Sapphire to Woolgoolga Upgrade

Six Monthly Compliance Tracking Report

Minister's Condition of Approval

11 February – 10 August 2012

August 2012

CONTENTS

Appendices

Document Control

File name	Status	Issued to	Issue date
Six Monthly Compliance Report – July 2012	Rev 1	RMS	6 July 2012
Six Monthly Compliance Report – August 2012	Rev 2	RMS	17 August 2012
Six Monthly Compliance Report August 2012	Rev 3	RMS	4 September 2012

1.0 Introduction

The Sapphire to Woolgoolga Pacific Highway upgrade project is a part of the Pacific Highway Upgrade Program being funded jointly by the State and Commonwealth Governments, and implemented by the Roads and Maritime Services (RMS) (formerly known as the Roads and Traffic Authority). The Pacific Highway Upgrade Program involves upgrading the Pacific Highway between Hexham and the Queensland border to dual carriageway, with the aim of improving the standard of the Pacific Highway, eliminating 'black spots' and reducing overall travel times.

In December 2006, the Minister for Planning declared that the Sapphire to Woolgoolga upgrade was a project to which Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A) applied. In December 2006, the Minister also declared the Project to be critical infrastructure under Section 75C of the EP&A Act. The project is a transitional project under Part 3A following refinement in Part 3A legislation.

The Project involves the construction of approximately 25 km of dual carriageway with a duplication of the existing Highway from Korora to Woolgoolga and a bypass of the main township of Woolgoolga.

The Project's Compliance Tracking Report states 'at six monthly intervals throughout construction, subsequent to reviewing the compliance status of the project, the Contractor will provide the compliance status to the Director-General in the form of a compliance tracking report'. 'The LFHJV will ensure that the compliance tracking reports include the following information –

- scope of the activities undertaken during the reporting period; **(refer Section 2)**
- performance of environmental controls that have been implemented; **(refer Section 3)**
- compliance with CoA, revised SOCs as recorded in the Compliance Tracking Tables **(refer Section 4 & Appendix A)**;
- Non-compliance during the reporting period **(refer Section 5);**
- ER reports and correspondence **(refer Section 6 & Appendix C);**
- Outcomes of monitoring undertaken over the reporting period and review of compliance against relevant criteria **(refer Section 7 and Appendix B);**
- Outcomes of audits and ERG inspections undertaken during the reporting period **(refer Section 8);** and
- Environmental complaints received, LFHJVs response and current status **(refer Section 9).**

This report is the fourth six-monthly report compiled in accordance with the above information. This report provides the above information from the reporting period 11 February to 10 August 2012.

2.0 Scope of Activities

Throughout the six-month reporting period, a range of works have occurred across the project. A summary of these activities is listed below.

Piling & Bridging Works

- Stage 1 of the Bridge piling has been complete which seen a total of 4217Lm of piles constructed. Stage 2 piling works will commence late in 2012 or early 2013 and will consist of a total of 530Lm of piles to the following bridges; Skinners NB Bridge, Killara Western Abutment, Fiddaman Western Abutment, Double Crossing Southbound Bridge, Graham Drive North eastern abutment and Eggins eastern abutment.
- The project has successfully installed 178 of the total 250 super T Girders to date, with the remaining super T girders manufactured and are currently being stored at Leighton's Precast Yard.
- The project has successfully installed 438 PSC planks to date with the remaining 100 planks manufactured and awaiting delivery and installation.
- Deck pours have been complete to all three spans of Headlands Road Bridge, both Spans of Moonee interchange, all 3 spans of Cunninghams NB Bridge, Hoys Road Bridge, all 3 spans of Skinners SB Bridge, the Eastern Span of Killara, the Eastern Span of Smiths, the Eastern Span of Fiddaman, the Northern two spans of Diamond Head Drive Bridge, Double Crossing NB, Uwins underpass, both spans of Greys Road Bridge, all 4 spans at Woolgoolga Twins, Newmans underpass, both decks of Arrawarra Twin bridges.
- The following bridges have been complete and in some instances open to traffic; Cunninghams NB, Hoys Road, Skinners SB, Northern half of Diamond Head, Unwins underpass, Greys Road Bridge, Newmans underpass.
- Demolition of the existing bridges has been successfully complete at Cunningham's, Hoys and currently well under way at Diamond Head drive.

Clearing Works

- Clearing works have been completed on approximately 98% of the project. There are small areas not cleared so that these areas can be cleared closer to when required.

Bridging Layers

- Placement of bridging layer continues to occur throughout the project.

Cut & Fill

- Cut and fill operations are occurring throughout the project.

Drainage

- The southern section of the Project has installed 12.5km of transverse drainage installed (88%) and 5000m out of 26km of pavement drainage installed (pavement drainage scop has increased).
- The northern section of the Project has installed 4210 lineal metres of transverse pipes, equating to approximately, 95% complete. Approximately, 5000 lineal metres of pavement drainage has been installed, equating to 39 % completion. We have also now completed 606 out of 634 lineal m of box culverts 96% complete.

Blasting

- 4 blasts have been fired in Cut 29.
- 12 blasts have been fired in Cut 35.
- Trial blast in Cut 14.
- Blasted rock has been processed for use throughout the project.

Sediment Basins and erosion/ sediment controls

- 65 sediment basins across the site have been commissioned to date and 19 of these basins have had siphons installed to self regulate discharge. Siphons are a successful initiative of the project and also reduce fuel usage and green house gases. Twelve (12) basins have been decommissioned as they are located on the main alignment where permanent works are being carried out.
- Continuous installation of earth bunds and sediment traps.
- Clean water diversions have been installed throughout the project to separate clean and site waters.

Environment Training

- Water release training.
- Waste update training.
- Use of mulch training.
- Erosion/ sediment control training.

3.0 Environmental Control Performance

3.1 Site Environmental Controls

3.1.1 Soil and Water

Erosion and Sediment Control

Progressive erosion and sediment controls plans are continually developed by the LFHJV in consultation with the Soil Conservation Service, and RMS where required. The Soil Conservation Service continues to assist the LFHJV in erosion and sedimentation control issues. In the reporting period, engineers are now taking more of a primary role in developing the erosion and sediment control plans.

A range of erosion and controls has been adopted, including innovative controls, and are working well. These include erosion controls such as geofabric lining, earth bunds, chutes, diversions, catch drains, rock controls, aggregate bags, topsoiling, cover crops, and sediment controls such as sediment basins, silt fence, mulch controls, sediment basins, and many sediment traps.

A new product, *Gluon*, has been trialled throughout the project as a soil stabiliser in July 2012, that is suitable for application under a number of circumstances and has been used to treat and stabilise stockpiles and batter faces over the project. Gluon is a soil stabilising agent which is insoluble once cured and bio-degradable. The gluon is utilised to effectively stabilise surfaces and achieve a C-Factor of 0.10 in accordance with the Blue Book.

Photo – Gluon being used to stabilise batters

Prior to expected rainfall events, all work crews, engineers and foreman ensure their sites are stabilised with appropriate erosion and sediment controls. The following photos are examples of effective erosion and sediment controls used onsite during the reporting period.

Photo - Triple and double cell culverts south of Gate 13C with associated erosion and sediment controls.

Photo – Inlet pit and median erosion and sediment controls to minimise sediment impacts between Smiths Road and Killara Avenue

Photo – Use of multiple controls (sediment fence, geofabric, rock bund) near waterways.

Photo – Use of controls in series, in this case using mulch.

Photo – Use of combined mulch/ rock checks and gypsum.

Photo – Proactive management of site water north of Arrawarra Creek near Nashs Road, using combined rock/ mulch controls, lining and gypsum to reduce water quality impacts.

Sediment Basins

Gypsum has continually been placed at each inlet of sediment basins to assist with quicker flocculation, release and earlier availability of the sediment basin for the next rainfall event. This has proved successful in preparation for forecast rain events. Areas where sediment basins cannot be established due to space constraints, alternate environmental controls are used such as mulch bunds, sand bags, mitre drains, sediment traps, etc.

Photo – Sediment Basin (249) outlet and associated restoration and revegetation

Photo - Gypsum used at the inlets of all basin to mix with stormwater to assist in quick flocculation and releases

Protection of Waterways

Scour protection works are continuing on the project. Skinners Creek scour protection works for the first bridge has been completed and previously received an ERG environmental award. The waterway also had coir matting applied to the bed and has been planted with macrophytes.

Other scour protection works have been completed across the project. Examples of scour protection works are highlighted below:

Photo - Upstream realignment at Skinners Creek

Photo- Macrophyte planting at Skinners creek

Photo – Installed scour protection and fauna passage at Skinners Creek with smaller rock

Photos-Restoration, revegetation and use of logs at Woolgoolga Creek.

3.1.2 Flora and Fauna

Threatened Species

The translocations of Rusty Plum, Slender Marsdenia and *Lindsaea incisea* have been successful to date.

Photo – Translocation site at the old Archery Club

Fauna

Fish and fauna passage construction continues to be progressed throughout the project.

Photo – Fish passage at culvert 30.05/06 in Wedding Bells area also showing planted Lomandra's in the waterway area

Photo – Giant Barred Frog culvert located north of Greys Road bridge site (to be fitted with motion sensors and video equipment)

Photo – Fauna underpass with refuge poles and connecting rails

Photo - Higher level fauna underpass culvert on the right, lower level drainage culvert on the left.

Photo-Fauna passage provided under Skinners Creek bridge.

Clearing Process

The two stage clearing process which is overseen by the project ecologist continues to work well, resulting in minimal fauna fatalities and/or injuries. There is minimal clearing remaining on the project (<2%). There was minor clearing of the remaining areas during this period.

Photo – Two stage clearing process

Revegetation, weed management and urban design

Progressive revegetation is continuing on exposed batters and other areas throughout the project, using topsoiling, fertilising and cover crop for surface stabilisation with hydro-seeding or hydro-mulching, including native seed. The revegetation and stabilisation has assisted with minimising visual impacts for road users and nearby residents and minimising erosion.

Photo- Cut 5 Revegetation

Photo- Revegetation of Cut 19, highlighting good integration of this cut batter into the landscape and progressive revegetation

Ongoing weed management occurs throughout the work areas. Specifically, weeds are identified prior to works and management controls are implemented. Weed awareness posters have been developed and displayed across the project, specifically outlining types and their control.

3.1.3 Air Quality

To manage dust onsite, the use of multiple water carts has been working well throughout the project to minimise generation of dust from construction activities. A total of fifteen (15) water carts are used on the project. Cover of exposed surfaces (using cover crop seed, etc) is continuing, which also assists in dust control. Dust is also minimised through enforcement of speed limits onsite. Weekly toolbox talks continue to emphasis the importance of speed limits onsite for safety and environmental reasons. Stabilised haul roads are also assisting with dust control as well as street sweepers at these locations.

Progressive revegetation is also assisting in reducing dust emissions. Other measures include stabilised access points throughout the project, use of soil binders / Gluon to suppress dust.

Photo – Water cart application to assist in dust suppression at Fill 10

Recycled water is continually used in water carts and stand pipes for dust suppression. Water generated from sedimentation basins and mulch stockpiles (tannins) has been reused as another source of dust suppression across the project.

In the south of the project, Dustex is currently being used as a trial measure of controlling dust and considerable effort has gone into setting up this system. Dustex is a non-toxic product derived from the wood pulping process and developed specifically for road stabilisation and dust control. Polo Haulage – DC is being used to control and reduce airborne dust, largely in the southern section of the project. The citrus-based product reduces water requirements, application frequency and reduces dust pollution.

Lime is being spread on a number of fill areas from July 2012 to provide a crust of the fills and to assist in drying out the material. A water cart constantly accompanies the lime applicator.

3.1.4 Noise and Vibration

Prior to each production blast, trial blasts have been occurring to ensure the primary impacts, air blast and vibration levels and site characteristics are known, and subsequently managed according to the rock type, weather, distance to sensitive receivers, etc.

