			

FIELD SUPERVISOR CHECKED (SIGN & DATE)

Tom Dewhurst [redacted] 27/6/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW02 US/DS

DATE: 29/5/19 TIME: 1:10 p.m

SAMPLING OFFICERS: T. Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: Duck Crk

ENVIRONMENTAL OBSERVATIONS

WEATHER: Overcast

VEGETATION: Thick vegetation on both banks

SLOPE: moderate slope on each side

EROSION: none

OTHER:

FIELD MEASUREMENTS no sample taken due to no flow (stagnant water)

pH:

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: none

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
/	/	/		

FIELD SUPERVISOR	CHECKED (SIGN & DATE)	
Tom Dewhurst	[redacted]	29/5/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW03 DS

DATE: 29/5/19 TIME: 4:35 p.m

SAMPLING OFFICERS: T. Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: Down stream of works, mac Rivulet

ENVIRONMENTAL OBSERVATIONS

WEATHER: overcast, high winds

VEGETATION: Pasture

SLOPE: gentle / flat

EROSION: minor

OTHER:

FIELD MEASUREMENTS

pH: 7.9

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: fast

COLOUR: clear, brakish

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1	1	ice		

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

Tom Dewhurst [redacted]

29/5/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW03US

DATE: 29/5/19 TIME: 4:30 p.m

SAMPLING OFFICERS: T. Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: up stream of works, Mac Rivulet.

ENVIRONMENTAL OBSERVATIONS

WEATHER: overcast high winds

VEGETATION: high (pasture)

SLOPE: moderate

EROSION: slight bank erosion

OTHER:

FIELD MEASUREMENTS

pH: 7.92

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: fast

COLOUR: clear, brakish

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1	1	Ice		

FIELD SUPERVISOR T Dewhurst CHECKED (SIGN & DATE) [redacted]

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: APRB - SW04

DATE: 29/5/19 TIME: 1.47 p.m

SAMPLING OFFICERS: T. Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: (GRAB)

DETAILED SAMPLE LOCATION DESCRIPTION: SW4 Illawarra Hwy (Fraser's Crk)

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny, high winds from the W

VEGETATION: minimal (pasture)

SLOPE: Slight, gentle.

EROSION: none

OTHER:

FIELD MEASUREMENTS

pH: 6.7

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: very slow

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1	1	ice		

FIELD SUPERVISOR T. Dewhurst CHECKED (SIGN & DATE) [redacted] 29/5/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SwOSA

DATE: 29/5/19 TIME: 2:00 p.m

SAMPLING OFFICERS: T. Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: (GRAB)

DETAILED SAMPLE LOCATION DESCRIPTION: off Calderwood Rd.

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny Wgh winds

VEGETATION: high

SLOPE: moderate

EROSION: little

OTHER:

FIELD MEASUREMENTS

pH: 6.88

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: fast

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1	1			

FIELD SUPERVISOR T. Dewhurst CHECKED (SIGN & DAT [redacted] 29/5/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW06

DATE: 29/5/19 TIME: 2:10 p.m

SAMPLING OFFICERS: T. Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: South of Tongarra Rd, (Frasers Creek)

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny, high winds

VEGETATION: light grass

SLOPE: minimal slope

EROSION: minor erosion.

OTHER:

FIELD MEASUREMENTS

pH: 7.1

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): See lab results

FLOW OBSERVATIONS

FLOW: Slow

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1	1	ice		

FIELD SUPERVISOR		CHECKED (SIGN & DATE)	
Tom	Dewhurst	T. Dewhurst	29/5/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW07

DATE: 29/5/19 TIME: 12:00 p.m

SAMPLING OFFICERS: T. Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: north of Princes Hwy. Across the road from Nissan

ENVIRONMENTAL OBSERVATIONS

WEATHER: Sunny / Cloud starting to come over. High wind

VEGETATION: dense

SLOPE: minimal

EROSION: little

OTHER:

FIELD MEASUREMENTS

pH: 7.1

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: little to no flow

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1	1	ice		

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

Tom Dewhurst [redacted] 29/5/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW08

DATE: 29/5/19 TIME: 2:20

SAMPLING OFFICERS: T. Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: (GRAB)

DETAILED SAMPLE LOCATION DESCRIPTION: In floodplain east of Illawarra Highway.

ENVIRONMENTAL OBSERVATIONS

WEATHER: overcast, strong winds

VEGETATION: pasture

SLOPE: none

EROSION: no

OTHER:

FIELD MEASUREMENTS no sample taken because no water at site.

pH: —

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: — N/A

COLOUR: N/A

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
—	—			

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

Tom Dewhurst [redacted] 29/5/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW09

DATE: 29/5/19 TIME: 2:20

SAMPLING OFFICERS: T. Dewhurst

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: East of Stapleton Ave

ENVIRONMENTAL OBSERVATIONS

WEATHER: overcast, strong winds

VEGETATION: minimal veg around waterways

SLOPE: none

EROSION: none

OTHER:

FIELD MEASUREMENTS no sample taken due to water being stagnant at monitoring point.

pH:

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: none, water stagnant.

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
✓	✓			

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

Tom Dewhurst [redacted] 29/5/19

Attachment D, Laboratory results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EW1902309**	Page	: 1 of 4
Client	: **FULTON HOGAN PTY LTD**	Laboratory	: Environmental Division NSW South Coast
Contact	: MR JAMES DIAMOND	Contact	: Glenn Davies
Address	: LEVEL 3 - 90 BOURKE ROAD ALEXANDRIA NSW, AUSTRALIA 2015	Address	: 1/19 Ralph Black Dr, North Wollongong 2500 4/13 Geary Pl, North Nowra 2541 Australia NSW Australia
Telephone	: +61 02 8346 9400	Telephone	: 02 42253125
Project	: Albion Park Rail Bypass	Date Samples Received	: 29-May-2019 15:56
Order number	: ----	Date Analysis Commenced	: 03-Jun-2019
C-O-C number	: ----	Issue Date	: 05-Jun-2019 16:16
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 6		
No. of samples analysed	: 6		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**SW03 US**	**SW03**	**SW04**	**SW05A**	**SW06**
			Client sampling date / time	29-May-2019 00:00	29-May-2019 00:00	29-May-2019 00:00	29-May-2019 00:00	29-May-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EW1902309-001**	**EW1902309-002**	**EW1902309-003**	**EW1902309-004**	**EW1902309-005**
				Result	Result	Result	Result	Result
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	**28**	<5	<5

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**SW07**	----	----	----	----
				Client sampling date / time	29-May-2019 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EW1902309-006**	--------	--------	--------	--------
					Result	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		<5	----	----	----	----

Surface Water Monitoring

Construction Event 6

The purpose of water quality monitoring during the construction phase is to determine impacts resulting from construction of the project only (i.e. road construction) and not other unrelated sources, such as agricultural operations. The potential impacts from road construction activities will most likely result from erosion and sediment control loss and spills.

Date of Monitoring: 5th June 2019

Rainfall Monitoring is shown below.

	FH Northern AWS	FH Southern AWS	Albion Park Airport AWS
Date:	Rainfall Received:	Rainfall Received:	Rainfall Received:
04/05/2019	35.9mm	42.9mm	40.6mm
05/06/2019	12.1mm	13.0mm	15.2mm

Scope and Limitations

During the construction phase of the project, surface water quality will be monitored at the same locations as the baseline-monitoring program. Surface water quality will be monitored at nine locations (i.e. SW1-SW4, SW5A, SW6 to SW9).

In addition to the nine surface water monitoring locations identified for the baseline program (WSP, 2018), surface water quality will be monitored downstream of the bridge works at Duck Creek (i.e. SW2DS) and upstream of the bridge works at Macquarie Rivulet (i.e. SW3US) following feedback from DPI Fisheries. As a result, there will now be a total of 11 construction surface water quality monitoring locations for the project.

This report presents the information collected during the monitoring event with some discussion on field observations and results with respect to upstream vs downstream conditions.

Field Programme

Surface water sampling was undertaken at all surface locations where flow conditions allowed a representative sample to be taken. This monthly water sampling event was conducted in accordance with the sampling program and protocols provided in:

- 2018, Baseline Monitoring Program – Albion Park Rail Bypass;
- 2018 Appendix B4 Soil and Water Management Sub-plan Albion Park Rail bypass (Stage 2 – Princes Motorway between Yallah and Oak Flats) Appendix B Construction water quality monitoring program

Field parameter for Oil and grease of a visual inspections confirmed no impact.

Water samples were submitted to a NATA certified testing laboratory (Australian Laboratory services (ALS)) to be analysed for:

- Total suspended solids; and
- pH.

Weather Monitoring

The project uses the Bureau of Meteorology to monitor weather and onsite Automatic Weather Stations to monitor rainfall.

Surface water sampling results

Results for the water quality monitoring event are located as attachments at the end of this document, they are:

- Attachment A, Location maps
- Attachment B, Tabulated results
- Attachment C, Field sheets
- Attachment D, Laboratory results

Surface water locations

The upstream location represents the 'reference' (un-impacted) site while the down-stream locations represent the 'test' sites (potentially impacted sites during construction). By comparing upstream water quality with down-stream water quality, potential impacts from construction are assessed.

