



Clarence River Crossing Construction Compliance Report

Report 4

18 April 2018 - October 17 2018



Contents

1.0 INTRODUCTION	7
1.1 Background	7
1.2 Purpose of this report	8
1.3 Relevant Documentation	9
2.0 PROJECT UPDATE	10
2.1 Levees	10
2.2 Demolition	10
2.3 Utilities and service relocation	10
2.3.1 Drainage	10
2.3.2 Pump Station	11
2.4 Earthworks	12
2.4.1 Contaminated Land	13
2.4.2 Traffic management	14
2.5 Temporary Works	14
2.6 Casting Yard	15
2.7 Bridge Works	16
2.7.1 Land Substructure	17
2.8 Sustainability	16
3.0 ENVIRONMENTAL CONTROL AND PERFORMANCE	19
3.1 Effectiveness of Environmental Controls	19
3.1.1 Soil and water management	19
3.1.2 Flora and Fauna	21
3.1.3 Heritage	21
3.2 Environmental Initiatives	Error! Bookmark not defined.
4.0 ENVIRONMENTAL MANAGEMENT SYSTEM OVERVIEW	22
4.1 Environmental Management System Certification	22
4.2 Environmental Management Framework	22
4.3 Construction Environmental Management Plan	22
5.0 NON-COMPLIANCES AND ENVIRONMENTAL INCIDENTS	24
5.1 Compliance Management	24
5.2 Incident Management	24
6.0 ENVIRONMENTAL REPRESENTATIVE REPORTS AND CORRESPONDENCE	26
6.1 Environmental representative approvals	26
6.2 Environmental Representative Reports and Outcomes	26
7.0 ENVIRONMENTAL MONITORING	30
7.1 Water Quality	30

7.1.1 Groundwater monitoring	30
7.2 Noise and Vibration Monitoring	30
7.3 Air Monitoring	37
7.4 Flora and Fauna	38
7.5 Heritage (Aboriginal & Non-aboriginal)	39
8.0 AUDITS AND INSPECTIONS	41
8.1 Compliance Auditing	41
8.2 Internal and external environmental inspections	41
9.0 ENVIRONMENTAL COMPLAINTS	43
9.1 Complaints Management	43
9.2 Community Engagement Initiatives	45

Appendices

- Appendix A: Project Approval Compliance Table
- Appendix B: Water Quality Monitoring Results
- Appendix C: Noise and Vibration Monitoring Results
- Appendix D: Air Quality Monitoring Results

Distribution of controlled copies

The most current version of this report will be available on the Fulton Hogan database for all project personnel. The document will be publicly available at <http://www.rms.nsw.gov.au/projects/northern-nsw/grafon-clarence-river-crossing/>.

Distribution of this report will be made through the Clarence River Crossing project document control system. The environmental management team will maintain, review and update this document on a six monthly basis.

Copy Number	Issued to	Date	Name
1	Project Director		Mark Stevenson
2	Environmental Manager		Sam Leigh
3	NSW Environmental Manager		Irina Kliger
4	RMS Environmental Representative		Greg Nash
5	DP&E endorsed Environmental Representative (ER)		Simon Williams

Revision History

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	November 2018	Draft for internal review	All	D. Lamb	S. Leigh
1	December 2018	RMS and ER review	All	D. Lamb	S. Leigh
2	January 2019	Updates to the compliance tracking table	All	Fulton Hogan staff	S. Leigh
3	February 2019	Final review by RMS and Project ER	All	Fulton Hogan staff	S. Leigh
4	April 2019	Updated to address comments by DP&E	9 24&25 31-36 37	Fulton Hogan staff	S. Leigh
5	June 2019	Extra details included as requested by RMS	25	Fulton Hogan staff	S. Leigh

Abbreviations

CEMP	Construction Environmental Management Plan
CPESC	Certified professional in erosion and sediment control
DP&E	Department of Planning & Environment
DPIW	Department of Primary Industries - Water
EIS	Environmental Impact Statement
EMS	Environmental Management System
EPA	Environmental Protection Authority
EP&A Act	Environmental Planning & Assessment Act 1979
EPL	Environmental Protection Licence
ER	Environmental Representative
MCoA	Minister's Conditions of Approval
NCR	Non-conformance report
NML	Noise Management Level (RBL+5)
NSW	New South Wales
OOHW	Out of Hours Work
POEO Act	Protection of the Environmental Operations Act 1997
PPR	Preferred Project Report
RBL	Rating Background Level
RMS	Roads and Maritime Services
ROL	Road Occupancy Licence
SEPP	State Environmental Planning policy
SSI	State Significant Infrastructure
TMP	Traffic Management Plan
VENM	Virgin Excavated Natural Material

1.0 Introduction

The Clarence River Crossing entails a new 525-metre long road bridge crossing of the Clarence River, Grafton. The Bridge will comprise two traffic lanes (one in each direction), road shoulders and a pedestrian/cycle path and be located approximately 70-metres downstream of the existing Grafton Bridge, which will be retained. The Project will also consist of a replacement of a rail viaduct section in Pound Street, approach works and upgrades to sections of the local road network in both Grafton and South Grafton.

The Project is required to alleviate existing traffic congestion and safety issues that arise from increasing traffic demand and inherent design issues with the existing bridge. The Project is consistent with key strategic and transport planning policies including the State Infrastructure Strategy and the Mid North Coast Regional Strategy.

Key features of the project include:

- Construction of a new road bridge over the Clarence River, located approximately 70 meters downstream of the existing Grafton Bridge
- Upgrades to parts of the local road network in both Grafton and South Grafton including:
 - Realigning the existing Pacific Highway to join Iolanthe Street near Through Street
 - Providing a new roundabout at the intersection of Through Street and Iolanthe Street
 - Widening pound street to four lanes and approach to the new bridge
 - Providing traffic signals at the intersection at Pound street and Clarence Street
- Works to the existing rail viaduct section across Pound Street to provide sufficient vertical clearance from the Pound Street upgrade
- Construction of a new shared pathway for cyclists and pedestrians for access to and across the new bridge crossing
- Flood mitigation works including the uplift of sections of the existing levee system upstream of the current Grafton Bridge.

Benefits of the project include:

- Improve traffic efficiency between and within Grafton and South Grafton
- Reducing travel time and delays for local people and businesses in peak periods
- Support regional and local economic development
- New shared pathway to provide safe facilities for pedestrians and cyclists
- Flood mitigation works

The Clarence River Crossing is being delivered through a 'design and construct' process. Fulton Hogan was appointed by RMS on 13 September 2016 to deliver the project.

1.1 Background

Roads and Maritime Services (RMS) completed an environmental assessment of the Additional Crossing of the Clarence River at Grafton (the Project EIS) in August 2014. The Project EIS identified a range of environmental, social and planning issues associated with the construction and operation of the Additional Crossing of the Clarence River at Grafton and proposed measures to mitigate or manage those potential impacts.

The Project EIS was publicly exhibited in August 2014 for a period of 30 days. Following public exhibition, submissions from stakeholders were received and addressed by Roads and Maritime in the Submissions Report which was lodged with the Secretary of the Department of Planning and Environment in October 2014.

After consideration of the Project EIS and Submissions Report, the Minister for Planning approved the Additional Crossing of the Clarence River at Grafton Project under Section 115ZB of the Environmental Planning and Assessment Act 1979 (EP&A Act) on 19 December 2014 subject to the Minister's Conditions of Approval (CoA) being met (hereafter referred to as the Project Approval). The project is State Significant Infrastructure (SSI) approved under Part 5.1 of the EP&A Act.

For the purposes of this environmental assessment, the concept design described and assessed in the Project EIS and consequently approved by the Minister, is referred to as the Approved Project.

The CEMP and associated Management Plans were approved by DPE on 15 September, 2016.

1.2 Purpose of this report

The purpose of this compliance tracking report is to assess and provide a summary of the procedures and processes implemented to track compliance in regards to the conditions of approval on the Clarence River Crossing Project.

This is a requirement under the Minister's Condition of Approval (MCoA) A12 which specifies:

A12 – Compliance Tracking

“The proponent shall prepare and implement a Compliance Tracking Program to track compliance with the requirements of this approval. The program shall be submitted to the Secretary for approval prior to the commencement of construction and operate for a minimum of one year following commencement of operation, subject to the Secretary's review of the outcomes of the Independent Environmental Audit Report referred to in condition E5. The operation of the program may be extended if the Secretary determines that there has been unsatisfactory compliance. The program shall include but not necessarily be limited to:

- (a) provisions for the notification of the Secretary prior to the commencement of works prior to the commencement of construction and prior to the commencement of operation of the SSI (including prior to each stage, where works are being staged);*
- (b) provisions for periodic review of the compliance status of the SSI against the requirements of this approval;*
- (c) provisions for periodic reporting of compliance status to the Secretary, including but not limited to:
 - i. a Pre-Construction Compliance Report, prior to the commencement of constructions;*
 - ii. 6-monthly Construction Compliance reports, for the duration of construction; and*
 - iii. a Pre-Operation Compliance Report prior to the commencement of operation;**
- (d) a program for independent environmental auditing in accordance with AS/NZS ISO 19011:2014 – Guidelines for Auditing Management Systems;*
- (e) mechanisms for recording environmental incidents during construction and actions taken in response to those incidents;*
- (f) provisions for reporting environmental incidents to the Department and relevant public authorities during construction;*
- (g) procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management;*

- (h) provisions for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities; and*
- (i) Provisions for reporting complaints received in accordance with the Construction Complaints Management System required under condition C2 of this approval.*

The compliance tracking program was issued to DPE by RMS and approved by DPE on 10 October 2016.

During this reporting period, the Clarence River Crossing is compliant with the conditions of approval (**Appendix A**). A review of compliance for the six-month period from 18 April 2018 to the 18 October 2017 is provided in this report.

1.3 Relevant Documentation

Documentation relevant to this report includes:

- Additional crossing of the Clarence River at Grafton Instrument of Approval
- Environmental Impact Statement
- Submissions Report
- Hydrological Mitigation Report
- Construction Environmental Management Plan and sub plans

2.0 Project Update

Project works are proceeding generally in accordance with the construction program. During the reporting period there was a total of 67 rain days, 4 rain events were observed to exceed the 5 day 85th percentile rainfall depth value of 37.2mm. Total rainfall was 357.1mm for the reporting period. The long term average for the same period in Grafton is 419mm.

The project continued to operate at full capacity as weather and site conditions allowed during the reporting period.

2.1 Levees

Levee works for the project are over 90% complete, with one small levee still required near the South Grafton bowling club.

There is temporary access through the Grafton levee within the project alignment to support construction of the new bridge. The access through the levee onto a clean rock working pad is used for pier 7, pier 6 and access to pier 5 for concrete pumping and pours. This area is consistently managed with environmental controls in place to ensure site materials are contained onsite. In the event of a flood warning all construction materials would be moved off the pad and a temporary levee structure put in place to protect Grafton from flooding.

2.2 Demolition

No demolition works occurred during the reporting period. Final demolition works to be completed on the project will be the removal of fencing, redundant power poles, road signage and the Pound street rail bridge.

2.3 Utilities and service relocation

Utilities works have continued to progress in both Grafton and South Grafton, the general update to the status of work are as follows:

- 82% of water relocation completed - 1800 meters out of 2200 meters
- 80% of sewer relocation completed - 360 meters out of 450 meters
- 100% copper telecommunications cable relocation completed - 5000 pairs
- 94% of fibre optic cables have been installed – 15 out of 16 lines
- 50% of the electrical service packages completed - 3 out of 6
- 30% of stormwater relocation completed – 700 meters out of 2400 meters

2.3.1 Drainage

Pavement drainage works have progressed in South Grafton and Grafton, the focus of these works has been:

- Pound Street drainage works are continuing and are about 75% complete
- Concrete open drains in fill 2 are now at approximately 95% complete, and will be completed in the short term
- Installation and head wall construction of the first stage of culvert 7 at Pound Street is now approximately 50% complete

- Subsoils and road drainage features are ongoing and concurrent to pavement works, they are about 50% complete through fill 2 and 75% complete for Pound and Clarence Street

2.3.2 Pump Station

Construction of the pump station structure was completed in August. The remaining steps to reach final completion include:

- Installation of internal pump systems
- Pour generator slab and install generator, this is installed on the road embankment
- Inlet and outlet piping systems are under construction, completion pending design RFI

The pump station is expected to be completed within the next reporting period.



Figure 1 Form work and steel tying setup at the Grafton pump station

2.4 Earthworks

Earthworks have progressed well in the reporting period; works include:

- Fill 2 substantially complete
- Fill 1 pre-load complete and earthworks completed to subgrade
- Abutment A, 75% complete
- Abutment B pre-load complete
- Fill 3 50% complete
- Clarence Street earthworks complete
- Pound Street past TAFE and the businesses earthworks were about 60% completed in the reporting period



Figure 1 Seal and subsoils place on fill 2 (left) and construction of the new roundabout at Iolanthe and Through Street (right)

Project works along Pound Street and Clarence Street are critical for the community and businesses local to the area. Staged works have aimed at reducing the duration and impacts to the local residents and business.

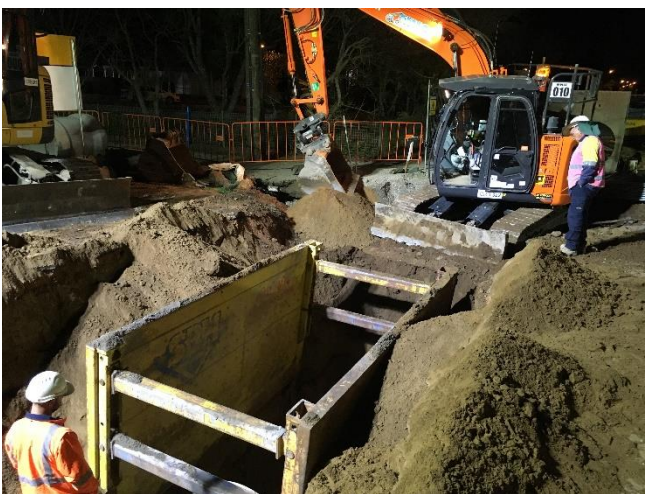


Figure 3 installation of Pound St Stormwater (left) and construction of the Clarence Street widening (right)

2.4.1 Contaminated Land

During the reporting period several new contaminated soil sources were encountered. New encounters included:

- Asbestos sheeting was encountered during sheet piling works at the Grafton levee
- Asbestos was also encountered on Clarence St. within gutter expansion joints
- Asbestos was encountered in Top Soil used for the open drain on Pound St

When asbestos is encountered onsite works stop and contaminated land specialists are engaged to safely remove the materials. The process for safely removing the material is to isolate the work area with no other workers in the area. The area is wet down and material is safely removed into a lined truck by an asbestos removalist. Air monitoring is in place to confirm asbestos fragments are not lost during the process.