Production blasting commenced in cut 29/28 in May 2012. No community complaints have been received during the reporting period which relate to blasting activities. Noise monitoring results are outlined in Section 7.2.

A decision was made not to blast at cut 1 and rock hammering is being used at this location. Trial blasting commenced in cut 14 in July 2012. The trial blast results were compliant with the MCoA.

The controls to manage noise and vibration from construction activities and ancillary facilities have included early and wide spread consultation in regards to the construction program and individual works, strict control on hours of work, selection of compounds and stockpiles sites to minimise noise impacts as far as possible, strategic use of noise monitoring and use of smart non-tonal reversing alarms. Other measures include, prior to any machinery, equipment or vehicles been utilised on site, an inspection occurs to ensure it meets the original equipment manufacturer (OEM) specifications. Two-way radio's are used instead of horns (all plant and vehicles have identification numbers, which assist in communication) in strategic areas, additionally, non-tonal reverse beepers are installed on all vehicles to reduce noise and spotters are used for plant and truck movements (reversing). This is emphasised in the site induction and pre-starts.

Additionally, every 250 hours (approximately 6 weeks) all plant/vehicles are serviced in addition to daily inspections to ensure the sound covers, smart non-tonal reversing alarms, etc are in operation. Five (5) noise related complaints have been received during the reporting period, which are discussed in Section 9 of this report.

In consultation with EPA and the community and based on the success of these extended Saturday working works in low impact areas, from 19 May to 24 November 2012, an extension of the approved working hours from 1-5 pm on Saturdays was implemented in accordance with the Construction Noise and Vibration Management Plan. The Saturday extended hours were undertaken in low impact zones on the project. No complaints have been received for the extended Saturday hours. In August 2012, the Joint Venture ceased all works on Saturdays until further notice.

Details of noise monitoring are included in Section 7.2 of this report. Monthly noise results are tabulated and discussed in the Environmental Review Group meetings.

The operational noise report for the project has been issued to Department of Planning and Infrastructure. Predetermined properties will receive noise treatments as a priority. Some noise walls have been replaced with vegetated noise mounds, for example at Emerald Beach and Woolgoolga Creek Road, resulting in a softer visual solution at these locations.

3.1.5 Heritage

The approved Heritage Management Tool, which is an appendix to the Construction Heritage Management Plan, has been implemented throughout the reporting period. The Heritage Management Tool requires all personnel to receive cultural heritage training regarding duty of care, and details the appropriate action when a potential heritage item/area is encountered. The project archaeologist is also heavily involved in this process, similarly with the five (5) Aboriginal stakeholders. Section 7.6 provides further details on Indigenous and non-Indigenous heritage matters.

3.1.6 Waste

The waste hierarchy has been adopted onsite, specifically 'reduce', 'reuse', 'recycle'. Where possible, waste reuse is prioritised onsite, particularly for concrete, steel and timber as this also has cost benefits. Waste oil and oily materials are taken to the project workshops and removed regularly by a local waste recycling operator. The same applies for batteries. Purchasing materials which have a recycled content also occurs where possible. Some materials (spoil, mulch, etc) have been sought by external parties with development consents and addressed under waste procedures/ EWMS's, which also assist the project in reducing the volume of waste and assist the approved development as well.

Mulch generated by the project has been reused by landowners, private developers, local schools and sporting associations, local businesses, including Coffs Harbour City Council for landscaping, revegetation works and fuel. Similarly, a large volume of mulch has been retained and is being reused on site for revegetation and erosion control.

Other areas of reuse and recycling include reusing pipe off cuts from drainage works for stock watering and pot plants to local farmers and National Parks. Concrete waste generated by the project is also reused after being crushed. There have been reasonable volumes of concrete waste recycled on the project for reuse on the project, with this material recycled at the Graham Drive batch plant site. Steel recycling also occurs on the project. A licensed waste metal contractor collects the material regularly.

Photo – Pipe offcuts for reuse

Photo – Concrete brought to Graham Drive for recycling for project use

3.2 Environmental Initiatives & Construction Management Controls

The LFHJV continue to implement the Environmental Performance Strategy which aims to 'drive a positive environmental culture' throughout the project. The Strategy has been developed at a high level within the LFHJV to ensure the environmental principles and practices outlined in the Environment Policy and Construction Environmental Management Plan are being implemented at all levels on the project.

Examples of key environmental initiatives/achievements, which have occurred during the reporting period include:

- Waterway restoration at Skinners, Woolgoolga and Cunninghams Creeks.
- Innovations in regards to erosion and sediment controls, including new sediment basins, mulch traps in series, combined rock/ mulch/ rock traps and use of gypsum to reduce water quality impacts;
- Siphons have been constructed in approximately half of the sediment basins across the project;
- Installation of two additional higher level frog culverts at Greys Dam;
- Glider design change to include additional glider poles;
- Extra noise wall at Emerald (costing $5 million);
- Replacing noise wall with a noise mound as is a softer approach and is being used in some cases on the project.
- Fauna passage design and installation;
- Reuse and recycling of waste materials.
- Further sealing of the well trafficked Bark Hut access road closer to the source of material;
- Design of rock scour outlet at Double Crossing Creek

- Use of coir as scour protection in lower velocity waterways;
- Use of dust suppressants; and
- Pipe diversion approach at unnamed Creek.

Many of these initiatives/ achievements are outlined in Section 3 or in earlier reports.

Weekly toolbox training continues to occur on the project, which addresses environmental project updates. It is a mandatory requirement that all project staff and crews, including subcontractors attend toolboxes. The Environment team convey key information to work crews, including upcoming regulator inspections, weekly weather forecasts which affect works (ie rainfall, dust), key environmental risk areas and areas where improvements are required.

A formal 'employee recognition programme' has been established, whereby employees can gain formal recognition for key values, including environment. The employee receives formal acknowledgement at the project toolbox, a certificate and a gift voucher. Receivers of environmental achievement awards during the period have included the Cunninghams Creek, Skinners Creek and Woolgoolga Creek work crews. The work crews in each of these areas delivered high quality channel restoration works following completion of bridgeworks and scour protection. The positive environmental outcomes included; maintenance of effective fish passage throughout construction; improvement to fish habitat (eg additional snags installed at Woolgoolga Creek to improve fish habitat); improved provision for fauna passage at each waterway; rapid stabilisation of the creek floodplain in high risk area incorporating dense Lomandra plantings to stabilise the creek banks; and maintenance of fish habitat by retention and protection of snags and creek structure. In particular the channel rehabilitation works at Woolgoolga Creek following removal of the bridge construction platform was recognised by DI&I (Fisheries) as one of the best examples of creek rehabilitation and minimisation of impact during construction on the Pacific Highway to date. Correspondingly an ERG award has been presented to the Woolgoolga Creek work crew.

Community consultation and engagement has been ongoing throughout the reporting period by the LFHJV Community Relations Team. The RMS Sapphire to Woolgoolga Project website is continually updated with project news, upcoming road works, etc. The toll-free project phone number is listed on the website and other communication tools (ie newsletters, roadside signs, etc) and is attended at all times for the public if there are any concerns or queries relating to the project. Any community complaints concerning the environment are recorded on the Projects *Consultation Manager* database which is managed by the LFHJV Community Relations Team. Further information on environmental complaints is discussed in Section 9 of this report.

4.0 Compliance with the Conditions

Appendix A illustrates the current compliance status (Compliance Tracking Register) against the Minister's Condition of Approval (MCoA) and the Statement of Commitments (SoC).

5.0 Non-Compliances & Environmental Incidents

Environmental non-compliances & incidents

Twelve (12) environmental incidents were reported during the six-monthly period, these are listed below and are reported to EPA as required under MCoA1.4. Incident reports are retained on the LFHJV's reporting system.

- On 14 February 2012, the location of the incident was the area of screened bridging around CH31500, north of Nashs Road, Arrawarra. Approximately 70mm of rain fell during the weekend of 11-12/2/2012 and the water level in the adjacent swamp, west of Fill 39 rose by approximately 300mm. The water flowed through the screened bridging where it mixed with the fine material in the bridging and became turbid. The dirty water then flowed east through the existing culvert under the Pacific Highway and along a constructed clean water drain. The issue was identified at 8:40am on 14 Feb, with immediate containment implemented. The clean water drain on the eastern side the highway was bunded with sandbags containing the turbid water, and the dirty water pumped into watercarts. A 6 inch pump (with enough delivery hose to reach the eastern boundary) was installed on the western boundary to carry the water to the eastern boundary.
- On 5 April 2012, slumping of the batter above sedimentation Basin 262b at Cut 28 unsuitable stockpile was discovered, which was inferred to have occurred between Friday evening and Saturday morning. The site was inspected by JV and RMS engineers on Saturday to confirm containment and immediate stability of material. The slumped material slid into the basin and was captured by the basin wall. The slumped material displaced sediment from the base of the sediment basin some of which flowed over the basin wall. Most of the displaced sediment was captured by the mulch windrow in place below the basin wall. A small amount of sediment (estimated 1 cubic metre) escaped the mulch control into the adjacent vegetation and was locally contained. The joint venture removed the slumped material to restore basin capacity. An access track was established to the basin on 7 May and removal of material commenced. Since the incident a rock wall has been installed to reduce risk of any further slippage.
- On 30 May 2012, following 18mm of rainfall there was an incident on the bridging layer north of Skinners Creek, turbid water was observed to be discharging from subsoil drain on north bank of Skinners Creek. Incident was assessed not be material harm, EPA project liaison officers were notified of incident. Before COB 30 May additional straw bale sediment traps were installed at the discharge point and gypsum dosed. On 31 May additional sediment traps were installed on north bank and dosed with gypsum. Additional straw bale sediment filters were also installed 5m back from the creek bank to further improve discharge water quality.

On 31 May turbid water pooled adjacent to the north bank was pumped to water cart and discharged on embankments. Three (3) loads were extracted with total volume of 30,000L retrieved. Gypsum was dosed to the ponded area.

- On 1 June 2012, during vegetation clearing between Fiddaman Rd and the Shell service station, west of the existing Pacific Highway a length of pipe approximately 500mm long was encountered by the excavator operator at Ch 18200. The pipe was positioned on a residential boundary a few meters into the Project boundary. No impact was made with the pipe. Initial survey of the pipe suggested it potentially contained asbestos material. An exclusion area and signage was placed around the pipe and access restricted to all project personnel. The Project licenced asbestos removal contractor was also contacted to assess and remove the section of pipe. The Project licenced asbestos removal subcontractor treated the waste in-situ and removed the section of pipe from the area. The sub contractor managed the disposal of the waste.
- On 13 June 2012, a plastic lined clean water diversion had been established across the former dam at Culvert 7.55 to convey upstream creek flows over the bridging to the existing culvert under the Pacific Highway. The steep northern bank failed during extended rainfall and a small section of bank slumped into clean water channel. The slumped material did not block the clean water diversion, being located in the northern half of the channel. The slump is inferred to have occurred between 11am and 3pm on 13 June, as there was no slump in the clean water channel during our morning inspection of the site at 10:30am. The slump was discovered at 3:30pm during an inspection. Rectification works commenced following a geotechnical assessment of the bank stability. A plastic lined sandbag diversion has been installed in the clean water channel to divert creek flows around the slumped material. Additional bridging material was also placed in the former dam to allow the clean water channel to be relocated to the south, away from the slumped bank.

- On 22 June 2012, during construction of the access road at the eastern abutment of Greys Road bridge earthworks team encountered a 100mm pipe below the surface. The pipe did not appear on any services drawings. The pipe appeared to be asbestos and was likely to be associated with subsurface drainage of a previous dwelling. EPA were notified. The project licenced asbestos removal contractor was also contact to assess the section of pipe which had been uncovered. The area was fenced off and the licenced asbestos contractor contacted attended site and positively identified the pipe material as asbestos The pipe was removed from site and taken to a licensed landfill facility.