Table 1 Surface water locations within specific surface water bodies

Surface water	Upstream of Alignment (reference site)	Downstream of Alignment (test site)
Brooks Creek	SW1	-
Duck Creek	SW2	SW2DS
Macquarie Rivulet	SW3US and SW5A	SW3
Frasers Creek	SW4	-
Frasers Creek	-	SW6
Horsley Inlet	-	SW7
Frasers Creek	-	SW8
Tributary of Frasers Creek	SW9	-

Results summary

Moderate rainfall was received prior to and during the monitoring event. As there had been an extended dry weather period during the month of May and into June ground conditions were very dry. The rain recorded on the fourth and fifth of June provided a small amount of relief to the surrounding catchments however flows at five of the Creek locations

still presented low flow conditions with the exception of Macquarie Rivulet. Consequently, there were no observed construction impacts noted during this monitoring event assessing upstream against downstream conditions. Upstream results of Macquarie Rivulet (SW5A) returned elevated levels of suspended solids however, these levels reduced at SW3US and SW3, directly adjacent to the project boundary.

Brooks Creek: Showed no impacts from construction. The creek had low flow.

Duck Creek: Showed no impacts from construction. The creek had low flow. TSS results showed an increase in levels at the upstream and downstream monitoring locations from previous months.

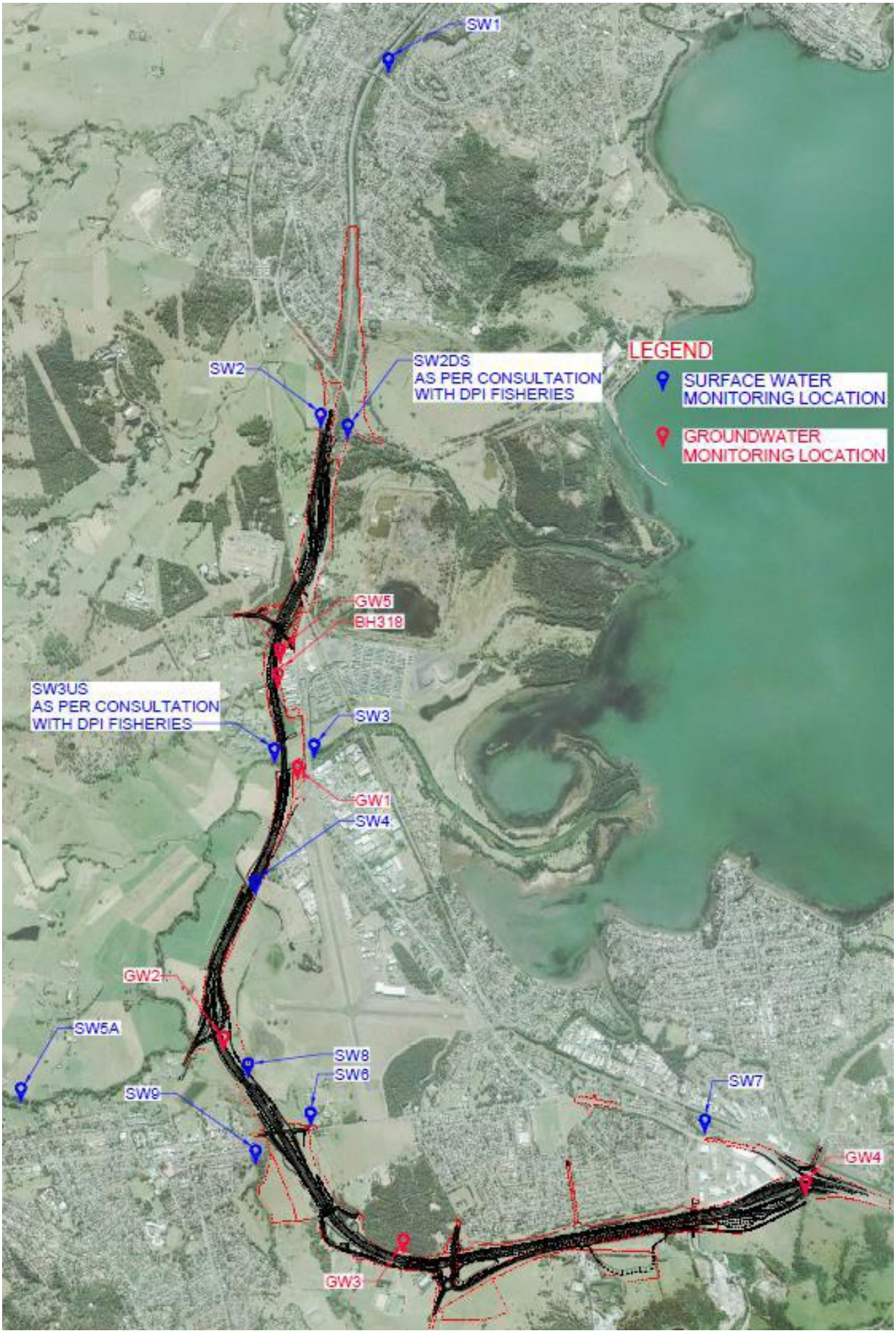
Macquarie Rivulet: Showed no impacts from construction. The creek had moderate to high flows. The most upstream monitoring point (SW5A) showed higher levels of TSS however they dropped to lower levels upstream and downstream of the project boundary.

Frasers Creek: Showed no impacts from construction. The creek had low to no flow, which resulted in higher than expected TSS levels at SW8 compared to results in the other two monitoring locations.

Horsley Inlet: Showed no impacts from construction. The creek had low flow, which resulted in higher than expected TSS levels.

Frasers Creek Tributary: Showed no impacts from construction. The creek had low to no flow however the creek was clear.

Attachment A, Location maps



Attachment B, Tabulated results

No.	Date	Time	pH	Total Suspended Solids (mg/L)
SW1	05/06/2019	1:48pm	7.6	<5
SW2	05/06/2019	1:30pm	7.2	16
SW2DS	05/06/2019	1:35pm	7.1	19
SW3US	05/06/2019	4:00pm	7.2	9
SW3	05/06/2019	4:05pm	7.1	7
SW4	05/06/2019	2:10pm	7.2	5
SW5A	05/06/2019	2:20pm	7.4	11
SW6	05/06/2019	2:30pm	7.3	6
SW7	05/06/2019	2:40pm	7.5	12
SW8	05/06/2019	2:50pm	6.9	22
SW9	05/06/2019	3:15pm	6.8	5

Attachment C, Field sheets

1

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW01

DATE: 5/6/19 TIME: 1:48

SAMPLING OFFICERS: T.D D.S

SAMPLING METHOD *(ie grab, bucket)* (GRAB)

DETAILED SAMPLE LOCATION DESCRIPTION: North of Emerson Rd (Dapto)

ENVIRONMENTAL OBSERVATIONS

WEATHER: raining lightly

VEGETATION: dense

SLOPE: medium

EROSION: minor

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: slow

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW01	1	ice		

FIELD SUPERVISOR Tom Dewhurst CHECKED (SIGN & DA [redacted]

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW02 DS

DATE: 5/6/19 TIME: 1:30 p.m

SAMPLING OFFICERS: T.D O.S

SAMPLING METHOD *(ie grab, bucket)*: (GRAB)

DETAILED SAMPLE LOCATION DESCRIPTION:

ENVIRONMENTAL OBSERVATIONS

WEATHER: light showers

VEGETATION: dense vegetation on both sides

SLOPE: medium

EROSION: none / little

OTHER:

FIELD MEASUREMENTS

pH: - on lab results

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): on lab results

FLOW OBSERVATIONS

FLOW: slow

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
/ (SW02 DS) /		ice.		

FIELD SUPERVISOR: Tom Dewhurst

CHECKED (SIGN & DATE): [redacted] 5/6/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW02 US

DATE: 5/6/19 **TIME:** 1:35 p.m

SAMPLING OFFICERS: TD O.S

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: Duck Creek ~~down~~ up stream of work site

ENVIRONMENTAL OBSERVATIONS

WEATHER: light showers

VEGETATION: dense vegetation on both sides

SLOPE: medium

EROSION: none / little

OTHER:

FIELD MEASUREMENTS

pH: on lab results

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): on lab results

FLOW OBSERVATIONS

FLOW: slow

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW02 US)	1	ice		

FIELD SUPERVISOR	CHECKED (SIGN & DATE)	
T. Dewhurst	[redacted]	5/6/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW03 DS

DATE: 5/6/19 **TIME:** 4:00 p.m

SAMPLING OFFICERS: O.S T.D

SAMPLING METHOD *(ie grab, bucket)*: (GRAB)

DETAILED SAMPLE LOCATION DESCRIPTION: Down stream of works (Mac Rivulet)

ENVIRONMENTAL OBSERVATIONS

WEATHER: ~~Clear~~ cloudy

VEGETATION: pasture

SLOPE: gentle

EROSION: minor

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: moderate

COLOUR: clear / brackish

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW03)	1	ice.		

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

Tom Dewhurst [redacted] 5/6/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW03 US

DATE: 5/6/19 TIME: 4:05 p.m

SAMPLING OFFICERS: T.D & O.S

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: up stream of works at Macquarie Rivulet

ENVIRONMENTAL OBSERVATIONS

WEATHER: ~~Sunny~~ overcast

VEGETATION: pasture

SLOPE: gentle

EROSION: minor bank erosion.

