



Monthly Environmental Monitoring Report

July 2009

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1.0 Report Purpose and Scope

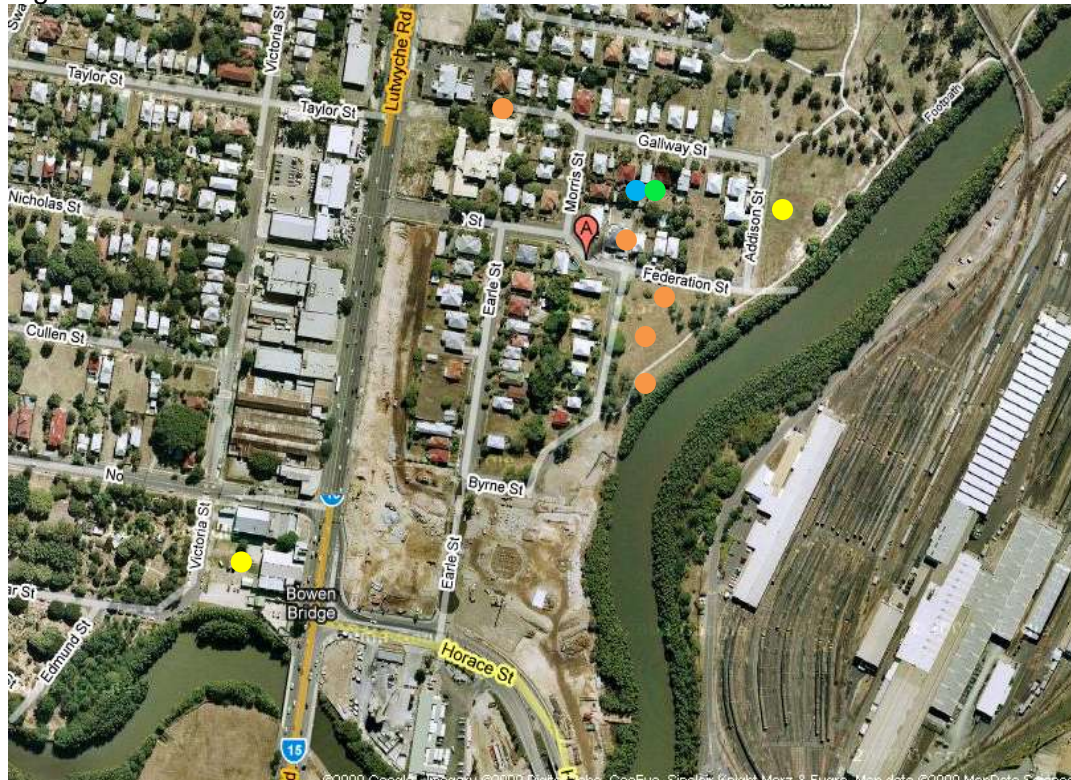
The report has been compiled to summarise the results of noise, air quality and vibration monitoring on the Airport Link, Northern Busway (Windsor to Kedron) and Airport Roundabout Upgrade project. The report also compares those results with compliance thresholds for environmental harm, community nuisance and loss of amenity nominated by the Coordinator General (Change Report July 2008).

The monitoring data covered in this report is for the July 2009 reporting period, from 15th June to 15th July 2009.

2.0 Monitoring Locations

Several monitoring locations exist within the project area as described in Figures 1-6. Note that the aerial photograph overlays used in Figures 1-6 do not accurately portray the extent of the project's progress to July 2009, though do serve a useful purpose in relating the monitoring locations to existing structures and infrastructure.

Figure 1: Bowen Hills



Legend

- Noise (during construction)
- Vibration
- Air (PM₁₀)
- Air (Dust Deposition)

Note – these locations are indicative only

Figure 2: Truro Street



Legend

● Noise (during construction)

● Air (PM₁₀)

Note – these locations are indicative only

Figure 3: Northern Busway



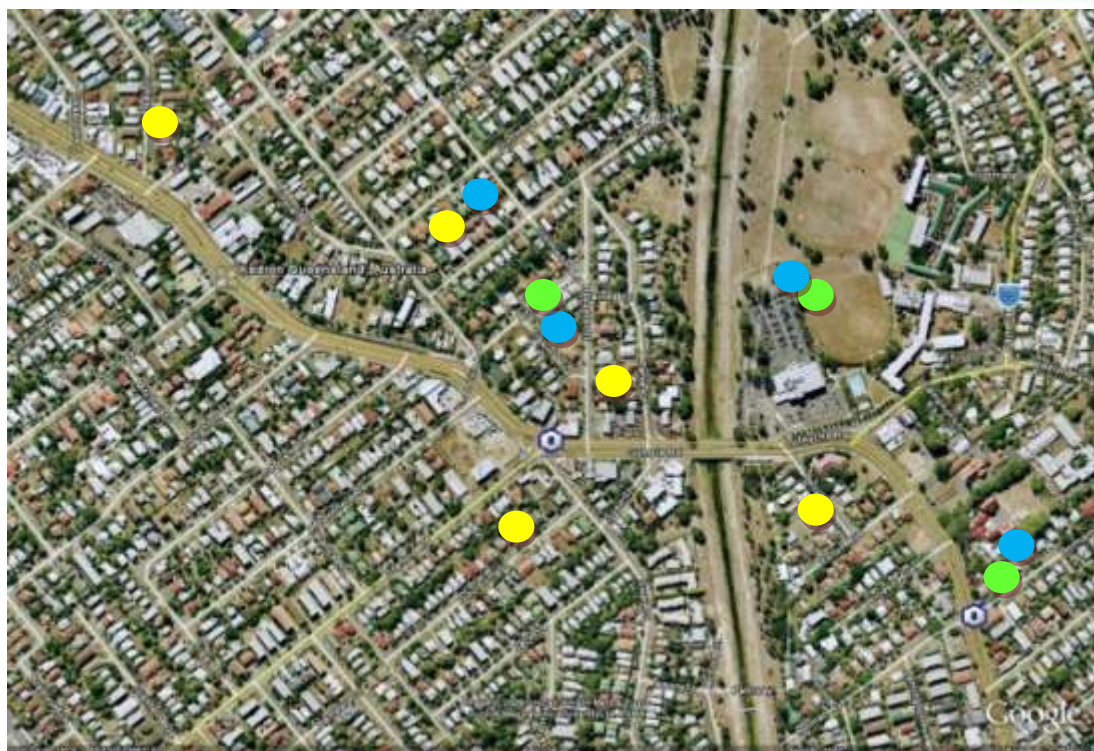
Legend

● Noise (during construction)