- On 22 June 2012, during the installation of final vegetated/rock drain at Moonee Interchange west, a tree stump was removed which caused clean water to mix with colloidal material. There were controls in place including geofabric and boards

across the culvert entrance and pumping. A three-inch pump that was containing the discoloured water failed and a two inch pump was used until the three inch was fixed. The two inch pump could not keep up with the flow and subsequencely a small quantity of discoloured water breached the containment controls and flowed downstream. Discoloured water was pumped to B121, treated and discharged as per EPL. Water cart pumped any discoloured water on the downstream and used it as dust control. Scour rock was washed down to remove any colloidal material with discoloured water again pumped to the basin.

- On 10 July 2012, an excavator was removing material from the piling pad at Cunninghams Creek when it took a bucket load of what appeared to be clean rock from beside the pipes and inadvertently displaced some sediment which caused the creek water to become discoloured. It is estimated that approximately several kilograms of colloidal material was displaced beneath the clean rock surface. The discoloured water was contained within the three (3) silt curtains deployed between the pad and the project boundary and successfully flocculated.
- On 16 July 2012, an unexpected asbestos pipe has been encountered at Gate 7A, Hoys Road, Moonee West. Whilst removing some previously stockpiled material the operator encountered what appeared to be an old driveway crossing, with a pipe that could potentially be asbestos material. The pipe was not identified on any services drawings. As a precaution work was stopped in the area immediately, the area was fenced and our licenced asbestos contractor was contacted to attend site to identify the material. RMS and EPA were notified. The Project licenced asbestos removal contractor was contacted to assess the section of pipe which had been uncovered. The licenced asbestos contractor attended site at approximately 9am on 17 July and confirmed that the suspected pipe was asbestos material. The pipe was removed by the licenced asbestos contractor and disposed of to landfill facility licenced to receive asbestos waste.
- On 31 July 2012, an unexpected asbestos pipe has been encountered at Gate 18B, Greys Road West, Woolgoolga. At approximately 9:45am 31 July, a grader was preparing a new haul road for truck and dogs. The pre-existing pipeline, which appears to be asbestos material was unknown and not shown on the Permit to Excavate. The pipe was not identified on any services drawings. As a precaution work was stopped in the area immediately, the area was fenced and our licenced asbestos contractor was contacted to attend site to identify the material.

- On 3 August 2012, an unexpected asbestos pipe was encountered at cut 29, near Newmans Road. Works ceased in the immediate area, and the area was fenced off and the licenced aspestos contractor was contacted to identify the material. The pipe was removed from site by the licensed asbestos contractor and disposed of to a licensed landfill facility. Waste records have been updated accordingly.

- On 10 August 2012, an subcontractors truck and dog's hydraulic hose burst on the

trailer out the front of the Shell service station in Emerald Beach. The oil spilt onto the earthworks. The truck was immediately removed from site, once the burst hose was temporarily patched up. Kitty litter was used to absorb the material and an excavator dug up the contaminated material & placed it onto plastic material until a fully bunded skip bin arrived onsite, together with organic absorbent. The contaminated material will be treated onsite.

Learning's are reported for each incident. These incidents have been captured and assisted in project learning's in regards to improved practices and controls as outlined above and in Section 3 in regards to controls. Toolboxing continues to be undertaken to ensure works are planned, in particular minimising any risks associated with the works.

6.0 Environmental Representative Reports & Correspondence

The Environmental Representative monthly reports and three-monthly reports from the six-month reporting period are attached in Appendix C of this report. Specifically, the following reports are included:

Monthly reports

- 1 – 29 February 2012
- 1 – 31 March 2012
- 1 - 31 April 2012
- 1 – 31 May 2012
- 1 – 30 June 2012
- 1 – 31 July 2012

Three-monthly reports

- 1 February - 30 April 2012

  In summary, the early part of February involved considerable repair/maintenance work following significant rain event in the final days of January (above 1 in 100 event). Overall, site held up very well considering the scale of rain event.

  One of the most heavily impacted areas was Woolgoolga Creek, where gravel material was washed downstream. Part of this was from construction and part was from natural gravel beds located further upstream. Gravel deposits partially blocked fish passage downstream and resulted in new by-pass channels.

  Repair/rehabilitation proposals were discussed with ERG and agencies, including NSW Water and NSW Forests (landowners). While there was some concern expressed about delays in documenting the repair/rehabilitation proposals, agreement was reached and works were successfully undertaken in March 2012.

  Environment team undertook an audit of exit points throughout the project, identifying a range of measures designed to reduce tracking of material onto public roads. Implementation of these measures commenced and is continuing to be implemented across the whole project.

  Continued rain disruptions throughout the reporting period are resulting in significant ongoing environmental challenges, mainly associated with water management and erosion/sedimentation control. Generally, these issues continue to be well managed, with a number of particularly good examples using mulch traps to filter fine sediment.

In many areas, the lack of space for sediment basins continues to present challenges, requiring alternative management controls. With only a few, quite minor, exceptions, these issues continue to be well managed. Continued diligence is required, particularly given ongoing rain.

- 1 May – 31 July 2012

  Significant continued rain disruptions throughout much of the reporting period, with greater than 85th percentile design rainfall on a number of occasions during the June. Ongoing environmental challenges associated with water management / ERSED controls, which are generally being well managed. There have been issues at some locations with management / capture of fine sediment during rain. This continues to be a challenge, particularly in locations where there is not room for sediment basins. A particular example is Arrawarra Creek, where restricted width of formation provides significant challenges.

  There have been some innovative controls within edge drains on the northern side of the creek. On the southern side, there have been particularly difficult challenges, resulting in release of turbid water to the creek. The Contractor has responded by constructing an elongated basin at the eastern edge of the formation, with significant disruption to construction sequencing / timing in this area. This commitment is appreciated.

  There have been some concerns with colloidal material leaching through the bridging layer at some locations, resulting in turbid water entering creeks. This has been confined to during and immediately following significant rain events at some locations, including Arrawarra Creek. This has been well managed in the vicinity of Skinners Creek, where a sump has been constructed, with water from within the bridging layer collected and pumped back up the formation. This issue will be resolved once the formation can be sealed at these locations. It needs to be managed during significant rain events that may occur prior to that sealing.

  There are also good examples of controls at a number of locations, particularly using mulch traps in series. These controls have worked well in capturing both coarse and fine sediment and should be used more widely, to become 'the norm' where possible. Continued diligence and ongoing maintenance is required to ensure that all controls are robust and have sufficient capacity prior to forecast rain events.

  Given the length of the project and the high number of drainage lines / waterway crossings, management should continue to ensure that adequate resources are available for ongoing maintenance of controls and that these works continue to be well planned.

  A particularly good result achieved during the month with the restoration of Woolgoolga Creek completed. Works were very well managed and constructed, with particularly good placement of coarse woody debris to restore habitat within the creek. Works were subject of

an ERG Environmental Award. Similarly successful restoration works completed / underway at Cunningham's Creek and Skinners Creek.

These reports are provided to the RMS, Department of Planning and Infrastructure and the Leighton-Fulton Hogan Joint Venture. The August 2012 reports will be included in the next six monthly report.

7.0 Environmental Monitoring

Monitoring and testing has been undertaken for surface water quality, noise, dust and flora and fauna in accordance with the Construction Environmental Management Plan (CEMP) during the reporting period. Monitoring results are provided in Appendix B. Further details on monitoring during the reporting period are provided below.

7.1 Water Quality

Waterway Water Quality Monitoring

The LFHJV continue to conduct monthly surface water quality monitoring at predetermined locations throughout the project, in accordance with the Construction Soil, Erosion and Water Quality Management Plan. Eight waterways are monitored at upstream and downstream locations. The monitoring results are uploaded onto the LFHJV environmental monitoring database and conveyed to the Environmental Review Group (ERG) on a monthly basis. Water quality parameters include - pH, turbidity, dissolved oxygen, electrical conductivity, salinity and total dissolved solids. The AquaRead water quality meter is calibrated once a week and is serviced by qualified technicians recommended by the manufacturer. The following information provides a discussion on results. There are differences in upstream to downstream results in terms of electrical conductivity at Cunningham's, Skinners and Double Crossing creeks due to downstream monitoring location being closer to a more estuarine location/ at a lower level and being more saline over a short distance. For zero NTU readings, a visual turbidity tube test is performed to confirm the results.

There appear to be minor differences between the upstream and downstream water quality with some generally small exceptions:

- There was a small increase in Skinners and Arrawarra Creeks turbidity from upstream to downstream on 6 March 2012.
- There was a decrease in Sugarmill Creeks turbidity from upstream to downstream on 4 April 2012.
- There was an increase in Arrawarra Creeks turbidity from upstream to downstream on 17 May 2012. However this seemed to be a short term effect by rainfall as the upstream and downstream water quality returned to normal quality on the 22nd of May 2012. Arrawarra Creek generally records a higher level of turbidity due to the quality of upstream water and the effect of continuous rainfall on several months.

Controls are reviewed taking into accout water quality results and have been refined at all locations with innovative controls adopted at Arrawarra and Sugarmill Creeks, involving a range of controls.

- There was a slight increase in Arrawarra Creeks turbidity from upstream to downstream on 11 July 2012.

The LFHJV has licensed additional sediment basins to contain and control water onsite. Water quality from the licensed basins has been continually monitored to ensure compliance with the discharge criteria in the EPL. Flocculation and pH correction is being undertaken to ensure the discharge criteria is met, within or before the five (5) day discharge criteria. Results are provided to EPA in the monthly report and Annual Return. The use of gypsum at inlets assists in reducing timeframes for release of basins.

Erosion & Sediment Control

The LFHJV have installed extensive erosion and sediment controls throughout the project. Permanent measures include operational sediment basins, concrete lined drains, scour protection and progressive revegetation. Temporary measures include sediment traps, batter chutes, rock checks, scour protection, rock/geofabric lined channels/waterways, sediment fences and clean water diversions. Further environmental control details are provided in Section 3, noting the newer innovative controls being used.

The LFHJV continue to develop progressive erosion and sediment control plans for onsite works. Assistance is provided by the Soil Conservation Service when required, who also conduct joint inspections with the LFHJV environment team to continually monitor the effectiveness of the erosion and sediment controls onsite on a weekly basis. Progressive erosion and sediment control plans are reviewed regularly to ensure they reflect site risks and current conditions.

7.2 Noise Monitoring

Attended noise monitoring occurs twice a month at seven (7) pre-determined locations, as per the Construction Noise and Vibration Management Plan (See Appendix B). During the reporting period, twelve (12) noise exceedances occurred. The majority of noise exceedances are from Newmans Rd where the background noise is very low at 31dBA. On days where there is no apparent work in the area, the noise level still exceeded the pre-recorded background noise, particularly where insects and bird noise is recorded in the range of 46-52dBA.

Noise exceedances near Hearnes Lake Road are mainly contributed by the vibratory roller and excavators building the retaining wall for the interchange. The noise monitor is set up with close proximity to the works, therefore the noise level at the local residences would be at a lower level than the recorded noise level.

Results and exceedances were reported to the relevant environmental agencies through the ERG. Event based noise monitoring occurs as required (ie complaint driven or agency requested).

For any out of hour's works, noise monitoring and/or modelling occurs prior to determine if proposed works are 'audible' or 'inaudible' at the closest sensitive receiver. The management procedure is prescribed in the Construction Noise & Vibration Management Plan, which ensures the relevant stakeholders/residents are advised of the works.

Prior to any machinery, equipment or vehicles been utilised on site, an inspection occurs to ensure it meets the original equipment manufacturer (OEM) specifications. Additionally, every 250 hours (approximately 6 weeks) the all plant/vehicles are serviced in addition to daily inspections to ensure the sound covers, reverse non-tonal beepers, etc are in operation.

Blasting at cut 18/19 was completed in the previous six months period.