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: moderate

COLOUR: clear / brakish

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW03 US)	1	ice		

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

Tom Denhurst [redacted] 5/6/2019

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW04

DATE: 5/6/2014 TIME: 2:10

SAMPLING OFFICERS: OS / TD

SAMPLING METHOD *(ie grab, bucket)*: (GRAB)

DETAILED SAMPLE LOCATION DESCRIPTION: Frazer 1 East Illa Hwy.

ENVIRONMENTAL OBSERVATIONS

WEATHER: Slightly raining

VEGETATION: Dense

SLOPE: None

EROSION: None

OTHER:

FIELD MEASUREMENTS

pH:

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: Slow

COLOUR: Clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW04	1	Ice		

FIELD SUPERVISOR OS/TD.

CHECKED (SIGN & DATE) [redacted] 2014.

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW05A

DATE: 5/6/2019 TIME: 2:20

SAMPLING OFFICERS: OS / TD

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: Calderwood RD

ENVIRONMENTAL OBSERVATIONS

WEATHER: Slightly raining

VEGETATION: Dense

SLOPE: Moderate

EROSION: None

OTHER:

FIELD MEASUREMENTS

pH:

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: High flow

COLOUR: Clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW05A	1			

FIELD SUPERVISOR	CHECKED (SIGN & DATE)	
OS / TD	[redacted]	5/6/2019

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW06

DATE: 5/6/19 TIME: 2:30

SAMPLING OFFICERS: O.S T.D

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: Frasers Creek South of Tangarra Rd

ENVIRONMENTAL OBSERVATIONS

WEATHER: Overcast

VEGETATION: Yes Dense

SLOPE: Little

EROSION: Minor

OTHER:

FIELD MEASUREMENTS

pH:

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L):

FLOW OBSERVATIONS

FLOW: Slow

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
SW06	1	ice		

FIELD SUPERVISOR T.D CHECKED (SIGN & DATE) [redacted]

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW07

DATE: 5/6/19 **TIME:** 2:38

SAMPLING OFFICERS: T.D O.S

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: Down stream of works (Horsley Inlet)

ENVIRONMENTAL OBSERVATIONS

WEATHER: light rain.

VEGETATION: moderate on both banks

SLOPE: medium to low slope

EROSION: very minor erosion on bank

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L): See lab results

FLOW OBSERVATIONS

FLOW: slow

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW07)	1	ice		

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

Tom Dewhurst [redacted] 5/6/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW08

DATE: 5/6/19 **TIME:** 2:45 p.m

SAMPLING OFFICERS: T.D & O.S

SAMPLING METHOD *(ie grab, bucket)*: GRAB

DETAILED SAMPLE LOCATION DESCRIPTION: In flood plain east of Illawarra Hwy

ENVIRONMENTAL OBSERVATIONS

WEATHER: overcast

VEGETATION: pasture

SLOPE: no, minor

EROSION: none

OTHER:

FIELD MEASUREMENTS

pH: see lab results

VISIBLE OIL AND GREASE: YES / NO

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: v. little flow

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW08)	1	ice		

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

Tom Dewhurst [redacted] 5/6/19

Fulton Hogan

SURFACE WATER SAMPLING RECORD

SITE: SW09

DATE: 5/6/19 **TIME:** 3:15 p.m

SAMPLING OFFICERS: T. Dewhurst, O. Sargeson

SAMPLING METHOD *(ie grab, bucket)*: (GRAB)

DETAILED SAMPLE LOCATION DESCRIPTION: East of Stapleton Ave

ENVIRONMENTAL OBSERVATIONS

WEATHER: Overcast

VEGETATION: Small amount arround waterway

SLOPE: minor

EROSION: minor

OTHER:

FIELD MEASUREMENTS

pH: See lab results

VISIBLE OIL AND GREASE: YES / (NO)

SUSPENDED SOLIDS (mg/L): see lab results

FLOW OBSERVATIONS

FLOW: very low flow

COLOUR: clear

OTHER:

SAMPLE NO.	NO. OF CONTAINERS	PRESERVATIVE	DUPLICATE	COMMENTS
1 (SW09)	1	ice		

FIELD SUPERVISOR

Tom Dewhurst

CHECKED [redacted] 5/6/19

Attachment D, Laboratory results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EW1902442**	Page	: 1 of 5
Client	: **FULTON HOGAN PTY LTD**	Laboratory	: Environmental Division NSW South Coast
Contact	: MR JAMES DIAMOND	Contact	: Glenn Davies
Address	: LEVEL 3 - 90 BOURKE ROAD ALEXANDRIA NSW, AUSTRALIA 2015	Address	: 1/19 Ralph Black Dr, North Wollongong 2500 4/13 Geary Pl, North Nowra 2541 Australia NSW Australia
Telephone	: +61 02 8346 9400	Telephone	: 02 42253125
Project	: Albion Park Rail Bypass	Date Samples Received	: 06-Jun-2019 14:55
Order number	: ----	Date Analysis Commenced	: 06-Jun-2019
C-O-C number	: ----	Issue Date	: 27-Jun-2019 16:10
Sampler	: TOM DEWHURST		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 11		
No. of samples analysed	: 11		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	SW01	SW02	SW02 DS	SW03	SW03 US
			Client sampling date / time	05-Jun-2019 00:00	05-Jun-2019 00:00	05-Jun-2019 00:00	05-Jun-2019 00:00	05-Jun-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EW1902442-001**	**EW1902442-002**	**EW1902442-003**	**EW1902442-004**	**EW1902442-005**
				Result	Result	Result	Result	Result
EA005FD: Field pH								
pH	----	0.1	pH Unit	**7.6**	**7.2**	**7.1**	**7.1**	**7.2**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**16**	**19**	**7**	**9**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	SW04	SW05	SW06	SW07	SW08
			Client sampling date / time	05-Jun-2019 00:00	05-Jun-2019 00:00	05-Jun-2019 00:00	05-Jun-2019 00:00	05-Jun-2019 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**EW1902442-006**	**EW1902442-007**	**EW1902442-008**	**EW1902442-009**	**EW1902442-010**
				Result	Result	Result	Result	Result
EA005FD: Field pH								
pH	----	0.1	pH Unit	**7.2**	**7.4**	**7.3**	**7.5**	**6.9**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**5**	**11**	**6**	**12**	**22**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**SW09**	----	----	----	----
			Client sampling date / time	05-Jun-2019 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EW1902442-011**	--------	--------	--------	--------
				Result	----	----	----	----
EA005FD: Field pH								
pH	----	0.1	pH Unit	**6.8**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**5**	----	----	----	----

Annexure C Groundwater Monitoring Reports

Groundwater Monitoring

Construction Event 1

The purpose of groundwater quality monitoring during the construction phase is to determine impacts resulting from construction of the project only (i.e. road construction) and not other unrelated sources, such as agricultural operations. The potential impacts from road construction activities will most likely result from erosion and sediment control loss and spills.

Date of Monitoring: 29 March 2019

Scope and Limitations

During the construction phase of the project, groundwater quality will be monitored at the same locations as the baseline-monitoring program. Groundwater quality will be monitored at six locations (i.e. GW1-GW5 and BH318).

This report presents the information collected during the monitoring event with some discussion on field observations and results with respect to conditions.

Field Programme

Groundwater sampling was undertaken at all groundwater monitoring wells in the first quarter of 2019; refer to Attachment A for monitoring well locations. This quarterly sampling event was conducted in accordance with the sampling program and protocols provided in:

- 2018, Baseline Monitoring Program – Albion Park Rail Bypass;
- 2018 Appendix B4 Soil and Water Management Sub-plan Albion Park Rail bypass (Stage 2 – Princes Motorway between Yallah and Oak Flats) Appendix B Construction water quality monitoring program

Water samples were submitted to a NATA certified testing laboratory (Australian Laboratory services (ALS)) to be analysed for:

- pH
- electrical conductivity
- temperature
- no visible oil and grease
- dissolved metals for GW2 only, which is located in a PASS risk area

Groundwater levels were also measured at each groundwater monitoring wells.

Groundwater sampling results

Results for the water quality monitoring event are located as attachments at the end of this document, they are:

- Attachment A, Location maps
- Attachment B, Tabulated results
- Attachment C, Field sheets
- Attachment D, Laboratory results

Results summary

No significant seasonal groundwater level fluctuations were observed and no significant trends were identified in the dataset. pH values were occasionally outside the nominated guideline of pH 6.5 – pH 8, with 1 of 4 pH results outside the nominated guidelines represented by low pH values (i.e. pH<6.5). Metal concentrations in groundwater were recorded above the nominated guideline including copper and zinc.

Groundwater monitoring well GW3 has been dry since March 2018. Due to the limited number of groundwater bores and linear nature of the project, the density and distribution of groundwater monitoring wells is insufficient to develop project wide groundwater level contours

GW1: Groundwater monitoring well was unable to be located during the monitoring event. No construction works had commenced within the area of GW2 and therefore no construction impact

GW2: All levels were below limit of recording or within nominated guidelines, except for Copper and Zine. As no construction was underway within the catchment area, these results are assumed to be a natural variance in the groundwater.