● Air (PM₁₀)

Note – these locations are indicative only

Figure 4: Kedron



Legend

● Noise (during construction)

● Air (PM₁₀)

● Air (Dust Fallout)

Note – these locations are indicative only

Figure 5: Toombul



Legend

● Noise (during construction)

● Air (PM₁₀)

● Air (Dust Fallout)

Note – these locations are indicative only

Figure 6: Airport Roundabout Upgrade



Legend

● Noise (during construction)

● Air (PM₁₀)

Note – these locations are indicative only

3.0 Noise Monitoring

TJH undertakes regular monitoring of noise levels at a variety of locations across the project to help measure impacts and assist the team plan works and appropriate mitigations if required. The type and timing of monitoring is influenced by the activities being undertaken and relevant Noise Goals (inside buildings and residents living areas where allowed at night and during the day). TJH have also undertaken external monitoring to better understand the pre-construction baseline and acoustic environment during works to assist TJH conduct risk assessments and nominate appropriate mitigation measures.

Monitoring involves ‘attended’ monitoring (where a member of the TJH environment team is observing noise sources and durations whilst noise measurements are taken) and ‘unattended’ monitoring (where the sound level meter with a datalogger is installed and collected at a later time).

Noise monitoring priorities are mostly influenced by predictive modelling undertaken for construction activities, responses from members of the community, access to residents properties, availability of existing knowledge of the acoustic environment, and results of impact assessments undertaken by the TJH environment team and

consultants.

Results of predictive modelling and monitoring are compared to Noise Goals nominated by the Coordinator General (Change Report October 2008) for the Airport Link and Northern Busway components of the project, the State Government (Environment Approvals Report, October 2008) for state controlled land relating to the Airport Roundabout Upgrade, and Brisbane Airport Corporation (Major Development Plan) for BAC controlled land.a

3.1 Overview of Noise Mitigation Measures

Generally the main strategies adopted in order to mitigate noise during construction works have included the following:

1. Undertake noise modelling for sections of works adjacent to sensitive receptors.
2. Reasonable and practical mitigation measures that have been implemented to date include the following:
 - a. Temporary noise barriers (precast concrete barrier and plywood):
 - i. Lutwyche Road (Lutwyche, Kedron)
 - ii. Truro Street on all sides of works
 - iii. Federation Street (Bowen Hills)
 - iv. Lasseter St / Arnott St (Kedron)
 - b. Temporary noise barrier (shipping container with plywood gap fillers, and extended sheet piles) installations:
 - i. Park Tce / Lasseter St (Kedron)
 - ii. Perry Street, (Kedron)
 - iii. Formule 1 Hotel (Bowen Hills)
 - c. Acoustic shed has been built around the tunnel portal at:
 - i. Truro Street
 - ii. Bowen Hills
 - d. Consultation with property owners prior to commencing works and during construction works.
 - e. Installation of mitigation measures at affected residents on a case-by-case basis.
 - f. Investigating the early installation of permanent noise barriers at early stages.
 - g. Investigation of alternative plant and equipment which inherently create less sound during operation.
 - h. Acoustic shielding of various plant.
 - i. Regular awareness, training and reinforcement of work behaviours of staff,

subcontractors, spoil haulage drivers, and delivery drivers to prevent or minimise noise generation in work areas.

- j. Use of temporary acoustic treatment (e.g. sound curtains around onsite generators and access/ egress from sites).
- k. Installation of directional reversing alarms (eg ‘squarkers’) on plant (especially those working out of normal working hours).
- l. Planning of works to occur wherever possible to normal working hours.
- m. Planning one-way construction access roads where possible to minimise the amount of reversing (eg airport roundabout).

3.2 Noise Monitoring Results

The results of TJH monitoring efforts are summarised for each project area in Tables 1a-e.

Average external daily noise results measured at Truro Street have also been presented below in Figure 7 for information.

