



**APPENDIX 1**

**REPORTING SUMMARY OF MONITORING RESULTS**

FOR THE

BRUNSWICK HEADS TO YELGUN

PACIFIC HIGHWAY UPGRADE PROJECT



# 1 Introduction

This is the monthly monitoring report for the calendar month of February 2007.

## 2 Weather

### 2.1 Discussion

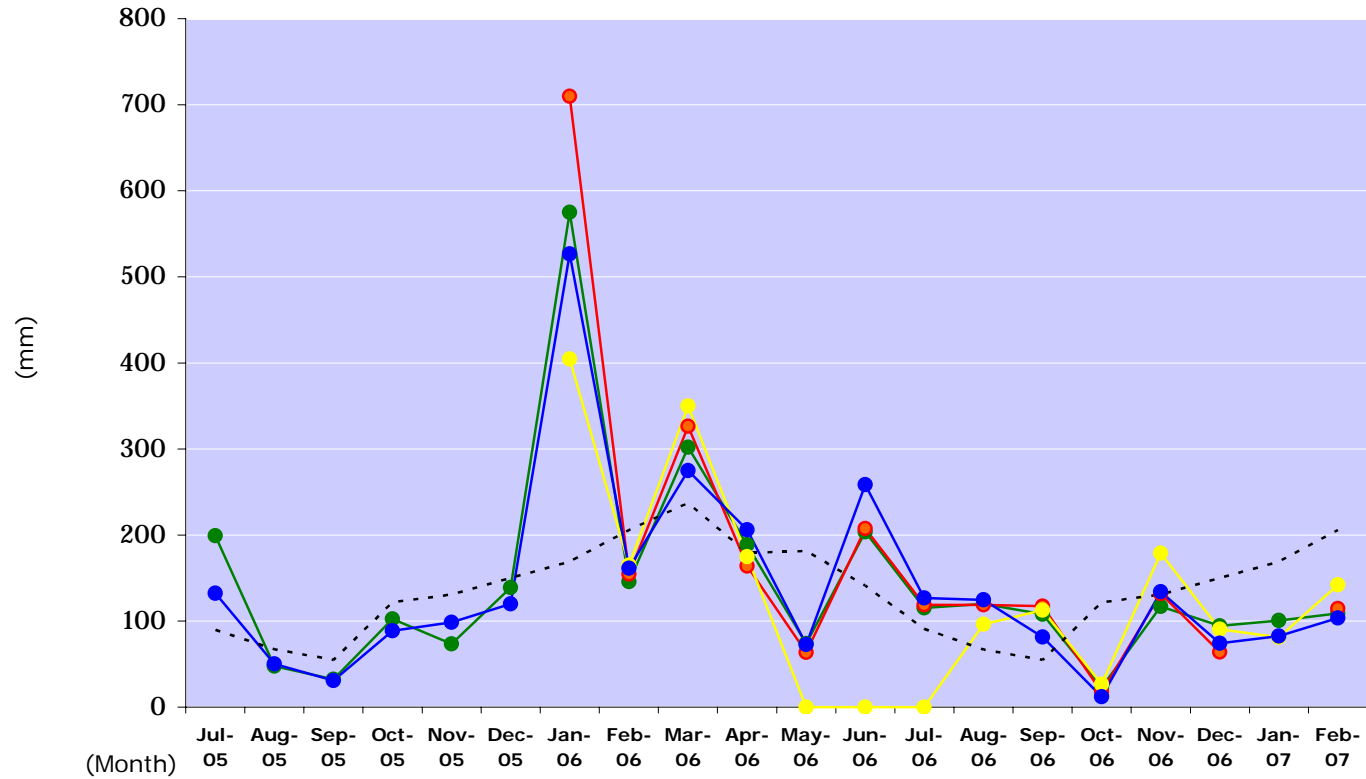
The daily rainfall monitoring gauge at the main site compound is recorded at approximately 9am each work day. The total rainfall received for the month is as follows: -

Month	Total monthly rainfall (Site office)
February 2007	103mm

Most of the rain was received during the second week of February, with the heaviest rainfall for the month recorded on the 13 February (70mm).

During February there was substantially less rain received in comparison to the monthly average – 205.6mm.

Graph 1:- Comparative rainfall data for the Brunswick Heads to Yelgun Pacific Highway Upgrade



	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07
Site Office	199.3	47.7	32.5	102.5	73.6	139	575	145.8	302.2	188.7	73.9	203.6	115.4	120	107.8	22.8	117	94.5	100.5	109
Workshop							710	154.5	326.5	164	63.5	207.5	119	119	117.5	17.5	132	64		114.5
Northern Compound							404.5	165	350	175	0	0	0	96.5	112.5	26.5	179	90.5	81	142
Brunswick Heads Bowls Club	132.2	50	30.8	88.8	98.4	119.8	526.8	161.2	274.8	206.2	72.6	258.4	127	124.6	81.4	12	134	74.2	82.4	103.5
Monthly Average (Historical Data 1964-2004)	89.89	67.29	54.86	121.64	130.75	149.96	168.99	205.69	237.09	179.07	181.28	141.15	90.89	66.88	54.86	121.64	130.75	149.96	168.99	205.69

### 3 Water

#### 3.1 Introduction

Brunswick River and Marshall’s Creek are the two main receiving water bodies that the project alignment passes over. Water quality is assessed at four (4) sites:

**B1** – Downstream Brunswick River at the Brunswick Heads Boat Ramp just upstream of the Fish Co-op complex;

**B2** – Upstream Brunswick River at the end of Riverside Crescent just west of the Ferry Reserve Caravan Park;

**B5** – Downstream Marshall’s Creek, just downstream of the bridgeworks site;

**B6** – Upstream Marshall’s Creek west of Billinudgel near the Pocket Road Bridge.

#### 3.2 Receiving Water Monitoring Results

The following table provides the results of water quality monitoring undertaken by Mark Rosicky of Abigroup.

**Table 1: Water Quality Monitoring Results**

	Site Description	Sample No	Time	Turbidity (NTU)	Temp (°C)	pH (unit)	DO (mg/l)	Specific Cond (dS/cm)	Salinity (PSS)
1 March 2007	Brunswick River upstream	B2	11:23	11.1	25.1	8.1	7.6	55.1	36.6
	Brunswick River downstream	B1	11:13	12.9	24.9	8.1	7.5	55.5	36.7
	Marshalls Creek upstream	B6	12:39	41.8	26.4	6.9	2.6	25.5	15.6
	Marshalls Creek downstream	B5	13:15	20.3	27.6	7.2	3.8	33.96	21.3

*Water Quality Monitoring Notes:*

Sampling was carried out by Mark Rosicky on 1 March 2007. Overcast day, no rain, light breeze 29°C. Time of sampling was between 11:13am and 1:15pm. Tide was outgoing during sampling.

### 3.3 Water Discussion

#### Brunswick River

All results received indicate good water quality within Brunswick River though it was noted that the water was quite warm on the day of sampling. Turbidity levels are good and relatively constant. Note no rain was received on the day of monitoring.

#### Marshalls Creek

In terms of turbidity, Marshalls Creek improves significantly downstream. All parameters indicate an improvement in water quality downstream, however temperature does rise slightly.

Dissolved oxygen levels are very low. There are no known causes nor discharges from the project which would result in this reading and it is presumed that this relates to the warm waters and low rainfall levels (therefore resulting in stagnant waters). Please note that downstream levels do show improvement.

Algal blooms were noted in Marshalls Creek upstream in the month of January.

### 3.4 Sediment Basin Water Monitoring

Much of the rain which fell in February occurred during the second week of February. Intermittent rain continued to fall every second or third day for the remainder of the month. Some basins were able to be released, however please note that once rain commenced in Feb (during the second week), rain continued to fall for the remainder of the month. There was not a five day period or window where no rain was received on site.

**Table 2: Sediment Basin Water Quality Assessment Results**

Sed Basin	Wetland B	4A	4B	12	6	8	9	10	YRA	Stock Route Rd
Oil and Grease	0	0	0	0	0	0	0	0	0	0
pH	7.9	7.5	7.6	7.7, 7.9	7.6, 7.6, 7.4	8.4, 7.6	8.4	8.4, 7.8, 8.4	8.0, 8.2	7.4
Turbidity	42	10	22	50, 20	20, 32, 24	35, 12	16	35, 44, 35	30, 50	30

#### Sediment Basins

All discharges were within the licensed water quality parameters.

Many basins are being used for water supply (via water carts) as water has been running low over the site. These basins include: -

- Basin 5;
- Bypass basins;
- Fill 3B east (B44.7 and 44.8);

- Basin F5A; and
- Basins north of Marshalls Creek at Fill 8C.

Please note that applications are currently submitted to DEC for to vary EPL12330 to remove basins 7 and F5A.

## 4 Noise

### 4.1 Introduction

Abigroup are undertaking noise monitoring for the Brunswick Heads to Yelgun Pacific Highway Upgrade Project.

The construction noise monitoring in this period was attended by Wendy Dooley using a calibrated Aclan Toulouse Sound Level Meter (Model SLS955, Class 2).

Noise monitoring at each site was carried out over 15 minute sampling periods.

Construction noise monitoring examines the  $L_{A10}$  and  $L_{A90}$  noise level parameters recorded during any given 15 minute sampling period.  $L_{A90}$  readings represent noise levels exceeded for 90% of the time, whilst  $L_{A10}$  readings represent the noise levels exceeded for 10% of the time.  $L_{A90}$  readings are recognised as background levels.  $L_{A10}$  readings can be used to reflect the annoyance from construction works, provided consideration is given to the influences of external noise sources which are absorbed into the  $L_{A10}$  value.

The  $L_{Acons}$  is calculated in relation to the  $L_{A10}$  that had been measured at each site prior to construction commencing in March 2005.

### 4.2 Noise Results

Table 3 shows the results of attended noise monitoring conducted in February.

Mon Site	Location + Predicted typical LA10	L <sub>A10</sub> (dBA)	L <sub>A90</sub> (dBA)	L <sub>cons</sub> (dBA)	EPL noise construction goal		EMP Predicted noise levels	Date/Time	Weather Conditions	Construction Noise Source	External Noise Source
					Earthworks (Background + 10dBA)	Bridgeworks & CBP (Background + 5dBA)					
1	2 Cudgen						45-54 for earthworks 41-42 for bridgework 53-58 for pavement				
2	Bashforth						70-71 for earthworks 48-50 for bridgeworks 73-76 for pavement				
3	Ferry Reserve	68	49	67.6	59	54	56-67 for bridgeworks 60-62 for walls 68-70 for earthworks 65-71 for pavement	24/2/07 1010	Fine, sunny 6/8 .27-1.76E 28.1° 63%	Reverse beeper, 2 <sup>nd</sup> reverse beeper heard occasionally Tipping sound (gravel?) – didn't register specifically Trucks Excavator Cutting or welding sound <30sec. None of the construction noise spiked above other background noise.	Truck x 2 @ 1020 was the only obvious H/way traffic noise Birds @ 65dBA intermittent Insects Caravaners quietly chatting, laughing, generally not greater than 59dBA. This was the predominant noise source though as noise was constant and the group of people were only 2-3m away. Local vehicle x 2 @ 58-65dBA Local truck @ 78dBA

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3 – Reading No. 2	Ferry Reserve	61	48	58.8	58	53	56-67 for bridgeworks  60-62 for walls  68-70 for earthworks  65-71 for pavement	27/2/0 7 0925	Overcast 8/8 .90-1.55 E 27.6° 73%	Rock breaker hammering @ 60-62dBA (steady bursts of activity), throughout first half of monitoring. NB Hammering noise varied possibly due to angling of equipment/shielding by operator; occasionally it was very quiet. 49-51dBA when no hammering heard Brief banging (unloading?) sound @ 0939 Reverse beeper (faint) 2 <sup>nd</sup> reverse beeper heard briefly Construction was not constant throughout	H/way traffic (truck @ 52dBA) Talking – residents Caravan movement (didn't register) Horn Birds @ 50dBA Garbage bins being washed out Mobile Phone Conversation Local vehicles x 12 (2x 61dBA, 2x 59dBA)
4	1 Rajah	63	57	Neg.	67	62	59-63 for bridgework  66-75 for walls  58-76 for earthworks  75-81 for pavement	24/2/0 7 1040	Fine, sunny 1/8 .08-.77 E 27.6° 68%	Hammering reo 59-60dBA Trucks Cranes (Hiab) Excavator tracking and reverse beeping	H/way traffic obvious Local Rajah traffic constant
4 – Reading 2	1 Rajah	66	56	Neg.	66	61	59-63 for bridgework  66-75 for walls  58-76 for earthworks  75-81 for pavement	27/2/0 7 1004	Overcast 0/8 No breeze 28.1° 73% Light rain sprinkle towards end of reading	Rock breaker hammering @ up to 68dBA but as low as 57dBA; continuous throughout monitoring, with brief pauses approx <60sec. Reverse beeper Other construction not obvious	H/way traffic 57-77dBA when no hammering taking place, appeared to predominate Local Rajah traffic didn't appear so heavy this monitoring period Birds incl. cockatoo @ 64dBA

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5	1 Oola						65-75 for walls 62-72 for earthworks 77-81 for pavement				
6	5 Weeronga						51-56 for bridgework 56-88 for retaining walls 53-58 for earthworks 61-64 for pavement				
7	5 Tongarra	71	57	Neg.	67	62	52-56 for walls 68-69 for earthworks 74-76 for pavement	27/2/07 1735	7/8 .41-.73 unable to ascertain wind direction 27.1° 60%	No construction audible	Very heavy highway traffic
8	24 Binya	59	45	58.3	55	50	42-45 for walls 46-50 for earthworks 49-53 for pavement	27/2/07 1100	Fine, sunny < .64 E 34.8° 56%	No construction evident, terminated reading after 5 minutes	H/way noise occasionally heard Insects Magpies carolling almost continuously, plus other birds

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9	19 Mountainview						57-60 for bridgeworks 51-54 for walls 62-64 for earthworks 71-77 for pavement				
10	48 Yamble	66	58	57.1	68	63	64-70 for bridgework 49-53 for walls 53-73 for earthworks 73-75 for pavement	27/2/07 1700	Fine 4/8 <1.92 NE 29.9° 62%	Hammering star pickets in Coolamon Scenic Drive for first few seconds only Reverse beeper briefly Frontend loader Light vehicles No obvious construction noise although construction activity visible	H/way traffic obvious Dog barking People talking
11	10/10 Balemo						60-70 for bridgework 49-52 for walls 54-65 for earthworks 67-68 for pavement	24/2/07 1110	Fine, sunny Slight breeze	No construction visible or audible. Did not proceed with monitoring.	H/way traffic
12	99 Stock Route						59-61 for bridgework 63-66 for walls 54-74 for earthworks 67-74 for pavement				

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13	2 Ulpira Cres						40-55 for earthworks 50-57 for pavement				
14	40 Matong	58	53	53.5	63	58	54-58 for bridgework 52-58 for earthworks 57-64 for pavement	27/2/07 1155	Fine, sunny 0/8 <1.20E 27.9° 66%	Reverse beeper (only showing as variation of fraction of dBA). Stopped @ 1203, resumed 1206 briefly then stopped permanently Dropping bundle of metal or plastic	H/way traffic prominent Horns beeping Insects Birds
15	White Dove	66	60	Neg.	70	65	60-78 for bridgework 59-63 for walls 73-76 for earthworks 76-79 for pavement	24/2/07 1220	Fine, sunny Up to 3.99 E 26.6° 72%	Moving pipes Horn x 2 very briefly Water truck Excavator x 2 – only one operating continuously Trucks Grader x 2 Trimmer – shut down and idled from 1229 Reverse beepers (faint). Louder @ 1227. Second beeper intermittent, occasionally simultaneously. CB radio – very loud	H/way traffic
16	21 Gilba	63	55	62.7	65	60	52-60 for bridgework 55-67 for walls 60-71 for earthworks 63-74 for pavement	24/2/07 1115	Fine, sunny 0/8 .68-1.72 E 35.9° 49%	Reverse beeper from Trimmer – quite piercing. Intermittent and stopped at 1120 2 <sup>nd</sup> reverse beeper heard occasionally but more faint; 3 <sup>rd</sup> beeper heard but only ever two reverse beepers heard simultaneously. Another reverse beeper heard to north of site CB radio Frontend loader Trucks Grader Construction definitely more obvious than operational noise	H/way traffic Lawn mower 2 blocks away to east, stopped third way through monitoring

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17	123 Balemo	61	54	Neg	64	59	55-74 for bridgework  58-71 for walls  66-77 for earthworks  69-77 for pavement	24/2/07 1245	Fine, sunny 1/8 Very slight breeze – unable to measure 40.4° 59%	Reverse beeper x 2, heard simultaneously occasionally 3 <sup>rd</sup> beeper heard briefly in conjunction with other two Grader Excavator Trucks @ 69dBA	H/way traffic – more prominent despite reverse beepers in construction  Birds Horn briefly heard
18	175 Stock Route						54-66 for bridgework  66-71 for earthworks  69-74 for pavement				
19	Holm Farm						54-65 for bridgework  49-63 for walls  64-66 for earthworks  60-69 for pavement				
20	Jagwen						56-62 for bridgework  51-58 for walls  60-64 for earthworks  63-67 for pavement  71-77 Rest Area construction				

## 4.3 Noise Monitoring Discussion

The construction noise monitoring was carried out between 8 Jan and 1 Feb 2007. It was attended by Wendy Dooley or Rebecca Walker-Edwards using a calibrated Aclan Toulouse Sound Level Meter (Model SLS955, Class 2).