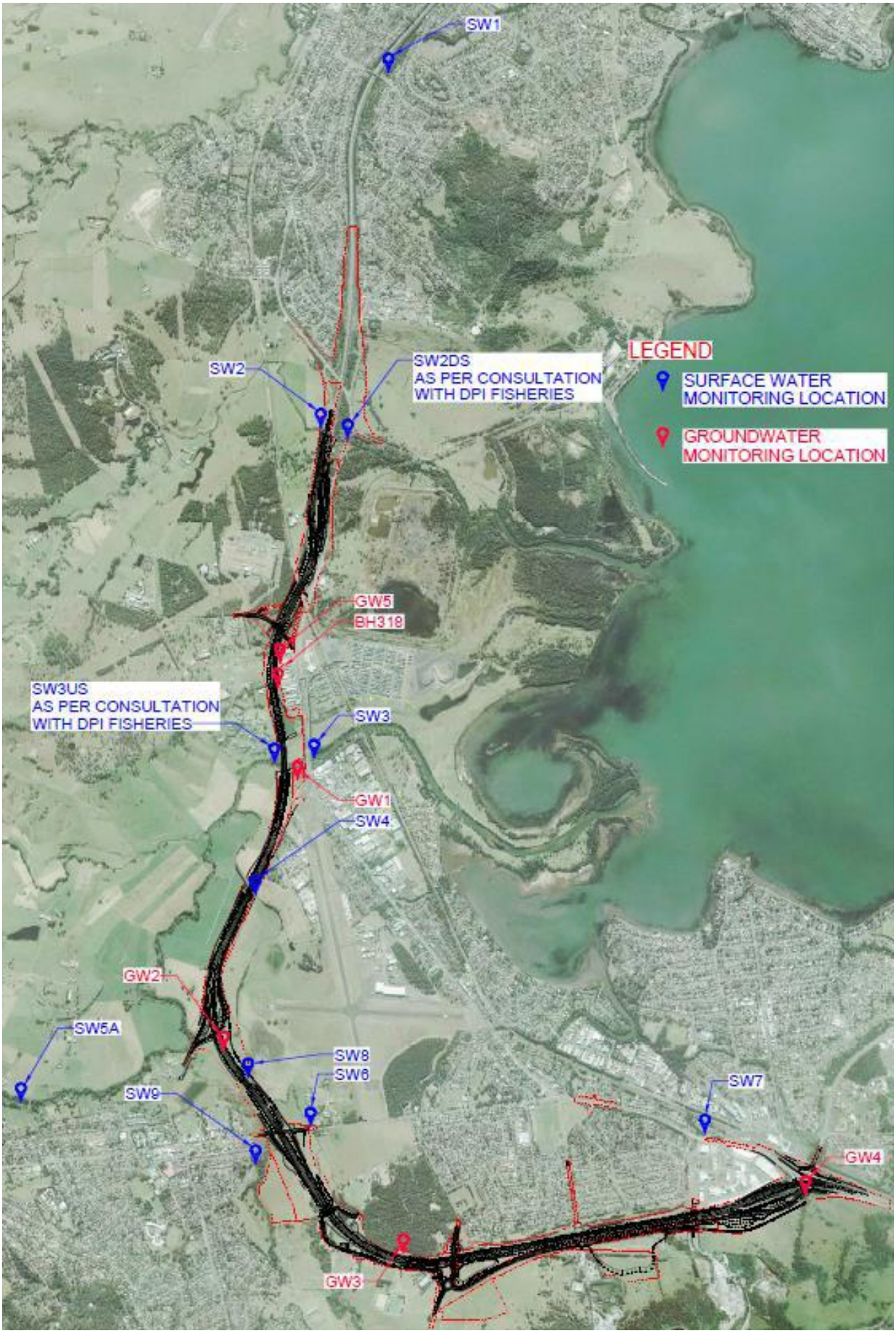
GW3: Well dry – No sample taken

GW4: All levels were below limit of recording or within nominated guidelines with no impact from construction

GW5: All levels were below limit of recording or within nominated guidelines with the exception of pH which was below the nominated guideline. Historical data shows that the recorded pH is consistent with previous results.

BH318: All levels were below limit of recording or within nominated guidelines.

Attachment A, Location maps



Attachment B, Tabulated results

No.	Date	Time	Temperature (°C)	pH	Electrical Conductivity (mS/cm)	Visible Oil and Grease	Depth from TOC (m)
GW1	29/03/2019	1:48pm	N/A	N/A	N/A	N/A	N/A
GW2	29/03/2019	12:55pm	18.7	7.9	1.35	No	2.09
GW3	29/03/2019	pm	N/A	N/A	N/A	N/A	Well Dry
GW4	29/03/2019	2:30pm	19.5	7.4	2.25	No	6.97
GW5	29/03/2019	12:20pm	Probe error	4.10	20.9	No	7.57
BH318	29/03/2019	11:50am	Probe error	7.30	5.19	No	5.35

GW2 Dissolved Metals results

Dissolved Metals	mg/L
Arsenic	0.002
Cadmium	<0.0001
Chromium	<0.001
Copper	0.090
Nickel	0.007
Lead	<0.001
Zinc	0.058
Mercury	<0.0001

Attachment C, Field sheets

Groundwater Sampling Record Sheet

Job Number: PS106112	**Well Number:** GW2
Property name/owner: **Contact details:**	**Purging Date:** 29/3/19 **Sampling Date:**
Depth to groundwater from TOC (m): 2.09	PVC Stickup (m):
Well depth from TOC (PVC) (m):	Casing diameter (mm):

Purging Information

Purging method: O Micropurge O Grundfos ✓ 12V pump O Bailer O Flowing O Grab sample	Calculated bore volume (m^3) = $\pi r^2 h$ π = 3.14 r = 0.5 x casing diameter (m) h = well depth – depth to GW (m)
Logger download: O YES ✓ NO	1 bore volume (L): 3 bore volumes (L):
Start time: 12:50	$1m^3$ = 1000L
Finish time: 1:20	Purging depth:

Field Results While Purging

Time	Vol (L)	Temp. °C	EC mS (µS/cm)	TDS (g/L)	DO %sat	DO mg/L	pH	Redox (mV)	Colour/odour/ turbidity
12:55		19.9	1.33	0.85	35	3.2	7.8	334	
1:00		19.3	1.35	0.86	30	2.7	7.8	327	
1:05		19.0	1.34	0.86	27.3	2.5	7.9	316	
1:10		18.7	1.35	0.86	26.5	2.4	7.9	267	
	CO_2 (mg/L) = mL in syringe x 10 =								

Measurements for pH should be within 0.1 pH units and measurements for conductivity, salinity and dissolved oxygen should be within 10% and temperature within 0.5 °C before the well is sampled.

Sampling Details

Sampling method (*if different from purging* method): O Micropurge O Grundfos ✓ 12V pump O Bailer O Flowing O Grab sample	Bottles collected: 1
Sampling time:	QA/QC details
Other comments and observations (environmental/climatic conditions):	
Sampler's name: Tom Dewhurst	Signature: [redacted]

Groundwater Sampling Record Sheet

Job Number: PS106112	**Well Number:** GW4
Property name/owner:	**Purging Date:** 29/3/19
Contact details:	**Sampling Date:**
Depth to groundwater from TOC (m): 6.97m	PVC Stickup (m):
Well depth from TOC (PVC) (m):	Casing diameter (mm):

Purging Information

Purging method: O Micropurge O Grundfos ✓ 12V pump O Bailer O Flowing O Grab sample	Calculated bore volume (m^3) = $\pi r^2 h$ π = 3.14 r = 0.5 x casing diameter (m) h = well depth – depth to GW (m)
Logger download: O YES ✓ NO	1 bore volume (L): 3 bore volumes (L):
Start time: 2:20	$1m^3$ = 1000L
Finish time: 2:50	Purging depth:

Field Results While Purging

Time	Vol (L)	Temp. °C	EC (uS/cm)	TDS (g/L)	DO %sat	DO mg/L	pH	Redox (mV)	Colour/odour/ turbidity
2:25		20.1	2.21	1.41	49.6	4.3	8.01	265	clear
2:33		19.8	2.23	1.43	40.4	3.4	7.7	277	clear
2:37		19.5	2.24	1.43	33.5	3.0	7.5	281	clear
2:46		19.5	2.25	1.44	28.1	2.46	7.4	286	clear
	CO_2 (mg/L) = mL in syringe x 10 =								

Measurements for pH should be within 0.1 pH units and measurements for conductivity, salinity and dissolved oxygen should be within 10% and temperature within 0.5 °C before the well is sampled.

Sampling Details

Sampling method (*if different from purging* method): O Micropurge O Grundfos ✓ 12V pump O Bailer O Flowing O Grab sample	Bottles collected: 1
Sampling time:	QA/QC details
Other comments and observations (environmental/climatic conditions):	
Sampler's name: Tom Dewhurst	Signature: [redacted]

Groundwater Sampling Record Sheet

Job Number: PS106112	**Well Number:** GW5
Property name/owner:	**Purging Date:** 29/3/19
Contact details:	**Sampling Date:**
Depth to groundwater from TOC (m): 7.57	PVC Stickup (m):
Well depth from TOC (PVC) (m):	Casing diameter (mm):

Purging Information

Purging method: O Micropurge O Grundfos ✓ 12V pump O Bailer O Flowing O Grab sample	Calculated bore volume (m^3) = $\pi r^2 h$ π = 3.14 r = 0.5 x casing diameter (m) h = well depth – depth to GW (m)
Logger download: O YES ✓ NO	1 bore volume (L):
Start time: 12:20	3 bore volumes (L): $1m^3$ = 1000L
Finish time: 12:30	Purging depth:

Field Results While Purging

Time	Vol (L)	Temp. °C	EC (uS/cm)	TDS (g/L)	DO %sat	DO mg/L	pH	Redox (mV)	Colour/odour/ turbidity
12:20									opaque
	CO_2 (mg/L) = mL in syringe x 10 =								

Measurements for pH should be within 0.1 pH units and measurements for conductivity, salinity and dissolved oxygen should be within 10% and temperature within 0.5 °C before the well is sampled.