Figure 4 Removal of bonded asbestos into a lined truck to be taken to Grafton landfill

Hydrocarbon contaminated soil

There are two locations on the project that have hydrocarbon contaminated soil below the ground. One location is in the former ARTC corridor at abutment A, the other location was encountered during construction at project chainage 400. At both locations the contaminated soil has been left in the

ground and monitoring programs put in place to ensure the contamination is not leaching into the receiving environment. A summary of the monitoring is detailed below.

ARTC soil contamination

Encountered prior to construction, the contaminated soil was left in the ground and a monitoring program put in place. That monitoring program requires monitoring at a number of ground water wells close to the contamination area and on the eastern side of the project boundary.

The project has completed three rounds of groundwater monitoring and the results from those monitoring events show that no contaminated soil is leaching towards the monitoring wells on the project boundary.

South Grafton soil contamination

During construction of an open drain the project stopped works when a leaching liquid and strong odour was observed. Investigations into the area confirmed a diesel contamination which was measured in the ground to a depth of about 3m. At this location the material is in a very stiff clay with slow groundwater flows. The material was left in the ground and monitoring wells drilled around the site to measure if there was any leachate.

Initial monitoring has confirmed that the contaminated material is not leaching into the receiving environment. Ongoing monitoring will occur and be reported in the next compliance report.

2.4.2 Traffic management

Traffic management is required throughout works to ensure that public road users and workers are kept separated and safe.

A summary of traffic management activities during the reporting period is detailed below:

- Parts of Pound and Clarence St continue to be closed with 3 traffic switches occurring in the reporting period.
- Two-way traffic has been restored to Clarence St.
- A number of temporary lane closures on Iolathe St and the Pacific Highway took place for a variety of utility works.
- 38 traffic control plans have been used on the project, two extra plans were approved in the reporting period

During the reporting period the project has prepared for the upcoming traffic switches which are planned to start in November 2018. Preparation works has included significant community consultation, one on one meetings with affected local businesses, presentations to business liaison group and the Grafton Chamber of commerce. These traffic switches will allow for the following works to occur:

- Upgrade to Iolanthe and Spring Street
- Opening of final traffic stages for Pacific Highway tie-in and Butters Lane

2.5 Temporary Works

The project has put in place a number of temporary facilities and sites to support construction, these include:

- Crane pads
- Site access roads
- Temporary boundary fencing and signage
- Construction jetty
- Construction pads at the bridge works areas
- Temporary access through the Grafton levee which includes a designed flood management strategy
- Temporary pavements in preparation for needed traffic switches

All temporary work areas have appropriate environmental controls in place which are maintained on a regular basis. Temporary work areas and facilities will be remediated at the completion of construction or as they become redundant.

2.6 Casting Yard

During the reporting period production at the casting yard was consistent, the yard is now producing up to 5 segments a week. 82 out of 176 segments have been successfully cast.

The casting yard is located in a commercial and industrial area in South Grafton, it is ideally located to undertake out of hours works without impacting residents. The background noise levels from the main roads and train lines combined with the distance to receivers allows out of hours works to occur without disturbance to sensitive receivers. The casting yard was operated from 6.00am until 10pm during the reporting period under the approved Out of Hours procedures. The extra hours will assist with the overall delivery of the project being improved. No complaints about the casting yard were received during the reporting period.



Figure 5 Aerial photo of the South Grafton casting yard

2.7 Bridge Works

Marine works are proceeding generally in accordance with the construction program. During the reporting period pier 2, pier 3, pier 4 and pier 5 were completed. The first two segments were installed at pier 2, 3 and 4.

At each of the piers the first two segments are installed and then a diaphragm is built. This diaphragm has a significant amount of steel in it and is complex build. Three of the diaphragms were built in the reporting period.

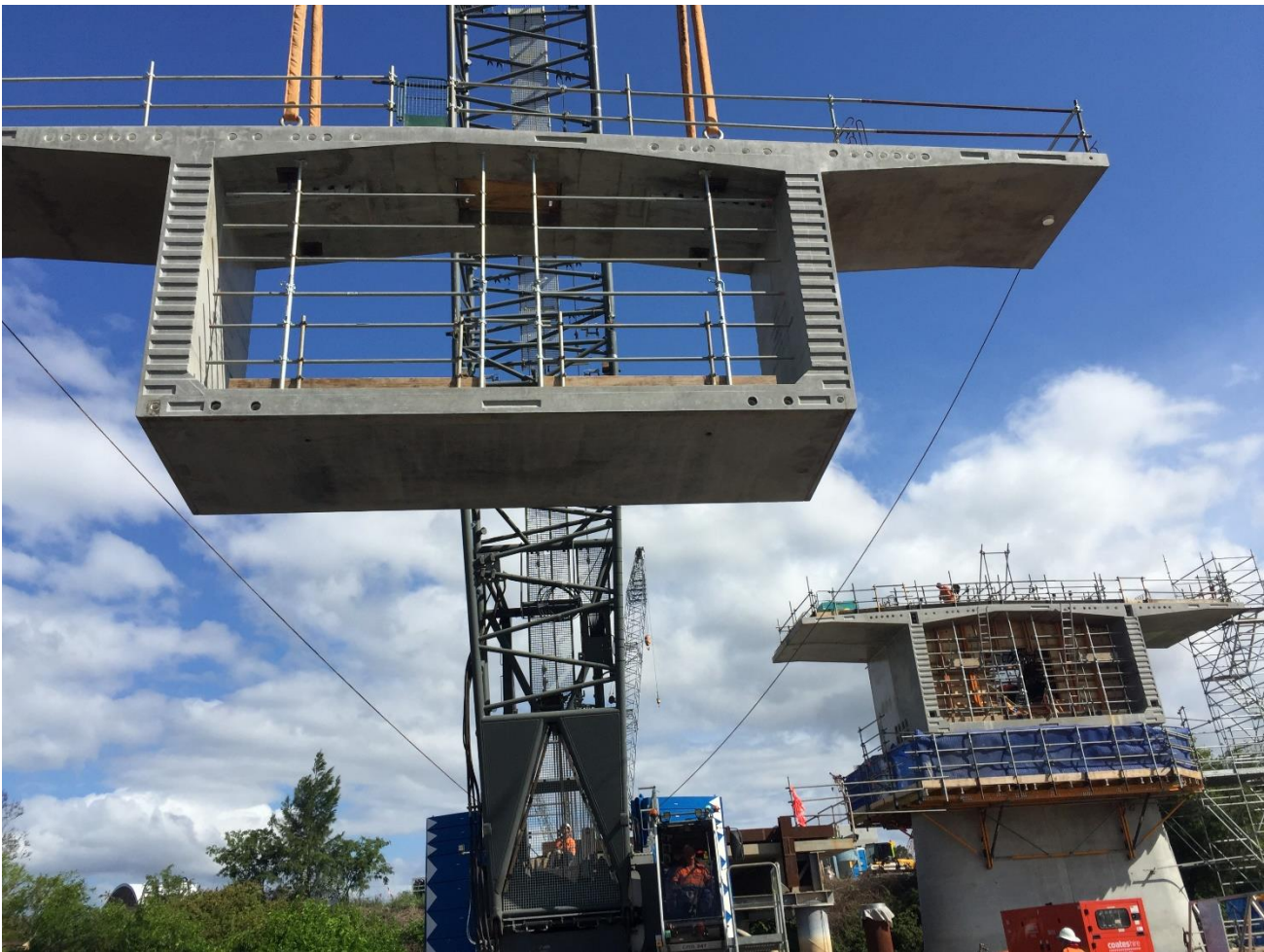


Figure 6 Erection of the first bridge segment onto pier 2

The project is committed to delivering a high quality product that will last the design life required. As a part of this any defects identified during construction are fixed up during construction. At pier 6 some unsound concrete was removed from the marine pile. The removal method over the river was complex using high pressure water, waste from this process was vacuumed from the work area. Screening, frames and booms were installed to contain the waste water at the work location.



Figure 7 hydro demolition at pier 6 with effective controls in place

The overall management of marine works environmental controls has been done to a high standard consistently throughout works. Regulators have noted this performance at several ERG meetings.

2.7.1 Land Substructure

All remaining piling works at pier 7, pier 8, abutment B and the rail bridge was completed during the reporting period.



Figure 8 Piling works at the Rail bridge completed in the reporting period

2.8 Sustainability

The Clarence River Crossing project continues to implement and encourage a number of initiatives to promote sustainable outcomes across site. Current approaches include:

- Correct cigarette butt disposal campaign
- Return and earn program for plastic bottles promoted on the project with separate bins, signage and education programs
- Battery recycling facilities installed at the project offices
- Waste concrete is being made into reusable precast products at the project casting yard

The project has continued to recycle steel from all construction works. Water from onsite sediment basins has been recycled for onsite dust suppression. Surplus earth fill from the project has been tested and confirmed as clean and then supplied for local reuse in nearby developments.

3.0 Environmental Control and Performance

During the reporting period, the project implemented and maintained a high standard of environmental controls and management measures.

The project's environmental performance is reviewed and measured by regional RMS, the project ER, EPA, local council, DP&E, SEEC (Project Soil Conservationist), and the NSW Department of Primary Industries – Fisheries.

3.1 Effectiveness of Environmental Controls

Environmental controls were effective during the reporting period. The project is implementing processes to ensure continuous improvement of the work site.

3.1.1 Soil and water management

The project continues to focus and invest resources into best practice erosion and sediment controls. The result of that investment is rainfall events have been observed to be well managed and not cause a measurable effect on receiving water ways.

The design of the fill 1 and fill 2 catchment continues to be a success with very few rainfall events causing basins to overtop. During the reporting only one rainfall event caused the fill 1 & 2 basin to overtop after 86.8mm of rain, doubling the required design event of 37.2mm.

Prior to heavy rainfall, site controls are reviewed and reinforced. Additional maintenance and controls are installed prior to shut down periods and long weekends ensuring maximum efficiency of the site during rainfall events.

In South Grafton, recent earthwork & utilities milestones have allowed for close to 80% of disturbed land to be vegetated. As a result controls have become more focused on diverting clean water to stormwater and the Clarence River. However, the project continues to maintain a high standard of erosion and sediment control with the use of geofabrics and polymers. Minimising the footprint through the course of construction will reduce effects on the environment over time.



Figure 9 Hydromulch and coir mesh application on disturbed ground diverting water into Fill 2 Basin.



Figure 10 SMZ placed at fill 1 (left) stabilised access and egress points (right)



Figure 11 Grass strike and controls installed near abutment B in Grafton

The Grafton section of the project is an urban construction area. This section of the project has limited space and a high complexity of works. In Grafton, the key focus was to minimise the amount of water entering site and reduce the sediment mobilisation. Key controls were seeding disturbed areas and earth mounds, mulch bunds around the works perimeter, polymer stabilisation on exposed dirt and stockpiles, and installing stormwater pit controls.



Figure 12 Controls installed to manage piling water during air lifts and pile pours in Grafton (left) and additional controls and drains installed along Kent Street, Grafton to manage potential dirty water run off (right)

Weekly environmental inspections capture the need for maintenance of controls and ensure all controls are functioning properly and are fit for purpose. Weekly environmental inspections are completed as a minimum and include prior to, during and after rainfall events and prior to new works commencing.

3.1.2 Flora and Fauna

Whilst majority of clearing has been completed, the project continued to maintain a high level of ecological management ensuring all impacts on the 'Three Toed Snake Tooth Skink' (TTSTS), and other local flora and fauna, were minimised.

No skinks were encountered during the reporting period. Habitat enrichment including additional mulch and leaf litter, frequent watering and planting of native species was undertaken throughout the reporting period to maintain a high level of suitable habitat for protected skinks.

Monitoring of nest boxes throughout the reporting period did not show any use of next boxes by micro bats. Monitoring will continue bi-annually for another year.

Further detail will be discussed in section 7.4.

3.1.3 Heritage

The project has stopped works 21 times for potential heritage finds. Of those stoppages two occurred within the reporting period. The potential heritage finds were:

- Wooden pieces were found in the road near Bunnings, the project stopped works and notified the project archaeologist. There was some concern that the wood found was part of a wooden cording bridge. The archaeologist came to site and during detailed investigation only found one piece of wood thought to be part of a fence line close to one hundred years' old
- The project stopped works when a shaped rock was thought to be a potential aboriginal artefact. The object was checked by the project archaeologist and it was confirmed that it wasn't an aboriginal artefact.

4.0 Environmental Management System Overview

4.1 Environmental Management System Certification

The overall Environmental Management System (EMS) for the Project is described within the Construction Environmental Management Plan (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.

4.2 Environmental Management Framework

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

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

4.3 Construction Environmental Management Plan

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

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

- Guideline for the Preparation of Environmental Management Plans (DP&I 2004);
- RMS Specification G36 – Environmental Protection (Management Systems);
- ISO 14001:2004 – Environmental Management Systems; and
- ISO 19011:2003 – Guidelines for Quality and/or Environmental Management Systems Auditing;
- NSW Minister for Planning Conditions of Approval (MCoA); and
- EA and Submissions Report

The CEMP was approved by the Department of Planning and Environment in accordance with MCoA B35 on 5 October 2016.

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

The CEMP and sub-plans have been reviewed and the dates of revision for the plans are detailed in table 4-1 below.

Table 4-1 CEMP and Sub-plans consistency with MCoA and ER review dates

Plan Name	Approved for use on the Project	Latest Revision Date
Construction Environmental Management Plan	15/09/16	March 2018
Construction Contaminated Land Management Plan	15/09/16	October 2017
Construction Air Quality Management Plan	15/09/16	August 2016
Construction Flora and Fauna Management Plan	15/09/16	November 2017
Construction Flood Management Plan	15/09/16	November 2017
Construction Heritage Management Plan	15/09/16	August 2016
Construction Noise and Vibration Management Plan	15/09/16	October 2017
Construction Soil and Water Quality Management Plan	15/09/16	November 2017
Construction Waste and Energy Management Plan	15/09/16	August 2016
Construction Traffic and Access Management Plan	15/09/16	October 2017

5.0 Non-Compliances and environmental incidents

5.1 Compliance Management

A non-compliance is a failure to comply with the requirements of the Infrastructure Approval or any applicable licence, permit or legal requirement. These are identified through routine inspections, formal reviews such as auditing and compliance reporting, and incident management.

During the reporting period there were no observed non-compliances on the project.