Noise monitoring was carried out over 15 minute sampling periods, unless stated otherwise.

Noise results indicate that:-

- **Ferry Reserve** – exceedance of the EPL, though this has been predicted in the EMP. Predominant noise source was actually the caravaners talking in the background. These people were located within only 2-3m of the noise monitoring gauge.

## 5 Vibration

### 5.1 Vibration Summary

There was no vibration monitoring undertaken during February.

## 6 Dust

### 6.1 Introduction

Depositional dust gauges were installed along the alignment at the commencement of earthworks operations and have operated for more than 12 months.

### 6.2 Dust Results - January

Dust sample bottles were collected from the gauges by Environmental Analysis Laboratory and analysed at Lismore. The monthly dust depositional gauge (DDG) analysis is being undertaken in accordance with AS 3580.10.1, and is summarised below.

**Table 4: Results of Dust Monitoring January 2007**

Site	Total Suspended Solids (g/m <sup>2</sup> /month)
1. Cut 2 near Bashforth property	1.2
2. Main Compound	10.6

3. Rajah Road intersection	6.3
4. Near STP Access	2.4
5. Coolamon Nursery	1.6
6A. Near Orana Rd intersection	3.3
6B. Outside workshop	1.7
7. Cut 7 The Tunnel Road	0.9
8. Outside Humble Pie business	2.5
9. Balemo Drive (north)	1.1
10. Yelgun Interchange	0.9

### 6.3 Dust results - February

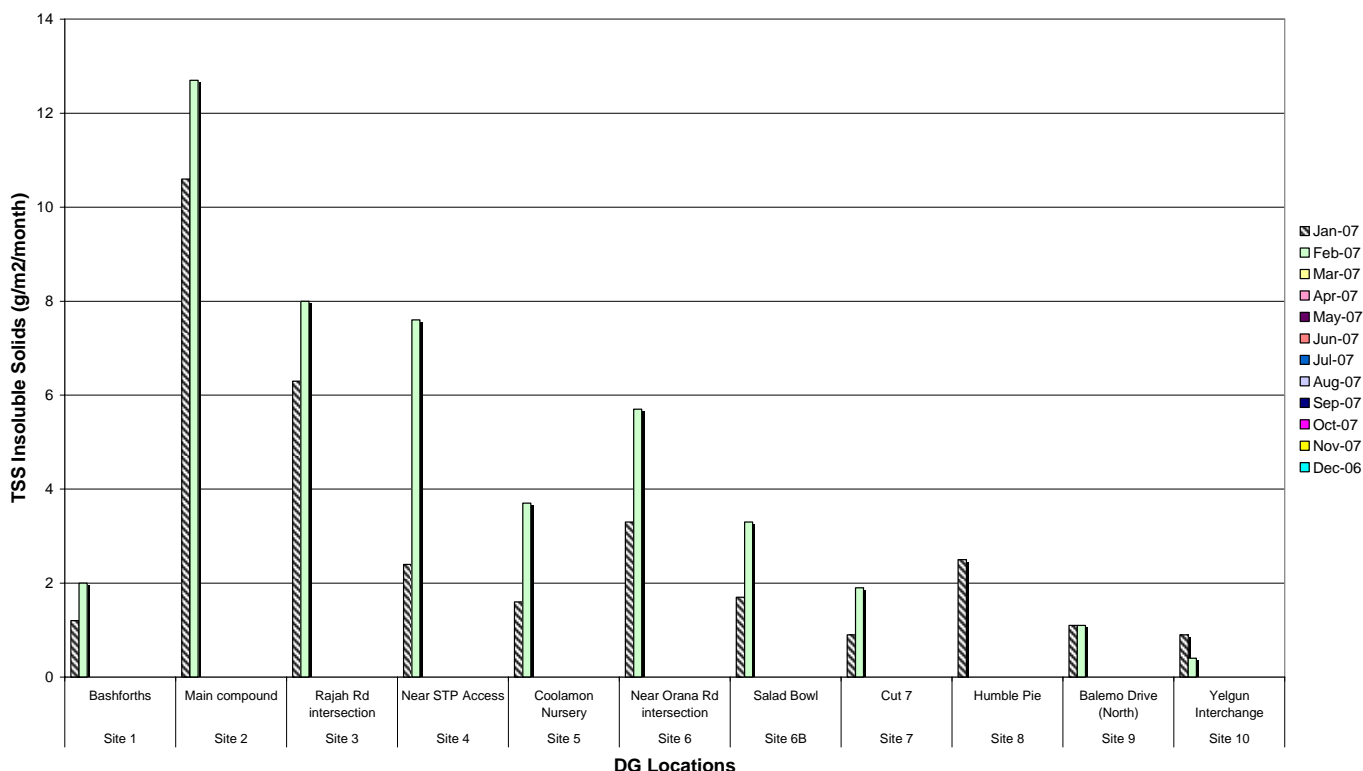
Dust sample bottles were collected from the gauges by Environmental Analysis Laboratory and analysed at Lismore. The monthly dust depositional gauge (DDG) analysis is being undertaken in accordance with AS 3580.10.1, and is summarised below.

**Table 5: Results of Dust Monitoring February 2007**

<b>Site</b>	<b>Total Suspended Solids (g/m<sup>2</sup>/month)</b>
1. Cut 2 near Bashforth property	2
2. Main Compound	12.7
3. Rajah Road intersection	8
4. Near STP Access	7.6
5. Coolamon Nursery	3.7
6A. Near Orana Rd intersection	5.7
6B. Outside workshop	3.3

7. Cut 7 The Tunnel Road	1.9
8. Outside Humble Pie business	n/a
9. Balemo Drive (north)	1.1
10. Yelgun Interchange	0.4

**Dust Monitoring Results  
B2Y 2007**



## 6.4 Dust Discussion

Dust results for January indicate only two exceedances – Site 2 (Main Compound) and Site 3 (Rajah Road intersection).

Dust results received for February show good results in all sites except Site 2, Site 3, Site 4 and Site 6.

Of the four sites found to be above 4g/m<sup>2</sup>/month, three are located directly adjacent to Highway intersections. These include sites 3, 4 and 6. The remaining site (Site 2 - Main Compound) monitors dust on the project itself, at the site car park.

A discussion of the activities occurring at these sites and any factors that may have contributed to the results is provided below.

The project suction street sweeper and water carts continue to work full time.

#### **Site 2 – Main Compound**

Results for this site are elevated with the source likely to be the access road. During the month of March, access into the site has been relocated to the old Pacific Highway. This is sealed, consequently resulting in reduced dust levels.

The site is remote from any sensitive receiver.

#### **Site 3 – Rajah Road**

Traffic is now on the newly sealed service road consequently resulting in an expected decrease in dust levels.

It is expected that SMZ will be placed in the Fill 4 area shortly.

Water carts continue to target Fill 4 and an exit point which was located opposite Rajah Rd, has recently been closed (in early Feb). It is suggested that this too will assist with dust levels.

Please note that this gauge is located on the project itself, as an appropriate location for the gauge, just outside of the project boundary, was not available.

#### **Site 4 – Near STP Access**

A water cart and in particular, the street sweeper is constantly attending to this area and the STP road itself has now been sealed, limiting dust exiting this site.

#### **Site 6A – Near Orana Rd intersection**

There has been negligible work in this area during the month of December and the alignment in Fill 6 is now paved.

Batters are also stabilised.

It is suggested that the dust levels obtained have been influenced by Highway traffic as this gauge is located directly opposite Coolamon Scenic Drive intersection, adjacent to the Highway.

## 7 Complaints

### 7.1 Summary of Pollution Complaints

A telephone complaints line has been operating for the project. The following table is a list of community environmental complaints during February.

**Table 6: Environmental Complaints received during February**

<i>Type</i>	<i>Complaint No. &amp; Nature of complaint</i>	<i>Abigroup Response</i>
Noise - construction	1 complaint	Complaint of hearing truck prior to 7am. Foreman confirmed that a franna did drive up and park on site before 7am. Email sent to all supervisors and foreman reminding of no plant movement before 7am – this includes no driving on to site and waiting for 7am to pass.
Noise - operational	1 complaint	Complainant concerned about new temporary traffic lights on Coolamon Scenic and potential for noise from traffic. Complainant advised that traffic light duration is approx 3 weeks and that after opening the new highway, operational noise monitoring will take place.
Dust	3 complaints	Immediate send out of water cart and streetsweeper. Suggested to the complainant to call whatever time and straight away as the water cart can be sent to the site immediately.
Vibration	3 complaints	All from same complainant. All investigated and it was confirmed that there was no use of the vibratory roller within the exclusion zone.
Water quality	1 complaint	Complainant said there was an oil slick where Stock Route Rd crosses over. This is upstream of the project. Immediate inspection by environmental officer revealed algal bloom and sheen from the algae. Also Enviro Manager had been in the creek on a canoe on the day as well and noted nothing. No work occurring that day as it was a Sunday. Complainant advised of algal bloom and how to distinguish between this and hydrocarbon spills.

Complaints have been managed in accordance with project documentation.

## **8 Non-Compliance**

### **8.1 Summary of Non-compliances**

The potential non-compliance for the month relates to the noise construction complaint as detailed above. Staff have been directed that no starting before 7am also includes not driving up to the area and waiting for a 7am start.

It must be said, however, that it would have been expected that this noise would not have been audible – ie it would not have been expected to be louder than background levels, which are highway traffic and trucks. The highway is directly beside this area and trucks are quite noisy here as air brakes are in constant use.

# 1 Introduction

This is the monthly monitoring report for March 2007.

## 2 Weather

### 2.1 Discussion

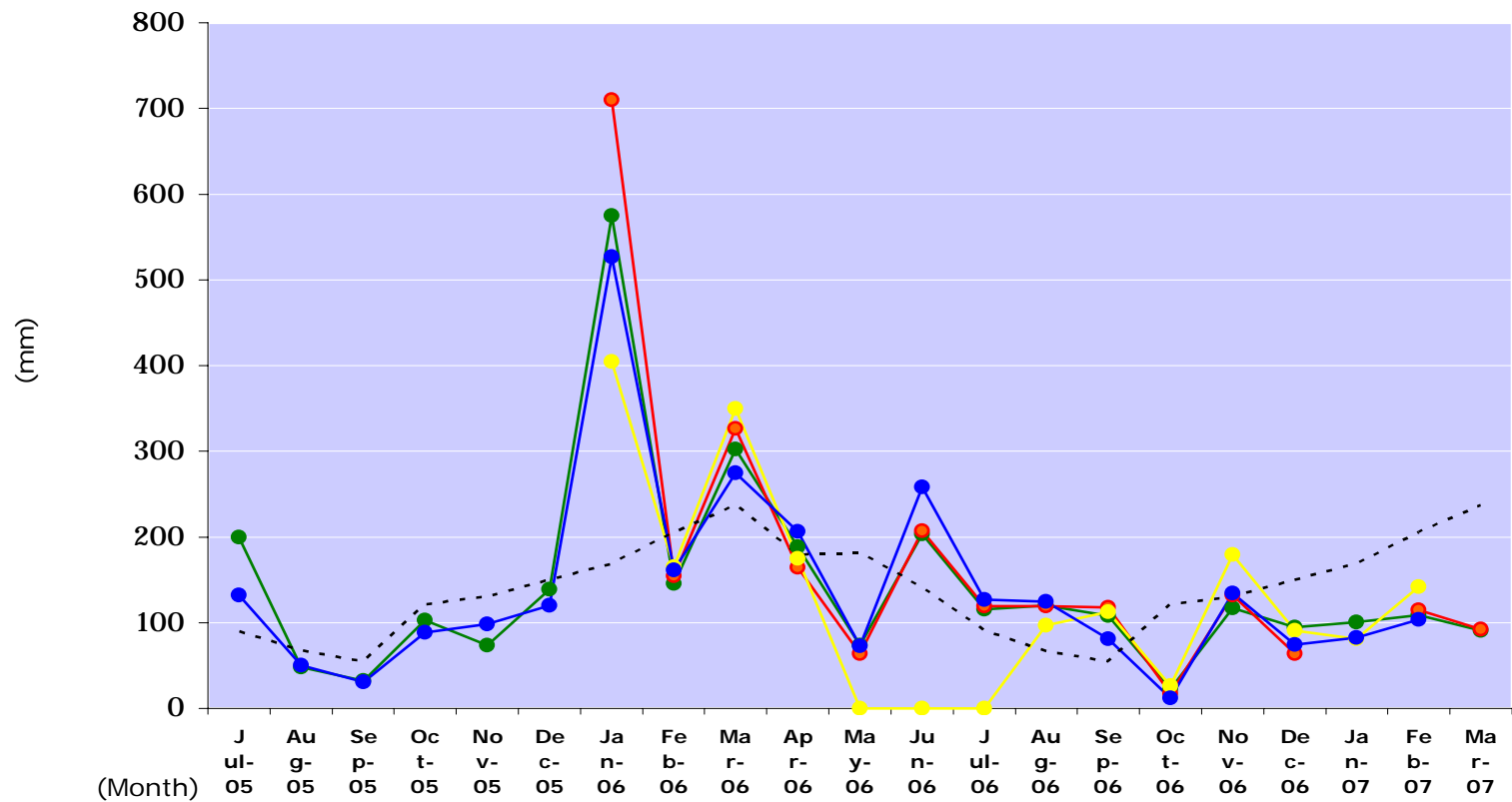
The daily rainfall monitoring gauge at the main site compound is recorded at approximately 9am each work day. The total rainfall received for the month is as follows: -

<b>Month</b>	<b>Total monthly rainfall (Site office)</b>
March 2007	90.5mm

Most of the rain was received during the second and last week of March.

During March there was substantially less rain received in comparison to the monthly average which is 237.09mm.

Graph 1:- Comparative rainfall data for the Brunswick Heads to Yelgun Pacific Highway Upgrade



	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07
Site Office	199.3	47.7	32.5	102.5	73.6	139	575	145.8	302.2	188.7	73.9	203.6	115.4	120	107.8	22.8	117	94.5	100.5	109	90.5
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### 3 Water

#### 3.1 Introduction

Brunswick River and Marshall's Creek are the two main receiving water bodies that the project alignment passes over. Water quality is assessed at four (4) sites:

**B1** – Downstream Brunswick River at the Brunswick Heads Boat Ramp just upstream of the Fish Co-op complex;

**B2** – Upstream Brunswick River at the end of Riverside Crescent just west of the Ferry Reserve Caravan Park;

**B5** – Downstream Marshall's Creek, just downstream of the bridgeworks site;

**B6** – Upstream Marshall's Creek west of Billinudgel near the Pocket Road Bridge.

#### 3.2 Receiving Water Monitoring Results

The following table provides the results of water quality monitoring undertaken by Mark Rosicky of Southern Cross University.