At cut 29, 6 blasts were fired, where the average vibration from all monitors was 4.581 mm/s. The maximum vibration on any monitor for the blast was 13.8mm/s at a property whereby the blasting landowner agreement was in place to increase vibration limit to 25mm/s under the DoPI for this. DoPI approved a modification to condition 2.23A (dated 25 February 2011) to permit higher vibration limits and airblast overpressure and agreements have been forwarded to DoPI. The average overpressure readings from all monitors in Cut 29 over the 6 blasts was 105.73 dB(L). The maximum overpressure level on any monitor over the 6 blasts was 120.4 dB(L). All overpressure levels were within the project limits or private agreement limits.

At Cut 35, 12 production blasts were fired, where the average vibration from all monitors was 1.02m/s. The maximum vibration on any monitor over the 12 blasts was 4.26mm/s. All Cut 35 vibration levels were within the project limits. The average airblast readings from all monitors in Cut 35 over the 12 blasts is 104.3dB(L). The maximum airblast level on any monitor over the 12 blasts was 115 dB(L). All airblast levels were within the project limits. The percentages of blasts above the 115dB (L) will be calculated at the completion of each cut, and checked for compliance against the MCoA.

At cut 14, a trial blast was undertaken, which was in accordance with the blast agreement/ limits. Blasting will occur in cut 14 in August 2012, which will be reported in the next six month reporting period.

7.3 Air Monitoring

Monthly dust monitoring occurs at fifteen (15) locations across the project, specifically at nearby sensitive receivers. Two (2) new dust gauges have been installed. One (1) gauge was installed as a result of a dust complaint at Split Solitary Road was installed in March 2012 and another at Graham Drive North in April 2012 due to increased activities at that location. The results of dust monitoring are compared to the prescribed dust criteria of 4g/m^2/month for the project (Refer Appendix B).

Photo – Dust deposition collection

In summary, dust results were exceeded nine (9) times from February to July 2012 (August 2012 will be included in the next reporting period), however only four (4) are related to construction. These exceedances are from dust gauge 11 (Cut 35), which are likely from crushing and screening activities and heavy construction traffic at this key entry point. Water carts are being used to reduced dust emissions in this area. Dust suppression methods such as water sprays and increase moist content of material at the crusher/ screening is likely to reduce the dust levels in the future. Exceedances at dust gauge 6, 9 and 13 is likely as these have been tampered with. No construction works have caused these exceedances as earthworks were not occurring at the time. Additional water carts have been added to the project to ensure that dust levels will remain low in the future.

On all occasions, dust results/ exceedances and mitigation measures have been tabulated and discussed at the next meeting of the ERG.

7.4 Flora & Fauna

Ecological 'walk through' & pre clearing surveys have been continuing throughout the reporting period prior to entering new areas, although these are now small in number considering that most of the clearing is completed. The RMS, project ecologist, clearing contractor, area engineer and LFHJV Environmental Co-ordinator undertake the surveys to identify clearing limits, environmentally sensitive areas/species, ecological site

constraints, habitat trees and discuss erosion/ sediment control options and any other issues that are applicable. The survey team delineate the extent of approved clearing limit using GPS and flagging tape. The ecological surveys conducted by the project ecologist occur at dusk, dawn and during the day, which includes spotlighting and frog identification.

The two-stage clearing process has worked well in the reporting period to control all clearing activities onsite. The night before clearing, the project ecologist conducts spotlighting and stagwatching and identifies any new habitat trees and marks them accordingly. The first stage of clearing occurs the next day and involves clearing everything except the habitat / marked vegetation. The second stage of clearing occurs 48 hours later and involves clearing the habitat trees in the presence of the project ecologist who captures and relocates any remaining fauna prior to tree felling.

To protect native flora and fauna, sensitive ecological environments, threatened species, etc, 'no – go' fencing and delineation flagging tape has been extensively used throughout the project to ensure these areas are not disturbed and the appropriate management procedures are in place prior to any necessary disturbance.

Two bat boxes were also installed upstream and downstream of Skinners Ck and Double Crossing Ck (ie.four boxes in total) in December 2011. Demolition is yet to commence on these bridges, hence no additional pre-clearance surveys have been undertaken to date. No additional bat boxes have been installed in the reporting period.

Although sporadic, vegetation clearing has not been completed. Therefore, the final assessment of actual tree hollows removed has not been completed. It is expected that the final calculation of tree hollows removed and nestboxes required will be undertaken within the next reporting period. The Ecological Monitoring report will be issued in August 2012.

7.5 Heritage (Aboriginal & Non-Aboriginal)

Aboriginal

The project archaeologist and LFHJV have been working alongside the Aboriginal representatives of the area within the reporting period undertaking cultural heritage surveys and salvaging cultural items in accordance with the Heritage Management Tool (Construction Heritage Management Plan). Four (4) Aboriginal stakeholder inspections have occurred in the reporting period, facilitated by the project archaeologist.

Where items of cultural significance have been uncovered, they have been managed by delineating the area using parawebbing, appropriate signage and toolboxing work crews, and in consultation with the Traditional Owner representatives.

Non-Aboriginal

In accordance with the Heritage Find Management Tool, works immediately ceased and the Archaeologist was contacted to undertake an inspection of significance. The Corduroy Crossing was found to be of low significance and was subsequently carefully removed and given to Coffs Harbour City Council to be used in a heritage walk as part of the Coffs Harbour Jetty Development, which is still to be installed.

Photo – Archaeologist inspecting site of Corduroy Crossing

8.0 Audits & Inspections

Environmental Review Group Meetings/Inspections

The Environmental Review Group (ERG) for the project consists of representatives from the LFHJV, Environment Protection Authority (EPA), Industry & Investment – Fisheries, Solitary Islands Marine Park Authority (SIMPA), Coffs Harbour City Council (CHCC), Department of Planning and Infrastructure (DoPI) and their Environmental Representative (ER), Soil Conservation Service and Roads & Maritime Services (RMS).

Monthly ERG meetings/inspections have occurred on the following dates, during the reporting period –

- 29 February 2012
- 28 March 2012
- 24 April 2012
- 23 May 2012
- 27 June 2012
- 25 July 2012

The August 2012 ERG meeting will occur outside the reporting period.

Fortnightly Environmental Inspections

Fortnightly environmental inspections continue to occur with the RMS, Environmental Representative and the LFHJV.

Weekly Environmental Inspections

The LFHJV, RMS and Soil Conservation Service continue to conduct weekly environmental inspections throughout the project. All actions are recorded on an Actions Register, which is managed by the Environment team. Where actions are not addressed within the requested timeframe, they are elevated to senior management until the item is addressed.

Environmental Audits

A LFHJV exit point (environmental) audit took place by the environment and construction teams on 24 February 2012, as a result of an increase of large rocks on the road. Several incidents have occurred involving motorists windscreens been damaged due to vehicle undercarriage. Each exit point was assessed individually, identifying new improvements such as longer cattle grids, sealing where practical and extend gravel.

An RMS audit was undertaken 3 and 4 April 2012 regards to Quality, Safety and Environmental issues. One (1) Corrective Action Required (CAR) was issued in relation to non commencement of Year 2 of monitoring of translocation sites, which is now underway.

9.0 Environmental Complaints

During the six months reporting period, there have been a total of ten (10) recorded environmental complaints relating to the 25 km project. A summary of these complaints and the LFHJV response is summarised below. All complaints are recorded into the LFHJV's Consultation Manager, which are tracked by assigning any actions to the appropriate person until they are closed out to the satisfaction of the resident and the LFHJV. All the complaints received during the reporting period have been closed out.

- On February 16 2012, RMS advised that they had received a complaint from a resident at Alpini Place, Sapphire Beach the day before at 12.23pm regarding a new excavator using his horn to signal to trucks, and the use of exhaust brakes by a number of trucks. Following the email, the project team contacted the earthworks foreman regarding the use of the horn. The foreman advised his excavator was not using a horn. The community team investigated further and found that a new excavator was being used by the drainage team. Drainage foreman was contacted and the use of the horn ceased. The issue of the sensitivity in this area was again toolboxed on 21 February 2012.
- On February 16 2012, RMS sent an email advising that they had received a complaint from a resident at Alpini Place, Sapphire Beach on February 15 at 1.30pm regarding the noise levels from trucks accessing the work site via the highway into Gaudrons Road who were excessively using their compression brakes and/or gears. RMS suggested an independent observation of a round of the truck fleet to see if this was the case and then toolboxing the offending drivers. The joint venture engaged a representative of GeoLink to carry out the observation. The feedback demonstrated that trucks were not excessively using their brakes and/gears and that in fact the construction team seemed to be making an effort to keep noise down. While there were some faintly audible brakes, the noise from traffic on the highway was higher. The representative's findings were emailed to the resident, RMS and other representatives.

- On 2 March 2012, the EPA advised a resident of Emerald Heights had raised concerns about the level of dust being generated near his property as dust was becoming a nuisance to him. The resident advised he had contacted a member of the JV community team between 8am and 9am that day but at the time of his telephone call to EPA (around 1.45pm), nothing had been done to manage the dust. The community team spoke with the resident that afternoon and he said he was satisfied that dust was being appropriately managed adjacent to his property. He did note that there was a wind change earlier (a strong southerly) and some plumes of dust at that time, however he had no issues then or outstanding. In an email to EPA, it was noted that the resident did not mention dust as an issue with

the community team that morning. The discussion was around other property-related issues. A full-time water cart resource is assigned to this area. Two members of the environment team inspected the site in the afternoon following the call from EPA and confirmed with EPA that the water cart was maintaining a damp surface.

- On 9 March 2012, a resident of Woolgoolga Creek Road, rang to complain about dust. The JV stabilised the exit point (Gate 19B) and increased sweeping in the area. The JV will continue to monitor this exit point.

- On 19 March 2012, a resident of Sapphire Beach, called RMS to complain about mud and dirt being left along Crystal Drive caused by trucks entering and exiting the site. Steady rain had been received on site all morning. The JV community team spoke to the foreman for the area who advised that he was aware of the issue and had regularly used a water cart and a sweeper in the area. He advised that work would be finished in the area by 2pm but that he would continue to use the water cart and sweeper. The community team rang and spoke to the resident who thanked them for the advice.
- On 3 June 2012, a resident at Sapphire Beach, complained about the noise from an excavator at the Gaudrons Road work site that was consistently using their horn to signal and that they had been assured in the past that both reverse beepers and tooting of horns would not be used in this area. The Community team made unannounced 'spot' checks of the operations in the week following this complaint and found that the excavator in this area was not using his horn but two-way radio to communicate with the trucks. The Community team then spoke to the foreman for this area on 8 June regarding this complaint. He also confirmed that the excavator operator had been using two-way radio for communications because of the known sensitivity of this resident to noise.
- On 18 June 2012, a member of the Community team returned a call to a resident at Emerald Heights, regarding a nearby stockpile. The team member advised the resident they would speak to the foreman for the area to see if it could be covered. The resident also asked when work would start on his fence. The team member advised the resident they would call him back when they could provide him with the information regarding the property works. The team member inspected the stockpile that afternoon. Most of the stockpile had previously been removed. The resident called OEH that afternoon to complain about dust and that he was not being informed about what was happening near his property. On 20 June, the team member rang the resident to set a meeting time to discuss any issues and the commencement of property works. A meeting was held on site with the resident on 21 June with four members of the project team to address the stockpile issue and start of property works on 22 June. An undertaking was given to remove the rest of the stockpile immediately and the staging of property works

was agreed. On 22 June, property works commenced. The team member rang the resident that afternoon to check if he was happy with the way works were progressing. The resident advised that he was out but would ring the team member on 23 June. The resident did not ring the team member on 23 June so on 25 June, the team member contacted the resident who advised that he was happy with the progress being made.