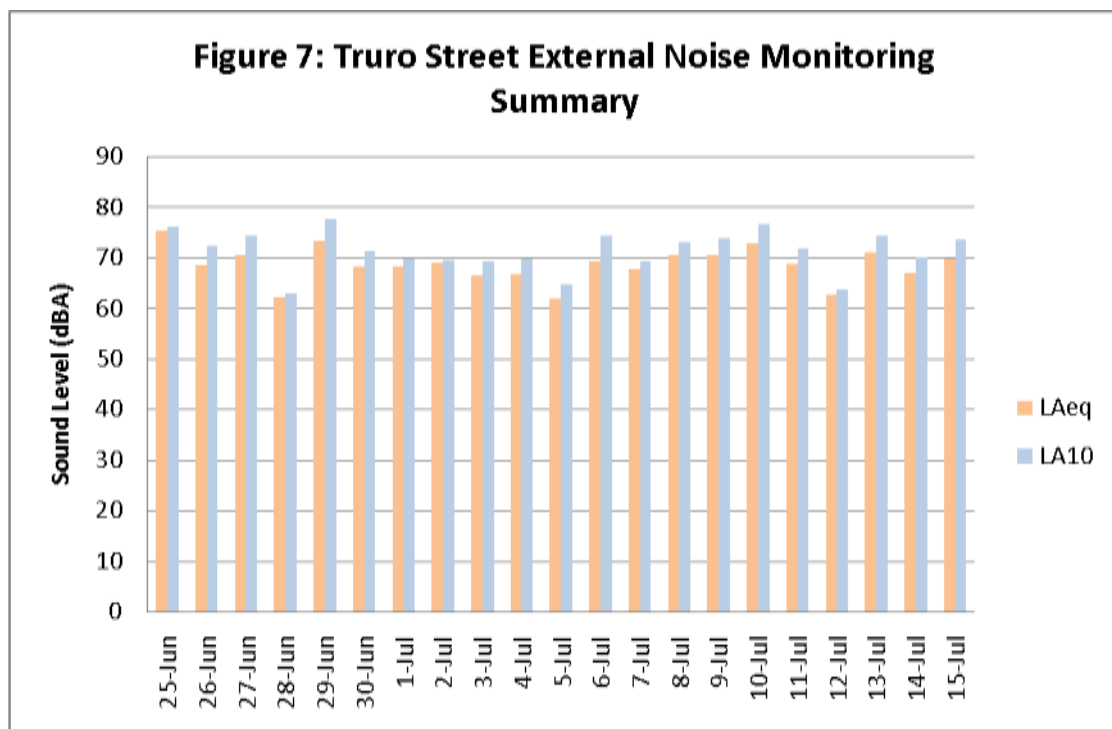


Table 1a: Noise Monitoring Results – Bowen Hills

Location	Monitoring Period	L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	L _{A10} (15 min) (dBA)	CoG Goal L _{A10} (15 min) (dBA)	L _{Amax} (15min) (dBA)	CoG Goal L _{Amax} (15 min) (dBA)	Comments
Northey Street Site, Windsor								
External, Unattended	19-24/06/09 DAY	71.2	N/A	64.1	N/A	N/A	N/A	Pre-construction background (road traffic dominated, other contributors NSBT and Northern Busway worksites, possibly some rock hammering from TJH site)
External, Unattended	19-24/06/09 NIGHT	62.8	N/A	60.4	N/A	None	N/A	
External, Unattended	24-29/06/09 DAY	63.2	N/A	63.1	N/A	N/A	N/A	
External, Unattended	24-29/06/09 NIGHT	55.8	N/A	55.9	N/A	None	N/A	

Table 1b: Noise Monitoring Results – Truro Street (Inside Front Site Gate)

Location	Monitoring Period	Average L _{Aeq} (dBA)	Baseline L _{Aeq} (dBA)	Average L _{A10} (dBA)	Baseline L _{A10} (dBA)	Comments
Unattended, External	24/06/09 - 27/06/09	65.2	68	65.9	71	The generator was running onsite. Significant traffic impacts to the site recordings. Cars that run pass the site were recorded at around 80dB and trucks were 100dB.
Unattended, External	29/06/09 - 04/07/09	64.0	68	65.0	71	
Unattended, External	06/07/09 - 11/06/09	64.4	68	64.8	71	Northern Busway team are now working in the area. Significant traffic impacts to the site recordings.
Unattended, External	13/07/09 – 15/07/09	64.3	68	65.2	71	

Table 1c: Noise Monitoring Results – Kedron

Location	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Average L _{Amax} (15 min) (dBA)	CoG Goal L _{Amax} (15 min) (dBA)	Comments
17 Park Terrace, Kedron						
Rear bedroom	29/06/2009 (1.49-2:03pm)	47.4	45	48.5	55	Attended – windows and doors closed. Key noise source: piling rigs approx 50m away. Arrangements being made for installation of double glazing and air-conditioning. CoG Non-Compliance raised.
Front bedroom	29/06/2009 (1.29-1.43pm)	48.6	45	49.8	55	
Living room	29/06/2009 (1.11-1.25pm)	43.4	45	44.8	55	
Rear bedroom	8/07/2009 (8:28-8:42am)	67.1	N/A	67.6	N/A	Attended - windows and doors open (Goals not applicable to open doors and windows). Key noise source: piling rigs approx 50m away
Front bedroom	8/07/2009 (8:46-9:00am)	62.0	N/A	63.1	N/A	
Living room	8/07/2009 (8:09-8:23am)	57.9	N/A	59.1	N/A	
9 Fifth Avenue, Kedron						
Kitchen	26/06/2009 (12:09-12:23pm)	41.4	45	42.6	55	Attended - windows and doors closed. General construction activities ongoing at time: vehicle motors, reverse beepers, piling rigs.
Dining room	26/06/2009 (12:30-12:44pm)	40.5	45	41.7	55	
Kitchen	14/07/2009 (1:35-1:49pm)	38.7	45	39.9	55	Attended - windows and doors closed. General construction activities ongoing at time: vehicle motors, reverse beepers, piling rigs.
Dining room	14/07/2009 (1:57-2:11pm)	40.1	45	39.8	55	
7 Ramsay Street, Kedron						
Upstairs living area	9/07/2009 (12:23-12:37pm)	43.5	45	39.8	55	Attended - windows and doors closed. Construction noise not evident.
	9/07/2009 (12:38-12:52pm)	39.7	45	39.5	55	
Downstairs living area	11/07/2009 (12:01-12:15pm)	35.9	45	37.0	55	Attended - windows and doors closed. Construction noise not evident.
	11/07/2009 (12:16-12:30pm)	36.6	45	37.4	55	

8 Perry Street, Kedron						
Upstairs living area	13/07/2009 (2:47-3:01pm)	45.2	45	45.6	55	Attended - windows closed. Works onsite included load and haul, piling and general surface works. Load and haul had a heavy influence on noise monitoring as the activity was being undertaken in close proximity (within 20m) to the house. Previously installed plywood noise wall and double-storey sea container wall appears to provide limited mitigation to this resident as noise was being directed between the two noise walls (gap between walls comprises a site access road). Alternative access not possible for practical and safety reasons. CoG Non-Compliance raised.
	13/07/2009 (3:02-3:16pm)	47.5	45	47.5	55	
	13/07/2009 (3:17-3:31pm)	47.9	45	47.4	55	
18 Stafford Road, Kedron						
Living area	15/07/2009 (1:49-1:59pm)	50.6	45	49.9	55C	Attended - Windows and doors closed. Key noise sources: general traffic on Stafford Rd, Energex works on pavement directly opposite house, TJH piling works (approx 50-100m away). Traffic noise recorded from Stafford rd had similar noise levels to TJH works. CoG Non-compliance raised.
Bedroom living area	15/07/2009 (2:03-2:17pm)	52.0	45	52.8	55	Attended - windows and doors closed. Key noise sources as above.