**Table 1: Water Quality Monitoring Results**

	Site Description	Sample No	Time (24 hour)	Weather Observations	Turbidity (NTU)	Temp (°C)	pH (unit)	DO (mg/l)	DO (%)	Specific Cond (dS/cm)	Salinity (PSS)
30 March 2007	Brunswick River upstream	B2	12:30	O'cast 30 <sup>o</sup>	0.2	25.54	7.99	4.74	67.3	49.70	32.53
	Brunswick River downstream	B1	12:15	O'cast 30 <sup>o</sup>	0.0	25.81	8.05	4.89	74.1	51.70	34.02
	Marshalls Creek upstream	B6	13:35	O'cast 29 <sup>o</sup>	46.7	24.30	7.48	3.86	50.4	23.60	14.32
	Marshalls Creek downstream	B5	14.05	O'cast 29 <sup>o</sup>	4.1	24.93	7.37	3.56	48.4	27.60	16.94

*Water Quality Monitoring Notes:*

Sampling was carried out by Mark Rosicky on 30 March 2007. Overcast day.

Time of sampling was between 12:30pm and 2:05pm. Tide was outgoing during sampling.

### 3.3 Water Discussion

#### Brunswick River

All results received indicate improved water quality downstream of the project.

It was again a warm day on the day of sampling and this is reflected in the water temperatures within Brunswick River.

Dissolved oxygen levels are low, though indicate an improvement in the downstream monitoring location.

Turbidity levels are good and relatively constant.

#### Marshalls Creek

In terms of turbidity, Marshalls Creek improves significantly downstream.

Dissolved oxygen is once again very low within this watercourse and is relatively similar at both sites. It is assumed that this relates to the warm waters and very low rainfall levels for the month (therefore resulting in stagnant waters).

### 3.4 Sediment Basin Water Monitoring

Please note that in accordance with the recently submitted variation application for EPL 12330, basins 7, F5A, GPT and BRBN have been deleted from the EPL 12330 and are now no longer functional.

**Table 2: Sediment Basin Water Quality Assessment Results**

Sed Basin	Bypass 1 (most sthn)	Bypass 2	Bypass 3	Bypass 4	Bypass 5	4A	4B	12	6	8	YRA	Stock Route Rd
Oil and Grease	0	0	0	0	0	0	0	0	0	0	0	0
pH	7.1	7.3	7.5	8.1	8.3	8.4	7.4	7.4, 8.5, 8.4	7.3, 7.9, 7.9	8.2	7.2, 7.2, 6.9	7.2
Turbidity	5	15	15	10	10	12	30	50, 35, 35	25, 38, 30	30	20, 20, 15	30

#### Sediment Basins

All discharges were within the licensed water quality parameters.

Many basins are being used for water supply (via water carts) as water is continuing to run low over the site. These basins include: -

- Wetland B;
- Basin 4A and 4B;
- Basin 5;

- Bypass basins;
- Fill 3B east (B44.7 and 44.8);
- Basins north of Marshalls Creek at Fill 8C.

## 4 Noise

### 4.1 Introduction

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The  $L_{Acons}$  is calculated in relation to the  $L_{A10}$  that had been measured at each site prior to construction commencing in March 2005.

### 4.2 Noise Results

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Mon Site	Location + Predicted typical LA10	LA10 (dBA)	LA90 (dBA)	Lcons (dBA)	EPL noise construction goal		EMP Predicted noise levels	Date/Time	Weather Conditions	Construction Noise Source	External Noise Source
					Earthworks (Background + 10dBA)	Bridgeworks & CBP (Background + 5dBA)					
1	2 Cudgen						45-54 for earthworks 41-42 for bridgework 53-58 for pavement				
2	Bashforth						70-71 for earthworks 48-50 for bridgeworks 73-76 for pavement				

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3	Ferry Reserve	57	52	Neg.	62	57	56-67 for bridgeworks 60-62 for walls 68-70 for earthworks 65-71 for pavement	29.3.07 1035	Fine, Sunny, Breezy. 0/8 <3.04 v/s NW 27.5° 55%	Rock hammering (hammering ceased approx 1045). Construction noise mostly <57dBA with only .7 dBA variation despite noise sounding physically loud to CRM. 52-53dBA without rock breaking. 3 x reverse beepers (2 beepers occasionally heard simultaneously) Machinery sounds Clanking of excavator bucket 1 bang heard briefly @ 1045 Plant machine similar to a generator heard from approx 1046 (similar to sound of helicopter).	Birds People talking in caravan park. 11 x local vehicles @ <60dBA 1 x ride on mower @ 65dBA (travelling on local road) Highway traffic heard only occasionally
4	1 Rajah	63	56	Neg.	66	61	59-63 for bridgework 66-75 for walls 58-76 for earthworks 75-81 for pavement	30.3.07 0820	Sunny, fine. Still – no breeze. 2/8 25.8° 70%	Hammering metal hand rail intermittently <58dBA Excavator Reverse beeper Nloading to the north or moving something? Second reverse beeper heard simultaneously @ 0833.	H/way traffic more prominent Clanking of trucks, truck & dogs on H/way directly below monitoring station Car brakes screeching Rajah vehicles x 46
5	1 Oola	64	55	Neg.	65	60	65-75 for walls 62-72 for earthworks 77-81 for pavement	30.3.07 08.45	Sunny 3/8 No breeze 24.6° 72%	Water cart 2 x reverse beeper (only heard simultaneously once, very briefly <20sec.) Occasional banging (possibly excavator bucket?) Excavator	H/way traffic (trucks quite noisy 65-69dBA) Cough x 2 Insects – at times up to 64 dBA when no trucks evident Birds Horn

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6	5 Weeronga	54	48	52.9	58	53	51-56 for bridgework 56-88 for retaining walls 53-58 for earthworks 61-64 for pavement	31.3.07 1135	7/8 1.67v/s NE 25.9° 54%	Reverse beepers x 3 heard (occasionally simultaneously) Construction noise evident all through monitoring period. Construction more prominent than H/way noise.	H/way traffic Birds Wind in branches and shrubbery Traffic on Warrambool 1 x local Weeronga
7	5 Tongarra						52-56 for walls 68-69 for earthworks 74-76 for pavement				
8	24 Binya	58	46	57	56	51	42-45 for walls 46-50 for earthworks 49-53 for pavement	31.3.07 12 noon	Fine, sunny 1/8 .98 v/s – couldn't discern direction 29.9° 53%	No construction visible or audible.  Terminated reading after 5 minutes	H/way traffic Resident talking next door Birds, including a great number of magpies extremely close to monitoring station. Magpie carolling very, very loud.
9	19 Mountainview	51	45	Neg.	55	50	57-60 for bridgeworks 51-54 for walls 62-64 for earthworks 71-77 for pavement	31.3.07 1345	Fine, Sunny 2/8 1.98 v/s SE 31.3° 51%	Originally resident advised no construction visible/audible however as BMW trials were being conducted, I carried out monitoring.  Truck Franna BMW trial, tyres screeching @ up to 57dBA	H/way traffic, up to 57dBA for buses and trucks and <49dba without trial and no trucks, only light vehicles Birds Wind rustling branches

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10	48 Yamble						64-70 for bridgework  49-53 for walls  53-73 for earthworks  73-75 for pavement			No-one home 30.3.07 No-one home 31.3.07	
11	10/10 Balemo	66	55	63.2	65	60	60-70 for bridgework  49-52 for walls  54-65 for earthworks  67-68 for pavement	29.3.07 1120	Fine, sunny 0/8 Breeze <2.31N 28.1° 48%	Cement truck visible but not audible  No construction audible, terminated reading after 5 minutes	Local vehicles <72dBA x 16 Construction at building site diagonally opposite monitoring site: hammering, nail gun @ 70dBA throughout monitoring period. H/way traffic constant
12	99 Stock Route						59-61 for bridgework  63-66 for walls  54-74 for earthworks  67-74 for pavement				
13	2 Ulpira Cres	68	49	67.9	59	54	40-55 for earthworks  50-57 for pavement	29.3.07 1130	Fine, sunny 0/8 1.29v/s mostly coming from E but very sheltered and difficult to ascertain. 27.8° 53%	No construction visible or audible	Light aircraft Slashing in progress when I arrived. Waited 5 minutes until machine moved away. Slasher returned. Reverse beeper from slasher, banging sound. Slasher left site @ 1133. Dog barking Insects loud – cicadas. Chainsaw commenced 1137

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14	40 Matong						54-58 for bridgework 52-58 for earthworks 57-64 for pavement				
15	White Dove						60-78 for bridgework 59-63 for walls 73-76 for earthworks 76-79 for pavement				
16	21 Gilba						52-60 for bridgework 55-67 for walls 60-71 for earthworks 63-74 for pavement				
17	123 Balemo						55-74 for bridgework 58-71 for walls 66-77 for earthworks 69-77 for pavement				

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18	175 Stock Route						54-66 for bridgework 66-71 for earthworks 69-74 for pavement				
19	Holm Farm						54-65 for bridgework 49-63 for walls 64-66for earthworks 60-69 for pavement				
20	Jagwen						56-62 for bridgework 51-58 for walls 60-64 for earthworks 63-67 for pavement 71-77 Rest Area construction				

## 4.3 Noise Monitoring Discussion

The construction noise monitoring was carried out between 29-31 March 2007. It was attended by Wendy Dooley using a calibrated Aclan Toulouse Sound Level Meter (Model SLS955, Class 2).

Noise monitoring was carried out over 15 minute sampling periods, unless stated otherwise.

Noise results indicate that:-

- **Site 8 – 24 Binya** - exceedance of the EPL, though there was no construction noise at all at this site. Only noise produced was from background sources including highway traffic and magpies;
- **Site 13 – 2 Ulpira** - exceedance of the EPL, though there was no construction noise at all at this site either. Predominant background noise sources included a light aircraft, slasher and chainsaw.
- 

## 5 Vibration

### 5.1 Vibration Summary

There was no vibration monitoring undertaken during March.

## 6 Dust

### 6.1 Introduction

Depositional dust gauges were installed along the alignment at the commencement of earthworks operations and have operated for more than 12 months.

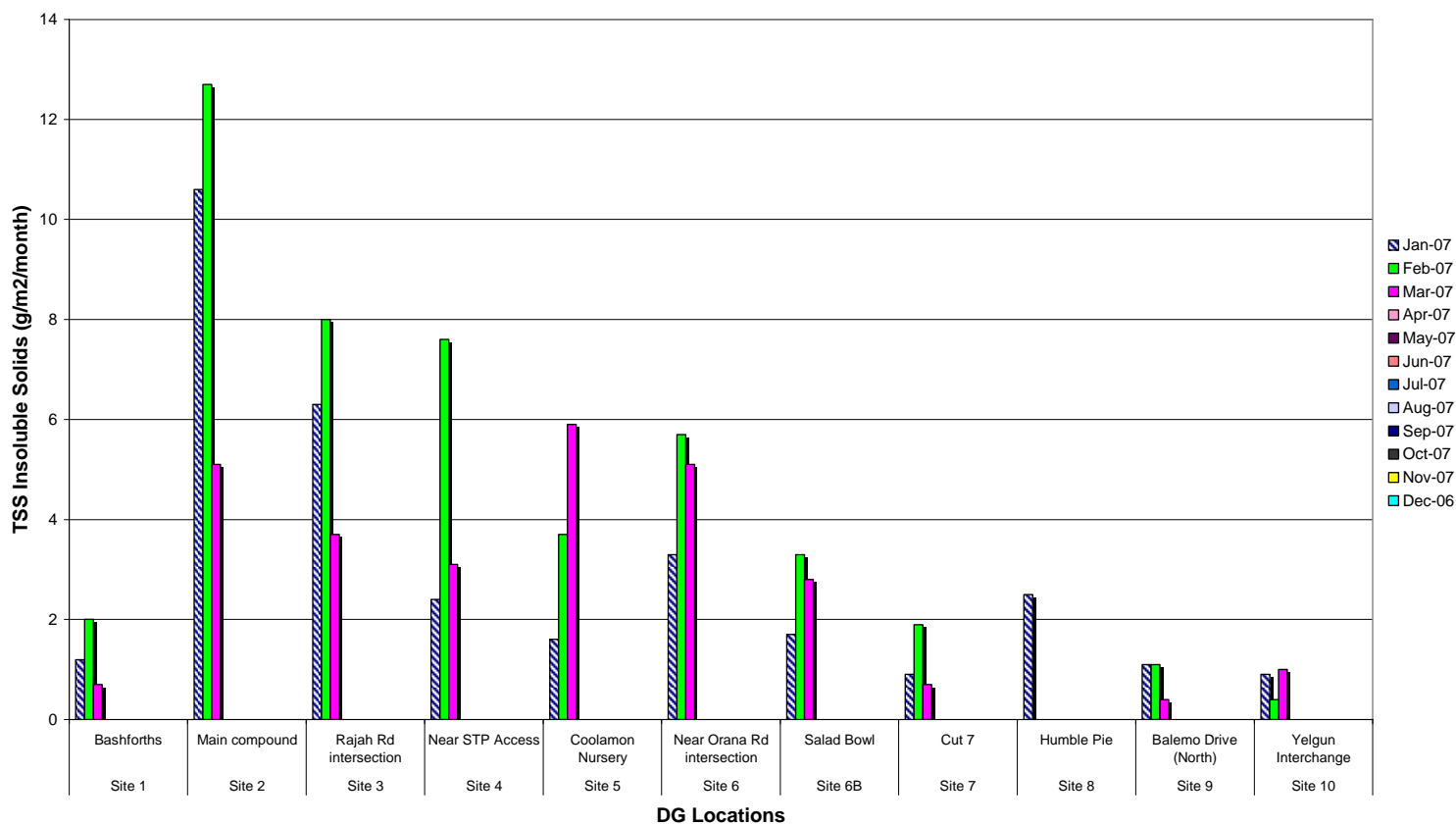
### 6.2 Dust Results - March

Dust sample bottles were collected from the gauges by Environmental Analysis Laboratory and analysed at Lismore. The monthly dust depositional gauge (DDG) analysis is being undertaken in accordance with AS 3580.10.1, and is summarised below.

**Table 4: Results of Dust Monitoring March 2007**

<b>Site</b>	<b>Total Suspended Solids (g/m<sup>2</sup>/month)</b>
1. Cut 2 near Bashforth property	0.7
2. Main Compound	5.1
3. Rajah Road intersection	3.7
4. Near STP Access	3.1
5. Coolamon Nursery	5.9
6A. Near Orana Rd intersection	5.1
6B. Outside workshop	2.8
7. Cut 7 The Tunnel Road	0.7
8. Outside Humble Pie business	n/a
9. Balemo Drive (north)	0.4
10. Yelgun Interchange	1.0

**Dust Monitoring Results  
B2Y 2007**



### 6.3 Dust Discussion

Site 8 has not achieved a result for March. At the end of February, the laboratory went to this site and noted that the gauge was missing possibly from site works or vandalism. It was not until 20 March (when the laboratory sent through the dust results through for February) that Abigroup were advised that this gauge was in fact missing. The gauge was immediately installed the next day (21 March) but will not effectively start recording until 1 April as the dust gauge bottle and glass funnel were installed by the laboratory on that day, and monitoring must be representative of an entire month.

Dust results for March indicate three exceedances – Site 2 (Main Compound), Site 5 (Coolamon Nursery) and Site 6A (Orana Road intersection).

A discussion of the activities occurring at these sites and any factors that may have contributed to the results is provided below.

The project suction street sweeper and water carts continue to work full time.

#### Site 2 – Main Compound

Site 2 monitors dust on the project itself (not at a sensitive receiver), at the site car park.

Though an exceedance has been recorded, the dust levels at this site have reduced dramatically from over 12 g/m<sup>2</sup>/month to 5.1 g/m<sup>2</sup>/month.