Sampling Details

Sampling method (*if different from purging* method): O Micropurge O Grundfos ✓ 12V pump O Bailer O Flowing O Grab sample	Bottles collected: 1
Sampling time:	QA/QC details

Other comments and observations (environmental/climatic conditions):

Purged approx 10L

Error with water quality probe, [redacted]

Sampler's name: Tom Dewhurst Signature: [redacted]

Groundwater Sampling Record Sheet

Job Number: PS106112	**Well Number:** GW318
Property name/owner:	**Purging Date:** 29/3/19
Contact details:	**Sampling Date:**
Depth to groundwater from TOC (m): 5.35	PVC Stickup (m):
Well depth from TOC (PVC) (m):	Casing diameter (mm):

Purging Information

Purging method: ○ Micropurge ○ Grundfos ☑ 12V pump ○ Bailer ○ Flowing ○ Grab sample	Calculated bore volume (m^3) = $\pi r^2 h$ π = 3.14 r = 0.5 x casing diameter (m) h = well depth – depth to GW (m)
Logger download: ○ YES ☑ NO Start time:	1 bore volume (L): 3 bore volumes (L): $1m^3$ = 1000L
Finish time:	Purging depth:

Field Results While Purging

Time	Vol (L)	Temp. °C	EC (uS/cm)	TDS (g/L)	DO %sat	DO mg/L	pH	Redox (mV)	Colour/odour/ turbidity
11:50									

CO_2 (mg/L) = mL in syringe x 10 =

Measurements for pH should be within 0.1 pH units and measurements for conductivity, salinity and dissolved oxygen should be within 10% and temperature within 0.5 °C before the well is sampled.

Sampling Details

Sampling method (*if different from purging* method): Bottles collected:

○ Micropurge ○ Grundfos ☑ 12V pump

○ Bailer ○ Flowing ○ Grab sample

Sampling time: 11:50 QA/QC details

Other comments and observations (environmental/climatic conditions):

Well purged dry after approx 10L

Error with quality probe.

Sampler's name: T. Dahl Signature [redacted]

Attachment D, Laboratory results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EW1901339**	Page	: 1 of 4
Client	: **FULTON HOGAN PTY LTD**	Laboratory	: Environmental Division NSW South Coast
Contact	: MR JAMES DIAMOND	Contact	: Glenn Davies
Address	: LEVEL 3 - 90 BOURKE ROAD ALEXANDRIA NSW, AUSTRALIA 2015	Address	: 1/19 Ralph Black Dr, North Wollongong 2500 4/13 Geary Pl, North Nowra 2541 Australia NSW Australia
Telephone	: +61 02 8346 9400	Telephone	: 02 42253125
Project	: Albion Park Rail Bypass	Date Samples Received	: 29-Mar-2019 16:13
Order number	: ----	Date Analysis Commenced	: 29-Mar-2019
C-O-C number	: ----	Issue Date	: 05-Apr-2019 14:10
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EK061G: : LOR raised for TKN on sample No 3 due to sample matrix.
- TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	GW2	GW4	GW5	BH318	----
			Client sampling date / time	29-Mar-2019 00:00	29-Mar-2019 00:00	29-Mar-2019 00:00	29-Mar-2019 00:00	----
Compound	CAS Number	LOR	Unit	EW1901339-001	EW1901339-002	EW1901339-003	EW1901339-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	----	4.10	7.30	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	20900	5190	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	769	----	----	----	----
Total Dissolved Solids @180°C	----	10	mg/L	----	1360	17800	3810	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	----	----	307	199	----
pH Redox	----	0.01	pH Unit	----	----	3.97	6.67	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	398	208	<1	390	----
Total Alkalinity as CaCO3	----	1	mg/L	398	208	<1	390	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	115	306	404	729	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	126	434	7860	1050	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	6	67	566	386	----
Magnesium	7439-95-4	1	mg/L	9	54	984	211	----
Sodium	7440-23-5	1	mg/L	299	338	2380	463	----
Potassium	7440-09-7	1	mg/L	5	<1	29	7	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.002	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	0.090	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.007	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.058	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	GW2	GW4	GW5	BH318	----
				Client sampling date / time	29-Mar-2019 00:00	29-Mar-2019 00:00	29-Mar-2019 00:00	29-Mar-2019 00:00	----
Compound	CAS Number	LOR	Unit		EW1901339-001	EW1901339-002	EW1901339-003	EW1901339-004	--------
					Result	Result	Result	Result	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	<0.01	**0.25**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**3.6**	**0.2**	<0.5	**0.1**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**3.6**	**0.2**	<0.5	**0.4**	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.03**	**0.28**	**0.12**	**0.01**	----
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L		**13.9**	**22.8**	**230**	**52.6**	----
Total Cations	----	0.01	meq/L		**14.2**	**22.5**	**213**	**56.9**	----
Ionic Balance	----	0.01	%		**0.97**	**0.62**	**3.75**	**3.98**	----

Groundwater Monitoring

Construction Event 2

The purpose of groundwater quality monitoring during the construction phase is to determine impacts resulting from construction of the project only (i.e. road construction) and not other unrelated sources, such as agricultural operations. The potential impacts from road construction activities will most likely result from erosion and sediment control loss and spills.

Date of Monitoring: 14 May 2019

Scope and Limitations

During the construction phase of the project, groundwater quality will be monitored at the same locations as the baseline-monitoring program. Groundwater quality will be monitored at six locations (i.e. GW1-GW5 and BH318).

This report presents the information collected during the monitoring event with some discussion on field observations and results with respect to conditions.

Field Programme

Groundwater sampling was undertaken at all groundwater monitoring wells in the first quarter of 2019; refer to Attachment A for monitoring well locations. This quarterly sampling event was conducted in accordance with the sampling program and protocols provided in:

- 2018, Baseline Monitoring Program – Albion Park Rail Bypass;
- 2018 Appendix B4 Soil and Water Management Sub-plan Albion Park Rail bypass (Stage 2 – Princes Motorway between Yallah and Oak Flats) Appendix B Construction water quality monitoring program

Water samples were submitted to a NATA certified testing laboratory (Australian Laboratory services (ALS)) to be analysed for:

- pH
- electrical conductivity
- temperature
- no visible oil and grease
- dissolved metals for GW2 only, which is located in a PASS risk area

Groundwater levels were also measured at each groundwater monitoring wells.

Groundwater sampling results

Results for the water quality monitoring event are located as attachments at the end of this document, they are:

- Attachment A, Location maps
- Attachment B, Tabulated results
- Attachment C, Field sheets
- Attachment D, Laboratory results

Results summary

No significant seasonal groundwater level fluctuations were observed and no significant trends were identified in the dataset. pH values were occasionally outside the nominated guideline of pH 6.5 – pH 8, with 2 of 4 pH results outside the nominated guidelines represented by low pH values (i.e. pH>8.5). Metal concentrations in groundwater were recorded above the nominated guideline including copper and zinc.

Groundwater monitoring well GW3 has been dry since March 2018. Due to the limited number of groundwater bores and linear nature of the project, the density and distribution of groundwater monitoring wells is insufficient to develop project wide groundwater level contours.

GW1: Groundwater monitoring well was unable to be located during the monitoring event. No construction works had commenced within the area of GW2 and therefore no construction impact.

GW2: All levels were below limit of recording or within nominated guidelines, except for copper and zine. As no construction was underway within the catchment area, these results are assumed to be a natural variance in the groundwater due to the dry conditions.