Table 1d: Noise Monitoring Results – Toombul

Location	Monitoring Period	L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	L _{A10} (15 min) (dBA)	CoG Goal L _{A10} (15 min) (dBA)	Comments
44 Lewis Street, Toombul						
Internal, Attended	16/06/2009 8:24 – 8:38am	41.9	40	42.6	50	Noise sources observed: general construction (diesel motors, beepers, d-wall grab etc) plus non-TJH noise sources (trains, local road traffic). Shipping container noise walls removed temporarily to allow for jet grouting.
Internal, Attended	16/06/2009 2:51 – 3:05pm	42.8	40	43.6	50	
Internal, Attended	30/06/2009 8:59 – 9:14am	39.2	40	38.9	50	General construction noises observed (diesel motors, beepers, d-wall grab etc). Shipping container noise wall reinstated.
Internal, Attended	30/06/2009 12:13–12:28pm	37.5	40	38.5	50	

Location	Monitoring Period	L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	L _{A10} (15 min) (dBA)	CoG Goal L _{A10} (15 min) (dBA)	Comments
Internal, Attended	30/06/2009 2:49 – 3:04pm	42.9	40	44.0	50	Noise sources observed: general construction (diesel motors, beepers, d-wall grab) plus non-TJH noise sources (trains, local road traffic).
Internal, Attended	30/06/2009 3:57 – 4:12pm	41.3	40	42.9	50	
Internal, Attended	7/07/2009 7:57 – 8:12am	41.2	40	42.1	50	
Internal, Attended	7/07/2009 1:56 – 2:11pm	40.1	40	40.8	50	Noise sources observed: general construction (diesel motors, beepers, d-wall grab). No train or local traffic noise observed.
Internal, Attended	7/07/2009 3:06 – 3:21pm	42.4	40	43.3	50	Noise sources observed: general construction (diesel motors, beepers, d-wall grab) plus non-TJH noise sources (trains, local road traffic). CoG Non-Conformance raised.
Internal, Attended	7/07/2009 4:11 – 4:26pm	42.0	40	42.8	50	
Parkside Apartments, Bage Street, Toombul						
Internal, Attended	7/07/2009 9:35 – 9:50am	44.3	45	44.8	50	Noise sources observed: a mixture of non-TJH road traffic (Sandgate Rd) and general construction noise (excavators, beepers and motors)
Internal, Attended	7/07/2009 9:57 – 10:12am	43.3	45	43.9	50	
70 Kalinga Street, Toombul						
Internal, Attended	7/07/2009 2:03- 2:18pm	51.7	40	44.2	50	Noise sources observed: general construction (diesel motors, beepers, d-wall grab) plus non-TJH noise sources (trains, local road traffic). CoG Non-Conformance raised.
Internal, Attended	7/07/2009 3:04 – 3:19pm	46.3	40	47.1	50	
89 Jackson Street, Toombul						
Internal, Attended	8/07/2009 9:49 – 10:04am	42.0	40	42.9	50	Noise sources observed: general construction (diesel motors, beepers, d-wall grab) plus non-TJH noise sources (trains, local road traffic). Noise wall (over Lewis Street Drain) under construction. CoG Non-Conformance raised.
Internal, Attended	8/07/2009 10:08–10:23am	41.3	40	42.0	50	
Internal, Attended	8/07/2009 1:39 – 1:54pm	43.6	40	44.3	50	
Internal, Attended	8/07/2009 1:57 – 2:12pm	44.1	40	44.9	50	

Location	Monitoring Period	L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	L _{A10} (15 min) (dBA)	CoG Goal L _{A10} (15 min) (dBA)	Comments
83 Stuckey Road, Toombul						
Internal, Attended	14/07/2009 8:46 – 9:01am	51.3	45	51.5	55	Noise sources observed: general construction (diesel motors, beepers, d-wall grab) plus non-TJH noise sources (trains, local road traffic). A planned mitigation, the installation of a shipping container noise wall, along Stuckey Road was delayed due to unexpected ground conditions experienced during the sewer relocation. CoG Non-Compliance raised.
Internal, Attended	14/07/2009 9:05 – 9:20am	50.7	45	51	55	
Internal, Attended	14/07/2009 1:04 – 1:19pm	51.1	45	50.2	55	
Internal, Attended	14/07/2009 1:25 – 1:40pm	50.6	45	51.7	55	

Table 1e: Noise Monitoring Results – Airport Roundabout Project – Formule 1 Hotel, Navigator Place, Hendra (2nd Floor, Room closest to roundabout)

Location	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	EAR Goal L _{Aeq} (15 min) (dBA)	Average L _{Amax} (15 min) (dBA)	EAR Goal L _{Amax} (15 min) (dBA)	Comments
Attended, Internal, (0:00-12.15am)	Wed 2/07/09	39.0	40	53.8	50	Purpose of monitoring: check compliance when undertaking barrier works on Roundabout (crane, franna, and flat bed truck). Key noise sources: non-TJH traffic on the Gateway Motorway and on the existing Airport Roundabout. Was noted that TJH generated activities did not exceed CoG L _{Amax} goals.
Attended, Internal, (12:30-12.45am)	Thur 3/07/09	39.9	40	63.7	50	As above though additional noise source comprised hotel guests.

Note: Compliance goals for ARU specified in State Government's Environment Approvals Report (October 2008), not Coordinator General's Change Report as per rest of project.