During the month of March, access into the site has been relocated to the old Pacific Highway. This is sealed, consequently resulting in reduced dust levels.

### Site 5 – Coolamon Nursery

There has been very limited works in the Coolamon Scenic Drive area.

The section of highway adjacent to the nursery is very near completion with pavement placed and medians and verges complete. Remaining work in the area will be the relocation of Coolamon Scenic Drive itself but this is not expected to occur until the final stages of the project.

Nevertheless water carts and the streetsweeper will continue to target this area.

Please note no complaints have been received for dust in this area.

### Site 6A – Near Orana Rd intersection

As discussed for Site 5, there has been negligible work in this area during the month of March and the alignment in Fill 6 is now paved with verges and medians complete. The medians have been hydromulched with grass taking well. Consequently much of the project adjacent to this site is covered.

Batters are also stabilised.

It is suggested that the dust levels obtained have been influenced by Highway traffic as this gauge is located directly opposite Coolamon Scenic Drive intersection, adjacent to the Highway.

## 7 Complaints

### 7.1 Summary of Pollution Complaints

A telephone complaints line has been operating for the project. The following table is a list of community environmental complaints during March.

**Table 6: Environmental Complaints received during March**

<i>Type</i>	<i>Complaint No. &amp; Nature of complaint</i>	<i>Abigroup Response</i>
Noise - construction	1 complaint	Complaint of hearing work all night. Investigation noted that no work occurred that night. In the morning the paver was

		moved and traffic control was set up at the top of STP Road. The only thing used were lights. Complainant was advised of this. They were thankful. Complaint not validated.
Waste	1 complaint	Complainant concerned about litter left across the road from the Salad Bowl where project employees park their vehicles.
Odour	1 complaint	Fumes from truck exhausts causing problems. Community Manager and Environmental Officer met with complainant and advised that traffic will be shifted when the Highway opens resulting in traffic being further away from her house. This should assist with odours. Complainant will wait and see what happens following traffic switch.

Complaints have been managed in accordance with project documentation.

## **8 Non-Compliance**

### **8.1 Summary of Non-compliances**

There are no non-compliances for March.

# 1 Introduction

This is the monthly monitoring report for April 2007.

## 2 Weather

### 2.1 Discussion

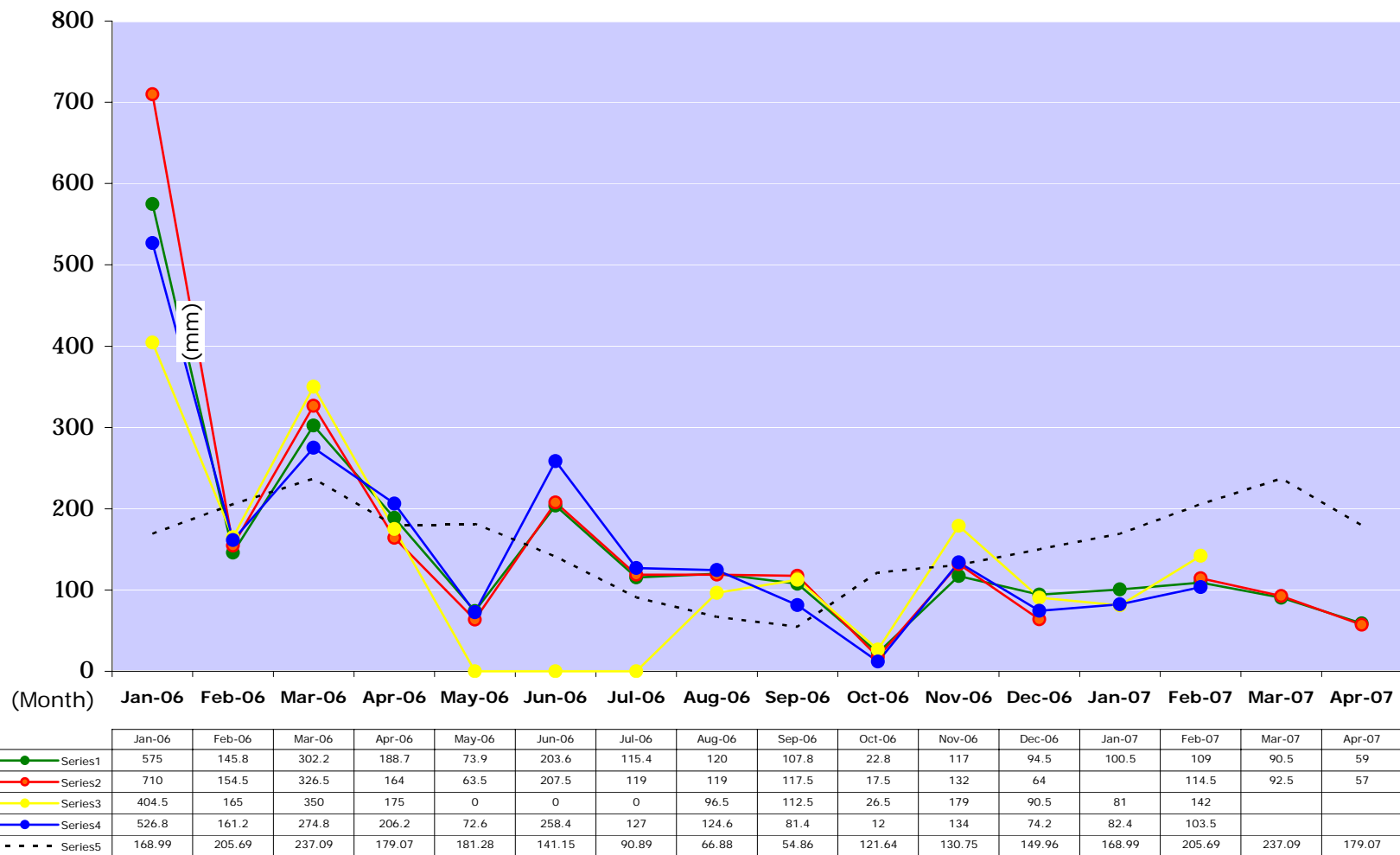
The daily rainfall monitoring gauge at the main site compound is recorded at approximately 9am each work day. The total rainfall received for the month is as follows: -

<b>Month</b>	<b>Total monthly rainfall (Site office)</b>
April 2007	59mm

Most of the rain was received during the second and last week of April.

During April there was substantially less rain received in comparison to the monthly average which is 179.07mm.

Graph 1:- Comparative rainfall data for the Brunswick Heads to Yelgun Pacific Highway Upgrade



### 3 Water

#### 3.1 Introduction

Brunswick River and Marshall's Creek are the two main receiving water bodies that the project alignment passes over. Water quality is assessed at four (4) sites:

**B1** – Downstream Brunswick River at the Brunswick Heads Boat Ramp just upstream of the Fish Co-op complex;

**B2** – Upstream Brunswick River at the end of Riverside Crescent just west of the Ferry Reserve Caravan Park;

**B5** – Downstream Marshall's Creek, just downstream of the bridgeworks site;

**B6** – Upstream Marshall's Creek west of Billinudgel near the Pocket Road Bridge.

#### 3.2 Receiving Water Monitoring Results

The following table provides the results of water quality monitoring undertaken by Mark Rosicky of Southern Cross University.

**Table 1: Water Quality Monitoring Results**

Site Description	Sample No	Time (24 hour)	Weather Observations	Turbidity (NTU)	Temp (°C)	pH (unit)	DO (mg/l)	Specific Cond (dS/cm)	Salinity (PSS)
Brunswick River upstream	B2	7:55	Sunny, breezy 26°C	7.2	22.6	7.96	5.7	52.9	34.7
Brunswick River downstream	B1	11:31	Sunny, breezy 26°C	16	22.97	8.1	6.2	53.7	35.3
Marshalls Creek upstream	B6	10:33	Sunny, breezy 26°C	21.3	22.12	7.25	4.3	43.1	27.6
Marshalls Creek downstream	B5	3:07	Sunny, breezy 26°C	10.1	22.13	7.28	3.7	43.7	28

30 April 2007

*Water Quality Monitoring Notes:*

Sampling was carried out by Mark Rosicky on 30 April 2007.

Tide was outgoing at the time of sampling.

### 3.3 Water Discussion

#### Brunswick River

Turbidity values increase slightly downstream in the Brunswick River. It is unknown why these values have increased, but please note that the date of sampling was a Rostered Day Off and no work was being conducted on site.

Dissolved oxygen levels are good and pH is slightly low, improving downstream.

#### Marshalls Creek

In terms of turbidity, Marshalls Creek improves in the downstream location.

pH remains constant at both monitoring sites.

Dissolved oxygen is once again very low within this watercourse and is relatively similar at both sites. It is assumed that this again relates to the very limited rainfall received for the month (therefore resulting in stagnant waters).

### 3.4 Sediment Basin Water Monitoring

**Table 2: Sediment Basin Water Quality Assessment Results**

Sed Basin	W48.9	W49.4	4A	4B	12	6	8	9	10	YRA	Stock Route Rd
Oil and Grease	0	0	0	0	0	0	0	0	0	0	0
pH	7.8, 7.6	7.5	7.6	7.5	7.6	7.8	7.0, 7.8, 7.9	7.5, 8.1, 7.8	8.4, 8.3	7.2, 7.8, 8.1	8.4, 8.1
Turbidity	38, 26	38	50	20	40	38	34, 42, 24	40, 40, 42	35, 38	27, 20, 20	35, 22

#### Sediment Basins

All discharges were within the licensed water quality parameters.

Many basins are being used for water supply (via water carts) as water is continuing to run low over the site. These basins include: -

- Wetland B;
- Basin 5;
- Basin 4;
- W49.4;
- Bypass basins;
- Fill 3B east (B44.7 and 44.8).

## 4 Noise

### 4.1 Introduction

Abigroup are undertaking noise monitoring for the Brunswick Heads to Yelgun Pacific Highway Upgrade Project.

The construction noise monitoring in this period was attended by Wendy Dooley using a calibrated Aclan Toulouse Sound Level Meter (Model SLS955, Class 2).

Noise monitoring at each site was carried out over 15 minute sampling periods.

Construction noise monitoring examines the  $L_{A10}$  and  $L_{A90}$  noise level parameters recorded during any given 15 minute sampling period.  $L_{A90}$  readings represent noise levels exceeded for 90% of the time, whilst  $L_{A10}$  readings represent the noise levels exceeded for 10% of the time.  $L_{A90}$  readings are recognised as background levels.  $L_{A10}$  readings can be used to reflect the annoyance from construction works, provided consideration is given to the influences of external noise sources which are absorbed into the  $L_{A10}$  value.

The  $L_{Acons}$  is calculated in relation to the  $L_{A10}$  that had been measured at each site prior to construction commencing in April 2005.

### 4.2 Noise Results

Table 3 shows the results of attended noise monitoring conducted in April.

Mon Site	Location + Predicted typical LA10	LA10 (dBA)	LA90 (dBA)	Lcons (dBA)	EPL noise construction goal		EMP Predicted noise levels	Date/Time	Weather Conditions	Construction Noise Source	External Noise Source
					Earthworks (Background + 10dBA)	Bridgeworks & CBP (Background + 5dBA)					
1	2 Cudgen	52	43	50.7	53	48	45-54 for earthworks  41-42 for bridgework  53-58 for pavement	28.4.07 09:40	Fine, 8/8 Mostly still, <3.13 v/s E Light sprinkle of rain early in the day. 75% 26.4°	Background hum of construction? (Could not definitely say it was construction, and not highway noise as no one particular noise stood out.)	Birds – consistent – mostly between 47-55 dBA; however crows up to 62dBA fairly constantly crowing throughout measurement period. Wind in trees H/way traffic; trucks intermittently heard faintly. Local vehicles: 1 @ 53dBA, 1 @ 54dBA and 1 @ 50dBA
2	Bashforth						70-71 for earthworks  48-50 for bridgeworks  73-76 for pavement	28.4.07		No construction evident	
3 READING No. 1	Ferry Reserve	50	45	Neg.	55	50	56-67 for bridgeworks  60-62 for walls  68-70 for earthworks  65-71 for pavement	14.4.07 18:40	Fine, 4/8 Still – no breeze 79% 19.5°	Generator – background hum only, not louder than traffic and certainly quieter than residents. All spikes in reading due to residents' noise. 18:48 excavator heard, but did not go above 50dBA  47dBA was the closest I could measure without too much background noise.	H/way traffic. Crickets Conversations, music, laughter and some banging from residents up to 52dBA Motor boat <10sec.

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3	Ferry Reserve	59	49	54.7	59	54		28.4.07 11:10	Fine & sunny however rain does appear imminent 8/8 <.47 v/s unable to discern direction – possibly E at times 64% 27.1°	Occasional banging Cutting noise Hammering (by hand) Rock hammer @ 59-61dBA (intermittent) although 1 session of hammering measured only 54-55dBA Reverse beeper (faint)  49-50dBA normal background without hammer	H/way noise Birds prominent Jet ski 57-58dBA Wind blowing dry gum leaves along asphalt road.
4	1 Rajah	63	51	Neg.	61	56	59-63 for bridgework  66-75 for walls  58-76 for earthworks  75-81 for pavement	16.4.07 22:25	Fine, 0/8 Still, no breeze 84% 18°	Generator @ 50dBA (constant)  NB: In discussion with unit manager (Shores Lodge) at this site on 28.4.07, no-one had complained or commented about nightworks because nothing could be heard with windows closed.	Intermittent H/way traffic although operational noise prominent. Trucks heard regularly @ 67-69dBA (very loud just south of Rajah intersection). Insects Local traffic x 8
4	1 Rajah							28.4.07		No construction in immediate vicinity; no reading taken.	
5	1 Oola						65-75 for walls  62-72 for earthworks  77-81 for pavement				

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6	5 Weeronga	49	45	43.7	55	50	51-56 for bridgework 56-88 for retaining walls 53-58 for earthworks 61-64 for pavement	14.4.07 19:15	Fine Slight breeze .88v/s. Could not ascertain direction, possibly W? NW? 81% 18.5°	Intermittent squeaking sound of excavator @ 47-48dBA Occasional bucket heard No generator noise audible Reverse beeper heard once @ 19:25 <6sec.	H/way traffic prominent, trucks @ 50dBA Birds Insects Dog bark <6sec Local Warrambool traffic x 18 Local Weeronga traffic x 4 (spikes in reading very obvious, 2 @ 60dBA and 1 @ 71dBA)
7	5 Tongarra						52-56 for walls 68-69 for earthworks 74-76 for pavement				
8	24 Binya						42-45 for walls 46-50 for earthworks 49-53 for pavement				
9	19 Mountainview						57-60 for bridgeworks 51-54 for walls 62-64 for earthworks 71-77 for pavement	27.4.07		No construction evident.	

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10	48 Yamble						64-70 for bridgework  49-53 for walls  53-73 for earthworks  73-75 for pavement	27.4.07 & 28.4.07		No construction evident in Coolamon Scenic Drive. One excavator parked on ridge. No reading taken.	
11	10/10 Balemo						60-70 for bridgework  49-52 for walls  54-65 for earthworks  67-68 for pavement	27.4.07 08:35		No construction evident – no reading taken	
12	99 Stock Route						59-61 for bridgework  63-66 for walls  54-74 for earthworks  67-74 for pavement	27.4.07 & 28.4.07		No construction evident	
13	2 Ulpira Cres						40-55 for earthworks  50-57 for pavement	27.4.07 08:45		No reading conducted as chainsawing and clearing being carried out nearby. No evidence of construction though.	