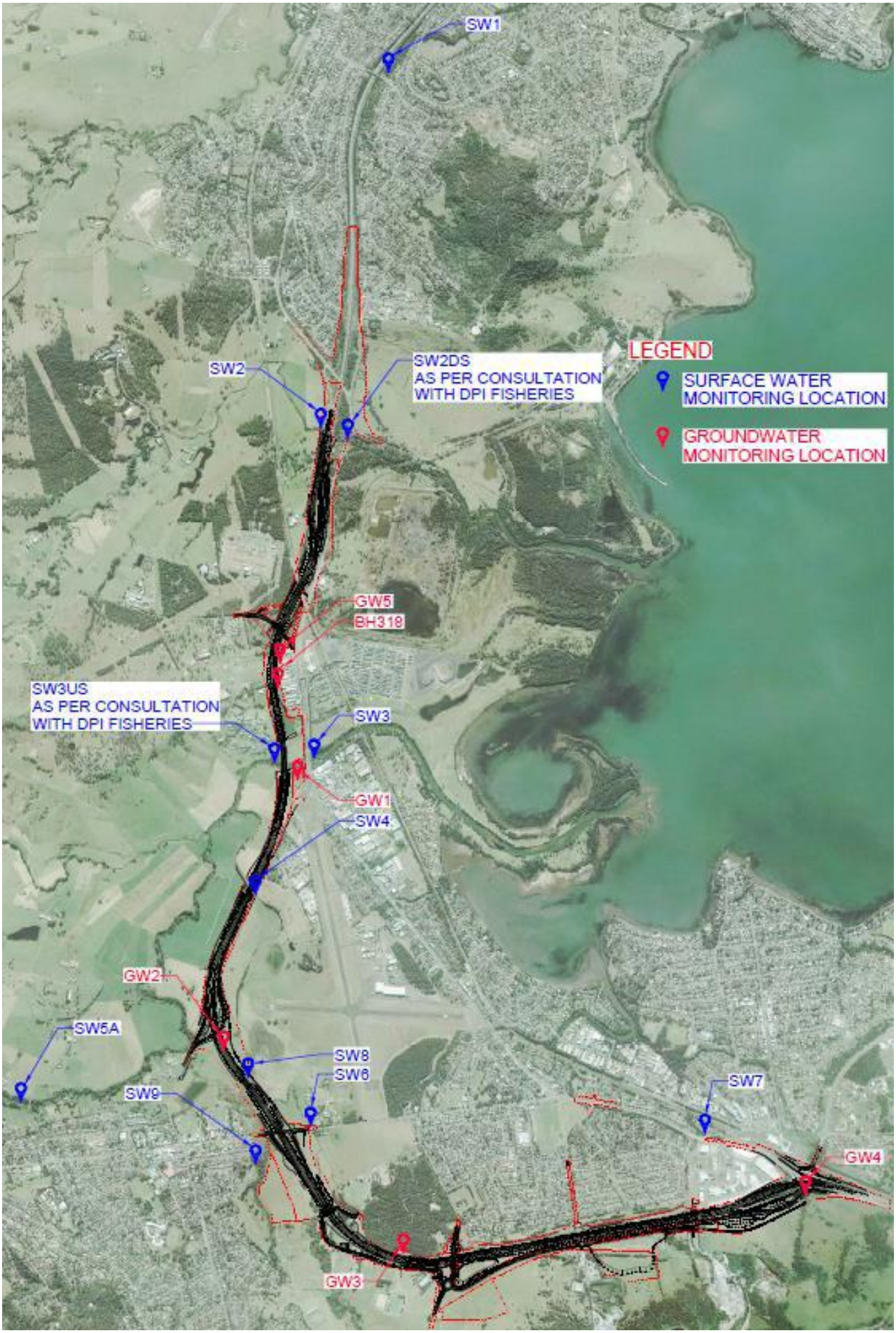
GW3: Well dry – No sample taken

GW4: All levels were below limit of recording or within nominated guidelines with no impact from construction

GW5: All levels were below limit of recording or within nominated guidelines with the exception of pH which was above the nominated guideline. Historical data shows that the recorded pH is above previous results.

BH318: All levels were below limit of recording or within nominated guidelines with the exception of pH which was above the nominated guideline.

Attachment A, Location maps



Attachment B, Tabulated results

No.	Date	Time	Temperature (°C)	pH	Electrical Conductivity (mS/cm)	Visible Oil and Grease	Depth from TOC (m)
GW1	14/05/2019		N/A	N/A	N/A	N/A	N/A
GW2	14/05/2019	9:00am	17.2	7.5	1.48	No	2.15
GW3	14/05/2019	8.30am	N/A	N/A	N/A	N/A	Well Dry
GW4	14/05/2019	8:10am	17.84	7.04	2.33	No	6.85
GW5	14/05/2019	4:10pm	18.6	8.79	21.5	No	7.60
BH318	14/05/2019	3:10pm	18.4	8.7	5.37	No	5.40

GW2 Dissolved Metals results

Dissolved Metals	mg/L
Arsenic	0.001
Cadmium	<0.0001
Chromium	0.001
Copper	0.020
Nickel	0.012
Lead	<0.001
Zinc	0.181
Mercury	<0.0001

Attachment C, Field sheets

Groundwater Sampling Record Sheet

Job Number:	**Well Number:** GW2
Property name/owner: **Contact details:**	**Purging Date:** 13/5/19 **Sampling Date:** 14/5/19
Depth to groundwater from TOC (m): 2.15m	PVC Stickup (m):
Well depth from TOC (PVC) (m):	Casing diameter (mm):

Purging Information

Purging method: O Micropurge O Grundfos ✓ 12V pump O Bailer O Flowing O Grab sample	Calculated bore volume (m^3) = $\pi r^2 h$ π = 3.14 r = 0.5 x casing diameter (m) h = well depth – depth to GW (m)
Logger download: O YES ✓ NO	1 bore volume (L): 3 bore volumes (L):
Start time: 9:00	$1m^3$ = 1000L
Finish time: 9:25	Purging depth:

Field Results While Purging

Time	Vol (L)	Temp. °C	EC (µS/cm)	TDS (g/L)	DO %sat	DO mg/L	pH	Redox (mV)	Colour/odour/ turbidity
9:05		17.3	1.61	1.03	118.1	10.95	7.4	76	clear
9:10		17.5	1.58	1.01	109.8	10.10	7.4	59	clear
9:12		17.5	1.54	0.99	104.6	9.98	7.4	50	clear
9:15		17.4	1.50	0.96	100.4	9.42	7.5	44	clear
9:20		17.2	1.48	0.93	98.2	9.22	7.5	41	clear
	CO_2 (mg/L) = mL in syringe x 10 =								

Measurements for pH should be within 0.1 pH units and measurements for conductivity, salinity and dissolved oxygen should be within 10% and temperature within 0.5 °C before the well is sampled.

Sampling Details

Sampling method (*if different from purging* method): O Micropurge O Grundfos ✓ 12V pump O Bailer O Flowing O Grab sample	Bottles collected: 1
Sampling time:	QA/QC details

Other comments and observations (environmental/climatic conditions):

Sampler's name: Tom Dawhurst	Signature: [redacted]

Groundwater Sampling Record Sheet

Job Number:	**Well Number:** BH318
Property name/owner:	**Purging Date:** 13/5/19
Contact details:	**Sampling Date:** 14/5/19
Depth to groundwater from TOC (m): 5.40	PVC Stickup (m):
Well depth from TOC (PVC) (m):	Casing diameter (mm):

Purging Information

Purging method: O Micropurge O Grundfos ✓ 12V pump O Bailer O Flowing O Grab sample	Calculated bore volume (m^3) = $\pi r^2 h$ π = 3.14 r = 0.5 x casing diameter (m) h = well depth – depth to GW (m)
Logger download: O YES ✓ NO	1 bore volume (L): 3 bore volumes (L):
Start time: 3:10	$1m^3$ = 1000L
Finish time: 3:40	Purging depth:

Field Results While Purging

Time	Vol (L)	Temp. °C	EC (µS/cm)	TDS (g/L)	DO %sat	DO mg/L	pH	Redox (mV)	Colour/odour/ turbidity
3:15		19.3	5.29	3.33	113	9.74	8.7	160	clear 15 NTU
3:20		19.1	5.31	3.35	100	8.85	8.7	140	clear 14 NTU
3:25		18.5	5.38	3.39	95	8.53	8.7	125	clear
3:30		18.4	5.37	3.39	92	8.39	8.7	120	clear
3:33		18.4	5.37	3.39	92	8.38	8.7	120	clear
3:36		18.4	5.37	3.39	91	8.20	8.7	120	clear

CO_2 (mg/L) = mL in syringe x 10 =

Measurements for pH should be within 0.1 pH units and measurements for conductivity, salinity and dissolved oxygen should be within 10% and temperature within 0.5 °C before the well is sampled.

Sampling Details

Sampling method (*if different from purging* method): O Micropurge O Grundfos ✓ 12V pump O Bailer O Flowing O Grab sample	Bottles collected:
Sampling time:	QA/QC details

Other comments and observations (environmental/climatic conditions):

Sampler's name: Tom Dewhurst	Signature: [redacted]

Groundwater Sampling Record Sheet

Job Number:	**Well Number:** GW 4
Property name/owner: **Contact details:**	**Purging Date:** 13.05.19 **Sampling Date:** 14.05.19
Depth to groundwater from TOC (m): 6.85	PVC Stickup (m):
Well depth from TOC (PVC) (m):	Casing diameter (mm):

Purging Information

Purging method: O Micropurge O Grundfos ✓ 12V pump O Bailer O Flowing O Grab sample	Calculated bore volume (m^3) = $\pi r^2 h$ π = 3.14 r = 0.5 x casing diameter (m) h = well depth – depth to GW (m)
Logger download: O YES ✓ NO	1 bore volume (L): 3 bore volumes (L):
Start time: 8:10	$1m^3$ = 1000L
Finish time: 8.40	Purging depth:

Field Results While Purging

Time	Vol (L)	Temp. °C	EC (µS/cm)	TDS (g/L)	DO %sat	DO mg/L	pH	Redox (mV)	Colour/odour/ turbidity
8.15		17.77	2.54	1.64	50.1	4.31	7.07	10	Clear 7 NTU
8:20		17.75	2.43	1.55	31.4	2.85	7.05	11	Clear 6.4 NTU
8:22		17.80	2.39	1.53	21.5	1.95	7.04	12	Clear 6.8 NTU
8:25		17.82	2.36	1.51	14.3	1.31	7.04	12	Clear 6.0 NTU
8:27		17.84	2.34	1.50	12.6	1.06	7.04	12	Clear 3.7 NTU
8:30		17.84	2.33	1.49	10.2	0.89	7.04	12	Clear 2.9 NTU
8:32		17.84	2.33	1.49	8.1	0.77	7.04	12	Clear 3 NTU
8:35		17.84	2.33	1.49	7.9	0.71	7.04	12	Clear 3 NTU
	CO_2 (mg/L) = mL in syringe x 10 =								

Measurements for pH should be within 0.1 pH units and measurements for conductivity, salinity and dissolved oxygen should be within 10% and temperature within 0.5 °C before the well is sampled.