3.3 Compliance with Noise Goals

Exceedances of the Coordinator General's Noise Goals have been found during this monitoring period at a number of locations:

- Formule 1 Hotel, Bowen Hills
- 17 Park Terrace, Kedron
- 8 Perry Street, Kedron
- 18 Stafford Road, Kedron
- 44 Lewis Street, Toombul
- 70 Kalinga Street, Toombul
- 89 Jackson Street, Toombul
- 83 Stuckey Road, Toombul

Construction activities are attributable to some of these exceedances though noise generated by existing traffic, trains and some other localised noise sources have also contributed. An investigation into each of these CoG-notifiable non-conformances has been, or is being undertaken, the results and recommendations of which will be forwarded to CNI, the Coordinator General and each affected property occupier/owner.

4.0 Air Quality Monitoring

TJH undertakes regular monitoring of air quality levels at a variety of locations across the project to help measure impacts and assist the team plan works and appropriate mitigations if required.

Monitoring involves sampling of dust deposition (monthly), and real-time respiratory dust (PM10) at a number of locations nominated by the Coordinator General. Real-time monitoring of Total Suspended Particulates is also occurring at selected locations to alert TJH teams of any emerging dust exceedances and implement appropriate mitigations to prevent an exceedance of the CoG Air Quality Goals.

Results of monitoring are compared to Air Quality Goals nominated by the Coordinator General (Change Report October 2008) for the Airport Link and Northern Busway components of the project, the State Government (Environment Approvals Report, October 2008) for state controlled land relating to the Airport Roundabout Upgrade, and Brisbane Airport Corporation (Major Development Plan) for BAC controlled land.

4.1 Overview of Air Quality Mitigation Measures

The key strategies adopted to mitigate dust and air quality impacts during construction works have included the following:

1. Continual use of water carts during the following activities:
 - i. Bulk earthworks

- ii. Haul roads
 - iii. Car parks and hardstands
 - iv. Demolition works (Northey Street, Windsor)
 - v. Clearing and grubbing (Airport Roundabout)
2. Investigation of appropriate soil binders (Water and Aeolian erosion prevention techniques).
 3. Covering of haul vehicles.
 4. Stabilisation of cleared areas with hardstand materials such as concrete and crushed rock.
 5. Hydro-mulching and laying geo-fabric to batters.
 6. Reduction of cleared / exposed soils with concrete paving and geo-fabric installation.
 7. Road sweepers.
 8. Design and future construction of enclosed spoil handling facilities at tunnel portals.

Airport Roundabout Upgrade: The key strategies adopted to mitigate dust and air quality impacts during construction works have included the following:

1. Continual use of water carts during the following activities:
 - a. Clearing and grubbing
 - b. Bulk earthworks
 - c. Haul roads
 - d. Hardstand works
2. Covering of haul vehicles
3. Stabilisation of cleared areas with hardstand materials such as crushed rock
4. Road sweepers

Kedron precinct: The key strategies adopted to mitigate dust and air quality impacts during construction works have included the following:

4.2 Air Quality Monitoring Results – Respirable Dust (PM10)

The results of PM10 monitoring is shown in Tables 2a-i and graphically summarised for 35 Lamington Avenue, Lutwyche, in Figure 8.

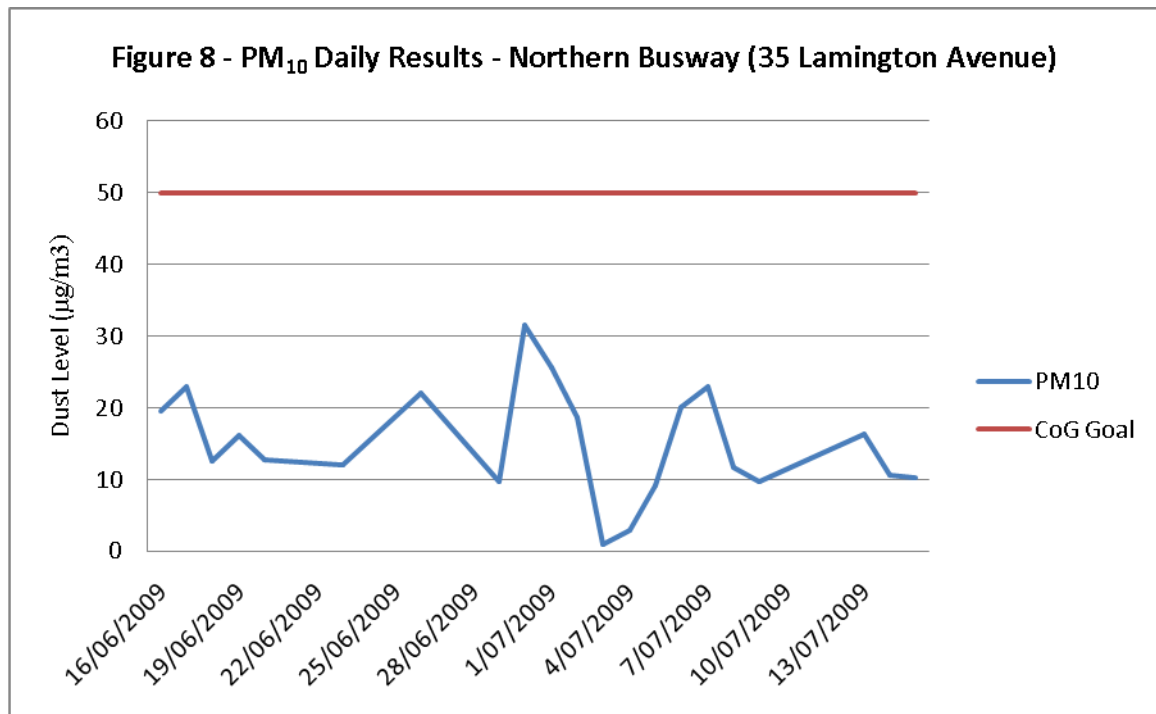


Table 2a: PM₁₀ Results – 5 Morris Street, Bowen Hills

Monitoring Period (midnight-midnight)	Daily PM ₁₀ (µg/m ³)	CoG PM ₁₀ Goal (µg/m ³ /day)	Comments
Fri 19/06/2009	45	50	
Sat 20/06/2009	21	50	
Sun 21/06/2009	24	50	
Mon 22/06/2009	23	50	
Tues 23/06/2009	18	50	
Wed 24/06/2009	23	50	
Thur 25/06/2009	32	50	
Tues 30/06/2009	22	50	
Wed 1/07/2009	28	50	
Thurs 2/07/2009	34	50	
Fri 3/07/2009	46	50	
Sat 4/07/2009	18	50	
Sun 5/07/2009	16	50	
Mon 6/07/2009	24	50	
Tues 7/07/2009	29	50	
Wed 8/07/2009	38	50	
Thur 9/07/2009	23	50	
Fri 10/07/2009	18	50	
Sat 11/07/2009	17	50	
Sun 12/07/2009	20	50	
Mon 13/07/2009	20	50	
Tues 14/07/2009	20	50	
Wed 15/07/2009	17	50	