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14	40 Matong	59	35	55.9	45	40	54-58 for bridgework 52-58 for earthworks 57-64 for pavement	27.4.07 08:55	Overcast 8/8 No breeze Rain had recently fallen 86% 22.9°	Clanking or unloading noise – very brief – heard x 4 times @ 62dBA – further south. Separate reverse beeper x 2 (definitely construction), to NW of site. Pushing, scraping sound or similar to trying to pull start an engine @ 09:09	Chainsaw definitely the prominent noise source. Chainsaw providing high levels of noise @ 60dBA (out the back of Ulpira) Intermittent reverse beeper (may have been external source, involved with private clearing nearby). Did not register. H/way traffic, trucks @ 63dBA Birds Insects Horn x 2
15	White Dove						60-78 for bridgework 59-63 for walls 73-76 for earthworks 76-79 for pavement	28.4.07 10:30		Only light vehicles in evidence so no monitoring undertaken	
16	21 Gilba						52-60 for bridgework 55-67 for walls 60-71 for earthworks 63-74 for pavement				

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17	123 Balemo	62	55	Neg.	65	60	55-74 for bridgework 58-71 for walls 66-77 for earthworks 69-77 for pavement	28.4.07 10:40	8/8 Little – no breeze <.77m/s 66% 26.9° Rain appeared imminent	County Energy working Jackhammer @ 61dBA, stopped 10:45 (C.E.) Banging sound (unloading or excavator bucket?) Generator (from Country Energy) Reverse beeper @ 59-60dBA from C.E. light vehicle <40sec @ 10:54 No generator/no construction during final 4 minutes, 54-57dBA background operational noise	
18	175 Stock Route						54-66 for bridgework 66-71 for earthworks 69-74 for pavement	18.4.07 09:00		Paul unable to contact new tenants to alert them to noise monitoring and warned me not to go to the house unannounced. Consequently, no monitoring undertaken.	
19	Holm Farm						54-65 for bridgework 49-63 for walls 64-66for earthworks 60-69 for pavement				

20	Jagwen						56-62 for bridgework  51-58 for walls  60-64 for earthworks  63-67 for pavement  71-77 Rest Area construction				
Roger s' reside nce, Stock Route Rd.	Monitoring for batch paving plant	57	50					19.4.07 22:40	Fine, no breeze High humidity 21.9°	Reverse beeper (not registering) – appeared faint. Generator (seemed louder than reverse beeper) Banging (like steel being dumped) 58dBA Workers talking	H/way traffic predominated Trucks @ 65-59dBA Startled by possum – possum squeaked and Noise Reader shrieked - quietly. Background noise @ 50-52dBA (however includes generator)

## 4.3 Noise Monitoring Discussion

The construction noise monitoring was carried out between 14-29 April 2007. It was attended by Wendy Dooley using a calibrated Aclan Toulouse Sound Level Meter (Model SLS955, Class 2).

Noise monitoring was carried out over 15 minute sampling periods, unless stated otherwise.

Noise results indicate that: -

- **Site 8 – 40 Matong** - exceedance of the EPL, though no exceedance of the EMP predicted noise levels. The prominent noise source at this site was a nearby chainsaw which was giving readings of over 60dB(A). Very limited (almost no) construction-related noise sources were detected at this site.

## 5 Vibration

### 5.1 Vibration Summary

There was no vibration monitoring undertaken during April.

## 6 Dust

### 6.1 Introduction

Depositional dust gauges were installed along the alignment at the commencement of earthworks operations and have operated for more than 12 months.

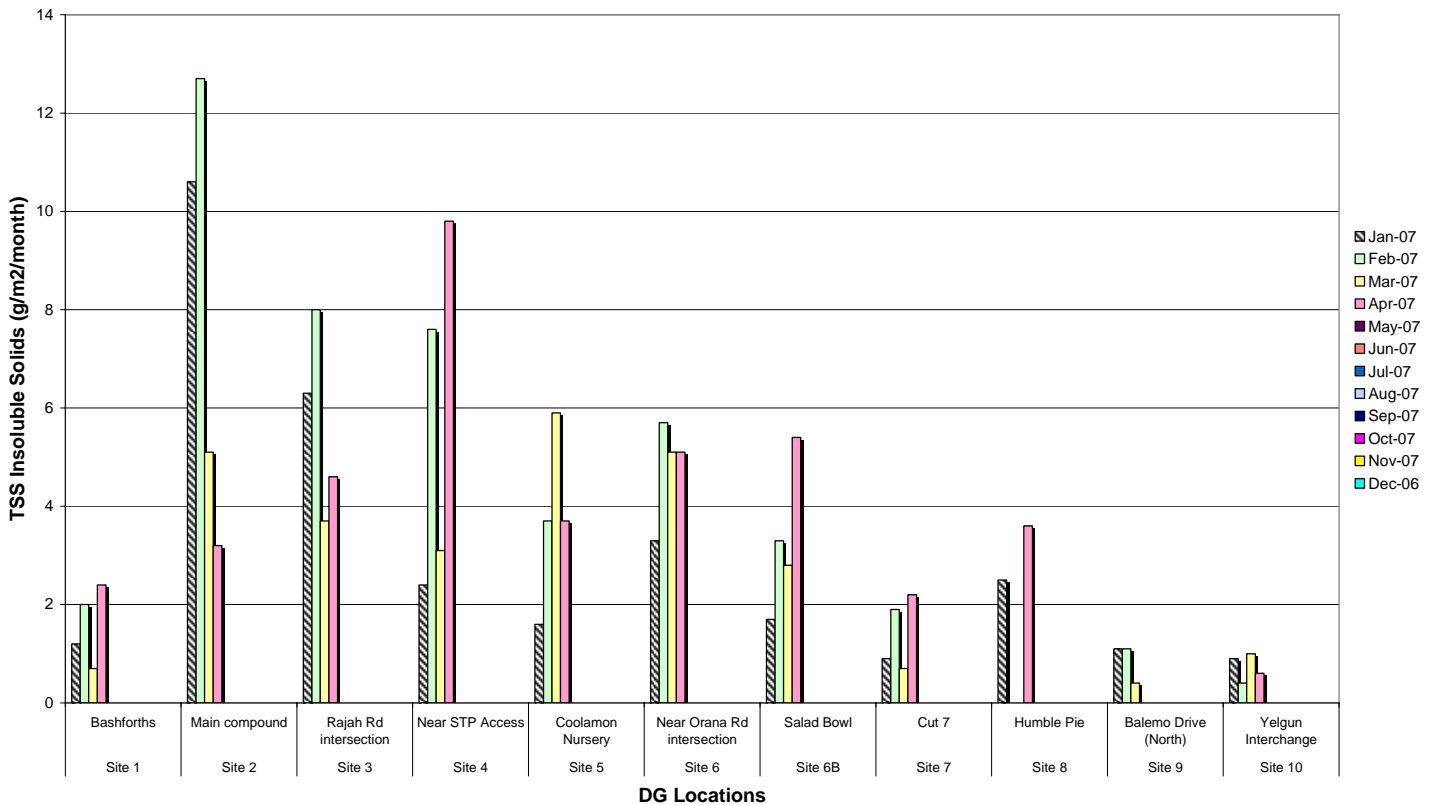
### 6.2 Dust Results - April

Dust sample bottles were collected from the gauges by Environmental Analysis Laboratory and analysed at Lismore. The monthly dust depositional gauge (DDG) analysis is being undertaken in accordance with AS 3580.10.1, and is summarised below.

**Table 4: Results of Dust Monitoring April 2007**

<b>Site</b>	<b>Total Suspended Solids (g/m<sup>2</sup>/month)</b>
1. Cut 2 near Bashforth property	2.4
2. Main Compound	3.2
3. Rajah Road intersection	4.6
4. Near STP Access	9.8
5. Coolamon Nursery	3.7
6A. Near Orana Rd intersection	5.1
6B. Outside workshop	5.4
7. Cut 7 The Tunnel Road	2.2
8. Outside Humble Pie business	3.6
9. Balemo Drive (north)	n/a
10. Yelgun Interchange	0.6

**Dust Monitoring Results  
B2Y 2007**



### 6.3 Dust Discussion

Dust results for April indicate four exceedances – Site 3 (Rajah Road), Site 4 (STP Access Road), Site 6A (Orana Road intersection) and Site 6B (Salad Bowl). A discussion of the activities occurring at these sites and any factors that may have contributed to the results is provided below.

Due to vandalism, there is no result available for Site 9. This gauge was both smashed and bent over.

The project suction street sweeper and water carts continue to work full time.

#### Site 3 – Rajah Road intersection

Site 3 is located directly opposite the Fill 4 area. Over the month of April this section of the project was highly stabilised with sealing and paving occurring.

The Site 3 gauge is located on the project alignment itself and directly beside the highway, therefore is highly affected by highway traffic. There was no suitable location for this gauge off site.

We will continue to monitor results in this gauge, though it is predicted that with paving in place along this section of the alignment that any potential dust sources are dramatically reduced.

#### **Site 4 – STP Access Road**

The results for Site 4 are unusually high in comparison to those results received to date.

A water cart and the street sweeper are both constantly attending to the Fill 4 area and the STP road. The streetsweeper operator will however be advised to target this area more intensively.

The STP Road has been sealed, limiting dust exiting from this site.

Please note that there have been no complaints about dust from this area.

#### **Site 6A – Near Orana Rd intersection**

As discussed previously, there has been negligible work in this area during April, and the alignment in Fill 6 is now stabilised with paving, batters, verges and medians complete.

It is suggested that the dust levels obtained have been influenced by Highway traffic as this gauge is located directly opposite Coolamon Scenic Drive intersection, adjacent to the Highway.

#### **Site 6B – Salad Bowl**

There has been some work occurring at the Salad Bowl with construction of the Wetland basin. A rock access was installed at the access point to limit any potential for tracking.

The streetsweeper has been attending this site in order to limit any potential dust.

Please note that there have been no complaints about dust from this area.

## 7 Complaints

### 7.1 Summary of Pollution Complaints

A telephone complaints line has been operating for the project. The following table is a list of community environmental complaints during April.

**Table 6: Environmental Complaints received during April**

<i>Type</i>	<i>Complaint No. &amp; Nature of complaint</i>	<i>Abigroup Response</i>
Noise - working hours	3 complaints	Two complaints related to lights coming on before 7am. Complainant advised of after hours work and that he had been notified. We will ensure that the lights are not placed in this location again.  One complaint about a truck being on site before 7am. An EIN was issued about this.
Noise - construction	1 complaint	Complainant requested that we turned down the reversing beepers. These cannot be turned down but Community Manager investigated the possibility of carrying out circular movements instead of reversing. This was not a possibility as the trucks needed to reverse up to the paver. Complainant offered motel accommodation however did not like motel beds so did not accept.
Dust	1 complaint	Billinudgel area. Wilfred Street sealing program fast-tracked with this work now complete. Gate 20 trialled with rock but safety concerns as rock ended up on highway. Gate 20 was then closed asap. The watercart was also targeted at this area.

Complaints have been managed in accordance with project documentation.

## **8 Non-Compliance**

### **8.1 Summary of Non-compliances**

On the 4 April 2007 work commenced before 7am. On this day, a subcontractor floated machinery prior to the 7am starting time. As a result of this, an EIN was issued to the subcontractor, and they were sent a letter reiterating the project working hours and importance in complying with these hours.

# 1 Introduction

This is the monthly monitoring report for May 2007.

## 2 Weather

### 2.1 Discussion

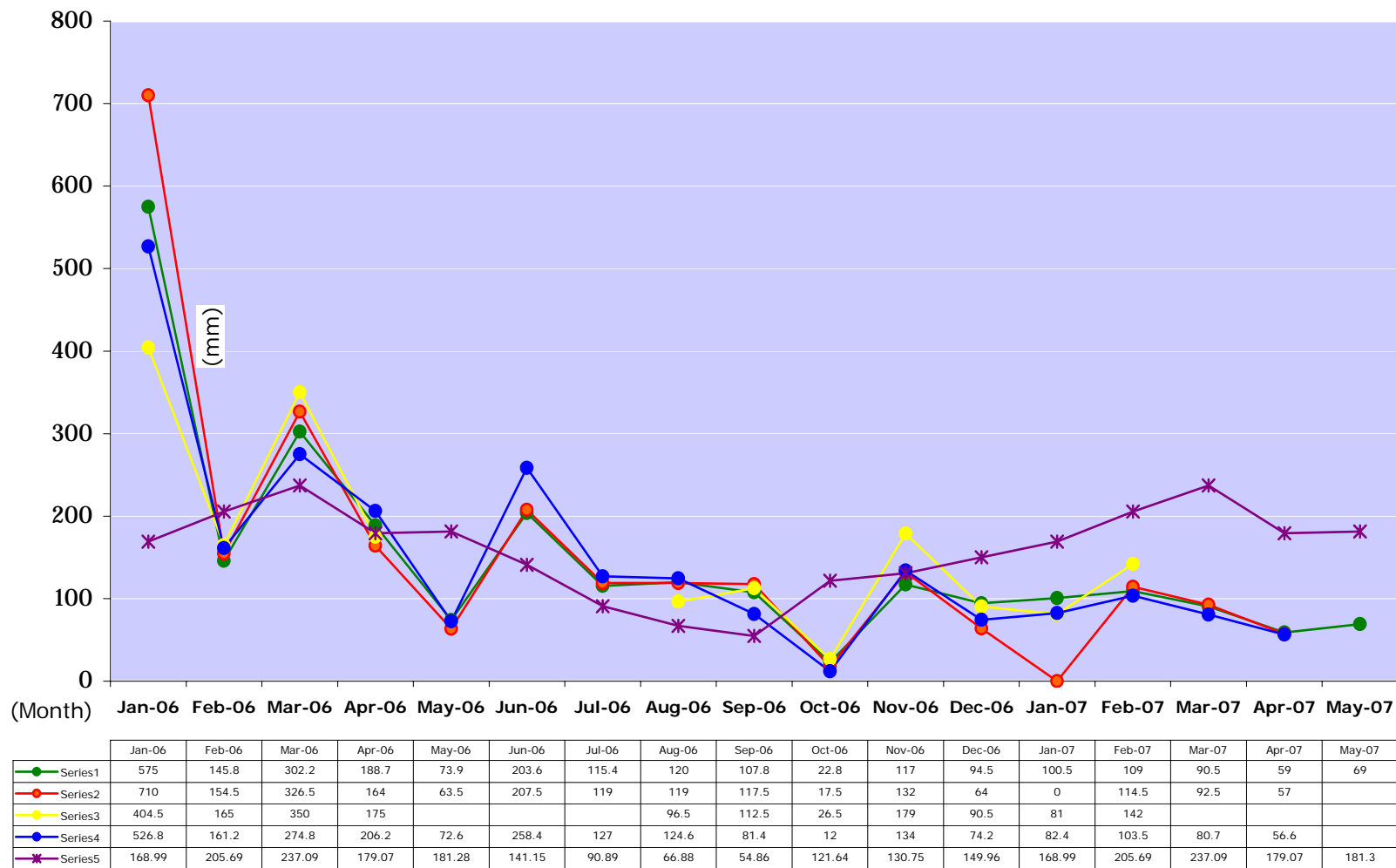
The daily rainfall monitoring gauge at the main site compound is recorded at approximately 9am each work day. The total rainfall received for the month is as follows: -

Month	Total monthly rainfall (Site office)
May 2007	69mm

There was very little rain which fell on the site over the month of May. Any rain received was minimal with the highest values being 14mm on 14 May and 17mm on 30 May 2007. For much of the rest of the month small recordings of between 1mm – 3mm were regularly received.

During May there was substantially less rain received in comparison to the monthly average which is 181.28mm.

Graph 1:- Comparative rainfall data for the Brunswick Heads to Yelgun Pacific Highway Upgrade



### 3 Water

#### 3.1 Introduction

Brunswick River and Marshall’s Creek are the two main receiving water bodies that the project alignment passes over. Water quality is assessed at four (4) sites:

**B1** – Downstream Brunswick River at the Brunswick Heads Boat Ramp just upstream of the Fish Co-op complex;

**B2** – Upstream Brunswick River at the end of Riverside Crescent just west of the Ferry Reserve Caravan Park;

**B5** – Downstream Marshall’s Creek, just downstream of the bridgeworks site;

**B6** – Upstream Marshall’s Creek west of Billinudgel near the Pocket Road Bridge.

#### 3.2 Receiving Water Monitoring Results

The following table provides the results of water quality monitoring undertaken by Mark Rosicky of Southern Cross University.