Sampling Details

Sampling method (*if different from purging* method): O Micropurge O Grundfos ✓ 12V pump O Bailer O Flowing O Grab sample	Bottles collected: 1
Sampling time:	QA/QC details

Other comments and observations (environmental/climatic conditions): Dry, Sunny

Well to be moved as located within project alignment

Sampler's name: James

Signatur [redacted]

Groundwater Sampling Record Sheet

Job Number:	**Well Number:** GW5
Property name/owner:	**Purging Date:** 13/5/19
Contact details:	**Sampling Date:** 14/5/19
Depth to groundwater from TOC (m): 7.60	PVC Stickup (m):
Well depth from TOC (PVC) (m):	Casing diameter (mm):

Purging Information

Purging method: O Micropurge O Grundfos ✓ 12V pump O Bailer O Flowing O Grab sample	Calculated bore volume (m^3) = $\pi r^2 h$ π = 3.14 r = 0.5 x casing diameter (m) h = well depth – depth to GW (m)
Logger download: O YES ✓ NO	1 bore volume (L): 3 bore volumes (L):
Start time: 4:10	$1m^3$ = 1000L
Finish time: 4:30	Purging depth:

Field Results While Purging

Time	Vol (L)	Temp. °C	EC (µS/cm)	TDS (g/L)	DO %sat	DO mg/L	pH	Redox (mV)	Colour/odour/ turbidity
4:10		18.6	21.5	13.3	136	10.7	8.79	165	
[redacted]									
[redacted]									
	CO_2 (mg/L) = mL in syringe x 10 =								

Measurements for pH should be within 0.1 pH units and measurements for conductivity, salinity and dissolved oxygen should be within 10% and temperature within 0.5 °C before the well is sampled.

Sampling Details

Sampling method (*if different from purging* method): O Micropurge O Grundfos ✓ 12V pump O Bailer O Flowing O Grab sample	Bottles collected: 0
Sampling time:	QA/QC details

Other comments and observations (environmental/climatic conditions):

well purged dry. TD
Unable to take sample.

Sampler's name: Tom Dewhurst	Signatu [redacted]

Attachment D, Laboratory results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EW1902104**	Page	: 1 of 2
Client	: **FULTON HOGAN PTY LTD**	Laboratory	: Environmental Division NSW South Coast
Contact	: MR JAMES DIAMOND	Contact	: Glenn Davies
Address	: LEVEL 3 - 90 BOURKE ROAD ALEXANDRIA NSW, AUSTRALIA 2015	Address	: 1/19 Ralph Black Dr, North Wollongong 2500 4/13 Geary Pl, North Nowra 2541 Australia NSW Australia
Telephone	: +61 02 8346 9400	Telephone	: 02 42253125
Project	: Albion Park Rail Bypass	Date Samples Received	: 15-May-2019 12:54
Order number	: ----	Date Analysis Commenced	: 15-May-2019
C-O-C number	: ----	Issue Date	: 22-May-2019 14:24
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 3		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- pH and Conductivity data supplied by ALS Wollongong.
- pH and Conductivity tests completed on day of receipt.

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**GW4**	**BH318**	**GW2**	**----**	**----**
			Client sampling date / time	14-May-2019 08:30	14-May-2019 15:40	15-May-2019 09:30	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EW1902104-001**	**EW1902104-002**	**EW1902104-003**	**--------**	**--------**
				Result	Result	Result	----	----
EA005FD: Field pH								
pH	----	0.1	pH Unit	**6.4**	**6.6**	**6.9**	**----**	**----**
EA010FD: Field Conductivity								
Electrical Conductivity (Non Compensated)	----	1	µS/cm	**2300**	**5290**	**1450**	**----**	**----**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**----**	**----**	**0.001**	**----**	**----**
Cadmium	7440-43-9	0.0001	mg/L	**----**	**----**	<0.0001	**----**	**----**
Chromium	7440-47-3	0.001	mg/L	**----**	**----**	**0.001**	**----**	**----**
Copper	7440-50-8	0.001	mg/L	**----**	**----**	**0.020**	**----**	**----**
Nickel	7440-02-0	0.001	mg/L	**----**	**----**	**0.012**	**----**	**----**
Lead	7439-92-1	0.001	mg/L	**----**	**----**	<0.001	**----**	**----**
Zinc	7440-66-6	0.005	mg/L	**----**	**----**	**0.181**	**----**	**----**
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	**----**	**----**	<0.0001	**----**	**----**

Annexure D Noise Monitoring Results

Noise monitoring results – January 2019

EPA ID#	LOCATION DESCRIPTION	Date	$L(A)_{eq(15min)}$	Comments
2	L1 - 20 Westwood Drive, Blackbutt	25/01/2019	51.3	No construction audible over highway traffic.
3	L2 - 78 Jarrah Way, Albion Park Rail	25/01/2019	54.8	No construction noise audible at time of monitoring
4	L3 - 17 Gumnut Street, Albion Park Rail	25/01/2019	48.4	Water truck filling up. (45-47)
5	L4 - 152 Croome Road, Albion Park	25/01/2019	65.8	No construction noise audible when monitoring
6	L5 - 59 Burdekin Drive, Albion Park	25/01/2019	66.2	No construction noise audible when monitoring
7	L6 - 25 Fraser Crescent, Albion Park	25/01/2019	52.5	No construction noise audible when monitoring
8	L7 - 52 Tongarra Road, Abion Park	25/01/2019	66.3	No construction audible. Main noise source was from traffic on Tongarra Rd (53-81).
9	L8 - 24 Terry Street, Albion Park	25/01/2019	70.6	No construction audible. Main noise source was from traffic on Terry St (68-86).
10	L9 - 42 Larkins Lane, Yallah	25/01/2019	59.3	No construction audible. Main noise source was from the traffic from the Princes Highway (50-60)
11	L10 - 4 Semillon Place, Mount Brown	25/01/2019	61.5	No construction audible at time of monitoring

Noise monitoring results – February 2019

EPA ID#	LOCATION DESCRIPTION	Date	$L(A)_{eq(15min)}$	Comments
2	L1 - 20 Westwood Drive, Blackbutt	11/02/2019	55.1	Construction inaudible over Princes HWY traffic (53-55) Postie bike (55-69) airplane (56-70)
3	L2 - 78 Jarrah Way, Albion Park Rail	11/02/2019	54.1	Construction inaudible over traffic (56-62) and airplanes (63-68)
4	L3 - 17 Gumnut Street, Albion Park Rail	11/02/2019	58.7	Most dominant noise: Water truck (64-78)
5	L4 - 152 Croome Road, Albion Park	11/02/2019	69	Construction inaudible. Traffic from Croome Rd (60-78) most dominant noise source.
6	L5 - 59 Burdekin Drive, Albion Park	11/02/2019	60.3	Construction not audible. Traffic on Burdekin Drive most dominate noise source, also a helicopter flew into the area causing spike
7	L6 - 25 Fraser Crescent, Albion Park	11/02/2019	48.2	No construction audible. 3 constant noises: Birds chirping (47-59) Traffic on Terry St (44-46) Trees rustling (44-45)
8	L7 - 52 Tongarra Road, Abion Park	11/02/2019	77.3	No construction audible. Main noise source was from traffic on Tongarra Rd (64-79).
9	L8 - 24 Terry Street, Albion Park	11/02/2019	72.4	No construction audible. Main noise source was from traffic on Terry St (65-81).
10	L9 - 42 Larkins Lane, Yallah	11/02/2019	68.3	No construction audible. Main noise source was from the traffic from the Princes Highway (67-68)
11	L10 - 4 Semillon Place, Mount Brown	11/02/2019	61.9	No construction audible at time. Main noise source was the traffic from the Princes Highway (55-56 dBa) and a whipper snipper in a neighbouring property (60-67).