Table 5-1 Non-compliance summary

Date	Description	Non-Compliant against	Status
<i>Nil</i>	<i>Nil</i>	<i>Nil</i>	<i>Nil</i>

Table 5-2 Non-conformance summary

Date	Description	Resolution	Status
<i>Nil</i>	<i>Nil</i>	<i>Nil</i>	<i>Nil</i>

5.2 Incident Management

During the reporting period there were nine events recorded as incidents - see tables 5-3 and 5-4 below. The incidents consisted of:

- One reportable events
- Eight category 2 incidents
- One category 1 incident

Table 5-3 Recorded Incidents

RMS Incident Category	May	Jun	Jul	Aug	Sep	Oct	Total
Category 1		1					0
Category 2		3	1		2	2	8
Reportable Event						1	1
Total	0	3	1	0	2	4	9

Table 5-4 Incident Summary

Date	Description	Agency reporting	Classification	Status
26-Jun-18	A 4.5T pad foot roller had a mechanical malfunction resulting in hydraulic fluid leak. Works were stopped and spill kit deployed	<i>Reporting not required: Onsite oil spill contained and cleaned up</i>	Cat 2	Closed

26-Jun-18	A vibration exceedance was recorded by a monitor near excavation works on Pound St. The ongoing activity included removing a concrete footpath. In the process the slab was dropped by the excavator causing a burst of vibration.	<i>Reporting not required: Minor vibration exceedance at the monitor not at sensitive receivers. Location of monitoring was in commercial zone</i>	Cat 2	Closed
27-Jun-18	FH received good forest mulch from the nearby Woolgoolga to Ballina Pacific Highway Upgrade. The mulch source is a 'dry sclerophyll' forest. FH was not advised of any restrictions on the mulch on or before receipt. The project assessed the received mulch as been compliant to the mulch exemption.	<i>Reported to EPA both verbally and in email, 28 June and 29 June 2018. EPA have advised no further issues or information required with this event</i>	Cat 1	Closed
18-Jul-18	During operation of an EWP in the casting yard in South Grafton a hydraulic line failed dropping oil onto the ground	<i>Reporting not required: Onsite oil spill contained and cleaned up</i>	Cat 2	Closed
4-sep-2018	During pilling works one of the hydraulic hoses operating the pile driver blew an O-Ring causing hydraulic fluid to spill. The fluid was caught by the generators inbuilt bund. None of the fluid caused contamination to surrounding area.	<i>Reporting not required: Onsite oil spill contained and cleaned up</i>	Cat 2	Closed
9 Oct 18	Whilst loading out material from Clarence St north bound box out a McLenan truck entering the site punctured a hydrophilic hose causing a moderate amount of oil to be spilled.	<i>Reporting not required: Onsite oil spill contained and cleaned up</i>	Cat 2	Closed
13-Oct-18	A Significant rain event was experienced. A total 86.8mm was observed between the 13th and 17th of October. This event caused both basins in south Grafton to over top	<i>EPA have advised that rainfall events that occur onsite and cause designed features to overtop as per the requirements of 'Blue book' and the project Soil and Water Management Plan do not need to be reported by the pollution line. EPA will be provided the reportable event notice</i>	Reportable event	Closed
17 Oct 18	A grout mixture was being prepared in a bucket on top of a concrete bridge segment. The workman mixing the grout accidentally knocked the bucket over spilling the mixture onto the segment and ground below.	<i>Reporting not required: Onsite spill contained and cleaned up</i>	Cat 2	Closed

Note for table 5-4: reporting to DP&E under condition CoA A14 is required when there is 'significant offsite' impacts. The incidents described in the table above relate to issues managed onsite and did not result in significant offsite impacts.

6.0 Environmental representative reports and correspondence

The CEMP requires a suitably qualified and experienced person, independent of the project design and construction, to act as a principal point of assistance in relation to all questions and complaints regarding environmental performance. Updates to the CEMP, consistency assessments and any other plans required under MCoA are required to be signed off by the environmental representative (ER) as necessary. The ER is also required to monitor the implementation of environmental management plans and monitoring programs.

6.1 Environmental representative approvals

During the reporting period the project ER continues to review, provide feedback and inspect the project. There were less approvals required by the project ER in this six-monthly period due to the stage of construction.

May 2018

- South Grafton ancillary facilities approval
- Clarification for the approval pathway for area modifications in the casting yard

June 2018

- Review and comments of the six monthly compliance report
- Review and approval of the offsite batch plant as an ancillary facility for the project

August 2018

- Clarification of OOH approval pathway for works at the casting yard

September 2018

- Review of high noise activities management by the project team

Other contributions and reviews by the ER not included in the above list would include but not be limited to: fortnightly site inspections, ERG meetings and minutes, monthly reporting, advice on general construction environmental mitigations.

6.2 Environmental Representative Reports and Outcomes

Site inspections with the environmental representative occur on a monthly basis. The results of these inspections are detailed in this section.

Table 6-1 ER inspection report comments

Report Number	Date	Issues/Comments	Status
16	17 Apr 18	Ensure stockpiled material on Abutment B is appropriately managed prior to rain or shutdown periods.	Closed out
		Wrap mulch bund with geo-fabric on the eastern side (Greaves Street)	Closed out
		General tidy up of bunds on the Grafton side of town. Ensure core logs are in good working order.	Closed out
		Ensure the area previously used for Telstra spoil is treated for weeds.	Closed out

17	3 May 18	Erosion and sediment controls need to be re-established on the eastern side of southern abutment/access track.	Closed out
		Erosion and sediment controls need to be re-established on the western side of access track to the abutment	Closed out
		Topsoil on batter on western side of fill should be checked for coverage, rocks and quality. Ensure it is consistent with specifications.	Closed out
		There soil surface has been exposed adjacent to the discharge of the batter chutes which appears to also have been recently disturbed. Ensure this area is stabilised, i.e.: seeding or soil binder. Please also provide clarification of the use of mulch in the batter chutes.	Closed out
		Ensure stockpiled unsuitable is free of waste, i.e.: geofabric.	Closed out
		Ensure ongoing weed management is continued through the site.	Ongoing
		Erosion and sediment controls on the eastern side of fill no1 requires tying back into existing ERSED design.	Closed out
18	26 Jun 18	Sediment fence needs to be repaired / replaced on western side.	Closed out
		Ensure that access to Abutment B fill, pump station and sediment basin areas are cleaned, setup and maintained to manage mud tracking.	Closed out
		Given the lack of availability of sweeper trucks, effort needs to be made to reduce mud tracking at access/egress points, for instance more use of rock, rumble grids and/or matting.	
		Reinstate boundary flagging.	Closed out
		Fresh mulch observed in stockpile area. Ensure that the mulch stockpile is managed as per the RMS Environmental Direction, Management of Tannins from Vegetation Mulch and complies with the Mulch Order and Exemption 2016 and RMS R179 Specification.	Closed out
		Pipe to convey site water under pedestrian walkway has been impacted by machinery tracking though. Ensure that adequate capacity is reinstated and maintained so that dirty site water can be conveyed to Sediment Basin, as per the PESCP.	Closed out
		Disturbed sediment material observed at access locations along the pound St. works. Ensure that adequate measures are implemented and maintained to stabilise access arrangements and minimise the amount of material tracked onto public roads.	Closed out
ERSED controls, gravel bags and earth bund, have been impacted by recent construction activities and not maintained. Reinstate ERSED controls to provide required functionality and ensure controls are monitored and maintained.	Closed out		
19	1 Aug 2018	Ensure that site access points are installed and maintained as per the Blue Book, CSWMP, CAQMP, G36 and 38 and the SWTC. Advised on-site that FH would investigate sealing of the entrance to Fill No.1 at South Grafton to reduce mud tracking due to the long term use of the access	Closed out
		Construction waste should be appropriately managed and not spread out throughout the construction areas.	Closed out
		Ensure weed management continues around the site and that problem areas are being inspected and addressed where appropriate.	Closed out
		Ensure that appropriate stabilised arrangements are installed and maintained to divert runoff from levee/access in the drains.	Closed out
		Monitor and manage the mud tracking around the project to ensure no material leaves the site. Focus needs to be on areas of high use. Material was observed on Pound St and at access to local businesses. Advised that the area out the front of BF Industries was going to be sealed and other locations near Clarence St were to be removed as part of construction activities in the coming days. Ensure that access to local businesses are installed and maintained to ensure no material is tracked onto the local roads.	Closed out
		Ensure that appropriate dust management measures are implemented on-site. It was noted that the recent dry conditions may pose an ongoing risk for dust management	Closed out

		Ensure that appropriate dust management measures are implemented on-site. It was noted that the recent dry conditions may pose an ongoing risk for dust management	Closed out
		Ensure that all ESC measures are installed and maintained appropriately. Mainly due to recent dry conditions and to ensure that the site is prepared for any change in conditions.	Closed out
20	29 Aug 18	Inlet from Kent St requires appropriate stabilisation measures to be reinstated.	Closed out
		Pipe Under Kent St has deposited material at outlet and may cause water to back up through the pipe. Ensure that appropriate maintenance measures are implemented to allow water to flow to basin.	Closed out
		Large area exposed at an elevated level and in proximity to residents. Consider implementing appropriate stabilisation measures and ESC to minimise the potential for material to be mobilised by wind or water.	Closed out
		Unstabilised material stockpiled on piling pad next to sump. Consider moving material to a more appropriate location, in particular prior to any rainfall.	Closed out
		Ensure that project boundary fencing and ESC measures are installed/reinstated prior to site being disturbed.	Closed out
		Stockpile appears to be in-active, ensure that appropriate stabilisation measures and bunding are installed depending on status of the stockpile.	Closed out
		Ensure that appropriate stabilised access arrangements are installed and maintained to minimise the potential for material to be tracked onto public roads - repeat issue.	Closed out
		Concrete waste located next to concrete washout and in multiple other locations around the work area. This issue was raised at the recent ERG and doesn't appear to have been rectified. Ensure that appropriate waste management procedures are implemented - repeat issue.	Closed out
		Uncontrolled discharge from fill into concrete drain in proximity to clean water diversion area. Ensure that appropriate measures are installed, may require a batter chute as flows have been diverted past the batter chute located to the north.	Closed out
		Disturbed area with no controls in close proximity to clean water flow path, advised during pre-rainfall inspection that this area would have appropriate controls/measures installed prior to rain. Ensure appropriate controls are installed during active works.	Closed out
		Ensure that batter chute is reinstated with adequate stabilisation at the inlet, may require extending the geofab to the inlet and with some rock installed at the concentration points of the inlet. Ensure works are done prior to any rainfall.	Closed out
		Ponding water observed on fill in close proximity to clean water flow path. May want to consider diverting water away from this low point to reduce the potential for water overtop or blowout the bund and flow into clean water.	Noted
		Ensure that batter chute is reinstated with adequate stabilisation at the inlet, may require extending the geofab to the inlet and with some rock installed at the concentration points of the inlet. Ensure works are done prior to any rainfall.	Noted
27/09/2018		Unstabilised and unbunded stockpile located in close proximity to sediment basin. Ensure that appropriate measures are in place to reduce the potential of excess material being displaced into basin.	Closed out
		Dust generation observed during concrete cutting. Ensure that appropriate measure are in place to minimise the generation and movement of dust.	Closed out
		Observes unstabilised discharge into drain from casting yard runoff in proximity to retained hydrocarbons. May need to consider the installation of stabilised discharge arrangements into drain and additional measures to control the flow of runoff from the casting yard.	Closed out
		Observed displacement and rilling of topsoil material into concrete drain. May need to consider additional stabilisation measures for this area once re-established.	Closed out

		Uncontrolled discharge of concentrated water flow from bitumen area onto revegetation/topsoil which is causing erosion of material. May want to consider further measures to stabilise and convey flows from bitumen area into drains.	Closed out
		Old tyre dumped in stockpile/bunding and clearly visible from Iolanthe Street. Remove and dispose of tyre.	Closed out

7.0 Environmental Monitoring

Environmental monitoring is used to review potential environmental risks caused by project activity. It allows the project to assess and evaluate receiving environment trends and ensure installed controls are appropriate and effective.

A range of environmental monitoring is required by the MCoA throughout the duration of construction of the project. These measures are listed in the CEMP. The results of the monitoring programs are described in this section.

7.1 Water Quality

Water quality throughout the reporting period continues to be representative of background data and has not demonstrated any impacts resulting from construction. Decreases in water quality are typically observed following a large rainfall in the wider upstream catchment as can be seen in the November and March monitoring results. It takes about 2-7 days before upstream affected waters flow past the bridge works site in Grafton.

During the reporting period there was a total of 96 rain days consisting of 11 heavy rainfall events. The 5 day 85th percentile rainfall depth value of 37.2mm was exceeded 3 times throughout the reporting period. Majority of rainfall occurred through June & September. Total rainfall was 375.1mm for the reporting period. Site water from rainfall events were managed through the project sediment control devices, stored water was treated and pumped onto well grassed areas. All discharges were compliant with the requirements of the approved soil and water management plan.

The project did not have any measurable effect on the background water quality of either Alipou Creek or the Clarence River during the reporting period. Rainfall events were well managed and site materials and waters contained on the site.

Water quality monitoring results are included in **Appendix B**.

7.1.1 Groundwater monitoring

The project is currently monitoring two locations affected by hydrocarbons near the groundwater table. Both of these locations show that at the source of the hydrocarbon pollutants the levels recorded are very high.

At each pollution source sentinel wells have been put in place to monitor if the pollutants are leaching into the wider environment. Monitoring at both locations has shown that the sentinel wells are clear and not impacted by the pollution source.

7.2 Noise and Vibration Monitoring

Noise monitoring was undertaken during standard construction hours for periodic (monthly) review, background noise assessments and for out of hours work assessments. All recorded noise levels were consistent with the anticipated levels as described in the approved Noise and Vibration Management Plan with no non-compliances.

35 out of hours work events were approved during the reporting period. Refer to table 7-1 below.