Note: AS 3580.10.1: 2003 requires a statement to be included with results when all of the siting recommendations are not able to be satisfied. The dust gauge is located such that a 120 degree skyward field is partially obscured by a building or treeline. Full satisfaction of AS recommendations is not possible to satisfy gauge security and access provisions.

Table 2b: PM₁₀ Results – Truro Street

Monitoring Period (midnight-midnight)	Daily PM ₁₀ (µg/m ³)	CoG PM ₁₀ Goal (µg/m ³ /day)	Comments
Tues 16/06/2009	28.9	50	
Wed 17/06/2009	15.2	50	
Thur 18/06/2009	9.4	50	
Fri 19/06/2009	8.1	50	
Sat 20/06/2009	10.7	50	
Sun 21/6/09	16.4	50	
Mon 22/6/09	13.1	50	
Tues 23/06/2009	5.8	50	
Wed 24/6/09	13.1	50	
Thurs 25/6/09	22.7	50	
Fri 26/06/2009 till Wed 15/07/09	-	50	Battery fault – power accidentally disconnected

Table 2c: PM₁₀ Results – Northern Busway (Lamington Avenue Site Office, Lutwyche)

Monitoring Period (midnight-midnight)	Daily PM ₁₀ (µg/m ³)	CoG PM ₁₀ Goal (µg/m ³ /day)	Comments
Tues 16/06/2009	20	50	
Wed 17/06/2009	23	50	
Thur 18/06/2009	13	50	
Fri 19/06/2009	16	50	
Sat 20/06/2009	13	50	Battery fault – monitor working for 30min only.
Sun & Mon 21-22/6/09	-	-	Equipment shut-down – data incomplete.
Tues 23/06/2009	12	50	Battery fault – monitor working for 30min only.
Wed & Thurs 24-25/6/09	-	-	Equipment shut-down – data incomplete.
Fri 26/06/2009	22	50	
Sat & Sun 27-28/6/09	-	-	Equipment servicing – data incomplete.
Mon 29/06/2009	10	50	
Tues 30/06/2009	32	50	
Wed 1/07/2009	26	50	
Thurs 2/07/2009	19	50	
Fri 3/07/2009	1	50	
Sat 4/07/2009	3	50	
Sun 5/07/2009	9	50	
Mon 6/07/2009	20	50	
Tues 7/07/2009	23	50	
Wed 8/07/2009	12	50	
Thur 9/07/2009	10	50	
Fri-Sun 10-12/7/09	-	-	Equipment servicing – data incomplete.
Mon 13/07/2009	16	50	
Tues 14/07/2009	11	50	
Wed 15/07/2009	10	50	

Table 2d: PM₁₀ Results – 20 Erskine Street, Kedron

Monitoring Period (midnight-midnight)	Daily PM ₁₀ (µg/m ³ /day)	CoG PM ₁₀ Goal (µg/m ³ /day)	Comments
Tues 16/06/2009	38	50	
Wed 17/06/2009	21	50	
Thur 18/06/2009	15	50	
Fri 19/06/2009	11	50	
Sat 20/06/2009	10	50	
Sun 21/06/2009	21	50	
Mon 22/06/2009	18	50	
Tues 23/06/2009	9	50	
Wed 24/06/2009	25	50	
Thur 25/06/2009	32	50	
Fri 26/06/2009	36	50	
Sat 27/06/2009	12	50	
Sun 28/06/2009	11	50	
Mon 29/06/2009	7	50	
Tues 30/06/2009	29	50	
Wed 1/07/2009	27	50	
Thur 2/07/2009 to Tues 7/07/2009	-	-	Equipment servicing – data incomplete
Wed 8/07/2009	22	50	
Thur 9/07/2009	13	50	
Fri 10/07/2009	10	50	
Sat 11/07/2009	10	50	
Sun 12/07/2009	17	50	
Mon 13/07/2009	28	50	
Tues 14/07/2009	13.7	50	
Wed 15/07/2009	12	50	

Table 2e: PM₁₀ Results – Kedron State High School Oval

Monitoring Period (midnight-midnight)	Daily PM ₁₀ (µg/m ³ /day)	CoG PM ₁₀ Goal (µg/m ³ /day)	Comments
Tues 16/06/2009	31	50	
Wed 17/06/2009	23	50	
Thur 18/06/2009	10	50	
Fri 19/06/2009	5	50	
Sat 20/06/2009	5	50	
Sun 21/06/2009	8	50	
Mon 22/06/2009	18	50	
Tues 23/06/2009	10	50	
Wed 24/06/2009	8	50	
Thur 25/06/2009	26	50	
Fri 26/06/2009	24	50	
Sat 27/06/2009	13	50	
Sun 28/06/2009	6	50	
Mon 29/06/2009	5	50	
Tues 30/06/2009	7	50	
Wed 1/07/2009	18	50	
Thurs 2/07/2009	17	50	
Fri 3/07/2009	52	50	Site was downwind of adjacent earthworks construction site (DES) and in immediate vicinity of extensive pavement cleaning. CoG Non-Conformance raised.
Sat 4/07/2009	12	50	
Sun 5/07/2009	5	50	
Mon 6/07/2009	11	50	
Tues 7/07/2009	11	50	
Wed 8/07/2009	17	50	
Thur 9/07/2009	5	50	
Fri 10/07/2009	4	50	

Sat 11/07/2009	4	50	
Sun 12/07/2009	8	50	
Mon 13/07/2009	7	50	
Tues 14/07/2009	17	50	
Wed 15/07/2009	12	50	

Note: AS 3580.10.1: 2003 requires a statement to be included with results when all of the siting recommendations are not able to be satisfied. The dust gauge is located such that a 120 degree skyward field is partially obscured by a building or treeline. Full satisfaction of AS recommendations is not possible to satisfy gauge security and access provisions.