Noise monitoring results – March 2019

EPA ID#	LOCATION DESCRIPTION	Date	$L(A)_{eq(15min)}$	Comments
2	L1 - 20 Westwood Drive, Blackbutt	27/03/2019	54.1	Construction inaudible over Princes HWY traffic (52-58)
3	L2 - 78 Jarrah Way, Albion Park Rail	27/03/2019	56.1	No construction noise audible at time of monitoring
4	L3 - 17 Gumnut Street, Albion Park Rail	27/03/2019	52.6	Most dominant noise: 15T Excavator audible at time of monitoring (50-66)
5	L4 - 152 Croome Road, Albion Park	27/03/2019	70.1	Construction inaudble. Traffic from Croome Rd (58-83) causing most dominant noise source.
6	L5 - 59 Burdekin Drive, Albion Park	27/03/2019	69.4	Construction not audible at time of monitoring
7	L6 - 25 Fraser Crescent, Albion Park	27/03/2019	47.2	No construction noise audible at time of monitoring.
8	L7 - 52 Tongarra Road, Abion Park	27/03/2019	73.1	Truck and dogs going in and out of gate 16 audible.
9	L8 - 24 Terry Street, Albion Park	27/03/2019	74.9	No construction audible. Main noise source was from traffic on Terry St.
10	L9 - 42 Larkins Lane, Yallah	27/03/2019	61	20T excavator audible (57-58)
11	L10 - 4 Semillon Place, Mount Brown	27/03/2019	60.3	No construction audible at time of monitoring

Noise monitoring results – April 2019

EPA ID#	LOCATION DESCRIPTION	Date	$L(A)_{eq(15min)}$	Comments
2	L1 - 20 Westwood Drive, Blackbutt	30/04/2019	54.2	Construction inaudible over Princes HWY traffic (50-59) Dogs barking (58-70)
3	L2 - 78 Jarrah Way, Albion Park Rail	30/04/2019	49.9	Birds (43-53) and Traffic (43-45) most dominant noise source
4	L3 - 17 Gumnut Street, Albion Park Rail	30/04/2019	49.8	Scrapers (48-54) and Traffic (47-49) most dominant noise sources
5	L4 - 152 Croome Road, Albion Park	30/04/2019	62.8	Traffic (53 - 78) on Croome Rd most dominant noise source
6	L5 - 59 Burdekin Drive, Albion Park	30/04/2019	60.3	No construction audible at time of monitoring
7	L6 - 25 Fraser Crescent, Albion Park	30/04/2019	48.4	Earthworks machinery audible (44-46) Birds (49-65) and trees (47-49) louder
8	L7 - 52 Tongarra Road, Abion Park	30/04/2019	70.6	Traffic (55-77) most dominant including some truck and dogs entering gate 16. CB truck (77-80)
9	L8 - 24 Terry Street, Albion Park	30/04/2019	69.6	Traffic along Illawarra HWY/Terry St (63-82)
10	L9 - 42 Larkins Lane, Yallah	30/04/2019	59.3	Traffic - princes HWY (50-60) and birds (53-55) most dominant noise source
11	L10 - 4 Semillon Place, Mount Brown	30/04/2019	57	No construction audible at time of monitoring

Noise monitoring results – May 2019

EPA ID#	LOCATION DESCRIPTION	Date	$L(A)_{eq(15min)}$	Comments
2	L1 - 20 Westwood Drive, Blackbutt	31/05/2019	58.0	Hammering at Cut 5 (55-57) Princes HWY traffic (50-59) Dogs barking (58-70) most dominant noise sources.
3	L2 - 78 Jarrah Way, Albion Park Rail	31/05/2019	49.9	Birds (43-53) and Traffic (43-45) most dominant noise sources.
4	L3 - 17 Gumnut Street, Albion Park Rail	31/05/2019	59.3	Watercart filling up with water (59-63) most dominant noise source.
5	L4 - 152 Croome Road, Albion Park	30/05/2019	66.1	Traffic (55 - 76) on Croome Rd most dominant noise source.
6	L5 - 59 Burdekin Drive, Albion Park	30/05/2019	59.3	Cars on Burdekin Dr (55-77) most dominant noise source.
7	L6 - 25 Fraser Crescent, Albion Park	31/05/2019	49.4	Birds (48-62) and Radio playing from house (51-53) most dominant noise sources.
8	L7 - 52 Tongarra Road, Abion Park	31/05/2019	75.2	Traffic (55-77) and non-project excavator (56-74) most dominant noise sources.
9	L8 - 24 Terry Street, Albion Park	31/05/2019	68.0	Traffic along Illawarra HWY/Terry St (63-79) most dominant noise source.
10	L9 - 42 Larkins Lane, Yallah	31/05/2019	59.7	Traffic - princes HWY (54-58) and Eco Dynamics Truck (55-57) most dominant noise sources.
11	L10 - 4 Semillon Place, Mount Brown	31/05/2019	67.0	No construction audible at time of monitoring. Most dominant noise source neighbours motorbike (66-80).

Noise monitoring results – June 2019

EPA ID#	LOCATION DESCRIPTION	Date	$L(A)_{eq(15min)}$	Comments
2	L1 - 20 Westwood Drive, Blackbutt	21/06/2019	59.7	Hammering at Cut 5 (57-58) Princes HWY traffic (58-60) Dogs barking (55-59) most dominant noise sources.
3	L2 - 78 Jarrah Way, Albion Park Rail	21/06/2019	53	Hammering just audible (49-52). Traffic (East West Link) most dominant noise source
4	L3 - 17 Gumnut Street, Albion Park Rail	21/06/2019	59.9	Works inaudible at time of monitoring. Most dominant noise sources include, airplanes, traffic and tree's rustling.
5	L4 - 152 Croome Road, Albion Park	28/06/2019	68.9	Traffic on Croome RD (54-80) most dominant noise source. No construction noise audible.
6	L5 - 59 Burdekin Drive, Albion Park	28/06/2019	65.2	Traffic on Burdekin Dr (62-80) most dominant noise source. Construction inaudible.
7	L6 - 25 Fraser Crescent, Albion Park	28/06/2019	48.9	Traffic on Tongarra Rd (48-50) and birds (45-49) most dominant noise source.
8	L7 - 52 Tongarra Road, Abion Park	28/06/2019	75	Most dominant noise source is traffic on Tongarra Road (55-84) only construction noise audible was reverse squawker (59-60)
9	L8 - 24 Terry Street, Albion Park	28/06/2019	68.7	Most dominant noise source - Traffic (Illawarra HWY/Terry St (56-84). No construction noise audible.
10	L9 - 42 Larkins Lane, Yallah	28/06/2019	53	Most dominant noise from traffic on the Princes HWY (50-60) 5T excavator with reversing beeper only construction activity audible. (48-54)
11	L10 - 4 Semillon Place, Mount Brown	28/06/2019	73.3	Most dominant noise source Traffic on Princes Highway (60-64) Birds (59-63) and garbage truck causing spike (65-91)

Out of Hours Noise monitoring results – January to June 2019

Date	Time 24hr	Location	Works Description	$L(A)_{eq}$ (15min)	L(A) max	$L(A)_{10}$ (15min)	$L(A)_{90}$ (15min)	L(A) min	Construction $L(A)_{10}$	Predicted	Exceedance (Y/N)	Comments
10/02/19	21:09 - 21:24	Boles Property (Illawarra HWY)	Lighting tower setup + accoustic barrier install + survey setout	47.7	68	50	43	42	48		No	Illawarra HWY closed. All work is considered attributle to constant works except crickets (42/43) etc at tiny intervals
11/02/19	21:30 - 21:45	Boles Property (Illawarra HWY)	Saw cutting asphalt for services	60	76	62	48	46.6			No	See file notes - sent via email
12/02/19	22:08 - 22:23	Boles Property (Illawarra HWY)	Saw cutting for services	52	65.4	56.6	41	40			No	See file notes - sent via email
13/02/19	22:33 - 22:48	24 Illawarra HWY	Saw cutting > 150m north now	50	58	53	46	43.6			No	See file notes - sent via email
2/06/19	20:53-21:08	Lighting Tower in Fill 2 near entrance ramp	Lighting tower setup + Trucks beginning at 21:03	62.1	79.3	63.6	58.9	57.8	72	85	No	Highway traffic (55-57) Trucks dropping off material (68-75) Generator for lighting towers (58-60)

2/06/19	21:20 - 21:35	Wool shed (Yallah)	Truck and Dogs importing material into fill 2	65.1	80.2	69.2	54.4	49	58	74	No	Highway traffic (55-72) most dominant source of noise. Truck tail gates occasionally banging (3 times during recording)
2/06/19	22:05 - 22:20	24 Terry St (Illawarra Highway)	Excavator digging trench for utility works on Illawarra HWY	58.7	72.9	58.8	56.8	56.2	57	67	No	Generator (57) for lighting tower most dominant noise source
2/06/19	22:45-23:00	Corner of Larkins Lane and Yallah Rd	Truck and Dogs importing material into fill 2	31.1	56.9	33.7	23.7	20.3	N/A	45	No	Highway only just audible. Most dominant noise source animals which were regularly heard
2/06/19	23:11 - 23:26	Cavatale	Truck and Dogs importing material into fill 2	54.9	67	57.8	48.8	44.1	50	66	No	Highway most dominant noise source.
6/06/19	20:47 - 21:02	24 Terry St (Illawarra Highway)	Utility works on Illawarra HWY and sign erection	45.8	69.5	47.4	43.4	41.2	47	67	No	Minimal noise being made from construction team on Illawarra highway at time of monitoring

6/06/19	21:18-21:33	Corner of Larkins Lane and Yallah Rd	Truck and Dogs importing material into fill 2	56.4	82.1	42.1	35.7	33	N/A	45	No	Highway noise just audible. Cars turning into Larkins Lane (70-82) causing large spikes
2/07/19	21:01-21:16	Cavatale	Truck and Dogs importing material into fill 2	61.8	73.6	65.7	51.7	47	53	58	No	Highway traffic (Princes HWY) most dominant noise source (54-74) generators (52-53) and trucks on fill (50-54) were the construction noise audible.
2/07/19	21:20 - 21:35	Wool shed (Yallah)	Truck and Dogs importing material into fill 2	68.5	84.4	71.5	55.1	51.5	55	85	No	Generators (54-55) for lighting towers and traffic control talking were construction noises heard during monitoring. Most dominant noise source Princes HWY (62-85)
2/07/19	21:48 - 22:03	1 Larkins Lane, Yallah	Truck and Dogs import material into fill 2	61.1	85.4	46.7	38.7	36.4	N/A	45	No	No construction audible at the time of monitoring.