Table 7-1 Approved OOH summary

The results of OOH noise monitoring for compliance tracking report 4 are summarised in the table below. A brief summary of the site conditions and monitoring includes:

- Background noise is consistently higher than the NML at each location monitored. This is due to several factors that include, early morning starts fall into the night period but the background noise from 0500 is dominated by increasing traffic over the existing bridge which is higher than the NML
- Pacific Highway traffic at night changes from cars to trucks, there is less volume of traffic but the noise is consistent from passing trucks
- The train line is active 24 hours a day in Grafton, both from shunting and moving carriages but also from train traffic through Grafton
- South Grafton commercial zone is located in an area away from residents, there is also significant attenuation provided by existing buildings and the rail embankment
- Many of the OOH works in the South Grafton marine zone were low noise works that were not audible over the traffic on the existing bridge, these type of works included early pre-start meetings, access to the work area, tying steel, formwork and engineering works
- Works on Pound Street were included in the EIS and are required to reduce impacts on businesses and the TAFE. It was always anticipated that OOH works along Pound Street would be a requirement during construction

Approval no.	Works	Location	Justification	Approval pathway	OOH	NML (dBA)	Monitored level	Monitoring notes
60	Pier 3 concrete pour	Marine works area	Technical, quality of concrete	Less than 5dBA above background	Early morning start 0400 – 0700 Night time period	NCA 6: 40 NCA 7: 42 NCA 2: 41	NCA 6: 51.5 NCA 7: 49 NCA 2: 53	Predominant noise at all locations was traffic across the bridge or at NCA 7 from Pacific H/Way
61	Extended Saturday's pier 3&4	Marine works area	Specialist works to improve delivery time	Less than 5dBA above background	Day OOH, works on Saturday Afternoons	NCA 6: 49 NCA 7: 44 NCA 2: 64	Spot checks 54-64 dBA traffic at NCA 2	21 April too windy 28 April too windy
62	Water main works	Clarence Street	Services works required OOH	Less than 5dBA above background	Day OOH	NCA 4: 53	Not monitored	Wind speed too high to get a representative reading
63	HBB placement fill 2	Fill 2 works area	Quality of pavement	Less than 5dBA above background	Early morning start 0600 Night time period	NCA 2: 41	NCA 2: 61dBA	Consistent background traffic noise at the time of monitoring 0555 to 0610. Construction 300m away and not audible

64	HBB placement fill 2	Fill 2 works area	Quality of pavement	Less than 5dBA above background	Late finish for HBB works above	NCA: 2	N/A	Not monitored works finished before the peak traffic flows reduced. Spot check in the afternoon confirmed the works were not audible over the traffic noise
	Stormwater works in South Grafton	Loanthe Street	Reduce impacts on traffic and businesses	Less than 5dBA above background	Not used			
65	Pound Street weekend works	Pound Street	Included in EIS, reduce impacts on businesses	Community agreement			55dBA Background noise	Noise monitoring construction not audible above background. One excavator working 100m away at 48dBA, passing cars 65-70dBA
67	Emergency water main repairs	Clarence Street	Emergency works	Emergency works to repair a broken water pipe. Community were consulted	A water-main on Clarence Street required immediate repairs to restore water supplies to residents.			Emergency works after a water main was hit and damaged during works and had to be repaired
68	Pound Street traffic switch	Pound Street	Traffic management, safety	Community agreement	Works included in the EIS to prevent impacts on businesses and the TAFE			Not monitored traffic switch works
69	Pound Street LV installation	Pound Street	As required by service provider	Community agreement	Works included in the EIS to prevent impacts on businesses and the TAFE			
70	Abutment A piling	Abutment A, South Grafton	Specialist works to improve delivery time	Less than 5dBA above background	Saturday afternoon Day OOH works	NCA 6: 49 NCA 2: 64	NCA 6: 56 NCA 2: 59	Wind speeds exceeding 30km/h. Spot checks confirmed background noise levels over the NML. Construction not audible
71	Gwydir Highway	Pacific and Gwydir highway intersection	Traffic management, safety	Less than 5dBA above background	Day OOH, Saturday afternoon works at the Pacific Highway. Closest resident 200m away.		Not required	Deemed unnecessary due to the location of the works on the existing Pacific Highway and the time of the works in the afternoon. Resident more than 200m from works, predominant noise is traffic

72	Pier 2, stage 2 pour	Pier 2, all access from south Grafton	Technical, quality of concrete	Less than 5dBA above background	Early morning concrete pour noisy works from 0600. Night period	NCA 6: 40 NCA 7: 42 NCA 2: 41	NCA 6: 50 NCA 7: 48 NCA 2: 57	Background monitoring showed the samples were above the NML. This is a result of the time of day, works starting at 0530-0600 when traffic volumes on the bridge is increasing. Bird noise also recorded
73	loanthe St waterman works	loanthe Street, South Grafton	As required by service provider	Less than 5dBA above background	Midweek night works on loanthe Street, South Grafton. Closest resident is more than 350m away	NCA 2: 41	NCA 2: 56	Monitoring at 10pm still traffic on Summerland Way. Train passing. Construction works not audible
74	Culvert 9 apron pour	Culvert 9 at the Pacific Highway tie-in South Grafton	Reduce environmental risk by reducing in waterway work days	Less than 5dBA above background	Evening works at the pacific highway tie-in at MC40. No residents within 350m. High background noise from Pac Highway	NCA 8: 53		Deemed unnecessary due to the location of the works on the existing Pacific Highway Evening period, closest resident is more than 350m away
75	Works at pier 2	South Grafton river bank works area	Specialist works to improve delivery time	Technical, quality of concrete	Day OOH, extended Saturday afternoon doing low noise works at pier 2&3	NCA 6: 49 NCA 7: 44 NCA 2: 64	NCA 2: 69 NCA 6: 67 NCA 7: 66	Windy day above the 5mm/s limit. Samples taken anyway shielded as best as possible. Results show background traffic and wind
76	Wet curing HBB south Grafton	South Grafton fill 2 area	Technical, quality of concrete	Technical, quality of concrete	HBB wet curing over the weekend using a small trailer to limit noise. Only needed a few times a day	NCA 4: 53	NCA: 53dBA	Minimal notes taken from the sample. Completed by the area foreman. Background noise from occasional traffic and pedestrians
77	Pound Street pavement repairs	Clarence Street	Traffic management, safety	Community agreement				
78	Power outage Pound Street	Pound St	As required by service provider	Community agreement	Sunday day works to reduce the impacts on the businesses up Pound Street	NCA 5: 49 NCA 4: 53	NCA 5: 52 NCA 4: 58	NCA 5: Works were audible at about 48dBA with the pole truck idling and workers talking NCA 4: Peak noise reading was about 82dBA from a passing logging truck
79	Pier 4 concrete pour	Marine works area	Technical, quality of concrete	Community agreement	Works completed with community agreement for the potentially affected sensitive receivers on Greave Street facing the River			

80	Proposed but not used							
81	Proposed but not used							
82	Stormwater works in Grafton	Pound and Clarence St	Traffic management, safety	Community agreement		Evening NCA 4: 47 Night NCA 4: 40	1800 NCA 4: 58.2 2200 NCA 4: 57	Early part of evening morning was mainly background noise Traffic on the main rad still main noise source
83	Abutment A works	Abutment A, South Grafton	Specialist works to improve delivery time	Less than 5dBA above background	Works in the after of Saturday, Day OOH	NCA 6: 49 NCA 7: 44 NCA 2: 64	NCA 7: 58 NCA 2: 70	Background noise no construction works are audible NCA 6 not monitored more than 350m away and too far to be heard for the works. NCA 2 had an unusually high level of traffic noise
84	Pound & Clarence St stormwater works	Pound and Clarence St Grafton	Traffic management, safety	Community agreement				
85	Stormwater installation across Bunnings drive way	Bunnings delivery driveway	Reduce impacts on business	Less than 5dBA above background	Works in the commercial zone at South Grafton			
86	Casting yard form preparation	South Grafton casting yard	Specialist works to improve delivery time	Less than 5dBA above background	Casting yard, two hours of work into the evening period doing low noise works to prepare forms	NCA 1: 37 NCA 2: 41	NCA 1: 60-70 NCA 2: 60-70	Monitoring over multiple nights showed that the background noise from traffic on Summerland Way is above the NML for this catchment
87	Proposed but not used							
88	Pacific highway under bore	Pacific Highway South Grafton	Traffic management, safety	Less than 5dBA above background	Pacific highway works required to be done at night as required by the ROL.	NCA 8: 46	NCA 8: 56	Truck traffic on the Pacific highway predominant noise source. The Pacific highway is about 100m from the sensitive receivers, works were over 200m away Construction works we not audible over truck traffic. Train

								traffic also recorded in the sample.
89	Pound Street	BFF industries driveways	Traffic management, safety	Community agreement with affected receiver, included in the EIS, less than 5dBA above background	Works on Pound St OOH to reduce impacts on the local businesses. Day OOH weekend works	NCA 5: 49 NCA 4: 53	NCA 5: 48 NCA 4: 57	At both locations construction was not audible. Villiers Street is a busy local road and that was the location that nearest sensitive receivers were on. Construction inaudible above background
90	Diaphragm works pier 3	Marine works area	Specialist works to improve delivery time	Less than 5dBA above background	Low noise works at Pier 3. Day OOH and evening OOH	Day NCA 6: 49 NCA 2: 64 Evening NCA 6: 44 NCA 2: 51	Day NCA 6: NCA 2: Evening NCA 6: 58 NCA 2: 62	Day OOH, monitoring on 25 August was cancelled due to received and ongoing rainfall unable to take a representative sample. Evening OOH, samples taken from 1800, traffic volumes still high. Noise represents background traffic noise
91	Waterman works	South Grafton	As required by service provider	Less than 5dBA above background	Water main works completed at night to reduce the impacts	NCA 8: 46 NCA 1: 37	NCA 8: 54 NCA 1: 46	Light rainfall during the sample. Sample at noise catchment 8 is background traffic on the pacific highway, works were not audible over traffic. Works 250m away. Through Street sensitive receivers is more than 250m from the works, traffic noise, construction inaudible
92	Pavement works	Pound Street	Technical, quality of concrete	Community agreement	Works on Pound Street to reduce the impacts on the businesses and TAFE on Pound Street	NCA 5: 49 NCA 4: 53	NCA 5: 53 NCA 4: 53	Grader reversing audible in the distance about 100m away.
93	Diaphragm works pier 3	Marine works area	Specialist works to improve delivery time	Less than 5dBA above background	Pier 3 works	Day NCA 6: 49 NCA 2: 64 Evening NCA 6: 44 NCA 2: 51	Day NCA 6: 50 NCA 2: 54 Evening NCA 6: 51 NCA 2: 52	Minor works on the river only a few workers visible. Hand tools only not audible over background noise.

								Evening noise measures at 1800 and was traffic on the main road no construction audible
94	Marine Works	Marines works area	Specialist works to improve delivery time	Community agreement	<p>This permit covers two activities taking one of the barges away from site which is required OOH so that it can leave safely when the tide is high and navigate downstream in the river. Pier 5 pile pour is the second activity, completed OOH to reduce peak concrete temperatures.</p> <p>Both activities are early in the morning</p>	Day NCA 6: 40 NCA 2: 64	NCA 6: 57 to 60 dBA checked at a few locations nearby to each other	Birds, traffic and some construction works audible. The level of construction noise measured similar to that of background traffic. There was always some noise from the birds
95	Services works	South Grafton	As required by service provider	Less than 5dBA above background	Power relocation works undertaken at night to reduce the service interruptions on the businesses that rely on the power	NCA 8: 46 NCA 1: 37	NCA 8: 52 NCA 1: 46	The closest sensitive receivers are more than 200m from the works. The background noise at Ryan Street is traffic on the Pacific Highway, particularly truck noise. At Through Street the noise is less in the night but the consistent background noise of traffic on the highway and at Summerland way still dominated the noise.

Out of hours works have been used to ensure the safe, on time and high quality delivery of the 'Additional Crossing of the Clarence River at Grafton'. Out of hours works for the reporting period have been done with the support of the project neighbours and there has been no complaints for the period. Out of hours works have also been done at the request of the community to reduce impacts on the street scape and to limit impacts on businesses and the TAFE.

Vibration monitoring

The construction of the new road and bridge sub-structure does from time to time create vibration on the ground which can be felt at nearby sensitive receivers. For residents and businesses near the works this is often a new process which can be disconcerting. To alleviate that potential stress, the project team has been working hard to consult with neighbours about vibration works prior to them occurring.

Vibration monitoring was undertaken throughout the reporting period for the following activities:

- Compaction of fill during Clarence/Pound Street widening and upgrade works
- Piling activities around Pound St Rail Viaduct
- Piling works for Pier 6, 7, 8.
- Piling Works Abutment B
- Background reference samples

At no point throughout the reporting period was the monitoring limit of 15mm/s exceeded. All recorded levels were within acceptable parameters described in the approve Noise and Vibration Management Plan – see figure below.

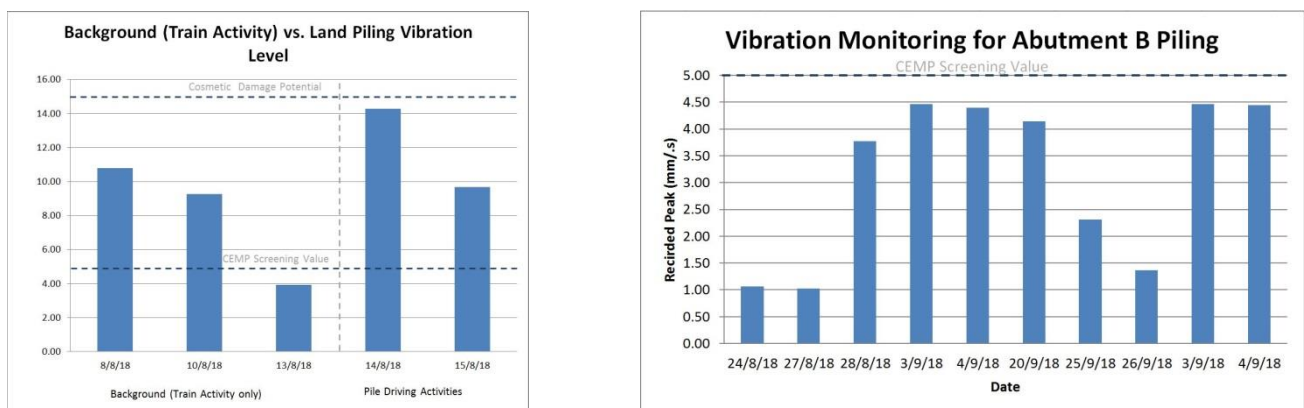


Figure 13 Recorded vibration impacts on rail abutment during piling works (left) and Piling works for abutment B (right).

Vibration monitoring results can be seen in **Appendix C**.

7.3 Air Monitoring

Ambient air quality monitoring was undertaken in accordance with the Construction Air Quality Management sub-plan. Dust monitoring gauges are placed at 4 locations across site:

- DMG1 – Pound Street, Grafton
- DMG2 – Rail Station, South Grafton
- DMG3 – Bunnings, South Grafton
- DMG4 – Control, South Grafton

Air monitoring results for the reporting period are shown in figure 14 below.