**Table 1: Water Quality Monitoring Results**

	Site Description	Sample No	Time (24 hour)	Weather Observations	Turbidity (NTU)	Temp (°C)	pH (unit)	DO (mg/l)	Specific Cond (dS/cm)	Salinity (PSS)
1 June 2007	Brunswick River upstream	B2	11:19	Sunny, breezy 24°C	4.7	21.84	7.88	6.3	55.5	36.6
	Brunswick River downstream	B1	11:10	Sunny, breezy 24°C	3.6	22.09	7.92	6.9	55.7	36.8
	Marshalls Creek upstream	B6	12:15	Sunny, breezy 24°C	12.7	19.1	7.07	4.7	47.2	30.4
	Marshalls Creek downstream	B5	12:57	Sunny, breezy 24°C	0.0	19.67	7.19	5.3	45.2	29

*Water Quality Monitoring Notes:*

Sampling was carried out by Mark Rosicky on 1 June 2007.

Tide was outgoing at the time of sampling.

### 3.3 Water Discussion

#### Brunswick River

All water quality results indicate good water quality within Brunswick River. Turbidity values are low and decrease downstream. pH, conductivity and salinity all remain consistent. Dissolved oxygen levels improve downstream.

#### Marshalls Creek

In terms of turbidity, Marshalls Creek improves downstream. pH, EC and salinity remain constant at both monitoring sites. Dissolved oxygen is once again low within this watercourse though does improve downstream.

### 3.4 Sediment Basin Water Monitoring

**Table 2: Sediment Basin Water Quality Assessment Results**

Sed Basin	Wetland B	43.1	43.2	10	7
Oil and Grease	0	0	0	0	0
pH	7.8	8.2	8.4	8.2	8.2
Turbidity	26	42	43	36	40

#### Sediment Basins

There was only one 5 day period of no rain within the month of May. The rain that had been received prior to this was only 1.5mm received on 1 May. An inspection of all of the basins was carried out by the Environmental Officer and ERSED Leading Hand after this rain event and it was noted that all basins were still empty and there was nothing capable of being released.

For the remainder of the month, light consistent rain was received every second or third day.

The discharges (as listed above) were carried out later in the month (24<sup>th</sup> and 30<sup>th</sup> May) as finishing or repair works were required on these basins.

Any discharges were within the licensed water quality parameters.

Many basins are being used for water supply (via water carts). These basins include: -

- Wetland B;
- Basin 5;
- W49.4; and

- Fill 3B east (B44.7 and 44.8).

## 4 Noise

### 4.1 Introduction

Abigroup are undertaking noise monitoring for the Brunswick Heads to Yelgun Pacific Highway Upgrade Project.

The construction noise monitoring in this period was attended by Wendy Dooley using a calibrated Aclan Toulouse Sound Level Meter (Model SLS955, Class 2).

Noise monitoring at each site was carried out over 15 minute sampling periods.

Construction noise monitoring examines the  $L_{A10}$  and  $L_{A90}$  noise level parameters recorded during any given 15 minute sampling period.  $L_{A90}$  readings represent noise levels exceeded for 90% of the time, whilst  $L_{A10}$  readings represent the noise levels exceeded for 10% of the time.  $L_{A90}$  readings are recognised as background levels.  $L_{A10}$  readings can be used to reflect the annoyance from construction works, provided consideration is given to the influences of external noise sources which are absorbed into the  $L_{A10}$  value.

The  $L_{Acons}$  is calculated in relation to the  $L_{A10}$  that had been measured at each site prior to construction commencing in July 2005.

### 4.2 Noise Results

Table 3 shows the results of attended noise monitoring conducted in May.

Mon Site	Location + Predicted typical LA10	LA10 (dBA)	LA90 (dBA)	Lcons (dBA)	EPL noise construction goal		EMP Predicted noise levels	Date/ Time	Weather Conditions	Construction Noise Source	External Noise Source
					Earthworks (Background + 10dBA)	Bridgeworks & CBP (Background + 5dBA)					
1	2 Cudgen						45-54 for earthworks 41-42 for bridgework 53-58 for pavement			No construction evident	
2	Bashforth						70-71 for earthworks 48-50 for bridgeworks 73-76 for pavement			No construction evident	
3	Ferry Reserve	58	51	51.1	61	56	56-67 for bridgeworks 60-62 for walls 68-70 for earthworks 65-71 for pavement	2.5.07 15:30	Overcast, 8/8 <.81 v/s N 63% 22.9°	2 x excavators on old BRB, scraping & clanking asphalt Reverse beeper x 2 (roller & excavator working on site compound?) 1 x excavator tracking & squeaking noise (back to site) 59-60dBA scraping, ripping. Some scraping @ up to 61dBA	H/way traffic, trucks distinctly heard at <57dBA Birds – constant @ 62-63dBA at times Gum leaves blowing across road surface. Motorboat Light aircraft @ 15.40 <8sec.

Abigroup Brunswick Heads to Yelgun Pacific Highway Upgrade

4	1 Rajah	64	57	Neg.	67	62	59-63 for bridgework  66-75 for walls  58-76 for earthworks  75-81 for pavement	28.5.07 11:05	0/8, fine, sunny Still, no breeze 64% 30.9°	Intermittent reverse beeper Hammering formwork intermittent (only measuring in points of a decibel) Truck & excavator (excavator bucket clanging) Saw cutting noise BRB area Banging reo? North of monitoring station	Rajah Road traffic @ 67 vehicles H/way traffic predominated. Trucks @ 68dBA – 72dBA regularly Birds up to 63dBA 2 x helicopter @ 64dBA @ 11:10 Sneeze @ 67dBA
5	1 Oola	63	55	Neg.			65-75 for walls  62-72 for earthworks  77-81 for pavement	28.5.07 12:20	Fine, sunny <90v/s SE 67% 21.4°	Hammering formwork Intermittent banging noise similar to unloading (further south). Could have been excavator bucket clanking in some instances Reverse beeper, not greater than 58dBA and under background traffic noise	H/way traffic Trucks 71dBA Bids
6	5 Weeronga						51-56 for bridgework  56-88 for retaining walls  53-58 for earthworks  61-64 for pavement			No construction evident	
7	5 Tongarra	72	59	Neg.	69	54	52-56 for walls  68-69 for earthworks  74-76 for pavement	28.5.07 11:30	Fine, sunny 0/8 60% 22.4° No breeze	Workers using reo on paving but nothing audible above background traffic noise.  Reverse beeper very faintly heard, very intermittent	H/way traffic predominated

Abigroup Brunswick Heads to Yelgun Pacific Highway Upgrade

8	24 Binya						42-45 for walls 46-50 for earthworks 49-53 for pavement			No construction evident	
9	19 Mountainview						57-60 for bridgeworks 51-54 for walls 62-64 for earthworks 71-77 for pavement			No construction evident.	
10	48 Yamble						64-70 for bridgework 49-53 for walls 53-73 for earthworks 73-75 for pavement			No construction evident	
11	10/10 Balemo						60-70 for bridgework 49-52 for walls 54-65 for earthworks 67-68 for pavement			No construction evident.	

Abigroup Brunswick Heads to Yelgun Pacific Highway Upgrade

12	99 Stock Route						59-61 for bridgework 63-66 for walls 54-74 for earthworks 67-74 for pavement			No construction evident	
13	2 Ulpira Cres	59	51	58.5	61	66	40-55 for earthworks 50-57 for pavement	28.5.07 15:50	Overcast, 8/8 No breeze 63% 22.4°	No construction audible or visible. Terminated after 5 min.	Birds – quite prominent H/way traffic Dog bark further down street.  Could see evidence of chainsawing and slashing work carried out during past 2 monitoring visits – piles of mulch between houses and highway.
14	40 Matong	58	52	53.5	62	57	54-58 for bridgework 52-58 for earthworks 57-64 for pavement	28.5.07 15:40	Overcast 8/8 No breeze 57% 24.1°	No construction audible or visible. Terminated reading after 5 min.	H/way traffic prominent. Birds.
15	White Dove						60-78 for bridgework 59-63 for walls 73-76 for earthworks 76-79 for pavement			No construction evident	

Abigroup Brunswick Heads to Yelgun Pacific Highway Upgrade

16	21 Gilba	64	58	63.7	68	63	52-60 for bridgework  55-67 for walls  60-71 for earthworks  63-74 for pavement	3.5.07 15:25	0/8 Up to 2.82 v/a N 61% 24.6°	Compression brakes Shout Horn Front end loader Truck 2 x reverse beepers heard to the north of monitoring station. One of these was a crane reversing its way down length of paving in front of monitoring station. Occasional banking sound heard – not particularly loud.	3 crows constantly cawing extremely close by (62-73dBA) H/way traffic predominated Wind in branches
17	123 Balemo	64	54	52.2	64	59	55-74 for bridgework  58-71 for walls  66-77 for earthworks  69-77 for pavement	28.5.07 15:10	Overcast 8/8 Little – no breeze .41v/s N? 60% 23.9°	Trucks to north of monitoring station Construction visible to north but not audible. Very intermittent reverse beeper heard to south of monitoring station.	H/way traffic prominent Birds
18	175 Stock Route						54-66 for bridgework  66-71 for earthworks  69-74 for pavement			No construction evident	
19	Holm Farm						54-65 for bridgework  49-63 for walls  64-66for earthworks  60-69 for pavement			No construction evident	

Abigroup Brunswick Heads to Yelgun Pacific Highway Upgrade

20	Jagwen	59	53	54.5	63	58	<p>56-62 for bridgework</p> <p>51-58 for walls</p> <p>60-64 for earthworks</p> <p>63-67 for pavement</p> <p>71-77 Rest Area construction</p>	28.5.07 16:05	<p>Overcast 8/8</p> <p>Very little – no breeze except towards end of reading 0- &lt;2.78 v/s 72% 21.4°</p>	<p>Cherry picker Cement truck Light vehicles Reverse beeper (faint) Light tapping and other very faint construction noises At batch plant: washing down a cement truck. Batch plant operating (drum turning – faint operating hum heard).</p>	H/way traffic prominent
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### 4.3 Noise Monitoring Discussion

The construction noise monitoring was carried out between 2-28 May 2007. It was attended by Wendy Dooley using a calibrated Aclan Toulouse Sound Level Meter (Model SLS955, Class 2).

Noise monitoring was carried out over 15 minute sampling periods, unless stated otherwise.

Noise results indicate that there were no exceedances in the month of May.

## 5 Vibration

### 5.1 Vibration Summary

There was no vibration monitoring undertaken during May.

## 6 Dust

### 6.1 Introduction

Depositional dust gauges were installed along the alignment at the commencement of earthworks operations and have operated for more than 12 months.

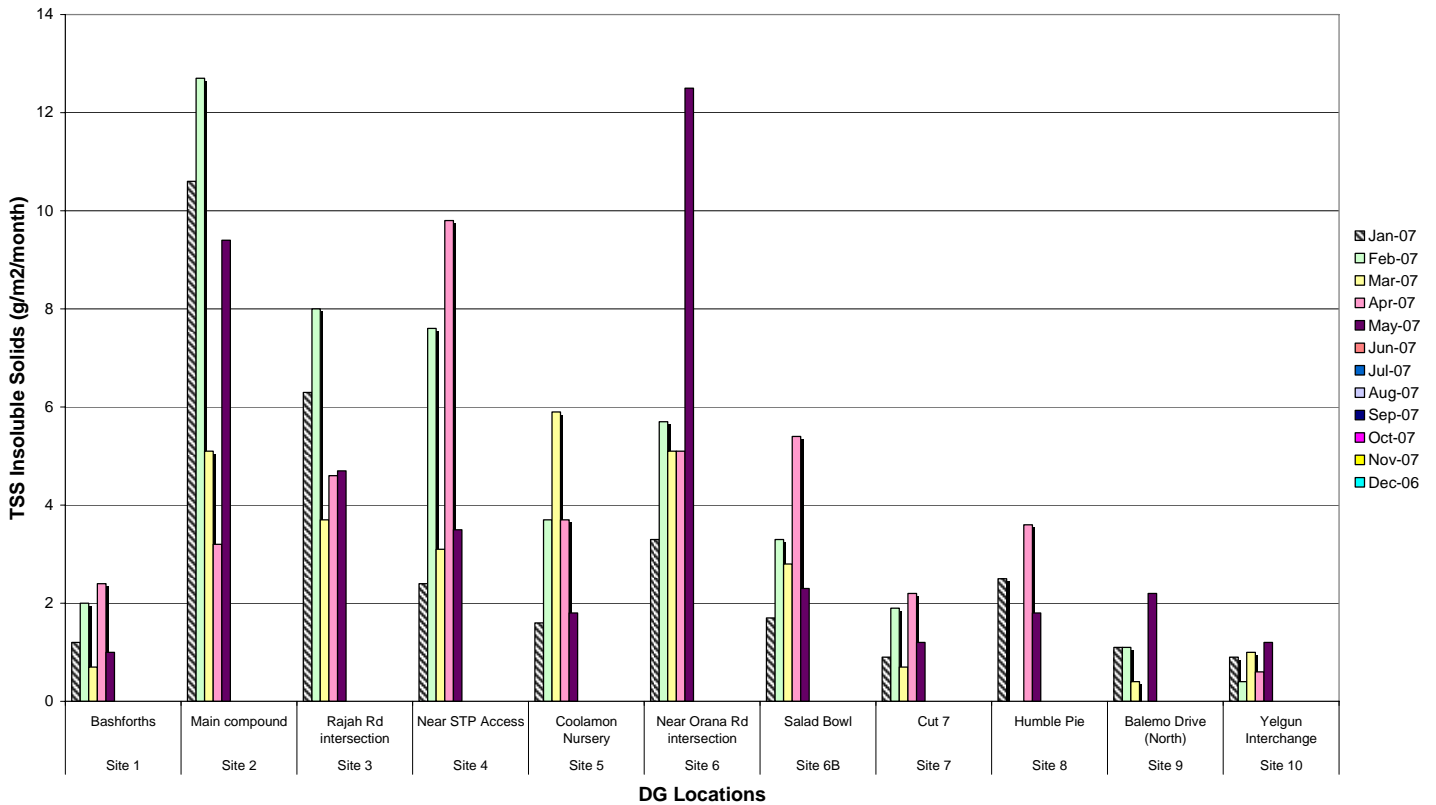
### 6.2 Dust Results - May

Dust sample bottles were collected from the gauges by Environmental Analysis Laboratory and analysed at Lismore. The monthly dust depositional gauge (DDG) analysis is being undertaken in accordance with AS 3580.10.1, and is summarised below.

**Table 4: Results of Dust Monitoring May 2007**

<b>Site</b>	<b>Total Suspended Solids (g/m<sup>2</sup>/month)</b>
1. Cut 2 near Bashforth property	1.0
2. Main Compound	9.4
3. Rajah Road intersection	4.7
4. Near STP Access	3.5
5. Coolamon Nursery	1.8
6A. Near Orana Rd intersection	12.5
6B. Outside workshop	2.3
7. Cut 7 The Tunnel Road	1.2
8. Outside Humble Pie business	1.8
9. Balemo Drive (north)	2.2
10. Yelgun Interchange	1.2

**Dust Monitoring Results  
B2Y 2007**



### 6.3 Dust Discussion

Dust results for May indicate three exceedances – Site 2 (Site office), Site 3 (Rajah Road), and Site 6A (Orana Road intersection). A discussion of the activities occurring at these sites and any factors that may have contributed to the results is provided below.

The project suction street sweeper and water carts continue to work full time.

#### Site 2 – Main compound

Site 2 monitors dust on the project itself (not at a sensitive receiver), at the site car park.

The water cart and streetsweeper are continuing to attend this area.

#### Site 3 – Rajah Road intersection

Site 3 is located directly opposite the Fill 4 area. This section of the project is highly stabilised with sealing and paving in place. The water carts and streetsweeper continue to attend to the Cut 4 / Fill 4 area.

Please note that the Site 3 gauge is located on the project alignment itself and is directly beside the highway, therefore is highly affected by highway traffic. There was no suitable location for this gauge off site.