- On 18 June 2012, a resident on Mahogany Avenue (south of Diamond Head Drive) complained about perceived increase in traffic noise following clearing of vegetation. The primary issue is heavy vehicle traffic on the Pacific Highway at night. The resident was advised that an Operational Traffic Noise Wall is to be constructed in this area, which is designed to meet the EPA's criteria for road traffic noise. The resident is not eligible for at house noise treatment. LFHJV is in the process of investigating the possibility of constructing the Operational Noise wall in this area earlier in the program pending assessment of paving operational requirements and integration with verge installation.
- On 20 June 2012, a resident at Emerald Heights Drive rang the freecall number late in the afternoon regarding hammering of rock. The resident advised he knew the project had hit hard rock in that location. A member of the Community team said they would investigate and call him back. Shortly later the resident was called and advised that hard rock had been encountered and that an excavator had been brought in to try to hammer the rock. Noise monitoring had been undertaken and the results would be provided to him the following morning. The resident was called on the morning of 21 June and advised of the results of the noise monitoring. The resident was told that although the results were below that required for operating under high noise activities under the EPL, the project would undertake the activity under the three hours' on, one hour of respite process. The resident also was advised that as the operation continued, it would move down into the cut and the noise would decrease. The resident rang OEH about noise that afternoon. OEH was advised of the previous discussions with the resident.
- On 21 June 2012, a resident of Hearnes Lake Road, south Woolgoolga, rang the freecall hotline number to complain about dust and that he had only seen a water cart in use about once a week. The resident was advised that the Community team would speak to the foreman for the area and ensure the water carts were kept up in the area. The resident also was advised that paving would commence in that area within six to eight weeks and any issue of dust would be considerably reduced. The foreman advised that the water cart was being used on a half hour rotation basis in that area. No further calls have been received.

Further details are contained in Section 7.3 and 3.1.3 of this report.

Appendix A Compliance Tracking Table

Appendix B Environmental Monitoring Results

Water Quality Monitoring

Sampling Location	Comments/Field Observations	Date Sampled	pH (Field_ pH Unit	Temperature °C	Turbidity NTU	Conductivity µS/cm	Dissolved Oxygen %/mg/L	Oil and grease mg/L	Dissolved Solids mg/L	ORP mv	Salinity ppt
Sugarmill Creek Upstream	Clear Water, Patches of showers	6/03/2012	7.36	21.5	3.6	323	6.74	None visible	209	44.4	0.16
Sugarmill Creek Downstream	Slightly turbid	6/03/2012	6.86	22.1	14.6	319	4.11	None visible	207	60.5	0.15
Cunninghams Creek Upstream	Slightly turbid	6/03/2012	6.82	21.9	48.4	391	2.93	None visible	254	95.9	0.19
Cunninghams Creek Downstream	Clear Water, high tide	6/03/2012	7.55	24.2	9.9	42026	4.68	None visible	27316	9.7	21.01
Skinners Creek Upstream	Clear water, slightly affected by tannin	6/03/2012	6.76	21.9	4.1	177	4.39	None visible	115	56.6	0.08
Skinners Creek Downstream	slightly turbid, affected by tannin	6/03/2012	6.77	22	28.4	73	6.26	None visible	47	91	0.03
Moonee Creek Upstream	Clear Water, Patches of showers	6/03/2012	6.83	22.1	4.5	212	4.64	None visible	137	75.9	0.1
Moonee Creek Downstream	Clear Water, Patches of showers	6/03/2012	6.65	22.1	5.8	213	4.43	None visible	138	96.1	0.1
Double Crossing Creek Upstream	Clear Water, Patches of showers	6/03/2012	6.79	22.2	13	378	4.64	None visible	245	84.6	0.18
Double Crossing Creek Downstream	Clear Water, Patches of showers	6/03/2012	6.8	22.5	12.8	5157	5.99	None visible	3352	84	2.57
Woolgoolga Creek Upstream	Clear Water, Patches of showers	6/03/2012	6.8	22.1	4.4	209	6.53	None visible	135	40.4	0.1
Woolgoolga Creek Downstream	Clear Water, Patches of showers	6/03/2012	6.69	22.1	4.3	208	6.63	None visible	135	54.5	0.1
Poundyard Creek Upstream	Clear Water, Patches of showers	6/03/2012	7.15	22.2	4.5	302	5.53	None visible	196	-95.7	0.15
Poundyard Creek Downstream	Clear Water, Patches of showers	6/03/2012	6.8	22.2	4.9	324	3.7	None visible	210	-6.3	0.16
Arrawarra Creek Upstream	Tannin affected	6/03/2012	6.72	21.9	14.4	431	2.57	None visible	280	51.5	0.21
Arrawarra Creek Downstream	Tannin affected	6/03/2012	6.82	22.2	28.6	429	2.76	None visible	278	101	0.21

Figure 1 March Water Quality

Sampling Location	Comments/Field Observations	Date Sampled	pH (Field_	Temperature	Turbidity	Conductivity	Dissolved Oxygen	Oil and grease	Dissolved Solids	ORP	Salinity
			pH Unit	°C	NTU	µS/cm	%/mg/L	mg/L	mg/L	mv	ppt
Sugarmill Creek Upstream	Slightly Turbid	4/04/2012	6.32	21.1	23.4	306	5.33	None Visible	198	45.2	0.15
Sugarmill Creek Downstream	Clear	4/04/2012	6.44	23.2	6	307	5.94	None Visible	199	95.3	0.15
Cunninghams Creek Upstream	Clear	4/04/2012	6.28	21.7	0.1	2377	2.91	None Visible	1545	48.2	1.18
Cunninghams Creek Downstream	Clear	4/04/2012	6.36	23.2	7.4	9461	3.67	None Visible	6149	94.3	4.73
Skinners Creek Upstream	Clear	4/04/2012	6.33	21.3	0	242	4.17	None Visible	157	63.4	0.12
Skinners Creek Downstream	Clear	4/04/2012	6.38	22.8	0.1	313	7.2	None Visible	203	105	0.15
Moonee Creek Upstream	Clear	4/04/2012	6.25	21.1	0	243	4.23	None Visible	157	100.7	0.12
Moonee Creek Downstream	Clear	4/04/2012	6.14	21.3	1.9	235	5.35	None Visible	152	162.8	0.11
Double Crossing Creek Upstream	Clear	4/04/2012	7.03	27.9	7.4	13676	4.93	None Visible	8889	46.4	6.83
Double Crossing Creek Downstream	Clear	4/04/2012	7.41	25.4	8.5	11765	4.95	None Visible	7647	89.7	5.88
Woolgoolga Creek Upstream	Clear	4/04/2012	6.8	22	4.8	9492	4.79	None Visible	6169	107.7	4.74
Woolgoolga Creek Downstream	Clear	4/04/2012	6.74	23.2	3.4	18490	5.99	None Visible	12018	88.9	9.24
Poundyard Creek Upstream	Clear	4/04/2012	6.48	20.3	2.6	307	3.34	None Visible	199	139.6	0.15
Poundyard Creek Downstream	Clear	4/04/2012	6.52	21.2	0	2185	4.36	None Visible	1420	89.5	1.09
Arrawarra Creek Upstream	Slightly Turbid	4/04/2012	6.23	22.3	47.7	511	7.98	None Visible	332	60.8	0.25
Arrawarra Creek Downstream	Slightly Turbid	4/04/2012	6.26	20.3	47	552	1.9	None Visible	358	100.2	0.27

Figure 2 April Water Quality

Sampling Location	Comments/Field Observations	Date Sampled	pH (Field_	Temperature	Turbidity	Conductivity	Dissolved Oxygen	Oil and grease	Dissolved Solids	ORP	Salinity
			pH Unit	°C	NTU	µS/cm	%/mg/L	mg/L	mg/L	mv	ppt
Sugarmill Creek Upstream	Fine	17/05/2012	6.56	17.2	17.8	531	7.03	None Visible	345	63	0.26
Sugarmill Creek Downstream	Fine	17/05/2012	6.82	16.2	19.1	311	6.52	None Visible	202	78	0.15
Cunninghams Creek Upstream	Fine	17/05/2012	7.38	15.2	4.3	799	4.92	None Visible	519	-4.9	0.39
Cunninghams Creek Downstream	Fine	17/05/2012	7.42	16.6	9.1	11517	5.41	None Visible	7486	-48.4	5.75
Skinners Creek Upstream	Fine	17/05/2012	6.46	15	2.5	210	6.76	None Visible	136	50.7	0.1
Skinners Creek Downstream	Fine	17/05/2012	6.59	16.2	5.1	238	7.2	None Visible	154	58.8	0.11
Moonee Creek Upstream	Fine	17/05/2012	6.72	15.7	10	280	6.25	None Visible	182	50.1	0.14
Moonee Creek Downstream	Fine	17/05/2012	6.82	15.5	15.2	255	5.37	None Visible	184	43.3	0.12
Double Crossing Creek Upstream	Fine	17/05/2012	7.14	18.1	2.4	10880	6.15	None Visible	7072	20	5.44
Double Crossing Creek Downstream	Fine	17/05/2012	6.92	18.4	3.8	13198	6.2	None Visible	8578	30.9	6.59
Woolgoolga Creek Upstream	Fine	17/05/2012	6.68	16.5	2.9	7101	6.35	None Visible	4615	-5.1	3.55
Woolgoolga Creek Downstream	Fine	17/05/2012	6.86	16.4	3.9	5035	6.7	None Visible	3272	-11.8	2.51
Poundyard Creek Upstream	Fine	17/05/2012	6.66	15.4	6.2	359	5.61	None Visible	233	16.2	0.17
Poundyard Creek Downstream	Fine	17/05/2012	6.77	15.7	6.3	668	6.31	None Visible	434	49.6	0.33
Arrawarra Creek Upstream	Slightly Turbid and tannin affected	17/05/2012	6.29	15	28.7	640	3.49	None Visible	416	12.5	0.32
Arrawarra Creek Downstream	Slightly Turbid and tannin affected	17/05/2012	6.41	15.6	62.5	604	4.68	None Visible	392	35.7	0.3
Arrawarra Creek Upstream	Slightly Turbid and tannin affected	22/05/2012	6.43	14.3	32	627	4.61	None Visible	407	-57.3	0.31
Arrawarra Creek Downstream	Slightly Turbid and tannin affected	22/05/2012	6.35	15.2	42.3	636	4.13	None Visible	413	56.5	0.31

Figure 3 May Water Quality

Sampling Location	Comments/Field Observations	Date Sampled	pH (Field_	Temperature	Turbidity	Conductivity	Dissolved Oxygen	Oil and grease	Dissolved Solids	ORP	Salinity
			pH Unit	°C	NTU	µS/cm	%/mg/L	mg/L	mg/L	mv	ppt
Sugarmill Creek Upstream	Clear	21/06/2012	5.94	15.9	11.3	293	8.96	None Visible	190	71.3	0.14
Sugarmill Creek Downstream	Clear	21/06/2012	6.15	13.7	16.5	282	9.29	None Visible	183	28.4	0.14
Cunninghams Creek Upstream	Clear	21/06/2012	6.06	13.2	9.9	370	8.41	None Visible	240	71.3	0.18
Cunninghams Creek Downstream	Clear	21/06/2012	5.96	13.5	0	2369	8.09	None Visible	1539	75.9	1.18
Skinners Creek Upstream	Clear	21/06/2012	5.72	13.5	8	243	7.87	None Visible	157	8.2	0.12
Skinners Creek Downstream	Clear	21/06/2012	5.73	14.3	13.3	222	9.23	None Visible	144	53.3	0.11
Moonee Creek Upstream	Clear	21/06/2012	5.92	14.2	0	249	9.12	None Visible	161	40.1	0.12
Moonee Creek Downstream	Clear	21/06/2012	5.75	14.5	0	242	9.6	None Visible	157	67.3	0.12
Double Crossing Creek Upstream	Clear	21/06/2012	6.26	14.3	2.7	743	9.58	None Visible	482	25.1	0.37
Double Crossing Creek Downstream	Clear	21/06/2012	6.56	14.5	0	1091	8.71	None Visible	709	49.7	0.54
Woolgoolga Creek Upstream	Clear	21/06/2012	5.78	14.4	5.4	267	9.04	None Visible	173	86.4	0.13
Woolgoolga Creek Downstream	Clear	21/06/2012	5.88	14.4	7.4	1484	8.94	None Visible	964	66.7	0.74
Poundyard Creek Upstream	Clear	21/06/2012	6.22	14.2	10	260	8.69	None Visible	169	69.1	0.13
Poundyard Creek Downstream	Clear	21/06/2012	6.25	13.7	9.4	507	8.94	None Visible	329	59.8	0.25
Arrawarra Creek Upstream	Slightly Turbid	21/06/2012	5.89	12.8	30.2	339	8.36	None Visible	220	58.9	0.16
Arrawarra Creek Downstream	Slightly Turbid	21/06/2012	6.14	13.3	34.6	330	9.64	None Visible	214	59.6	0.16