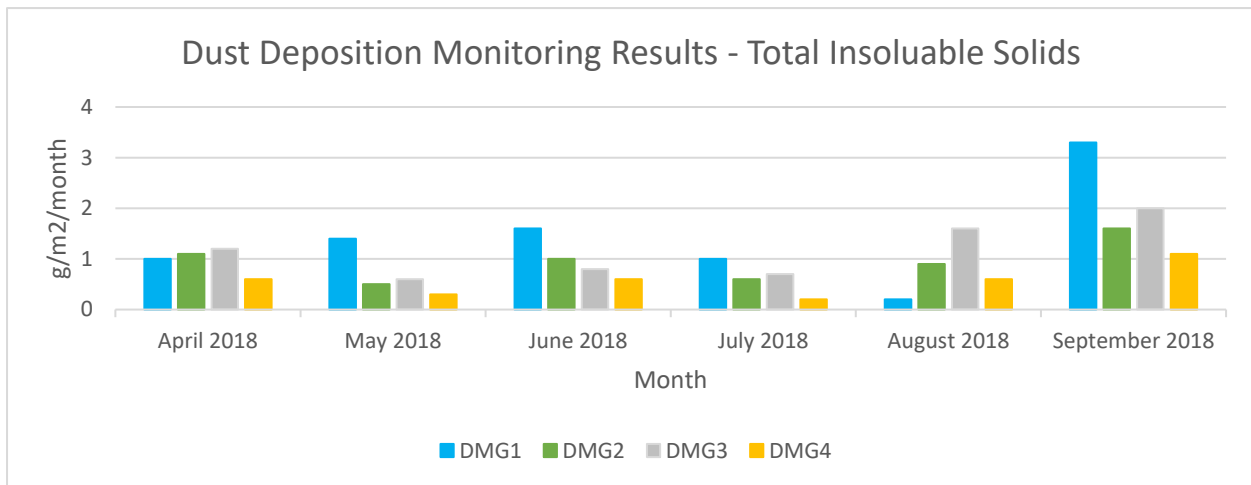


Figure 14 Air monitoring results for the reporting period

All results from the reporting period were compliant and did not exceed the 4g per m² per month limit.

7.4 Flora and Fauna

Project ecologists have been onsite to carry out pre-clearing inspections, hollow bearing tree inspections, nest box installations and monitoring, clearing reviews and fauna rescues. The project ecologist has also completed pre-clearing inspections in areas identified for three-toed snake tooth skinks.

No Skins were reported or found throughout this reporting period. All skink protection areas across the project progressively undergo habitat enrichment including new mulch and leaf litter, weed management, watering down during dryer periods and planting of native flora as well as audit checks for damage or further required works.

Multiple fauna rescues occurred during the reporting period, refer to table 7-2 below. All staff and site crew have remained diligent in implementing the correct procedures when fauna have been sighted or injured, stopping works until the project ecologist has successfully removed the fauna and they had been safely relocated into adjacent unaffected habitat areas, or when injured, to the local veterinary clinic.

Table 7-2 Fauna rescues for the project throughout the reporting period

Fauna Type	Location Found	Works Occurring	Injured	Outcome
Eastern Brown Snake	Bradey's Site office	N/A	No	Relocated
Blue Tongue Lizard	Pound St Rail Viaduct	Piling Works	No	Relocated
Carpet Python	May Van Barge	Marine Works	No	Relocated
Carpet Python	Pound St Rail Viaduct	Steel Works	No	Relocated

Other snake and animal sightings were reported by work crews, the animals were given space and time to move safely through the work area.

No fauna impacts were observed during the reporting period.



Figure 15 Blue tongue Lizard (left) and Carpet python found under Pound Street Rail Viaduct (right).

7.5 Heritage (Aboriginal & Non-aboriginal)

The project has stopped works 21 times for potential heritage finds. Of those stoppages two occurred within the reporting period. The potential heritage finds were:

- Wooden pieces were found in the road near Bunnings, the project stopped works and notified the project archaeologist. There was some concern that the wood found was part of a wooden cording bridge. The archaeologist came to site and during detailed investigation only found one piece of wood thought to be part of a fence line close to one hundred years' old
- The project stopped works when a shaped rock was thought to be a potential aboriginal artefact. The object was checked by the project archaeologist and it was confirmed that it wasn't an aboriginal artefact.

Table 7-3 Heritage finds on the project during the reporting period

UF Number	Date	Location	Description	Significance
20	August 2018	loanthe Street	Wooden artefact which was possibly a part of wooden cording bridge. Found to be only an old fence post	Nil
21	November 2018	Topsoil stockpile, south Grafton	Stone object thought to have some risk of been an aboriginal artefact	Nil

All locally significant heritage locations in close proximity to the project have been protected with clear exclusion signage and boundary fencing.

8.0 Audits and Inspections

8.1 Compliance Auditing

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

- Internal compliance audits undertaken by Fulton Hogan
- External compliance audits undertaken by the ER and RMS appointed auditors

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

Table 8-1 below summarises the audits undertaken during the reporting period.

Table 8-1 Audit summary

Audit	Type of Audit	Date	Overview	Outcome
ER Audit	External	December 2017	Six monthly and periodic ER audit	Nil
RMS Audit	External	14 Nov 2017	Six monthly Audit	Nil
ER Audit	External	17 April 2018	Six monthly and periodic ER audit	Nil

8.2 Internal and external environmental inspections

The project completes weekly site inspections as a minimum to assess environmental performance and identify areas of improvement and maintenance. This includes prior to, during and after adverse weather events, clearing activities, high risk activities and the opening new works areas.

Each inspection provides an opportunity to improve environmental management across the project including new erosion and sediment control installations, improved site mitigation measures and general site improvements.

Inspections are completed consistent with the requirements of the project CEMP. Table 8-2 below summarises the inspections completed on the project.

Table 8-2 Inspections summary

Type of Inspection	Attendees	Duration
Weekly	Fulton Hogan Staff; environmental, engineers, foreman, leading hand, labourers, superintendents, management	Weekly
Wet Weather	Fulton Hogan Staff; environmental, engineers, foreman, leading hand, labourers, superintendents, management	As required
ER	Simon Williams (ER - GeoLINK) Fulton Hogan Staff; environmental, engineers, foreman and superintendents	Fortnightly
Pacific Highway RMS	Jason Sheehan Fulton Hogan Staff; environmental, engineers, foreman and superintendents	Fortnightly

NSW EPA	Stan Viney Peter Higgs Fulton Hogan Staff; environmental, engineers, foreman and superintendents	As required
NSW DPI (Fisheries)	James Sakker Fulton Hogan Staff; environmental, engineers, foreman and superintendents	As required
DP&E	Michael Young Fulton Hogan Staff; environmental, engineers, foreman and superintendents	As required
Environmental Consultants	SEEC – Project Soil Conservationist Ecosure Ecology – Project Ecologist Sandpiper Ecology – Project Ecologist Cavvanba Fulton Hogan Staff; environmental, engineers, foreman and superintendents	As required
Clarence Valley Council	David Morrison Fulton Hogan Staff; environmental, engineers, foreman and superintendents	As required
ERG	RMS ER EPA Council DPI (Fisheries) DP&E Fulton Hogan Staff; environmental, construction manager	Monthly

9.0 Environmental Complaints

In accordance with MCoA C2 and C3, a complaint management system has been established on the project to address any community enquiries and complaints during the course of construction. There are four mechanisms that have been established to facilitate the lodgement of enquiries and complaints:

Table 9-1: Community contact details

Tool	Details
Project Information line (24-hour toll free)	The Project information line (1800 918 759) is a 24-hour toll free telephone number allowing the community to contact the community relations team at all times when work is being carried out on site, including out of hours work. Outside of working hours, a recorded message with voicemail is available.
Email Address	The email address (grafonbridgecommunity@fultonhogan.com.au) is monitored by the community relations team for incoming emails during business days.
Postal Address	The postal address (76-79 Pound Street, Grafton NSW 2460) is monitored by the project team for incoming letters.
Website	The RMS Additional Crossing of the Clarence River – Grafton Bridge website (www.rms.nsw.gov.au/grafonbridge) includes the contact tools and will be updated regularly to have the latest information about the project.

These tools will be in place until eight weeks after the date of construction completion.

Stakeholder complaints will be responded to and managed in accordance with

- AS-ISO 10002-2006 Complaints Handling (which has superseded AS 4269 Complaints Handling)
- Section 9.2 of the Construction complaints management system – Additional Crossing of the Clarence River at Grafton, Community consultation strategy

9.1 Complaints Management

The project engaged with the community in various forms of communication about one thousand times during the reporting period. Those engagements include: door knocks, letter box drops, phone calls, email, community information nights and visitors to the project community display centre.

The majority of communications and interactions with the community are positive with the local residents interested and supportive of the project. At times the construction activities can cause some impacts which can result in complaints. The project received 19 complaints in the reporting period a reduction from the previous period.

Table 9-1 Environmental complaints summary

Complaint #	Date	Environmental Relevance	Summary	Status
1	27 April 2018	Dust	Resident rang to complain about dust from earthworks occurring on Pound and Clarence streets. The foreman was called and a water cart sent to the areas in question. The resident was advised that the foreman would keep a dedicated water cart on site.	Closed
2	8 May 2018	Vibration	Resident sent an email complaining about vibration at her house due to work in Clarence Street. Vibration monitoring was undertaken at the residence and the results provided from the monitoring. The resident also was sent a letter on 21 May 2018 advising that a building inspector would visit the property again after works were completed. Following the inspection, any claim for compensation regarding new damage as a result of the works would be considered.	Closed
3	10 May 2018	Noise	Resident complained about noise from trucks pulled up outside the residence waiting to enter the construction site and leaving their engines idling. Foreman was advised about the complaint and managed the workforce so the complaint would not re-occur	Closed
4	14 May 2018	Dust	Business owner complained about dust from removal of a directional arrow on the roadway in front of her business for a traffic switch and the possibility dust could have landed on her stock. An offer was made to clean the stock but the business owner advised she saw the work occurring and didn't put any stock out.	Closed
5	28 May 2018	Air quality	Business owner complained about a traffic controller smoking outside his workshop and diesel fumes from a truck parked up with its engine idling. The issue of smoking only on a break was raised with the superintendent of the traffic controllers and truck drivers were toolboxed about turning engines off when parked up.	Closed
6	20 June 2018	Dust	Resident complained about dust from earthworks. Foreman was advised to regularly send a water cart to the area.	Closed
7	28 June 2018	Dust	Business owner complained about dust on her stock that she placed outside her business. Water cart usage was increased and polymer was placed on an area where the seal had broken up in heavily trafficked places.	Closed
8	10 July 2018	Dust	Business owner complained about dust from an excavator loading trucks. Foreman was advised and material was watered down prior to being loaded into trucks.	Closed
9	25 July 2018	Dust	Business owner complained a water cart had been watering but then the driver turned off the water and kept the air blowing and a plume of dust was created. Foreman was advised and spoke to the water cart driver.	Closed
10	27 July 2018	Mud	Business owner complained about mud from water cart operations and application of polymer to keep the dust down being walked into his business. Offer was made to sweep out the business owner's workshop but was refused.	Closed
11	28 July 2018	Mud, dust, vibration	Business owner complained about dust, mud from water cart operations and application of polymer and vibration from roller doing compaction. Meeting was held with the business owner and arrangements made to re-seal the pavement in front of the business. An undertaking was also given to use a smaller roller to cause less vibration.	Closed
12	15 August 2018	Vibration	Resident complained about vibration from pile driving and asked for a vibration monitor to be placed in their backyard for the duration of the work. Residents was advised that the project did not have a spare monitor to place in their backyard but that monitoring was occurring in	Closed

			close proximity to the work. An offer was made to undertake monitoring at the residence on a nominated day when pile driving would be occurring. No response was received.	
13	21 August 2018	Dust	Business owner complained that a water cart had been observed not watering all the way to the end of a street. Business owner was advised that this section of the street had recently been re-sealed and did not require watering since it would not produce dust.	Closed
14	24 August 2018	Dust	Resident complained about dust from earthworks. Water cart resources for the works were confirmed and extra effort put in place to reduce dust	Closed
15	24 August 2018	Quality of topsoil	Resident complained about rocks in topsoil that had been placed on a Telstra trench that had subsided. Rocks were removed from the topsoil.	Closed
16	19 September 2018	Noise	Resident complained about noise from pile driving. Additional mitigation was offered to the impacted residents to allow them a place away from their home during the required high noise works	Closed
17	20 September 2018	Noise and vibration	Resident complained about the noise and vibration from pile driving which occurred on the day before. Resident was advised of the results of vibration monitoring for the pile driving and that those results were compliant to project requirements. The program of works was provided for the remaining pile driving. The project would continue to work with impacted residents and offer respite, hearing protection and places to go away from the works.	Closed
18	20 September 2018	Landscaping	Resident complained about the landscaping planned for the front streetscape of their property. As outlined in the approved Urban Design and Landscaping Plan. The resident requested turf instead of plants. Resident was advised their request would be raised with RMS and the urban designer and they would be advised of the outcome.	Closed
19	10 October 2018	Landscaping	Resident complained about the landscaping planned for the front streetscape of their property. As outlined in the approved Urban Design and Landscaping Plan. The resident requested turf instead of plants. The resident was advised their request would be raised with RMS and the urban designer and they would be advised of the outcome .	Closed

9.2 Community Engagement Initiatives

Throughout the report period, ongoing consultation with directly impacted residents about upcoming work was carried out. A member of the community relations team was available at all times during standard working hours at the community display centre, 76-79 Pound Street, Grafton.

Community consultation for work has included but not been limited to:

- OOH works in Grafton and South Grafton
- Marine navigation
- Special events
- Business Liaison Groups with affected businesses in Grafton and South Grafton, providing updates on traffic and staging and program
- Segment production
- Marine works and progress

- Traffic switches, staging and changes to access
- Information provided to interested residents at the project community display centre

The project is maintaining and building on the positive and constructive relationship with the community and stakeholders to effectively address and manage issues as they emerge during construction. All contact with the community and stakeholders is recorded in the community contact database – Consultation Manager.