### Site 6A – Near Orana Rd intersection

As discussed previously, there has been negligible work in this area during May, and the alignment in Fill 6 is now stabilised with paving, batters, verges and medians complete.

It is suggested that the dust levels obtained have been influenced by Highway traffic as this gauge is located directly opposite Coolamon Scenic Drive intersection, adjacent to the Highway. It is hoped that closure of the old Coolamon Scenic Drive and relocation of this intersection will assist with dust levels.

## 7 Complaints

### 7.1 Summary of Pollution Complaints

A telephone complaints line has been operating for the project. The following table is a list of community environmental complaints during May.

**Table 6: Environmental Complaints received during May**

<i>Type</i>	<i>Complaint No. &amp; Nature of complaint</i>	<i>Abigroup Response</i>
Noise – working hours	5 complaints	<p>Three of these complaints were received from the same complainant. These complaints related to delivery trucks being parked near the STP intersection before 7am. Please note this is a public road and vehicles are able to park on it, however we have taken the matter seriously and firstly, the delivery operators were advised directly not to arrive before 7am, and secondly a letter and an EIN was sent to the head office of the company involved reiterating the hours of operation and the importance of complying with these. The Project Director also met with this complainant and the complainant was satisfied that his concerns would be addressed through supervision and early morning inspections by the Superintendent.</p> <p>One complaint was anonymous and received via DECC. Please refer to the written report supplied to DECC on 11 May 2007 regarding this matter.</p>

Noise - construction	1 complaint	Called at 5:25pm concerned about working late as lights set up. The Community Manager advised the complainant of the hours of operation and that or could continue until 6pm.
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Complaints have been managed in accordance with project documentation.

## **8 Non-Compliance**

### **8.1 Summary of Non-compliances**

On the 26 May 2007 a delivery truck parked near the STP Road just before 7am. As a result of this, an EIN was issued to the subcontractor, and they were sent a letter reiterating the project working hours and importance in complying with these hours. The Superintendent has been carrying out early morning inspections to supervise these works and ensure that this does not recur. The Project Director has met with the complainant to discuss his concerns. The complainant was satisfied following this meeting.

# 1 Introduction

This is the monthly monitoring report for June 2007.

## 2 Weather

### 2.1 Discussion

The daily rainfall monitoring gauge at the main site compound is recorded at approximately 9am each work day. The total rainfall received for the month is as follows: -

Month	Total monthly rainfall (Site office)
June 2007	110.5mm

Most of the larger rain falls was received during the last week of June.

During June 2007 there was less rain received in comparison to the monthly average for Brunswick Heads which is 141mm.

## 3 Water

### 3.1 Introduction

Brunswick River and Marshall's Creek are the two main receiving water bodies that the project alignment passes over. Water quality is assessed at four (4) sites:

**B1** – Downstream Brunswick River at the Brunswick Heads Boat Ramp just upstream of the Fish Co-op complex;

**B2** – Upstream Brunswick River at the end of Riverside Crescent just west of the Ferry Reserve Caravan Park;

**B5** – Downstream Marshall's Creek, just downstream of the bridgeworks site;

**B6** – Upstream Marshall's Creek west of Billinudgel near the Pocket Road Bridge.

### 3.2 Receiving Water Monitoring Results

The following table provides the results of water quality monitoring undertaken by Mark Rosicky of Southern Cross University on 29 June 2007. Weather was sunny and windy.

**Table 1: Water Quality Monitoring Results**

	Site Description	Sample No	Time (24 hour)	Turbidity (NTU)	Temp (°C)	pH (unit)	DO (mg/l)	DO (%)	Specific Cond (dS/cm)	Salinity (PSS)
29 June 2007	Brunswick River upstream	B2	12:15	0.6	17	7.8	6.7	86	51	33
	Brunswick River downstream	B1	12:05	0.5	18	8.0	6.9	91	53	34
	Marshalls Creek upstream	B6	13:21	13	15	7.1	5.8	63	24	15
	Marshalls Creek downstream	B5	14:08	15	16	7.1	6.5	70	24	15

*Water Quality Monitoring Notes:*

Time of sampling was between 12pm and 2pm during low tide.

### 3.3 Water Discussion

#### **Brunswick River and Marshalls Creek**

Results indicate good water quality in the receiving waters. Turbidity levels are good. Dissolved oxygen levels are good in all areas except in upstream at Marshalls Creek.

### 3.4 Sediment Basin Water Monitoring

Table 2 below indicates water discharges from sediment basins on site. Other sediment basins were de-watered by watercart with water used within the project site.

**Table 2: Sediment Basin Water Quality Assessment Results**

Sed Basin	Bypass 1 (most sthn)	Bypass 2	Bypass 3	4	6	8	9	10	48.8	YRA	Stock Route Rd
Oil and Grease	0	0	0	0	0	0	0	0	0	0	0
pH	8.4	7.6	8.1	7.5	8.5, 8.5	7.9	7.7	8.4	8.2	7.8, 7.9	8.2
Turbidity	20	15	22	28	17, 17	22	20	42	38	28, 35	12

## 4 Noise

### 4.1 Introduction

Abigroup are undertaking noise monitoring for the Brunswick Heads to Yelgun Pacific Highway Upgrade Project.

The construction noise monitoring was undertaken between 18 and 29 June 2007, however extra monitoring was undertaken associated with the Brunswick River bridge demolition. It was attended by Wendy Dooley using a calibrated Aclan Toulouse Sound Level Meter (Model SLS955, Class 2).

Noise monitoring at each site was generally carried out over 15 minute sampling periods.

Construction noise monitoring examines the  $L_{A10}$  and  $L_{A90}$  noise level parameters recorded during any given 15 minute sampling period.  $L_{A90}$  readings represent noise levels exceeded for 90% of the time, whilst  $L_{A10}$  readings represent the noise levels exceeded for 10% of the time.  $L_{A90}$  readings are recognised as background levels.  $L_{A10}$  readings can be used to reflect the annoyance from construction works, provided consideration is given to the influences of external noise sources which are absorbed into the  $L_{A10}$  value.

The  $L_{Acons}$  is calculated in relation to the  $L_{A10}$  that had been measured at each site prior to construction commencing in March 2005.

### 4.2 Noise Results

Table 3 shows the results of attended noise monitoring conducted in June. This includes the Brunswick River Bridge demolition activity for the period.

**Table 3: Construction Noise Monitoring Results**

Mon Site	Location + Predicted typical LA10	LA10 (dBA)	LA90 (dBA)	Lcons (dBA)	Date/Time	Weather Conditions	Construction Noise Source	External Noise Source
1	2 Cudgen  41-42 for bridgework  53-58 for pavement				29.6.07 08:10	Fine, sunny No breeze	No construction noise evident when external noise ceased momentarily  No reading taken due to external noise.	Tree lopping, mulching activities carried out nearby, not project related.
2	Bashforth						No obvious construction activity.	
3  <b>READING 1</b>	<b>Ferry Reserve</b>  55-77 demolition  56-67 for bridgeworks  65-71 for pavement	58	51	51.1	2.5.07 15:30	Overcast, 8/8 Breeze <0.81 m/s N 63% 22.9°	2 x excavators on old BRB, scraping & clanking asphalt Reverse beeper x 2 (roller & excavator working on site compound?) 1 x excavator tracking & squeaking noise (back to site) 59-60dBA scraping, ripping. Some scraping @ up to 61dBA	H/way traffic, trucks distinctly heard at <57dBA Birds – constant @ 62-63dBA at times Gyum leaves blowing across road surface. Motorboat Light aircraft @ 15.40 <8sec.
3  <b>READING 2</b>	<b>Ferry Reserve</b>  55-77 demolition  56-67 for bridgeworks  65-71 for pavement	59	52	54.7	18.6.07 14:35	Fine, sunny 2/8 Breeze <0.73m/s (couldn't ascertain direction) 56% 22.4°	Initially no hammering on old bridge.  Truck Excavator working x 2; squeaking sound, reverse beeper. Hammering commenced 14:36, very intermittent, resumed @ 14:39 62-67dBA (Most hammering around 62dBA). Clanking of chains.  (Only 2 spikes on the reading.)	Highway traffic 1 x local vehicle @ 57dBA Birds Motor boat Residents talking

3	<b>Ferry Reserve</b> 55-77 demolition 56-67 for bridgeworks 65-71 for pavement	55	50	Neg.	19.6.07 10:30	9/8 Breeze quite gusty at times, 5.05m/s N 55% 18°	Hammering. One bout of hammering @ 65dBA <2sec. Excavator working Bobcat Excavator tracking Some banging Reverse beepers x 2 (occasionally simultaneously). Machinery sounds on northern side of BRB	Highway traffic Birds Woodworking tools (grinder/saw?) Leaves rustling 1 local vehicle Metal tag on hose reel tapping in wind
3	<b>Ferry Reserve</b> 55-77 demolition 56-67 for bridgeworks 65-71 for pavement	56	49	Neg.	22.6.07 08:25	Fine, sunny 0/8 Occas. Breeze E-SE (but breeze swirled so difficult to measure) <2.26m/s 53% 13.9°	BRB Demolition with rubber matting in place. Excavator hammering, stopped 8:28. Mostly recorded at 62dBA, once 65dBA but for <1sec. At 8:35 machinery moved into position. Reverse beeper. Tracking and clanking sounds. An engine could be heard (possibly a boat) Other construction noise occasionally heard – very faintly (excavator).	Highway traffic Bird calls prominent (up to 52dBA) Tree branches rustling  49dBA when no construction activity audible.
3	<b>Ferry Reserve</b> 55-77 demolition 56-67 for bridgeworks 65-71 for pavement	64	53	63	22.6.07 08.55	As above	Hammering up to 68dBA (intermittent) but mostly around 62-64dBA. Reverse beeper (south). Engine (cutting sound?). Clanking of excavator.  At 9:08 a steady hammering recorded @ 65- 67dBA (mostly @ 66dBA) – rarely 67dBA.  Another set of hammering gave a reading of between 62-64dBA.	Highway traffic Birds Incl. magpies carolling @ 57dBA  Residents conversing  55dBA when no obvious construction audible

4	<b>1 Rajah</b> 63-67 demolition 59-63 for bridgework  75-81 for pavement	64	57	Neg.	28.5.07 11:05	0/8, fine, sunny Still, no breeze 64% 30.9°	Intermittent reverse beeper Hammering formwork intermittent (only measuring in points of a decibel) Truck & excavator (excavator bucket clanging) Saw cutting noise BRB area Banging reo? North of monitoring station	Rajah Road traffic @ 67 vehicles H/way traffic predominated. Trucks @ 68dBA – 72dBA regularly Birds up to 63dBA 2 x helicopter @ 64dBA @ 11:10 Sneeze @ 67dBA
5	1 Oola						No obvious construction activity.	
6	5 Weeronga 51-56 for bridgework  56-88 for retaining walls  53-58 for earthworks  61-64 for pavement	55   55	47   47	54.1   54.1	29.6.07 8:22   8:40	0/8 Fine Breeze <0.77m/s N Gusts very much heavier towards end of reading  Second reading taken as bridge demolition commenced	Construction not at all prominent. 2 reverse beepers, 1 north, 1 south of monitoring station. 1 very brief hammering on demolition of old bridge  Hammering on bridge between 54-56dBA  Sample measurement taken over 5 minutes	3 x local vehicles Highway traffic Warrambool traffic Car @ 8:33 up to 59dBA, started engine opposite; revved, then drove past @ 78dBA Birds Mobile phone ring & conversation Man walking dogs who stopped to talk briefly  Car opposite started engine @ 60-69dBA 2 x local vehicles
7	5 Tongarra						No obvious construction activity.	

8	24 Binya						No obvious construction activity.	
9	19 Mountainview						No obvious construction activity.	
10	48 Yamble  73-75 for pavement				29.6.07		Resident not home – could not gain access. Construction could be seen but not audible above Highway traffic.	
11	10/10 Balemo						No obvious construction activity.	
12	99 Stock Route						No obvious construction activity.	
13	2 Ulpira Cres						No obvious construction activity.	
14	40 Matong						No obvious construction activity.	
15	White Dove						No obvious construction activity.	
16	21 Gilba  63-74 for pavement				29.6.07		No obvious construction activity.	Building noise at house adjacent monitoring site. Highway traffic prominent.

17	123 Balemo 69-77 for pavement	62	55	Neg.	29.6.07 10:35	Fine, sunny 0/8 Breezy <1.63m/s N	Construction visible but not audible  5 minute reading only	Highway traffic prominent Leaves rustling Conversation with resident during final 30sec. of monitoring.
18	175 Stock Route						No obvious construction activity.	
19	Holm Farm						No obvious construction activity.	
20	Jagwen 63-67 for pavement 71-77 Rest Area construction	59	54	54.5	29.6.07 11:05	Fine, sunny 0/8 Strong breeze <2.61m/s N	Tip truck unloading dirt Horn beep x 3 Cement trucks Hiab Scraping sound (dragging plastic piping?) <2sec. Clanking of excavator Reverse beeper (2 heard simultaneously on occasion) intermittently throughout @ mostly 57dBA Truck & dog reversing @ 11:19 which resulted in 3 reverse beepers heard simultaneously.	Pacific Highway traffic prominent (Trucks @ 61dBA) Birds Tree leaves/branches rustling  External noise definitely greater than construction noise.

## 4.3 Noise Monitoring Discussion

The construction noise monitoring was carried out between 2 and 28 May, and 18 to 29 June, 2007. It was attended by Wendy Dooley using a calibrated Aclan Toulouse Sound Level Meter (Model SLS955, Class 2).

Noise results indicate that all noise generated by construction activity was within the noise predictions for the project.

## 5 Vibration

### 5.1 Vibration Summary

There was no vibration monitoring undertaken during March.

## 6 Dust

### 6.1 Introduction

Depositional dust gauges have been installed along the alignment at the commencement of earthworks operations and have operated for more than 12 months.

### 6.2 Dust Results

Dust sample bottles were collected from the gauges by Environmental Analysis Laboratory and analysed at Lismore. The monthly dust depositional gauge (DDG) analysis is being undertaken in accordance with AS 3580.10.1, and is summarised below.

**Table 4: Results of Dust Monitoring June 2007**

<b>Site</b>	<b>Total Suspended Solids (g/m<sup>2</sup>/month)</b>
1. Cut 2 near Bashforth property	2.4
2. Main Compound	3.5
3. Rajah Road intersection	6.8
4. Near STP Access	9.8
5. Coolamon Nursery	1.6
6A. Near Orana Rd intersection	3.9
6B. Outside workshop	2.9
7. Cut 7 The Tunnel Road	0.8
8. Outside Humble Pie business	2.1
9. Balemo Drive (north)	1.3
10. Yelgun Interchange	0.6

### 6.3 Dust Discussion

For the month of June 2007 the project site was considerably stable. Concrete and bitumen sealing of road pavement surfaces and good vegetation growth, hydro-mulching of landscape areas was prevalent over much of the project area. Consequently most of the area generated relatively low levels of dust.

There were two sites, sites 3 and 4, which recorded levels of dust, of 6.8 and 9.8 respectively. As much of the road surfaces have been sealed in this area the higher dust levels might be attributable to the street sweeper cleaning off the road pavement in between concrete pavement layers and minor dust associated with erecting retaining walls. These are once-off activities and once the final pavement surface is laid there is negligible future dust generation.

## 7 Complaints

### 7.1 Summary of Pollution Complaints

A telephone complaints line has been operating for the project. The following table is a list of community environmental complaints during June.

**Table 5: Environmental Complaints received during June 2007**

<i>Type</i>	<i>Nature of complaint</i>	<i>Abigroup Response</i>
Construction Noise (working hours)	1 telephone complaint	Complaint not validated. Resident had been notified and was reminded of up-coming out of hours work in area previously.
Operational Noise	1 email complaint	Complainant concerned about B-double truck noise on the highway, and request for compensation. Complainant address forwarded to the operational noise monitoring consultants.
Air quality - Odour	2 telephone complaints	1 x due to fresh mulch. The freshly delivered mulch for the landscaping under the Brunswick River Bridge. The odour dissipated in a day.  1 x due to asphalt works. The freshly delivered bitumen asphalt has some short term, temporary odours. The odour dissipated in a few hours.