Figure 4 June Water Quality

Sampling Location	Comments/Field Observations	Date Sampled	pH (Field_	Temperature	Turbidity	Conductivity	Dissolved Oxygen	Oil and grease	Dissolved Solids	ORP	Salinity
			pH Unit	°C	NTU	µS/cm	%/mg/L	mg/L	mg/L	mv	ppt
Sugarmill Creek Upstream	Clear	11/07/2012	5.85	16.3	4.1	260	9.89	None Visible	169	110.4	0.13
Sugarmill Creek Downstream	Clear	11/07/2012	6.1	15.9	4.4	296	9.4	None Visible	192	133.8	0.14
Cunninghams Creek Upstream	Clear	11/07/2012	6.04	14.4	11.5	394	7.86	None Visible	256	117.6	0.19
Cunninghams Creek Downstream	Clear	11/07/2012	5.98	15.2	13	906	7.76	None Visible	588	118.3	0.45
Skinners Creek Upstream	Clear	11/07/2012	6.17	14.9	19.5	230	8.67	None Visible	149	-1	0.11
Skinners Creek Downstream	Clear	11/07/2012	5.89	14.7	6.2	199	9.53	None Visible	129	95.9	0.09
Moonee Creek Upstream	Clear	11/07/2012	5.94	15.7	6.3	230	8.6	None Visible	149	81	0.11
Moonee Creek Downstream	Clear	11/07/2012	5.79	15.8	5.2	233	8.94	None Visible	151	114.9	0.11
Double Crossing Creek Upstream	fine	11/07/2012	6.22	17.1	22.7	1235	8.6	None Visible	802	90.6	0.61
Double Crossing Creek Downstream	fine	11/07/2012	6.43	17.2	24.1	1571	8.96	None Visible	1021	53	0.78
Woolgoolga Creek Upstream	Clear	11/07/2012	6.14	15.6	8.5	265	9.32	None Visible	172	74.5	0.13
Woolgoolga Creek Downstream	Clear	11/07/2012	6.09	15.7	10.8	335	8.8	None Visible	217	86.5	0.16
Poundyard Creek Upstream	Clear	11/07/2012	6.21	15.6	12	279	9.12	None Visible	181	69.3	0.13
Poundyard Creek Downstream	fine	11/07/2012	6.21	15.4	17.1	291	9.39	None Visible	189	110.3	0.14
Arrawarra Creek Upstream	fine	11/07/2012	5.98	14	30.7	374	8.06	None Visible	243	73.9	0.18
Arrawarra Creek Downstream	slightly turbid	11/07/2012	6	14.8	44.9	366	8.11	None Visible	237	82	0.18

Figure 5 July Water Quality

Noise Monitoring

Month	Location	Relevant Background level	Type of Activity	Relevant Noise Goal	Measured L_{A10}	Compliant with MCOA Goal
February	Warrawee St	55	Earthworks	60	54	Yes
February	Wakelands Rd	55	Earthworks	60	46.9	Yes
February	Woodhouse Rd	46	Bridge Demolition	51	29.7	Yes
February	Kambaingeri Cl	57	Earthworks/Bridges	62	33.9	Yes
February	Oak Close, Sandy Beach	55	Earthworks/Bridges	60	51	Yes
February	Hearnes Lake Rd	51	Earthworks	56	65	No
February	Newman Rd	31	Earthworks/Bridges	36	55	No
February	Warrawee St	55	Earthworks	60	55	Yes
February	Wakelands Rd	55	Earthworks	60	47.6	Yes
February	Woodhouse Rd	46	Bridge Demolition	51	52	No
February	Kambaingeri Cl	57	Earthworks/Bridges	62	37.4	Yes
February	Oak Close, Sandy Beach	55	Earthworks/Bridges	60	59	Yes
February	Hearnes Lake Rd	51	Earthworks	56	62	No
February	Newman Rd	31	Earthworks/Bridges	36	50	No

Figure 6 Februrary Noise Data

Month	Location	Relevant Background level	Type of Activity	Relevant Noise Goal	Measured L_{A10}	Compliant with MCOA Goal
March	Warrawee St	55	Earthworks	60	49	Yes
March	Wakelands Rd	55	Earthworks	60	48.4	Yes
March	Woodhouse Rd	46	Bridge Demolition	51	43	Yes
March	Kambaingeri Cl	57	Earthworks/Bridges	62	37.4	Yes
March	Oak Close, Sandy Beach	55	Earthworks/Bridges	60	57	Yes
March	Hearnes Lake Rd	51	Earthworks	56	61	No
March	Newman Rd	31	Earthworks/Bridges	36	43	No

Figure 7 March Noise Data

Month	Location	Relevant Background level	Type of Activity	Relevant Noise Goal	Measured L_{A10}	Compliant with MCOA Goal
April	Warrawee St	55	Earthworks	60	58	Yes
April	Wakelands Rd	55	Earthworks	60	53	Yes
April	Woodhouse Rd	46	Bridge Demolition	51	45.6	Yes
April	Kambaingeri Cl	57	Earthworks/Bridges	62	47.8	Yes
April	Oak Close, Sandy Beach	55	Earthworks/Bridges	60	47.9	Yes
April	Hearnes Lake Rd	51	Earthworks	56	50	Yes
April	Newman Rd	31	Earthworks/Bridges	36	46	No
April	Warrawee St	55	Earthworks	60	57	Yes
April	Wakelands Rd	55	Earthworks	60	42.7	Yes
April	Woodhouse Rd	46	Bridge Demolition	51	49	Yes
April	Kambaingeri Cl	57	Earthworks/Bridges	62	41.6	Yes
April	Oak Close, Sandy Beach	55	Earthworks/Bridges	60	52.9	Yes
April	Hearnes Lake Rd	51	Earthworks	56	61	No
April	Newman Rd	31	Earthworks/Bridges	36	62	No

Figure 8 April Noise Data

Month	Location	Relevant Background level	Type of Activity	Relevant Noise Goal	Measured L_{A10}	Compliant with MCOA Goal
May	Warrawee St	55	Earthworks	60	57	Yes
May	Wakelands Rd	55	Earthworks	60	56	Yes
May	Woodhouse Rd	46	Bridges	51	45	Yes
May	Kambaingeri Cl	57	Earthworks/Bridges	62	46.4	Yes
May	Oak Close, Sandy Beach	55	Earthworks/Bridges	60	45.8	Yes
May	Hearnes Lake Rd	51	Earthworks	56	54	Yes
May	Newman Rd	31	Earthworks/Bridges	36	53	No
May	Warrawee St	55	Earthworks	60	58	Yes
May	Wakelands Rd	55	Earthworks	60	58	Yes
May	Woodhouse Rd	46	Bridges	51	45.1	Yes
May	Kambaingeri Cl	57	Earthworks/Bridges	62	47.2	Yes
May	Oak Close, Sandy Beach	55	Earthworks/Bridges	60	50	Yes
May	Hearnes Lake Rd	51	Earthworks	56	60	No
May	Newman Rd	31	Earthworks/Bridges	36	52	No

Figure 9 May Noise Data

Month	Location	Relevant Background level	Type of Activity	Relevant Noise Goal	Measured L_{A10}	Compliant with MCOA Goal
June	Warrawee St	55	Earthworks	60	55	Yes
June	Wakelands Rd	55	Earthworks	60	56	Yes
June	Woodhouse Rd	46	Bridges	51	51	Yes
June	Kambaingeri Cl	57	Earthworks/Bridges	62	47.4	Yes
June	Oak Close, Sandy Beach	55	Earthworks/Bridges	60	49.5	Yes
June	Hearnes Lake Rd	51	Earthworks	56	51	Yes
June	Newman Rd	31	Earthworks/Bridges	36	45	No
June	Warrawee St	55	Earthworks	60	53	Yes
June	Wakelands Rd	55	Earthworks	60	58	Yes
June	Woodhouse Rd	46	Bridges	51	49	Yes
June	Kambaingeri Cl	57	Earthworks/Bridges	62	52.8	Yes
June	Oak Close, Sandy Beach	55	Earthworks/Bridges	60	55	Yes
June	Hearnes Lake Rd	51	Earthworks	56	55	Yes
June	Newman Rd	31	Earthworks/Bridges	36	54	No

Figure 10 June Noise Data

Month	Location	Relevant Background level	Type of Activity	Relevant Noise Goal	Measured L_{A10}	Compliant with MCOA Goal
July	Warrawee St	55	Earthworks	60	59	Yes
July	Wakelands Rd	55	Earthworks	60	54.2	Yes
July	Woodhouse Rd	46	Bridges	51	48	Yes
July	Kambaingeri Cl	57	Earthworks/Bridges	62	48.6	Yes
July	Oak Close, Sandy Beach	55	Earthworks/Bridges	60	49.8	Yes
July	Hearnes Lake Rd	51	Earthworks	56	45.7	Yes
July	Newman Rd	31	Earthworks/Bridges	36	51	No
July	Warrawee St	55	Earthworks	60	56	Yes
July	Wakelands Rd	55	Earthworks	60	59	Yes
July	Woodhouse Rd	46	Bridges	51	50	Yes
July	Kambaingeri Cl	57	Earthworks/Bridges	62	52.2	Yes
July	Oak Close, Sandy Beach	55	Earthworks/Bridges	60	52.2	Yes
July	Hearnes Lake Rd	51	Earthworks	56	56	Yes
July	Newman Rd	31	Earthworks/Bridges	36	60	No

Figure 11 July Noise Data

Dust Deposition Gauge Results

Month	Date Started	Date Finished	DD1	DD2	DD3	DD4	DD5	DD6	DD7	DD8	DD9	DD10	DD11	DD12	DD13	DD14	Split Solitary Rd	Monthly Project Average
February 2012	20/01/2012	20/02/2012	3.1	0.7	0.7	0.7	1.5	10.4	0.9	1.8	12.5	1.3	18.9	1.6	1.5	NA	NA	4.3
March 2012	20/02/2012	19/03/2012	0.8	0.7	0.3	0.5	0.4	5.2	0.8	0.6	0.9	2.3	5	0.3	0.6	NA	1.6	1.4
April 2012	19/03/2012	20/04/2012	0.7	1.2	0.6	0.4	1.2	1.1	0.7	1.2	1.8	0.9	9	0.5	1.7	NA	0.7	1.6
May 2012	20/04/2012	21/05/2012	2.9	0.7	0.5	0.4	0.6	1.6	0.6	0.5	0.5	0.6	3.3	0.7	1.6	0.8	3.4	1.2
June 2012	21/05/2012	20/06/2012	1.4	0.7	0.6	0.7	1.2	0.9	0.9	2.6	1	1.5	5.1	2.1	23.4	0.9	2.4	3.0
July 2012	20/06/2012	20/07/2012	0.6	0.9	0.4	0.4	1.5	0.8	0.2	1.8	0.6	3.6	3.4	0.9	17	1	1.9	2.5

Figure 12 Six Month Dust Gauge Results, all results are g/m^2/month

Comments

February 2012 – DD6 is high due to interference; DD11 is high due to crushing and screening and construction traffic
March 2012 – DD11 is high due to crushing and screening
April – DD9 is high due to crushing and screening
May 2012 – All compliant
June – DD11 incombustible material is under the limit; DD13 is high due to interference
July – DD13 is high due to interference

Locations:
DD1 - 361 Old Coast Rd, Sapphire
DD2 - 1 Alpini Way, Sapphire
DD3 - 14-30 MacCues Rd, Moonee Beach
DD4 - 1206D Pacific Highway, Moonee Beach
DD5 - 1579 Pacific Highway, Moonee Beach
DD6 - Emerald Beach Compound

DD7 - 4 Ocean View Cres, Emerald Beach (1km from site)

DD8 - RTA Land off Diamond Head Rd, Sandy Beach
DD9 - 34-40 Unwins Rd, Woolgoolga
DD10 - RTA Land Bark Hut Rd, Woolgoolga
DD11 - Blueberry Farm, Bark Hut Rd, Woolgoolga
DD12 - 105 Old Bucca Rd, Moonee Beach (1km from site)
DD13 - 25 Greys Rd, Woolgoolga
DD14 – Graham Drive North
DD Split Solitary Rd

Appendix C Environmental Representative Reports

REPORTING PERIOD: 1 – 31 August 2012

Summary: A generally dry month, easing pressure on ERSED controls. Dry windy conditions increased dust risk, and JV has responded by increasing water trucks and street sweepers across the site and implementing addition dust suppression controls at crusher / screen plants.