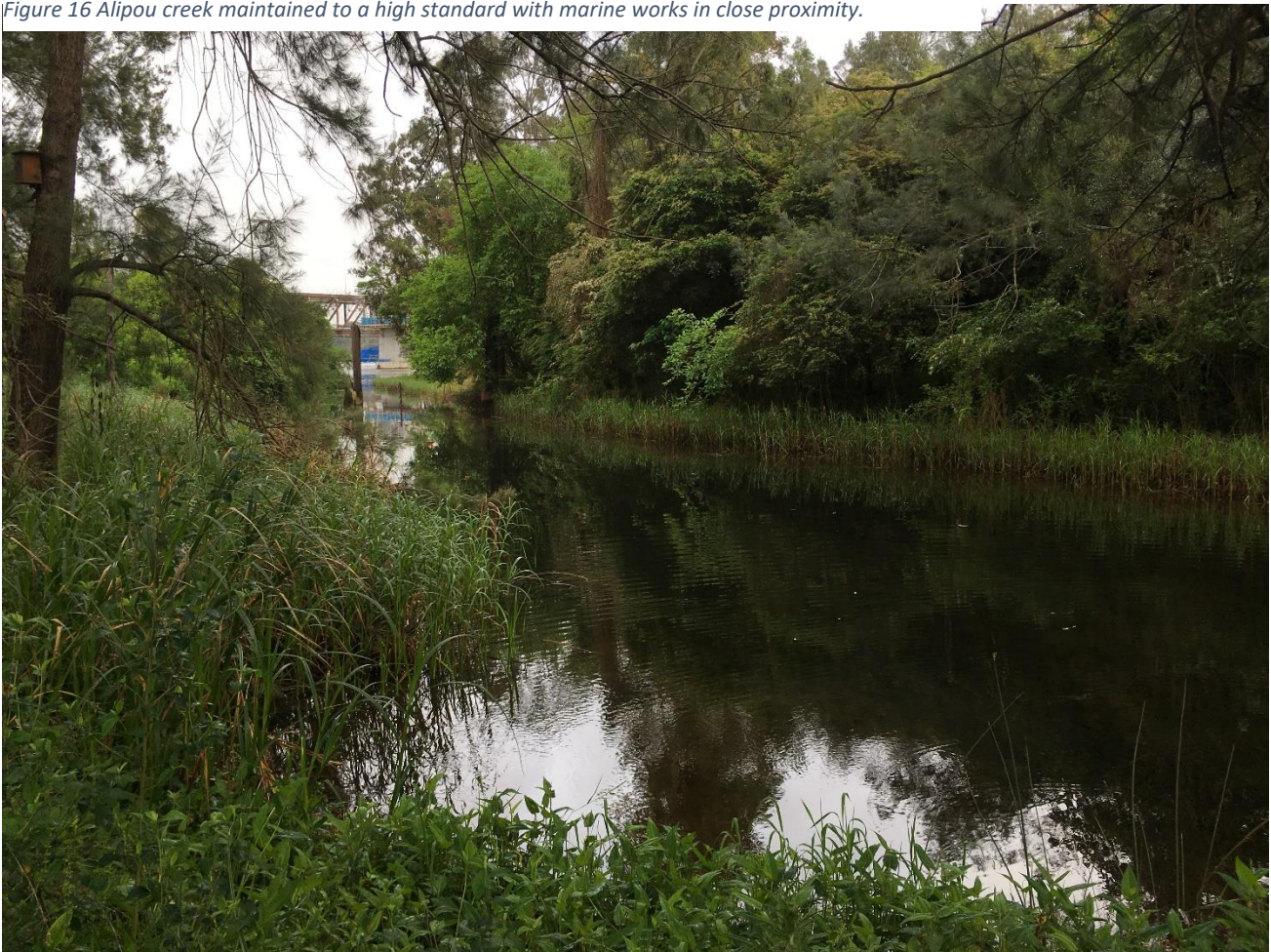
APPENDIX A

Project Approval Compliance Table

APPENDIX B

Water Quality Monitoring Results

Figure 16 Alipou creek maintained to a high standard with marine works in close proximity.



B-1: Surface water quality monitoring completed during the reporting period

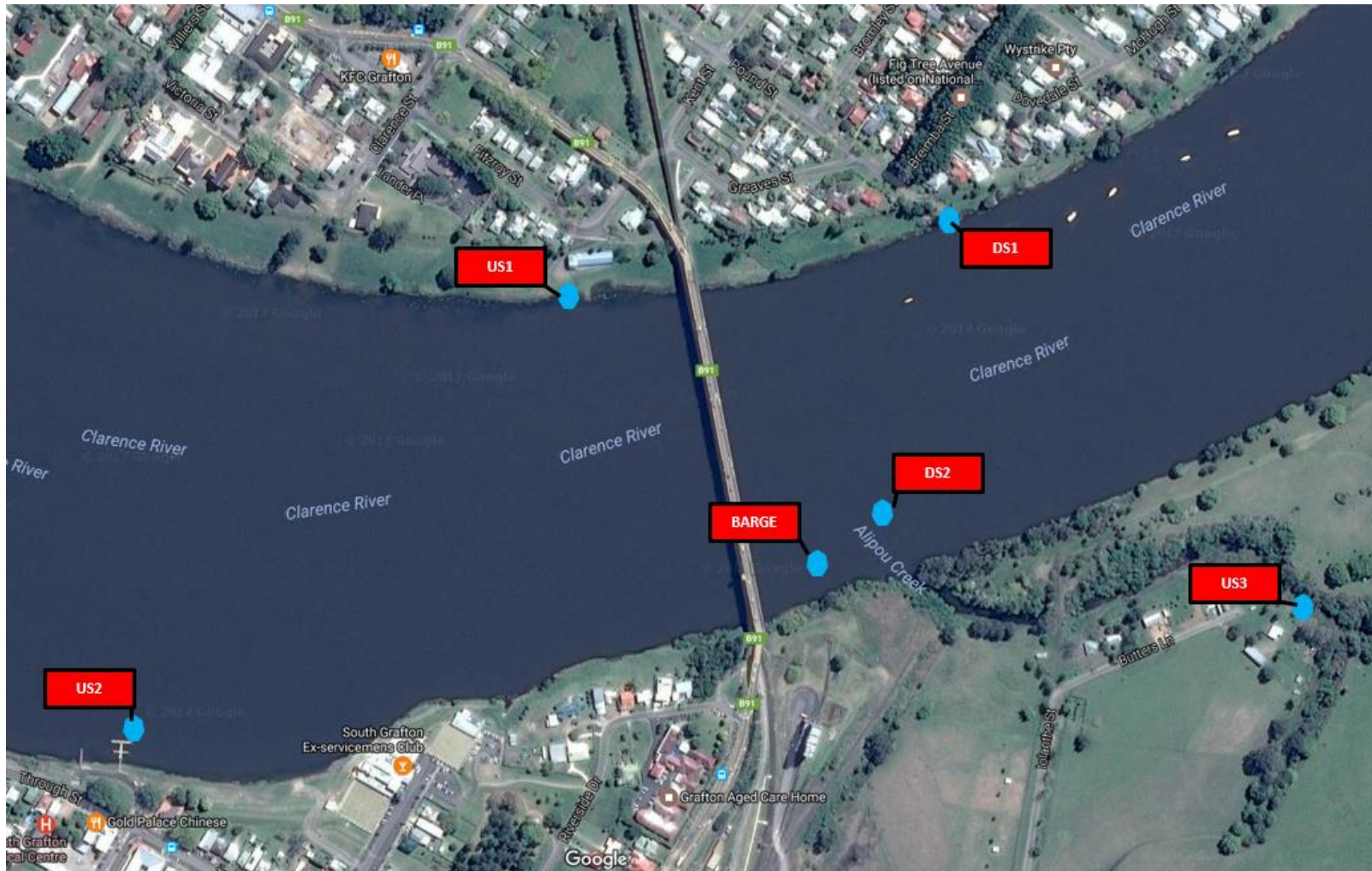
Date	Monitoring	Sample Location	Site	Turbidity (NTU)	pH	Conductivity (µs/cm)	Temp (C)	Observations			Flow		Comments
								Oil/Grease	Algae	Debris	Rate	Colour	
18/04/2018	Dry	Sailing Club	US1	6.4	8.1	107.1	25.7	No	No	No	Slow	Brown	
18/04/2018	Dry	Boat Ramp South	US2	6.25	8.1	202	24.5	No	No	No	Slow	Brown	
18/04/2018	Dry	Alipou Creek	US3	-	-	-	-	No	No	No	Slow	Clear	Unable to obtain samples - sample pole broken. Visual observation only
18/04/2018	Dry	Pound Street	DS1	8.22	9.1	215	24.1	No	No	No	Slow	Brown	
18/04/2018	Dry	DS River/Butters Lane	DS2	5.73	7.69	270	26.4	No	No	No	Moderate	Brown	
18/04/2018	Dry	Barge	DS3	6.26	7.81	116.3	26.2	No	No	No	Moderate	Brown	
29/05/2018	Dry	Sailing Club	US1	7.5	8	300	24	No	No	No	Slow	Clear	
29/05/2018	Dry	Boat Ramp South	US2	4	8.1	315	23	No	No	No	Slow	Clear	
29/05/2018	Dry	Alipou Creek	US3	8.5	8.3	205	23.5	No	No	No	Not visible	Clear	
29/05/2018	Dry	Pound Street	DS1	5.1	7.89	350	24	No	No	No	Slow	Clear	
29/05/2018	Dry	DS River/Butters Lane	DS2	5.2	7.9	360	23.8	No	No	No	Slow	Clear	
29/05/2018	Dry	Barge	DS3	4.2	7.8	370	24.5	No	No	No	Slow	Clear	
1/06/2018	Dry	Sailing Club	US1	5	8.23	333	15.2	No	No	No	Still	Clear	
1/06/2018	Dry	Boat Ramp South	US2	6	8.31	300	15.1	No	No	No	Still	Clear	
1/06/2018	Dry	Alipou Creek	US3	3	8.05	315	15.3	No	No	No	Still	Clear	
27/06/2018	Dry	Pound Street	DS1	3	8.64	349	15.5	No	No	No	Still	Clear	
1/06/2018		DS River/Butters Lane	DS2	-	-	-	-	No	No	No	Still	Clear	
25/07/2018	Dry	Sailing Club	US1	12.93	7.78	487	18.3	No	No	No	Nil	Clear	
25/07/2018	Dry	Boat Ramp South	US2	2.52	7.43	414	19.3	No	Yes	YES	Fast	Clear	
25/07/2018	Dry	Alipou Creek	US3	2.59	8.63	610	14.4	No	No	No	Nil	Clear	
25/07/2018	Dry	Pound Street	DS1	4.59	8.64	471	16.3	No	No	Yes	Nil	Brown/Green	

25/07/2018	Dry	DS River/Butters Lane	DS2	4.82	8.01	435	18.1	No	No	No	Nil	Brown/Green	
26/09/2018	Dry	Sailing Club	US1	4.89	8.22	783	20.7	No	No	No	Nil	Clear	
26/09/2018	Dry	Boat Ramp South	US2	2.71	7.78	813	20.7	No	No	No	Slow	Clear	
26/09/2018	Dry	Alipou Creek	US3	3.38	8.26	667	18.6	No	No	No	Nil	Clear	
26/09/2018	Dry	Pound Street	DS1	2.2	8.17	746	21.2	No	No	No	Nil	Clear	
26/09/2018	Dry	DS River/Butters Lane	DS2	2.6	7.63	765	20.6	No	No	No	Nil	Clear	
29/10/2018	Dry	Sailing Club	US1	12.4	8.06	793	21.6	No	No	No	Nil	Brown	High level of tannin apparent
29/10/2018	Dry	Boat Ramp South	US2	20	7.78	813	21.7	No	No	No	Slow	Brown	
18/10/2018	Dry	Alipou Creek	US3	35.8	8.78	448	21.6	Yes	No	No	Slow	Brown	Evidence of oil slick not related to construction works
18/10/2018	Dry	Pound Street	DS1	6.1	8.04	373	22.4	No	No	No	Nil	Brown	High level of tannin apparent
18/10/2018	Dry	DS River/Butters Lane	DS2	2.21	7.63	733	21.8	No	No	No	Nil	Clear	

B-2: Ground water quality monitoring completed during the reporting period.

Date Sampled	Monitoring	Sample Location	Depth (m)	Temp (C)	pH	Conductivity (µs/cm)	PAH's	Dissolved Metals	BTEX/TPH	Comments
8/05/2018	5852/1	Field Bank	[NT]	21.4	5.5	<50	No	No	No	
8/05/2018	5852/2	Field Diplicate (SW1_	1.95	21.7	6.2	956	No	No	No	No odour, grey turbid
8/05/2018	5852/3	SW1 South Sentinel	1.91	21.8	6.2	962	No	No	No	No odour, grey turbid
8/05/2018	5852/4	SW2 Middle Sentinel	2.11	21.9	6.5	620	No	No	No	No odour, pale grey turbid
8/05/2018	5852/5	SW3 North Sentinel	5.77	23.5	5.9	553	No	No	No	No odour, grey very turbid
8/05/2018	5852/6	MW05	4.33	22.9	6.9	1560	No	No	Yes	No odour, grey very turbid
8/05/2018	5852/7	MW03	3.69	23.1	6.5	537	No	No	No	No odour, grey, brown turbid
8/05/2018	5852/8	PMW1	4.46	23.4	6.4	497	Yes	No	Yes	Visual Oils, Strong Hydrocabon odour
8/05/2018	5852/9	MW06	4.72	22.7	6.5	806	Yes	No	Yes	Visual Oils, Strong Hydrocabon odour

B-3: Water quality monitoring locations, including extra locations sampled for construction



APPENDIX C

Noise and Vibration Monitoring Results

C-1: Noise monitoring completed during the reporting period

Monitoring Type	Date	Time (24 hr)	Works Activity	Works Location	Monitoring Location	NML (RBL+5)	LAeq15	LAmx	LAmn	LA10	LA90	Compliant	Additional Comments
Periodic (monthly)	24/4/18	14:22	No works	Fill 1	Butters lane residents	49	49.6	64	44.9	51	46.6	Yes	See minuted detail. Compliant
Periodic (monthly)	24/4/18	14:42	No works	Casting Yard	28 Through Street	69	66.8	78.2	48.1	67.2	54.9	Yes	See minuted detail. Compliant
Periodic (monthly)	24/4/18	15:05	No works	Pier 2 and 3	3 Riverside Drive	69	58.7	71.6	49.8	64.9	52.5	Yes	See minuted detail. Compliant
Periodic (monthly)	26/4/18	14:22	Compaction and grading of SMZ	Clarence Street	16 Clarence Street	58	63.7	78.9	57.5	66	59.5	Yes	See minuted detail. Compliant
Periodic (monthly)	26/4/18	14:40	Grading of fill 3	Fill 3	10 pound Street	54	48.3	59.8	45.4	49.5	46.5	Yes	See minuted detail. Compliant
Periodic (monthly)	26/4/18	15:02	Grading of fill 3	Fill 3	5 Kent Street	58	58.3	71.4	46.2	60	51.2	Yes	See minuted detail. Compliant
Periodic (monthly)	20/6/18	9:15	Compaction	Pound St	18 Clarence St	58	63.45	80.5	53.8	66.7	57	Yes	See minuted detail. Compliant
Periodic (monthly)	20/6/18	9:30	Excavation and Jack Hammering	Kent Street	5 Kent Street	54	47.9	74.5	41.3	49.6	43.6	Yes	See minuted detail. Compliant
Periodic (monthly)	20/6/18	9:55	Excavation and Jack Hammering	Kent Street	10 pound Street	58	62.4	81.2	54.3	62.9	56	Yes	See minuted detail. Compliant
Periodic (monthly)	20/6/18	10:20	Piling	Iolanthe St	3 Riverside Drive	69	57.5	70.5	51.2	60	53.7	Yes	See minuted detail. Compliant
Periodic (monthly)	21/6/18	10:45	Piling at pier1	Iolanthe St	Butters lane residents	49	53.1	65.5	47.7	55	50.2	Yes	See minuted detail. Compliant
Out of hours	8/7/18	8:10	Utilities power outage	Pound St	24 Villiers St	53	55.2	76.5	43.4	52.2	46.1	Yes	See minuted detail. Compliant
Out of hours	8/7/18	8:35	Utilities power outage	Pound St	18 Clarence St	61	58.5	76.8	47	58.3	47.7	Yes	See minuted detail. Compliant
Out of hours	8/7/18	9:10	Utilities power outage	Pound St	Cnr of Villiers & Pound St	61	65.5	77.5	55.1	70.8	58.8	Yes	See minuted detail. Compliant
Periodic (monthly)	27/7/18	12:45	Piling/Air lifting	Abutment A	Butters lane residents	49	44.9	62.6	38.1	45.3	40.4	Yes	See minuted detail. Compliant
Periodic (monthly)	27/7/18	3:36	Piling/Air lifting	Abutment A	28 Through Street	69	59	74.5	49	62.1	52.8	Yes	See minuted detail. Compliant
Periodic (monthly)	27/7/18	11:20	Road Works	Pound & Clarence St	18 Clarence St	58	55.1	65.8	47.5	57.5	50.5	Yes	See minuted detail. Compliant
Periodic (monthly)	27/7/18	11:40	Stockpile Re-arrangement	Abutment B	5 Kent Street	58	58	74.8	46.6	60.9	50.4	Yes	See minuted detail. Compliant