Complaints have been managed in accordance with project documentation.

## 8 Non-Compliance

### 8.1 Summary of Non-compliances

There are no non-compliances for June.

# 1 Introduction

This is the monthly monitoring report for July 2007.

## 2 Weather

### 2.1 Discussion

The daily rainfall monitoring gauge at the main site compound is recorded at approximately 9am each work day. The total rainfall received for the month is as follows: -

Month	Total monthly rainfall (Site office)
July 2007	8 mm

During July 2007 there was less rain received in comparison to the monthly average for Brunswick Heads which is 90mm.

## 3 Water

### 3.1 Introduction

Brunswick River and Marshall's Creek are the two main receiving water bodies that the project alignment passes over. Water quality is assessed at four (4) sites:

**B1** – Downstream Brunswick River at the Brunswick Heads Boat Ramp just upstream of the Fish Co-op complex;

**B2** – Upstream Brunswick River at the end of Riverside Crescent just west of the Ferry Reserve Caravan Park;

**B5** – Downstream Marshall's Creek, just downstream of the bridgeworks site;

**B6** – Upstream Marshall's Creek west of Billinudgel near the Pocket Road Bridge.

### 3.2 Receiving Water Monitoring Results

The following table provides the results of water quality monitoring undertaken by Mark Rosicky of Southern Cross University on 1 August 2007. Weather was sunny and windy.

**Table 1: Water Quality Monitoring Results**

Site Description	Sample No	Time (24 hour)	Turbidity (NTU)	Temp (°C)	pH (unit)	DO (mg/l)	DO (%)	Specific Cond (dS/m)	Salinity (PPT)
Brunswick River upstream	B2	12:35	TBA	19	8.3	8.6	-	60.3	40
Brunswick River downstream	B1	12:52	TBA	19	8.4	8.9	-	60.5	40
Marshalls Creek upstream	B6	13:58	TBA	15	7.7	9.6	-	53.3	35
Marshalls Creek downstream	B5	14.40	TBA	15	7.8	7.8	-	54.3	36

*Water Quality Monitoring Notes:*

Time of sampling was between 12pm and 2pm during low tide.

### 3.3 Water Discussion

#### **Brunswick River and Marshalls Creek**

Water quality has been good. Results indicate water quality in the receiving waters within expected parameters and historical recordings.

### 3.4 Sediment Basin Water Monitoring

Due to the dry weather there were no water discharges from sediment basins on site during the month.

## 4 Noise

### 4.1 Introduction

Abigroup are undertaking noise monitoring for the Brunswick Heads to Yelgun Pacific Highway Upgrade Project.

There was negligible construction activity on site during this period. The construction noise monitoring was undertaken on 24 - 31 July 2007. It was attended by Wendy Dooley using a calibrated Aclan Toulouse Sound Level Meter (Model SLS955, Class 2).

Noise monitoring at each site was generally carried out over 15 minute sampling periods.

Construction noise monitoring examines the  $L_{A10}$  and  $L_{A90}$  noise level parameters recorded during any given 15 minute sampling period.  $L_{A90}$  readings represent noise levels exceeded for 90% of the time, whilst  $L_{A10}$  readings represent the noise levels exceeded for 10% of the time.  $L_{A90}$  readings are recognised as background levels.  $L_{A10}$  readings can be used to reflect the annoyance from construction works, provided consideration is given to the influences of external noise sources which are absorbed into the  $L_{A10}$  value.

The  $L_{Acons}$  is calculated in relation to the  $L_{A10}$  that had been measured at each site prior to construction commencing in March 2005.

## 4.2 Noise Results

Table 2 shows the results of attended noise monitoring conducted in July.

**Table 2: Construction Noise Monitoring Results**

Mon Site	Location + Predicted typical LA10	LA10 (dBA)	LA90 (dBA)	L <sub>cons</sub> (dBA)	Date/Time	Weather Conditions	Construction Noise Source	External Noise Source
1	2 Cudgen  53-58 for pavement	50	38	47.7	24.7.07 15:40	Fine, sunny 0/8  <0.90 – could not ascertain direction	No noise audible or visible.  Terminated reading after 5 minutes due to inactivity.	Birds extremely noisy, including a very loud plover who pushed the dBA reading up 4 points every time it called. Skateboarder Cyclist Local vehicle @ 54dBA
2	Bashforth  73-76 for pavement							
3	Ferry Reserve  55-77 demolition  65-71 for pavement	61	53	58.8	24.7.07 14:05	Fine, sunny 4/8 Rain had fallen day before. <1.42 m/s E	Bridge demolition. Hammering intermittently; only 1-2 dBA above background. (63dBA loudest recording.) Reverse beeper @ 14:39.	H/way traffic. Birds – extremely obvious in gum tree nearby throughout entire reading. Light aircraft at commencement of reading. Pump or engine could be heard from W towards final 5 minutes of reading.  Background as high as 60-61dBA with occasional trucks and constant bird calls.
4	1 Rajah  63-67 demolition  59-63 for bridgework  75-81 for pavement	63	53	Neg.	24.7.07 14:30	Fine, sunny 0/8 Rain had fallen day before. Breeze barely discernable (<.64 m/s)	Paving between roundabout & BRB. Reverse beepers x 2, occasionally simultaneously, heard throughout reading. Machinery noise. Noise from paving equipment. Man shouting. Hammering at bridge demolition heard for intermittent periods twice – not very obvious.	Local Service Road traffic heard occasionally (truck @ 65dBA ). A truck could sometimes be heard on the new highway, but generally traffic on this carriageway not audible. Horn beeps occasionally heard. Birds Rajah Road traffic banked up whilst paving conducted. 65-70 dBA braking in Rajah Rd.

5	1 Oola 77-81 for pavement							
6	5 Weeronga 61-64 for pavement							
7	5 Tongarra 74-76 for pavement							
8	24 Binya 49-53 for pavement							
9	19 Mountainview 71-77 for pavement							
10	48 Yamble 73-75 for pavement							
11	10/10 Balemo 60-70 for bridgework 67-68 for pavement	67	50	64.9	31.7.07 16:55 (second attempt – residents approached at first attempt 16:30)	0/8 No breeze (<.04m/s)	Reverse beeper heard intermittently (not registered). Construction at Orana Rd intersection – excavators but not visible from monitoring site. Banging noise (probably from excavator bucket).  NB. New houses have now been erected in front of monitoring station.	Birds Local traffic x 19 vehicles Service Road traffic. Some light construction noise from builders working opposite monitoring site incl. electric saw @ 69dBA  NB. Local traffic very significant.

12	99 Stock R. 67-74 for pavement							
13	2 Ulpira C. 50-57 for pavement							
14	40 Matong 57-64 for pavement							
15	W. Dove 76-79 for pavement							
16	21 Gilba 63-74 for pavement							
17	123 Balemo 69-77 for pavement							
18	175 Stock 69-74 for pavement							
19	Holm Farm 60-69 for pavement							
20	Jagwen 63-67 for pavement 71-77 Rest Area							

## 4.3 Noise Monitoring Discussion

Construction noise readings were undertaken on 24 and 31 July.

There was only minor construction noise during the month of July. The chief activity being undertaken is minor works associated with the demolition of the old Brunswick River Bridge, and the new local road roundabout at Orana Road.

Noise results indicate that all noise generated by this activity was within the noise predictions for the project.

## 5 Vibration

### 5.1 Vibration Summary

There was no vibration monitoring undertaken during the month.

## 6 Dust

### 6.1 Introduction

Depositional dust gauges have been installed along the alignment at the commencement of earthworks operations and have operated for more than 12 months.

### 6.2 Dust Results

Dust sample bottles were collected from the gauges by Environmental Analysis Laboratory and analysed at Lismore. The monthly dust depositional gauge (DDG) analysis is being undertaken in accordance with AS 3580.10.1, and is summarised below.

**Table 3: Results of Dust Monitoring June 2007**

<b>Site</b>	<b>Total Suspended Solids (g/m<sup>2</sup>/month)</b>
1. Cut 2 near Bashforth property	1.1
2. Main Compound	3.0
3. Rajah Road intersection	1.8
4. Near STP Access	1.0
5. Coolamon Nursery	0.8
6A. Near Orana Rd intersection	1.5
6B. Outside workshop	1.8
7. Cut 7 The Tunnel Road	0.5
8. Outside Humble Pie business	0.3
9. Balemo Drive (north)	Damaged
10. Yelgun Interchange	0.0

### 6.3 Dust Discussion

For the month of July 2007 the project site is considerably stable. Concrete and bitumen sealing of road pavement surfaces and good vegetation growth and hydro-mulching of landscape areas was prevalent. The dust levels are low.

The glass containers at Site 9 and Site 6B showed evidence of vandalism. The glass jar at site 9 is located on Balemo Drive in close proximity to residences, and the glass sample containers was completely broken, rendering any reading impossible. At site 6B, although the glass funnel was broken, the glass container was still intact and a reading was made.

The project site has generated negligible levels of dust during the month.

## 7 Complaints

### 7.1 Summary of Pollution Complaints

A telephone complaints line has been operating for the project. The following table is a list of community environmental complaints during the calendar month of July 2007.

**Table 4: Environmental Complaints received during July 2007**

<i>Type</i>	<i>Nature of complaint</i>	<i>Abigroup Response</i>
Operational Noise	29 x complaints	Advise noise consultants, and arrange to undertake the operational noise monitoring in the next few months.
Landscaping	1 x complaint	Resident wanted more tree planting in the Salad Bowl area. This will be done when the Orana Road roundabout is finished in next few weeks.
Litter	1 x complaint	Litter in the Tunnel Road area was cleaned up.

Complaints have been managed by the community relations team in accordance with project management plans.

## 8 Non-Compliance

### 8.1 Summary of Non-compliances

There are no non-compliances for the month of July.

# 1 Introduction

This is the monthly monitoring report for August 2007.

## 2 Weather

### 2.1 Rain Summary

The daily rainfall monitoring gauge at the main site compound is recorded at approximately 9am each work day. The total rainfall received for the month is as follows: -

Month	Total monthly rainfall (Site office)
August 2007	177 mm

During August 2007 there was more rain received in comparison to the long term monthly average for Brunswick Heads which is 68mm. The majority of this rain occurred between 20 and 23 August.

## 3 Water

### 3.1 Introduction

Brunswick River and Marshall's Creek are the two main receiving water bodies that the project alignment passes over. Water quality is assessed at four (4) sites:

**B1** – Downstream Brunswick River at the Brunswick Heads Boat Ramp just upstream of the Fish Co-op complex;

**B2** – Upstream Brunswick River at the end of Riverside Crescent just west of the Ferry Reserve Caravan Park;

**B5** – Downstream Marshall's Creek, just downstream of the bridgeworks site;

**B6** – Upstream Marshall's Creek west of Billinudgel near the Pocket Road Bridge.

### 3.2 Receiving Water Monitoring Results

The following table provides the results of water quality monitoring undertaken by Mark Rosicky of Southern Cross University on 31 August 2007. Weather was sunny with a breeze.

During the time of sampling the tide was high and starting to run out.

**Table 1: Water Quality Monitoring Results**

	Site Description	Sample No	Time (24 hour)	Turbidity (NTU)	Temp (°C)	pH (unit)	DO (mg/l)	DO (%)	Specific Cond (dS/cm)	Salinity (PSS)
31 August 2007	Brunswick River upstream	B2	11:22	8	19.5	8.1	8.1-8.5	-	51.9	34.1
	Brunswick River downstream	B1	11:41	6	19.8	8.1	8.0-9.0	-	52.0	34.1
	Marshalls Creek upstream	B6	13:36	45	18.7	6.6	6.6-6.9	-	0.5	0.2
	Marshalls Creek downstream	B5	14:38	15	17.5	6.9	8.1-8.4	-	0.5	0.2

### 3.3 Water Discussion

Results indicate good water quality in the receiving waters. Turbidity levels in Brunswick River are particularly good, with some turbidity upstream at Marshalls Creek. Dissolved oxygen levels are good.

The demolition of the old Brunswick River bridge was occurring at the time of the monitoring, and the monitoring results do not indicate any impact on water quality as a result of the demolition.

There was no work in the Marshalls Creek area during this month.

### 3.4 Sediment Basin Water Monitoring

The following sediment basins water quality measurements were undertaken prior to discharge during the month.

**Table 2: Sediment Basin Water Quality Assessment Results**

Sed Basin	B43.2	B43.5	6	W48.9	8	9	Stock Route	YRA	4	B44.7	B44.8
Oil and Grease	0	0	0	0	0	0	0	0	0	0	0
pH	6.8	7.0	6.8	7.6	7.0	6.8	7.2	6.9	7.5	7.6	7.2
Turbidity	10	5	12	22	16	10	24	20	20	22	20

#### Sediment Basins

All basin discharges were within the licensed parameters. Some basins were also emptied for water supply (via water carts) as a water re-use strategy.

## **4 Noise**

### **4.1 Noise Discussion**

Construction works for the upgrade substantially completed when traffic was open on the upgrade on 11 July 2007. No construction stage noise monitoring took place during the month.

During August 2007 minor work has been undertaken on the new roundabout at Orana Road. This has involved laying concrete pavement and culverts. The plant and equipment used has been relatively small in scale and noise emissions from these works have been comparable to the existing surrounding traffic environment.

Also during August 2007 the demolition of the old Brunswick River bridge continued. This work proceeded slowly with the breaking of concrete bridge pieces, using barges to bring material to the shore, and then loading material to a holding area where concrete pieces were periodically broken down. Because the pace of work progress has been slow, there have been very long respite periods during the progress. Most of the time there has been no noise emission.

There have been noise complaints received due to the vehicular traffic on the completed highway upgrade (discussed in section 7 below). Operational noise monitoring is being proposed and planned in accordance with the project requirements.

## **5 Vibration**

### **5.1 Vibration Discussion**

There was no vibration monitoring undertaken during the month.

## **6 Dust**

### **6.1 Introduction**

Depositional dust gauges have been installed along the alignment at the commencement of earthworks operations and have operated for more than 12 months.

### **6.2 Dust Results**

Dust sample bottles were collected from the gauges by Environmental Analysis Laboratory and analysed at Lismore. The monthly dust depositional gauge (DDG) analysis is being undertaken in accordance with AS 3580.10.1, and is summarised below.

**Table 3: Results of Dust Monitoring August 2007**

<b>Site</b>	<b>Total Suspended Solids (g/m<sup>2</sup>/month)</b>
1. Cut 2 near Bashforth property	8.9
2. Main Compound	4.0
3. Rajah Road intersection	2.8
4. Near STP Access	2.0
5. Coolamon Nursery	1.3
6A. Near Orana Rd intersection	3.1
6B. Outside workshop	2.2
7. Cut 7 The Tunnel Road	0.7
8. Outside Humble Pie business	0.7
9. Balemo Drive (north)	1.1
10. Yelgun Interchange	0.2

### 6.3 Dust Discussion

For the month of August 2007 the project site was stable. Concrete and bitumen sealing of road pavement surfaces have been complete and good vegetation growth on landscape areas was prevalent. Consequently most of the area generated relatively low levels of dust.

There was one moderately high reading at dust Site 1 beside the Bashforth property. All the road batters in this area (Cut 2) are extremely well vegetated and over previous months the dust monitoring levels here have been low. The cause of the moderately high reading at Site 1 is not clear, but it is unlikely to be construction related.

## 7 Complaints

### 7.1 Summary of Pollution Complaints

A telephone complaints line has been operating for the project. The following table is a list of community environmental complaints during August.

**Table 4: Environmental Complaints received during August 2007**

<i>Type</i>	<i>Nature of complaint</i>	<i>Abigroup Response</i>
Operational Noise	16 x complaints (some repeat from previous month)	Schedule the operational noise monitoring in the next few months.
Landscaping	1 x complaint	Resident wants more planting at the Orana Road roundabout area.

Complaints have been managed in accordance with project documentation.

## **8 Non-Compliance**

### **8.1 Summary of Non-compliances**

There are no non-compliances for the month of August.