Particularly pleasing to see environmental crews retained and ERSED controls across the site continuing to be maintained in readiness for rain events.

ER ACTIVITIES

Certification / Endorsement:

- none

Out of Hours Works Approvals:

- none

ERG:

- 25 August 2012 (draft notes distributed previously)

Inspections:

- 10 Aug 2012

Audits:

- none

Stop Work Notices:

- none issued

Consultation:

- none

NON-CONFORMANCE WITH CEMP

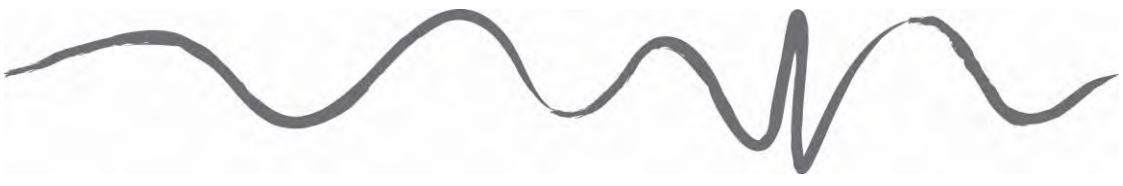
- none identified

INCIDENTS

- SW 44 – Oil spill, service station at Emerald
- SW 45 – Asbestos, Diamond Head Drive
- SW 47 – Oil spill, Hearns Lake Rd
- SW 48 – Oil spill Cut 29

(Note: No. 46 not used)

Rob van Iersel
ER



ENVIRONMENTAL REPRESENTATIVE THREE-MONTHLY REPORT

May – July 2012

Reporting Period: 1 May to 31 July 2012

Summary: Significant continued rain disruptions throughout much of the reporting period, with greater than 85th percentile design rainfall on a number of occasions during the June. Ongoing environmental challenges associated with water management / ERSED controls, which are generally being well managed. There have been issues at some locations with management / capture of fine sediment during rain. This continues to be a challenge, particularly in locations where there is not room for sediment basins. A particular example is Arrawarra Creek, where restricted width of formation provides significant challenges (see Photo 1). There have been some innovative controls within edge drains on the northern side of the creek (see Photo 1).

On the southern side, there have been particularly difficult challenges, resulting in release of turbid water to the creek. The Contractor has responded by constructing an elongated basin at the eastern edge of the formation, with significant disruption to construction sequencing / timing in this area. This commitment is appreciated.

There have been some concerns with colloidal material leaching through the bridging layer at some locations, resulting in turbid water entering creeks. This has been confined to during and immediately following significant rain events at some locations, including Arrawarra Creek (see Photo 2). This has been well managed in the vicinity of Skinners Creek, where a sump has been constructed, with water from within the bridging layer collected and pumped back up the formation. This issue will be resolved once the formation can be sealed at these locations. It needs to be managed during significant rain events that may occur prior to that sealing.

There are also good examples of controls at a number of locations, particularly using mulch traps in series (see Photo 3). These controls have worked well in capturing both coarse and fine sediment and should be used more widely, to become 'the norm' where possible. Continued diligence and ongoing maintenance is required to ensure that all controls are robust and have sufficient capacity prior to forecast rain events.

Given the length of the project and the high number of drainage lines / waterway crossings, management should continue to ensure that adequate resources are available for ongoing maintenance of controls and that these works continue to be well planned.

A particularly good result achieved during the month with the restoration of Woolgoolga Creek completed. Works were very well managed and constructed, with particularly good placement of coarse woody debris to restore habitat within the creek. Works were subject of an ERG Environmental Award. Similarly successful restoration works completed / underway at Cunninghams Creek and Skinners Creek.

Photo 1: Controls within edge drain

Photo 2: Colloidal material bleeding through bridging at Arrawarra Creek.

Photo 3: Mulch controls in series

ER ACTIVITIES

Certification, review & comment:

- Killara Avenue temporary replacement road
- Proposed noise and landscape mounds across project
- Woolgoolga Creek temporary access tract relocation
- Bark Hut Rd temporary laydown area
- Culvert 18.32 western bund; minor (temporary) works
- Environmental Assessment, temporary access track at Fiddamans Road
- Minor tree removal Diamond Head Drive
- Consistency review, user path / cycleway

Out of Hours Works Approvals:

- OOHW 80 – Smiths Road pier

Inspections:

- ERG inspections monthly
- Fortnightly inspections with RTA and JV – 9 May, 13 June & 10 July

ERG:

- meetings: 23 May, 26 June & 25 July (see previously issued presentations and notes)

Audits:

- none

Stop Work Notices:

- none issued

INCIDENTS

- E34 – turbid water discharge through bridging layer at Skinners Creek.
- E35 – minor unexpected asbestos – removed by licenced asbestos contractor to Grafton landfill
- E36 – bank slump at Culvert 7.55, soil into clean water diversion channel
- E37 – asbestos pipe uncovered at Greys Road bridgeworks site
- E38 – turbid water release Moonee interchange site
- E39 – turbid water Cunninghams Creek. Minor discharge associated with removal of temoaray creek crossing,; adequately controlled.
- E40 – minor unexpected asbestos stockpile CH17800 west – removed by licenced asbestos contractor to Grafton landfill
- E41 – minor unexpected asbestos Gate 7A Hoys Road – removed by licenced asbestos contractor to Grafton landfill
- E42 – minor unexpected asbestos Gate 18B – removed by licenced asbestos contractor to Grafton landfill

MINISTER'S CONDITIONS OF APPROVAL

- no significant issues.

Rob van Iersel
Environmental Representative
GeoLINK

ENVIRONMENTAL REPRESENTATIVE MONTHLY REPORT

REPORTING PERIOD: 1 – 31 July 2012

Summary: Continued rain during the first half of the month continued to present challenges for ERSED controls. Generally, controls were well established and maintained with continued good use of mulch controls in a number of locations.

Some water management / ERSED issues at Arrawarra Creek, where restricted width of formation provides significant challenges. JV's commitment to improvements were appreciated, in the construction of an elongated basin within the formation, noting the disruption this causes to construction program and efficiency in this location.

A particularly good result achieved during the month with the restoration of Woolgoolga Creek completed. Works were very well managed and constructed, with particularly good placement of coarse woody debris to restore habitat within the creek. Works were subject of an ERG Environmental Award.

Similarly successful restoration works completed / underway at Cunninghams Creek and Skinners Creek.

ER ACTIVITIES

Certification / Endorsement:

- Environmental Assessment, temporary access track at Fiddamans Road
- Minor tree removal Diamond Head Drive
- Consistency review, user path / cycleway

Out of Hours Works Approvals:

- none

ERG:

- 25 July 2012 (draft notes distributed previously)

Inspections:

- 10 July 2012

Audits:

- none

Stop Work Notices:

- none issued

Consultation:

- none

NON-CONFORMANCE WITH CEMP

- none identified

INCIDENTS

- E39 – turbid water Cunninghams Creek. Minor discharge associated with removal of temoaray creek crossing,; adequately controlled.
- E40 – minor unexpected asbestos stockpile CH17800 west – removed by licenced asbestos contractor to Grafton landfill
- E41 – minor unexpected asbestos Gate 7A Hoys Road – removed by licenced asbestos contractor to Grafton landfill
- E42 – minor unexpected asbestos Gate 18B – removed by licenced asbestos contractor to Grafton landfill

ENVIRONMENTAL REPRESENTATIVE MONTHLY REPORT

REPORTING PERIOD: 1 – 30 June 2012

Summary: Significant rain events during the month, with greater than 85th percentile design rainfall on a number of occasions during the month. Continues to present challenges for ERSED controls. Continued good use of mulch controls in a number of locations (see below).

There have been some concerns with colloidal material leaching through the bridging layer at some locations, resulting in turbid water entering creeks. This has been confined to during and immediately following significant rain events at some locations (see below). This has been well managed in the vicinity of Skinners Creek, where a sump has been constructed, with water from within the bridging layer collected and pumped back up the formation.

This issue will be resolved once the formation can be sealed at these locations. It needs to be managed during significant rain events that may occur prior to that sealing.

ER ACTIVITIES

Certification / Endorsement:

- Proposed noise and landscape mounds across project
- Woolgoolga Creek temporary access tract relocation
- Bark Hut Rd temporary laydown area
- Culvert 18.32 western bund; minor (temporary) works

Out of Hours Works Approvals:

- none

ERG:

- 26 June 2012 (draft notes distributed previously)

Inspections:

- 13 June 2012

Audits:

- none

Stop Work Notices:

- none issued

Consultation:

- none

NON-CONFORMANCE WITH CEMP

- none identified

INCIDENTS

- E35 – minor unexpected asbestos – removed by licenced asbestos contractor to Grafton landfill
- E36 – bank slump at Culvert 7.55, soil into clean water diversion channel
- E37 – asbestos pipe uncovered at Greys Road bridgeworks site
- E38 – turbid water release Moonee interchange site

ENVIRONMENTAL REPRESENTATIVE MONTHLY REPORT

REPORTING PERIOD: 1 – 31 May 2012

Summary: Some rain disruptions throughout the month, but also clear periods allowing significant earthworks. Ongoing environmental challenges associated with water management, which are generally being well managed. There have been issues at some locations with management / capture of fine sediment during rain. This continues to be a challenge, particularly in locations where there is not room for sediment basins.

There are good examples of controls at some locations, particularly using mulch traps in series (see photo below). These controls have worked well in capturing both coarse and fine sediment and should be used more widely, to become 'the norm' where possible. Continued diligence and ongoing maintenance is required to ensure that all controls are robust and have sufficient capacity prior to forecast rain events.

Given the length of the project and the high number of drainage lines / waterway crossings, management should continue to ensure that adequate resources are available for ongoing maintenance of controls and that these works continue to be well planned.

ER ACTIVITIES

Certification / Endorsement:

- Killara Avenue temporary replacement road

Out of Hours Works Approvals:

- OOHW 80 – Smiths Road pier

ERG:

- 23 May 2012 (draft notes distributed previously)

Inspections:

- 9 May 2012

Audits:

- none

Stop Work Notices:

- none issued

Consultation:

- none

NON-CONFORMANCE WITH CEMP

- none identified

INCIDENTS

- S2W E34 – turbid water discharge through bridging layer at Skinners Creek.

ENVIRONMENTAL REPRESENTATIVE MONTHLY REPORT

REPORTING PERIOD: 1 – 31 May 2012

Summary: Some rain disruptions throughout the month, but also clear periods allowing significant earthworks. Ongoing environmental challenges associated with water management, which are generally being well managed. There have been issues at some locations with management / capture of fine sediment during rain. This continues to be a challenge, particularly in locations where there is not room for sediment basins.

There are good examples of controls at some locations, particularly using mulch traps in series (see photo below). These controls have worked well in capturing both coarse and fine sediment and should be used more widely, to become 'the norm' where possible. Continued diligence and ongoing maintenance is required to ensure that all controls are robust and have sufficient capacity prior to forecast rain events.