Periodic (monthly)	27/7/18	12:00	Stockpile Re-arrangement	Abutment B	10 pound Street	54	46.4	60.8	37	50.2	39.5	Yes	See minuted detail. Compliant
Periodic (monthly)	27/7/18	12:20	Piling/Air lifting	Abutment A	3 Riverside Drive	69	56.2	67.8	49.4	58.7	52.2	Yes	See minuted detail. Compliant
Out of hours	30/7/18	18:15	Stormwater Instillation	Clarence Street	18 Clarence St	40	58.8	88.4	55	60.2	56.9	No	See minuted detail. Compliant
Out of hours	30/7/18	18:35	Stormwater Instillation	Clarence Street	14 Clarence St	40	58	68.5	54.6	60	55.7	No	See minuted detail. Compliant
Out of hours	30/7/18	19:00	Stormwater Instillation	Clarence Street	24 Clarence St	40	48.5	66.2	43.9	49.4	45.6	No	See minuted detail. Compliant
Out of hours	30/7/18	20:40	Stormwater Instillation	Clarence Street	18 Clarence St	40	58.6	70.4	55	59.9	56	No	See minuted detail. Compliant
Out of hours	30/7/18	21:00	Stormwater Instillation	Clarence Street	14 Clarence St	40	56.1	68.9	52.3	57.5	53.4	No	See minuted detail. Compliant
Out of hours	30/7/18	19:30	Stormwater Instillation	Clarence Street	24 Clarence St	40	48.2	62.9	45.3	49.1	47.2	No	See minuted detail. Compliant
Out of hours	31/7/18	1:15	Stormwater Instillation	Clarence Street	18 Clarence St	40	56.8	69.4	54.4	57.5	55.8	No	See minuted detail. Compliant
Out of hours	31/7/18	1:45	Stormwater Instillation	Clarence Street	14 Clarence St	40	55.1	67.9	52.7	55.6	54.5	No	See minuted detail. Compliant
Out of hours	31/7/18	2:00	Stormwater Instillation	Clarence Street	24 Clarence St	40	48.9	67.3	42.4	50	44.6	No	See minuted detail. Compliant
Out of hours	31/7/18	18:00	Stormwater Instillation	Clarence Street	18 Clarence St	40	58.4	78.2	54.8	60.7	55.9	No	See minuted detail. Compliant
Out of hours	31/7/18	18:25	Stormwater Instillation	Clarence Street	14 Clarence St	40	58.2	71.2	54.7	59.8	55.8	No	See minuted detail. Compliant
Out of hours	31/7/18	18:40	Stormwater Instillation	Clarence Street	24 Clarence St	40	53.1	68.8	47.5	54.6	49.1	No	See minuted detail. Compliant
Out of hours	31/7/18	20:30	Stormwater Instillation	Clarence Street	18 Clarence St	40	60.7	81.3	55.3	61.3	57.4	No	See minuted detail. Compliant
Out of hours	31/7/18	20:45	Stormwater Instillation	Clarence Street	14 Clarence St	40	57.3	67.1	54.9	58.5	56	No	See minuted detail. Compliant
Out of hours	31/7/18	21:15	Stormwater Instillation	Clarence Street	24 Clarence St	40	55.7	76.3	47.5	53.6	49.9	No	See minuted detail. Compliant
Out of hours	31/7/18	21:45	Stormwater Instillation	Clarence Street	18 Clarence St	40	62.6	84.2	55.1	64.5	58.2	No	See minuted detail. Compliant
Spot Check (Background)	9/8/18	13:45	Rail Viaduct Piling	Pound St Rail viaduct	30 Bridge St.	75	50.9	74.8	38.9	48.8	41.2	Yes	See minuted detail. Compliant
Spot Check (Background)	9/8/18	14:00	Rail Viaduct Piling	Pound St Rail viaduct	24 Pound St	75	56.6	72.7	43.4	60.2	47.1	Yes	See minuted detail. Compliant
Spot Check (Activity)	14/8/18	8:15	Rail Viaduct Piling	Pound St Rail viaduct	30 Bridge St.	75	73.2	94.5	42.7	62	44.5	Yes	See minuted detail. Compliant

Spot Check (Activity)	14/8/18	9:15	Rail Viaduct Piling	Pound St Rail viaduct	10 Pound St	75	78.9	93.4	43	84.8	46.5	No	See minuted detail. Compliant
Periodic (monthly)	22/8/18	14:20	Culvert 3 stormwater works	Fill 1	Butters lane residents	49	45.2	59	38.2	47.5	41.9	Yes	See minuted detail. Compliant
Periodic (monthly)	22/8/18	14:50	Culvert 3 stormwater works	Fill 2	28 Through Street	69	58.3	73	49	62.3	57.2	Yes	See minuted detail. Compliant
Periodic (monthly)	22/8/18	12:45	Excavation, sub base trimming	Pound And Clarence St	18 Clarence St	58	70.1	93	53.8	66.2	58.9	No	See minuted detail. Compliant
Periodic (monthly)	22/8/18	13:25	Excavator unloading and movement	Abutment B	5 Kent Street	58	60.6	72.5	49.4	66.9	51.1	No	See minuted detail. Compliant
Periodic (monthly)	22/8/18	13:03	Excavator Unloading	Abutment B	10 pound Street	54	46.2	64.9	32.9	48.5	37.5	Yes	See minuted detail. Compliant
Periodic (monthly)	22/8/18	14:45	Culvert 3 cut out and storm water installation	Culver 3	3 Riverside Drive	69	58	78.3	50.7	59.7	53.6	Yes	See minuted detail. Compliant
Spot Check (Background)	23/8/18	3:22	Rail Viaduct Piling	Pound St Rail viaduct	18 Clarence St	75	65.5	50.7	65.5	50.7	52.4	Yes	See minuted detail. Compliant
Spot Check (Activity)	24/8/18	8:57	Sheet Piling	north Levee	10 Pound St	54	50	72.5	48.1	60.4	50.7	Yes	See minuted detail. Compliant
Spot Check (Activity)	3/9/18	13:30	Pile Driving	Pound St Viaduct	25 Pound St	75	78	91.7	53.7	82.2	57	No	See minuted detail. Compliant
Spot Check (Activity)	12/9/18	6:15	Pier 5 Concrete Pour	Pier 7 Piling Pad	8 Greaves Street	63	59.7	75.1	45.2	63.3	50.1	Yes	See minuted detail. Compliant
Spot Check (Activity)	12/9/18	6:30	Pier 5 Concrete Pour	Pier 7 Piling Pad	9 Pound St	63	52.5	69.4	40.1	55.9	44.2	Yes	See minuted detail. Compliant
Spot Check (Activity)	12/9/18	7:00	Pier 5 Concrete Pour	Pier 7 Piling Pad	7 Greaves Street	63	50.2	67.7	40	53	44.7	Yes	See minuted detail. Compliant
Spot Check (Background)	19/9/18	7:30	Pier 8 Pile driving	Pier 8 Piling pad	5 Graves St (vacant lot)	75	61.3	81.3	52.9	59.8	55.4	Yes	See minuted detail. Compliant
Spot Check (Background)	19/9/18	9:00	Pier 8 Pile driving	Pier 8 Piling pad	7 Greaves St	75	52	69.4	44.9	54.6	48.9	Yes	See minuted detail. Compliant
Spot Check (Activity)	19/9/18	10:37	Pier 8 Pile driving	Pier 8 Piling pad	7 Greaves St	75	73.9	84.6	50.1	79.1	56.1	Yes	See minuted detail. Compliant
Spot Check (Activity)	20/9/18	14:00	Pier 8 Pile driving	Pier 8 Piling pad	15 Pound St	75	73.1	82.6	64.2	77.6	67.7	Yes	See minuted detail. Compliant
Periodic (monthly)	25/9/18	12:58	footpath and road surface demolition	Pound 7 Clarence St	18 Clarence St	58	74.4	79.6	70.1	76.2	72.5	No	Close proximity demolition accounted for the higher reading
Periodic (monthly)	25/9/18	1:19	Piling Activities	Abutment B	10 Pound St	54	67.9	75.3	62.6	69.6	65.9	No	
Periodic (monthly)	25/9/18	1:37	Piling Activities + Excavation	Abutment B	5 Kent Street	58	75.5	90	66.4	78.2	70.8	No	

Periodic (monthly)	25/9/18	1:56	No Audible Works	Pier activity	3 Riverside Drive	69	75.2	89.4	66.3	76.9	69.9	No	Heavy traffic evident throughout monitoring period
Periodic (monthly)	25/9/18	2:23	Crane activity	Fill 1	Butters Lane Residence	49	69	90.7	60.8	71.4	64.1	No	Rain and Wind was evident throughout monitoring period increasing distortion and traffic noise
Periodic (monthly)	25/9/18	3:00	No Audible Works	Cast Yard	28 Through Street	69	69.2	92.2	57.4	68.5	60.2	No	Rain and heavy traffic accounted for higher than expected reading. No construction works were audible
Spot Check (Activity)	26/9/18	9:57	Pile driving	Pier 6	10 greaves Street	75	78.6	98.5	70.4	81.6	74.9 6	No	Appropriate Respite enforced
Periodic (monthly)	9/10/2018	12:15	Clarence North bound box out	Clarence St	18 Clarence St	58	77.2	91.2	71.4	71.4	74	No	Background noise above 75dBA
Periodic (monthly)	9/10/2018	12:30	Hydrodemolition & piling works	Pier 6-8	5 Kent Street	58	70.4	85.2	63.5	72.4	67.4	No	
Periodic (monthly)	9/10/2018	13:30	Crane operation & steel fixing	Pier 1	Butters Lane Residence	49	68.7	76.7	62.5	70.4	66.3	No	Works Inaudible, Compliant
Spot Check (Activity)	30/10/2018	7:30	Pier 2 diaphragm pour	Pier 2	Greaves St.		62	7.6	54.8	64.2	57.6	Yes	Works Inaudible, Compliant

C-2: Vibration monitoring completed during the reporting period

Date	Start Time	End Time	Construction Activity	Plant	Nearest Receiver	Monitoring location	Structure	Building Structure Requirement (mm/s)	Recorded Peak (mm/s)	Screening level Exceeded (7.5 mm/s)	No. of Exceedances	Action
23/4/18	7:30	16:30	Background (No works)	Excavator Tipper truck	Nil	Railway viaduct	Bridge	20	15.31	Yes	3	The high reading was next to works not at sensitive receiver
24/4/18	13:45	15:30	Background (No works)	No works	Nil	Railway viaduct	Bridge	20	16.80	Yes	2	The high reading was next to works not at sensitive receiver
3/7/18	10:30	16:40	Earthworks for road upgrade on Clarence Street	17T Padfoot roller Excavator Tipper truck	14-18 Clarence St	18 Clarence St	Residential	20	4.78	No	0	Nil
4/7/18	9:48	16:30	Pound Street pavement construction under on the southbound carriageway in front of the swim school building	Pozi track, 5t excavator , rigid trucks, 7t compaction roller	Swim School	Pool works building inside the front wall facing works about 5m to 10m from compaction rolling	Commercial	20	3.50	No	0	Nil
9/7/18	10:16	16:16	Compaction rolling of the road base materials, hand work preparing the footpath & concrete pouring.	Pozi track, 5t excavator , rigid trucks, 7t compaction roller	18 Clarence Street	18 Clarence Street	Residential	20	3.01	No	0	Nil

10/7/18	12:28	16:30	Compaction rolling of the road base materials, hand work preparing the footpath & concrete pouring.	11t roller, Pozi track, trucks & concrete trucks intermittently	18 Clarence Street	18 Clarence Street	Residential	21	1.89	No	1	Nil
17/7/18	10:59	16:40	Pound Street pavement construction under on the southbound carriageway in front of the swim school building	Pozi track, 5t excavator , rigid trucks, 7t compaction roller, Wacker packer wheel drum roller remote operated	Swim School	Pool works building inside the front wall facing works about 5m to 10m from compaction rolling	Commercial	20	5.69	No	0	Nil
18/7/18	9:36	16:35	Pound Street pavement construction under on the southbound carriageway in front of the swim school building	Pozi track, 5t excavator , rigid trucks, 7t compaction roller, Wacker packer wheel drum roller remote operated	Swim School	Pool works building inside the front wall facing works about 5m to 10m from compaction rolling	Commercial	20	4.10	No	0	Nil
19/7/18	7:30	16:50	Pound Street pavement construction under on the southbound carriageway in front of the swim school building	Pozi track, 5t excavator , rigid trucks, 7t compaction roller, Wacker packer wheel drum roller remote operated	Swim School	Pool works building inside the front wall facing works about 5m to 10m from compaction rolling	Commercial	20	5.65	No	0	Nil
25/7/18	9:00	16:45	Pound Street construction activities, east side of the road Ch. 1924	Pozi track, 5t excavator , rigid trucks, 7t compaction roller	Swim School	Swim School, outside of the building near the front wall facing the works	Commercial	20	5.50	No	0	Nil
26/7/18	8:30	16:00	Pound Street construction activities, east side of the road Ch. 1925	Pozi track, 5t excavator , rigid trucks, 7t compaction roller	Pool works building	Pool works building	Commercial	20	1.30	No	0	Nil