Table 2f: PM₁₀ Results – Woolloowin State School, Front Office

Monitoring Period (midnight-midnight)	Daily PM ₁₀ (µg/m ³ /day)	CoG PM ₁₀ Goal (µg/m ³ /day)	Comments
Tues 16/06/2009	26	50	
Wed 17/06/2009	29	50	
Thur 18/06/2009	33	50	
Fri 19/06/2009	31	50	
Sat 20/06/2009	31	50	
Sun 21/06/2009	30	50	
Mon 22/06/2009	24	50	
Tues 23/06/2009	34	50	
Wed 24/06/2009	36	50	
Thur 25/06/2009	33	50	
Fri 26/06/2009	31	50	
Sat 27/06/2009	27	50	
Sun 28/06/2009	25	50	
Mon 29/06/2009	24	50	
Tues 30/06/2009	28	50	
Wed 1/07/2009	24	50	
Thur 2/07/2009 to Tues 7/07/2009	-	-	Equipment servicing – data incomplete.
Wed 8/07/2009	22	50	
Thur 9/07/2009	19	50	
Fri 10/07/2009	19	50	
Sat 11/07/2009	19	50	
Sun 12/07/2009	19	50	
Mon 13/07/2009	22	50	
Tues 14/07/2009	30	50	
Wed 15/07/2009	20	50	

Note: AS 3580.10.1: 2003 requires a statement to be included with results when all of the siting recommendations are not able to be satisfied. The dust gauge is located such that a 120 degree skyward field is partially obscured by a building or treeline. Full satisfaction of AS recommendations is not possible to satisfy gauge security and access provisions.

Table 2f: PM₁₀ Results – 9 Fifth Avenue, Kedron

Monitoring Period (midnight-midnight)	Daily PM ₁₀ (µg/m ³ /day)	CoG PM ₁₀ Goal (µg/m ³ /day)	Comments
Tue-Wed 30/6/09-1/7/09	16	50	
Wed-Thu 1-2/7/09	36	50	
Thu-Fri 2-3/07/09	7	50	

Note: AS 3580.10.1: 2003 requires a statement to be included with results when all of the siting recommendations are not able to be satisfied. The dust gauge is located such that a 120 degree skyward field is partially obscured by a building or treeline. Full satisfaction of AS recommendations is not possible to satisfy gauge security and access provisions.

Table 2g: PM₁₀ Results – Kalinga Street, Toombul

Monitoring Period (midnight-midnight)	Daily PM ₁₀ (µg/m ³ /day)	CoG PM ₁₀ Goal (µg/m ³ /day)	Comments
Tues 16/06/09	24	50	
Wed 17/06/09	18	50	
Thur 18/06/09	10	50	
Fri 19/06/09	10	50	
Sat 20/06/09	8	50	
Sun 21/06/09	14	50	
Mon 22/06/09	7	50	
Tues 23/06/09	5	50	
Wed 24/06/09	19	50	
Thur 25/06/09	27	50	
Fri 26/06/09	21	50	
Sat 27/06/09	7	50	
Sun 28/06/09	4	50	
Mon 29/06/09	5	50	
Tues 30/06/09	19	50	
Wed 1/07/09	19	50	
Thurs 2/07/09	36	50	
Fri 3/07/09	5	50	
Sat 4/07/09	2	50	
Sun 5/07/09	6	50	
Mon 6/07/09	18	50	
Tues 7/07/09	21	50	
Wed 8/07/09	16	50	
Thur 9/07/09	11	50	
Fri 10/07/09	7	50	
Sat 11/07/09	6	50	
Sun 12/07/09	13	50	
Mon 13/07/09	12	50	
Tues 14/07/09	6	50	
Wed 15/07/09	6	50	

Note: AS 3580.10.1: 2003 requires a statement to be included with results when all of the siting recommendations are not able to be satisfied. The dust gauge is located such that a 120 degree skyward field is partially obscured by a building or treeline. Full satisfaction of AS recommendations is not possible to satisfy gauge security and access provisions.

Table 2h: PM₁₀ Results – Kalinga Park adjacent Alma Street, Toombul

Monitoring Period (midnight-midnight)	Daily PM ₁₀ (µg/m ³ /day)	CoG PM ₁₀ Goal (µg/m ³ /day)	Comments
Wed 17/06/09	22	50	
Thur 18/06/09	10	50	
Sun 28/06/09	3	50	
Thur 9/07/09	4	50	
Fri 10/07/09	4	50	
Tues 14/07/09	6	50	
Wed 15/07/09	9	50	

Note: AS 3580.10.1: 2003 requires a statement to be included with results when all of the siting recommendations are not able to be satisfied. The dust gauge is located such that a 120 degree skyward field is partially obscured by a building or treeline. Full satisfaction of AS recommendations is not possible to satisfy gauge security and access provisions.