Given the length of the project and the high number of drainage lines / waterway crossings, management should continue to ensure that adequate resources are available for ongoing maintenance of controls and that these works continue to be well planned.

ER ACTIVITIES

Certification / Endorsement:

- Killara Avenue temporary replacement road

Out of Hours Works Approvals:

- OOHW 80 – Smiths Road pier

ERG:

- 23 May 2012 (draft notes distributed previously)

Inspections:

- 9 May 2012

Audits:

- none

Stop Work Notices:

- none issued

Consultation:

- none

NON-CONFORMANCE WITH CEMP

- none identified

INCIDENTS

- S2W E34 – turbid water discharge through bridging layer at Skinners Creek.

ENVIRONMENTAL REPRESENTATIVE THREE-MONTHLY REPORT

Reporting Period: 1 February to 30 April 2012

Summary: Early part of February involved considerable repair / maintenance work following significant rain event in the final days of January (above 1 in 100 event). Overall, site held-up very well considering the scale of the rain event.

One of the most heavily impacted areas was Woolgoolga Creek, where gravel material was washed downstream. Part of this was from construction site and part was from natural gravel beds located further upstream. Gravel deposits partially blocked fish passage downstream and resulted in new by-pass channels.

Repair / rehabilitation proposals were discussed with ERG and agencies, including NSW Water and NSW Forests (land owners). While there was some concern expressed about delays in documenting the repair / rehabilitation proposals, agreement was reached and works were successfully undertaken in early March.

Environmental Team undertook an audit of exit points throughout the project, identifying a range of measures designed to reduce tracking of material onto public roads. Implementation of these measures commenced and is continuing to be implemented across the whole of the project.

Continued rain disruptions throughout the reporting period are resulting in significant ongoing environmental challenges, mainly associated with water management and erosion / sedimentation control. Generally, these issues continue to be well managed, with a number of particularly good examples using mulch traps to filter fine sediment.

In many areas, the lack of space for sediment basins continues to present challenges, requiring alternative management controls. With only a few, quite minor, exceptions, these issues continue to be well managed. Continued diligence is required, particularly given ongoing rain.

ER ACTIVITIES

Certification, review & comment:

- Refinement / widening of Cut 28 / 29
- clearing works required to construct a permanent drain in the vicinity of Double Crossing Creek
- Hayes Creek boundary modification for installation of drainage channel
- Minor clearing / trimming associated with power services, south

Out of Hours Works Approvals:

- OOHW 56 & 67 – Grey's Road bridge deck
- OOHW 74 – Sugarmill Dam culvert works
- OOHW 77 – Smiths Road overpass works

- OOHW 78 – six-month extension to Saturday afternoon works

Inspections:

- ERG inspections monthly
- Fortnightly inspections with RTA and JV – 14 February, 6 March, & 11 April

ERG:

- meetings: 29 February, 28 March & 24 April (see previously issued presentations and notes)

Audits:

- Community Communications Strategy – note: while no non-conformances were identified, it was noted that a significant number of complaints continue to be coming from a particular resident (mainly about noise). I note that contractors have responded very well, continuing to adjust work programs / practices to reduce impact. Complaints, however, have not diminished, and audit recommended that independent mediation be considered.
- Monitoring Program – no issues raised
- Compliance Tracking Program - Area for Improvement identified: Section 2.6 of the Plan relates to Non-Conformances and indicates that identified non-conformances will be managed in 'an appropriate timeframe' and that close-out of non-conformances will be discussed and reviewed at ERG meeting. While environmental issues are generally reviewed at ERG, there has not been specific discussion of identified non-conformances. Audit suggested that better use of ERG could be made in this regard, in relation to 'learnings' from non-conformances etc, particularly ability to bring experience from other projects.
- CEMP – audit identified issues as noted in recent independent Pollution Reduction Program audit. JV has responded to that audit and is in the process of implementing improvements to overcome the identified issues.

Issue 1: ERSED plans routinely done for all sections. They have been generally developed by Soil Conservation Service staff, in conjunction with Environmental team and communicated to construction staff, generally through area foremen / superintendents.

Environmental ERSED teams responsible for implementation and ongoing monitoring, as directed by Environmental Coordinators.

Comment:

The Soil Erosion and Water Management Plan indicates that Project Engineers should be responsible for preparation of ERSED plans, with intention that construction team has 'ownership' of controls.

The practice onsite has been for the environmental team (including soil con) to prepare the plans and provide to site foremen / area superintendent for implementation.

Previously, there were concerns that construction team did not have 'ownership' of the controls, therefore not maintaining them appropriately.

Toward the end of 2011, additional resources were provided in the form of dedicated ERSED teams across the site. While Soil Con and EOs still prepare the plans, the additional resources are resulting in improved maintenance of controls.

While current practice appears to be working well, it is not consistent with practice outlined in EMP.

This was recently identified through an independent Pollution Reduction Program audit. In relation to that audit, JV have provided the following response:

CEMP Table 4.2: JV Personnel key environmental responsibilities updated to explicitly include Area Superintendent role (with General Superintendent role) (Rev 1.1). Note that the Area Superintendent level is an additional management level established in recognition of the size and complexity of the project and that implementation of erosion and sediment control plans specifically assigned to Area Superintendents.

Site Engineers to develop the skeleton ESCPs. Further training to be provided to Site Engineers to facilitate.

Environmental Coordinator, Site Engineer and Foreman to undertake field inspection with skeleton plan to flesh out agreed detailed controls.

Environmental Coordinators will retain master copies in register and pass on to Area Superintendents. Witness Point to be effected by email from Area Superintendent to Environmental Manager / Environmental Coordinator confirming controls implemented or the date by which implementation will be completed.

Issue 2: The G38#3 Hold Point has not been implemented as required by Section 4.2 of the Soil Erosion and Water Management Plan. This was recently identified through an independent Pollution Reduction Program audit. In response to that audit, JV are now implementing a process which confirms, records and demonstrates that ESC planning process is being applied prior to commencement of works. This involves:

Permit to Enter Undisturbed Area to be implemented for new areas of work.

For new phases of work, Area Superintendent to sign off on PESCP that all controls implemented prior to commencement of new phase.

Environmental Manager to sign off on Permit to Enter Undisturbed Area.

Environmental Coordinators to monitor Area Superintendent sign off on PESCP in advance of works on new phases. Environmental Manager to regularly confirm implementation.

Stop Work Notices:

- none issued

INCIDENTS

- E031 – turbid water release at Arrawarra Creek – located in an area of screened bridging around CH31500, north of Nashes Road. Following significant rain, the water level in the adjacent wetland (to the west) rose by around 300mm. This flowed through the bridging, mixing with the fine material therein. The resultant dirty water flowed east through an existing culverts and also west back into the wetland.

  Originally, it was proposed that an impervious liner (plastic or the like) would be used below and alongside the bridging layer, but the construction team decided not to use this (against recommendation of Environmental Coordinator).

  Geofabric and plastic lining was subsequently installed along the western boundary of the fill.

ISSUES

- as outlined above, the most significant issue was related to clean-up of flood damage from rain events at the end of January; in particular in relation to downstream of works at Woolgoolga Creek. Repair / restoration works were carried out in early March; well-managed with minimal environmental disturbance to the creek.

MINISTER'S CONDITIONS OF APPROVAL

- no significant issues.

Rob van Iersel
Environmental Representative
GeoLINK

ENVIRONMENTAL REPRESENTATIVE MONTHLY REPORT

REPORTING PERIOD: 1 – 30 April 2012

Summary: Continued rain disruptions throughout the month. Ongoing environmental challenges associated with water management, which are generally being well managed.

ACTIVITIES

Certification / Endorsement:

- Minor clearing / trimming associated with power services, south

Out of Hours Works Approvals:

- OOHW 74 – Sugarmill Dam culvert works
- OOHW 77 – Smiths Road overpass works
- OOHW 78 – six-month extension to Saturday afternoon works

ERG:

- 24 April 2012

Inspections:

- 11 April 2012

Audits:

- none

Stop Work Notices:

- none issued

Consultation:

- attendance at mulch / ERSED toolbox 24th April

NON-CONFORMANCE WITH CEMP

- none identified

INCIDENTS

- none reported

ENVIRONMENTAL REPRESENTATIVE MONTHLY REPORT

REPORTING PERIOD: 1 – 31 March 2012

Summary: Continued rain disruptions throughout the month. Ongoing environmental challenges associated with water management, which are generally being well managed.

ACTIVITIES

Certification / Endorsement:

- clearing works required to construct a permanent drain in the vicinity of Double Crossing Creek
- Hayes Creek boundary modification for installation of drainage channel

Out of Hours Works Approvals:

- OOHW 56 & 67 – Grey's Road bridge deck

ERG:

- 28 March 2012

Inspections:

- 6 March 2012

Audits:

- Community Communications Strategy
- Monitoring Program
- CEMP
- Compliance Tracking Program

Stop Work Notices:

- none issued

Consultation:

- none

NON-CONFORMANCE WITH CEMP

CEMP – issues as noted in recent independent Pollution Reduction Program audit. JV has responded to that audit and is in the process of implementing improvements to overcome the identified issues.

Issue 1: ERSED plans routinely done for all sections. They have been generally developed by Soil Conservation Service staff, in conjunction with Environmental team and communicated to construction staff, generally through area foremen / superintendents.

Environmental ERSED teams responsible for implementation and ongoing monitoring, as directed by Environmental Coordinators.

Comment:

The Soil Erosion and Water Management Plan indicates that Project Engineers should be responsible for preparation of ERSED plans, with intention that construction team has 'ownership' of controls.

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- Communications Strategy – recommendation for independent mediation in relation to ongoing resident complaints

- Compliance Tracking - Area for Improvement: Section 2.6 of the Plan related to Non-Conformances. It indicates that identified non-conformances will be managed in 'an appropriate timeframe' and that close-out of non-conformances will be discussed and reviewed at ERG meeting.

  While environmental issues are generally reviewed at ERG, there has not been specific discussion of identified non-conformances. Suggest that better use of ERG could be made in this regard, in relation to 'learnings' from non-conformances etc, particularly ability to bring experience from other projects.

INCIDENTS

- None reported

ENVIRONMENTAL REPRESENTATIVE MONTHLY REPORT

REPORTING PERIOD: 1 - 29 February 2012

Summary: Early part of the month involved considerable repair / maintenance work following significant rain event in the final days of January. Overall, site held-up very well considering the scale of the rain event.

One of the most heavily impacted areas was Woolgoolga Creek, where gravel material was washed downstream. Part of this was from construction site and part was from natural gravel beds located further upstream. Gravel deposits partially blocked fish passage downstream and resulted in new by-pass channels.

Repair / rehabilitation proposals were discussed with ERG and agencies, including NSW Water and NSW Forests (land owners). While there was some concern expressed about delays in documenting the repair / rehabilitation proposals, agreement was reached and works were successfully undertaken in early March.

Environmental Team undertook an audit of exit points throughout the project, identifying a range of measures designed to reduce tracking of material onto public roads. Implementation of these measures commenced and will continue to be implemented across the whole of the project.

ACTIVITIES

Certification / Endorsement:

- Refinement / widening of Cut 28 / 29

Out of Hours Works Approvals:

- none

ERG:

- 29 February 2012

Inspections:

- 14 February 2012

Audits:

- none undertaken

Stop Work Notices:

- none issued

Consultation:

- none

Other:

- preparation of documentation to incorporate mulch protocols into the CEMP – updates to stockpile location / management protocols and procedures; distribution to ERG for comment.

ISSUES

- as outlined above, the most significant issue was related to clean-up of flood damage from rain events at the end of January; in particular in relation to downstream of works at Woolgoolga Creek. Repair / restoration works were carried out in early March; well-managed with minimal environmental disturbance to the creek.

NON-CONFORMANCE WITH CEMP

- none

INCIDENTS

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