27/7/18	8:00	1630	Pound Street construction activities, east side of the road Ch. 1925	Pozi track, 5t excavator , rigid trucks, 7t compaction roller	Pool works building	Pool works building	Commercial	20	0.85	No	0	Nil
3/8/18	11:06	15:47	Pound Street construction activities,46 Pound St	Pozi track, 5t excavator , rigid trucks, 7t compaction roller	Al's Mechanical	Al's Mechanical	Commercial	20	3.31	No	0	Nil
8/8/18	11:14	16:28	Rain Viaduct background monitoring	Train Activity Only	Rail Via Duct	Rail Via Duct	Commercial	20	10.79	Yes	0	Nil
10/8/18	7:49	15:24	Rain Viaduct background monitoring	Train Activity Only	Rail Via Duct	Rail Via Duct	Commercial	20	9.27	Yes	0	Nil
13/8/18	8:28	16:28	Rain Viaduct background monitoring	Train Activity Only	Rail Via Duct	Rail Via Duct	Commercial	20	3.92	No	0	Nil
14/8/18	7:12	16:01	Rain Viaduct Piling	Pile Driver and augur	Rail Via Duct	Rail Via Duct	Commercial	20	14.30	Yes	0	Nil
15/8/18	7:55	15:30	Rain Viaduct Piling	Pile Driver and augur	Rail Via Duct	Rail Via Duct	Commercial	20	9.68	Yes	0	Nil
20/8/18	8:10	15:30	Pound Street construction activities, Elgas Pound St	Wacker packer, 5t excavator , rigid trucks, 7t compaction roller	Elgas	Elgas	Commercial	20	9.06	Yes	0	Nil
21/8/18	9:11	14:57	Pound Street construction activities, Elgas Pound St	Wacker packer, 5t excavator , rigid trucks, 7t compaction roller	Elgas	Elgas	Commercial	20	4.67	No	0	Nil
22/8/18	8:21	15:26	Pound Street construction activities, Elgas Pound St	5t excavator , rigid trucks, Pozi track	Elgas	Elgas	Commercial	20	2.67	No	0	Nil
23/8/18	9:25	16:25	Pound Street construction activities, Elgas Pound St	5t excavator , rigid trucks, Pozi track	Elgas	Elgas	Commercial	20	2.05	No	0	Nil
24/8/18	7:15	15:30	Pile driving	180 t crane, pile driver	24 Pound St	18 Clarence Street	Residential	20	1.06	No	0	Nil

27/8/18	7:57	11:36	Pile driving	180 t crane, pile driver	24 Pound St	18 Clarence Street	Residential	20	1.02	No	0	Nil
28/8/18	7:43	10:42	Pile driving	180 t crane, pile driver	24 Pound St	24 Pound St	Residential	20	3.77	No	0	Nil
3/9/18	9:23	15:23	Pile driving	180 t crane, pile driver	24 Pound St	24 Pound St	Residential	20	4.46	No	0	Nil
4/9/18	15:50	16:44	Pile driving	180 t crane, pile driver	24 Pound St	Rail Via Duct abutment	Commercial	20	4.40	No	0	Nil
7/9/18	7:34	15:47	SMZ placement and compaction	Wacker packer, 5t excavator, rigid trucks, 7t compaction roller	Al's Mechanical	Al's Mechanical	Commercial	20	4.68	No	0	Nil
14/9/18	8:12	15:16	SMZ placement and compaction	Wacker packer, 5t excavator, rigid trucks, 7t compaction roller	Al's Mechanical	Al's Mechanical	Commercial	20	4.76	No	0	Nil
17/9/18	12:05	16:06	SMZ placement and compaction	Wacker packer, 5t excavator, rigid trucks, 7t compaction roller	Al's Mechanical	Al's Mechanical	Commercial	20	2.54	No	0	Nil
18/9/18	7:53	15:34	Pile driving (Background)	180 t crane, pile driver	10 Greaves Street	5 Greaves St. Vacant Lot	Residential	20	0.82	No	0	Nil
19/9/18	8:33	17:03	Pile driving	180 t crane, pile driver	10 Greaves Street	5 Greaves St. Vacant Lot	Residential	20	9.11	Yes	45	Nil
20/9/18	6:09	15:52	Pile driving	180 t crane, pile driver	10 Greaves Street	10 Greaves Street	Residential	20	4.14	No	0	Nil
25/9/18	12:06	16:36	Pile driving	180 t crane, pile driver	10 Greaves Street	8 Greaves Street	Residential	20	2.31	No	0	Nil
26/9/18	9:40	15:00	Pile driving	180 t crane, pile driver	10 Greaves Street	8 Greaves Street	Residential	20	1.37	No	0	Nil
29/8/18	8:53	18:00	SMZ placement and compaction	7T roller	Elgas	Elgas	Residential	20	7.19	No		
30/8/18	9:23	15:23	SMZ placement and compaction	intermittent Trucks, Pozi track., 7 T roller	Elgas	Elgas	Residential	20	9.42	Yes	4	

3/9/18	7:43	10:42	Pile Driving	Pile Driver, 180T crane	Rail Viaduct	Rail Abutment	Commercial	20	4.46	No
4/9/18	10:50	16:44	Pile Driving	Pile Driver, 180T crane	Rail Viaduct	Rail Abutment	Commercial	20	4.44	No
4/10/18	9:00	17:00	Pile Driving	Pile Driver, 180T crane	Rail Viaduct	Rail Abutment	Commercial	20	2.29	No
9/10/18	9:00	17:00	Box out and excavation	Excavator X2, Posi track	18 Clarence St	18 Clarence St	Residential	20	4.73	No
10/10/18	6:00	18:00	Box out and excavation	Excavator X2, Posi track	18 Clarence St	18 Clarence St	Residential	20	2.56	No
11/10/18	6:00	18:00	Piling and hydrodemolition	Hydrodemolition, Auger. 180T crane	10 Greaves St	8 Greaves St	Residential	20	1.14	No
12/10/18	6:00	14:00	Piling and hydrodemolition	Hydrodemolition, Auger. 180T crane	10 Greaves St	8 Greaves St	Residential	20	0.93	No
24/10/18	7:18	18:00	Box out and subsoil placement	Excavator X2, Posi track, Pad foot Roller	Heritage TAFE building	Heritage TAFE building	Residential	20	2.93	No
30/10/18	9:00	18:00	Subsoil Placement	Pound ST	38 Villiers	38 Villiers	Residential	20	5.01	No
31/10/18	9:00	18:00	Subsoil Placement	Pound ST	38 Villiers	38 Villiers	Residential	20	3.21	No

APPENDIX D

Air Quality Monitoring Results

April 2018

Test Report Number: 5703

Date Issued: 26/04/2018

Tested between: 19/04/18 and 26/04/18



Results

Sample#	Sample Description	Date On	Date Off	Number of Days	Insoluble Solids	Ash	Combustible Matter	Calculated Rain
			Units Method Code Limit of Report	days VGT-WI/14	g/m2/mth VGT-WI/14 0.1	g/m2/mth VGT-WI/14 0.1	g/m2/mth VGT-WI/14 0.1	mm VGT-WI/14 1
5703/1	Control	21/03/2018	18/4/2018	28	0.6	0.2	0.4	46
5703/2	DMG2 Rail	21/03/2018	18/4/2018	28	1.1	0.7	0.4	46
5703/3	DMG3 Bunnings	21/03/2018	18/4/2018	28	1.2	0.8	0.4	45
5703/4	Pound Street	22/03/2018	18/4/2018	27	1.0	0.9	0.1	22

Results have been approved and report finalised on 26/04/2018

NATA Accredited Laboratory – 15230.

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



May 2018

Test Report Number: 5854

Date Issued: 25/05/2018

Tested between: 17/05/18 and 25/05/18



Results

Sample #	Sample Description	Date On	Date Off	Number of Days	Insoluble Solids	Ash	Combustible Matter	Calculated Rain
			Units Method Code Limit of Report	days VGT-WI/14	g/m2/mth VGT-WI/14 0.1	g/m2/mth VGT-WI/14 0.1	g/m2/mth VGT-WI/14 0.1	mm VGT-WI/14 1
5854/1	Control	18/04/2018	16/5/2018 15:10	29	0.3	0.1	0.2	31
5854/2	DMG 2 Rail	18/04/2018	16/5/2018 14:50	29	0.5	0.5	<0.1	29
5854/3	DMG 3 Bunnings	18/04/2018	16/5/2018 15:00	29	0.6	0.3	0.3	29
5854/4	Pound Street	18/04/2018	16/5/2018 16:00	29	1.4	1.2	0.2	30

Results have been approved and report finalised on 25/05/2018

NATA Accredited Laboratory – 15230.

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



June 2018

Test Report Number: 5964

Date Issued: 22/06/2018

Tested between: 13/06/18 and 22/06/18



Results

Sample #	Sample Description	Date On	Date Off	Number of Days	Insoluble Solids	Ash	Combustible Matter	Calculated Rain
			Units Method Code Limit of Report	days VGT-WI/14	g/m2/mth VGT-WI/14 0.1	g/m2/mth VGT-WI/14 0.1	g/m2/mth VGT-WI/14 0.1	mm VGT-WI/14 1
5964/1	Control	16/05/2018 15:10	13/6/2018	27	0.6	0.6	<0.1	66
5964/2	DMG2 Rail	16/05/2018 14:50	13/6/2018	27	1.0	0.9	0.1	63
5964/3	DMG3 Bunnings	16/05/2018 15:00	13/6/2018	27	0.8	0.6	0.2	65
5964/4	Pound Street	16/05/2018 16:00	13/6/2018	27	1.6	1.1	0.5	65

Results have been approved and report finalised on 22/06/2018

NATA Accredited Laboratory – 20375

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



July 2018

Test Report Number: 6166

Date Issued: 23/07/2018

Tested between: 13/07/18 and 23/07/18



Results

Sample#	Sample Description	Date On	Date Off	Number of Days	Insoluble Solids	Ash	Combustible Matter	Calculated Rain
			Units Method Code Limit of Report	days VGT-WI/14	g/m2/mth VGT-WI/14 0.1	g/m2/mth VGT-WI/14 0.1	g/m2/mth VGT-WI/14 0.1	mm VGT-WI/14 1
6166/1	Control	14/06/2018	12/07/2018	28	0.2	0.2	<0.1	13
6166/2	DMG2 Rail	14/06/2018	12/07/2018	28	0.6	0.6	<0.1	29
6166/3	DMG3 Bunnings	14/06/2018	12/07/2018	28	0.7	0.5	0.2	12
6166/4	Pound Street	14/06/2018	12/07/2018	28	1.0	0.8	0.2	15

Results have been approved and report finalised on 23/07/2018

NATA Accredited Laboratory – 20375

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



August 2018

Test Report Number: 6297

Date Issued: 22/08/2018

Tested between: 9/08/18 and 21/08/18



Results

Sample#	Sample Description	Date On	Date Off	Number of Days	Insoluble Solids	Ash	Combustible Matter	Calculated Rain
			Units Method Code Limit of Report	days VGT-WI/14	g/m2/mth VGT-WI/14 0.1	g/m2/mth VGT-WI/14 0.1	g/m2/mth VGT-WI/14 0.1	mm VGT-WI/14 1
6297/1	Control	12/07/2018	08/08/2018	27	0.2	0.1	0.1	6
6297/2	DMG 2 Rail	12/07/2018	08/08/2018	27	0.9	0.4	0.5	4
6297/3	DMG 3 Bunnings	12/07/2018	08/08/2018	27	1.6	1.1	0.5	3
6297/4	Pound Street	12/07/2018	08/08/2018	27	0.6	0.6	<0.1	7

Results have been approved and report finalised on 22/08/2018

NATA Accredited Laboratory – 20375

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



September 2018

RESULTS OF DUST MONITORING (Page 1 of 1)

4 samples supplied by Fulton Hogan Construction Pty Ltd on 11th September, 2018. Lab Job No.H3925

Exposure Period: 6/8/18 - 7/9/18

Samples submitted by David Lamb. Your Job: CRC

76-92 Pound Street GRAFTON NSW 2460

Sample Site	EAL Code	Sample Comments	Diameter of Funnel (mm)	Sampling Days (days)	Sample Volume (L)	Deposit rate of Insoluble Solids		Deposit rate of:			
						Total Suspended Solids (SST)		Ash (g/m ² /month)	Combustible Matter (g/m ² /month)	Soluble Matter (g/m ² /month)	Total Solids (g/m ² /month)
						(g/m ² /month)	(mg/m ² /day)				
<i>Method Reference</i>						<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>
Pound St	H3925/1	org. matter	150	32	1.68	1.6	53	1.2	0.3	1.8	3.3
DMG 3 Bunnings	H3925/2	org. matter	150	32	1.10	1.4	48	1.2	0.3	0.5	2.0
DMG 2 Rail	H3925/3	org. matter	150	32	1.07	1.0	34	0.8	0.2	0.6	1.6
Control	H3925/4	org. matter/ants	150	32	1.13	0.4	14	0.3	0.1	0.7	1.1

METHODS REFERENCE

a . Australian Standard AS 3580.10.1.8.2.2-1991(1mm pre-sieving then using Whatman 42 Ashless filter)

NOTES

1. ... No data/ information
2. Total Suspended Solids = Mass deposition rate of insoluble solids
3. Per Month calculations incorporate 'Sampling Days' hence per Month actually refers to number of days sampled.

Environmental Analysis Laboratory, Southern Cross University,
Tel. 02 6620 3678, website: scu.edu.au/eal



checked:
Graham Lancaster
Laboratory Manager

October 2018

Test Report Number: 6580

Date Issued: 30/10/2018

Tested between: 18/10/18 and 29/10/18



Results

Sample#	Sample Description	Date On	Date Off	Number of Days	Insoluble Solids g/m2/mth AS 3580.10.1 Limit of Report	Ash g/m2/mth AS 3580.10.1	Combustible Matter g/m2/mth AS 3580.10.1	Calculated Rain mm AS 3580.10.1
6580/1	Control	07/09/2018	15/10/2018	38	0.4	0.1	0.3	115
6580/2	DMG2 Rail	07/09/2018	15/10/2018	38	0.6	0.3	0.3	118
6580/3	DMG3 Bunnings	07/09/2018	15/10/2018	38	1.0	0.8	0.2	124
6580/4	Pound Street	07/09/2018	15/10/2018	38	0.9	0.8	0.1	128

Results have been approved and report finalised on 30/10/2018

NATA Accredited Laboratory – 20375

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