Table 2i: PM₁₀ Results – Airport Roundabout Project – 64 The Promenade, Hendra

Monitoring Period (midnight-midnight)	Daily PM ₁₀ (µg/m ³ /day)	EAR PM ₁₀ Goal (µg/m ³ /day)	Comments
Tues 16/06/2009	26	50	Pre-construction baseline (no TJH works at ARU)
Wed 17/06/2009	14	50	
Thur 18/06/2009	6	50	
Fri 19/06/2009	6	50	
Sat 20/06/2009	8	50	
Sun 21/06/2009	13	50	
Mon 22/06/2009	230	50	Humidity interference with the photometer resulting from an 18mm rain event – results can be discarded. No CoG Non-Conformance raised.
Tues 23/06/2009	515	50	Humidity interference with the photometer resulting from a 30mm rain event – results can be discarded. No CoG Non-Conformance raised.
Wed 24/06/2009	25	50	Pre-construction baseline (no TJH works at ARU)
Thur 25/06/2009	28	50	
Fri 26/06/2009	18	50	
Sat 27/06/2009	6	50	
Sun 28/06/2009	8	50	
Mon 29/06/2009	10	50	Pre-construction baseline (TJH clearance and site preparation at roundabout approx 1km away)
Tues 30/06/2009	21	50	Pre-construction baseline (TJH clearance and site preparation at roundabout approx 1km away)
Wed 1/07/2009	23	50	
Thur 2/07/2009	29	50	
Fri 3/07/2009	7	50	
Sat 4/07/2009	4	50	
Sun 5/07/2009	10	50	
Mon 6/07/2009	17	50	
Tues 7/07/2009	20	50	
Wed 8/07/2009	9	50	
Thur 9/07/2009	7	50	
Fri 10/07/2009	5	50	
Sat 11/07/2009	8	50	
Sun 12/07/2009	16	50	
Mon 13/07/2009	18	50	
Tues 14/07/2009	9	50	
Wed 15/07/2009	11	50	

Note: Compliance goals for ARU specified in Environment Approvals Report (October 2008), not Coordinator General's Change Report as per rest of project. Note: AS compliant (AS/NZS 3580.1.1: 2007 - Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment?)

4.3 Air Quality Monitoring Results – Dust Deposition

Dust deposition monitoring is undertaken on a monthly basis using a bottle and funnel placed 2m ± 0.2m above ground level in accordance with Australian Standard AS 3580.10.1: 2003 and at locations nominated by the Coordinator General.

Table 3a: Dust Deposition Results – 5 Morris Street, Bowen Hills

Monitoring Period (midnight-midnight)	Dust Fallout (g/m ² /mth)	CoG Dust Fallout Goal (g/m ² /mth)	Comments
15/5/09 – 15/6/09	2.0	4	Sampling period 31 days.
15/6/09 -10/7/09	2.7	4	Sampling period 25 days.

Note: - All samples assessed at a NATA accredited laboratory.
 - AS 3580.10.1: 2003 requires a statement to be included with results when all of the siting recommendations are not able to be satisfied. The Woolloowin and DES dust gauges are located such that a 120 degree skyward field is partially obscured by a building or treeline. Full satisfaction of AS recommendations is not possible to satisfy gauge security and access provisions.

Table 3b: Dust Deposition Results – Kedron

Location and Monitoring Period (midnight-midnight)	Dust Fallout (g/m ² /mth)	CoG Dust Fallout Goal (g/m ² /mth)	Comments
Woolloowin State School 9/06/09 - 9/07/09	1.5	4	
Kedron DES Site 9/06/09 - 9/07/09	1.5	4	
Erskine St, Kedron 9/06/09 - 9/07/09	1.5	4	

Note: - All samples assessed at a NATA accredited laboratory.
 - AS 3580.10.1: 2003 requires a statement to be included with results when all of the siting recommendations are not able to be satisfied. The Woolloowin and DES dust gauges are located such that a 120 degree skyward field is partially obscured by a building or treeline. Full satisfaction of AS recommendations is not possible to satisfy gauge security and access provisions.

Table 3c: Dust Deposition Results – Toombul

Location and Monitoring Period (midnight-midnight)	Dust Fallout (g/m ² /mth)	CoG Dust Fallout Goal (g/m ² /mth)	Comments
68 Kalinga St 22/05/09 – 22/06/09	1.6	4	
Alma Rd 22/05/09 – 22/06/09	1.7	4	
Toombul Indoor Sports Complex – Bage Street 5/06/09 – 22/06/09	0.9	4	Sampling period 17 days.

Note: - All samples assessed at a NATA accredited laboratory.
 - AS 3580.10.1: 2003 requires a statement to be included with results when all of the siting recommendations are not able to be satisfied. All dust gauges are located such that a 120 degree skyward field is partially obscured by a building or treeline. Full satisfaction of AS recommendations is not possible to satisfy gauge security and access provisions.

4.4 Compliance with Air Quality Goals

Three exceedances of the CoG air quality goals were recorded this month, two of which relate to equipment failures (ref Hendra monitor Table 2i). One exceedance occurred at the Kedron State School location as described in Table 2e. Initial investigations indicate the exceedance was influenced by non-TJH related activities though localised hardstand cleaning may have contributed. A CoG non-conformance is being raised and will be fully investigated.

5.0 Vibration Monitoring

TJH undertakes monitoring of vibration levels at a variety of locations across the project to help measure impacts and assist the team plan works and appropriate mitigations if required. Monitoring involves measuring peak particle velocity (mm/s) at a number of sensitive receptors.

Results of monitoring are compared to Vibration Goals nominated by the Coordinator General (Change Report October 2008) for the Airport Link and Northern Busway components of the project, the State Government (Environment Approvals Report, October 2008) for state controlled land relating to the Airport Roundabout Upgrade, and Brisbane Airport Corporation (Major Development Plan) for BAC controlled land.

5.1 Overview of Vibration Mitigation Measures

The key strategies adopted during this monitoring period to mitigate vibration impacts during construction works have included:

1. Predictive modelling of anticipated risks and impacts.
2. Building condition surveys of properties which are likely to experience vibration levels in excess of the levels for minimal risk of cosmetic damage outlined in the CoG Report.
3. Selection of alternative construction equipment / methodology where possible
4. Review of monitoring data for the activities undertaken and checking the robustness of the predictive modelling.
5. Consideration when purchasing or hiring equipment that will meet the CoG goals.

5.2 Vibration Monitoring Results

Monitoring has been undertaken at Bowen Hills during this monitoring period as a result of rock hammering and tunnelling activities. Real-time monitoring data is collected for the purpose of reporting; all data is collated into a monthly average as shown in Table 4.

Table 4: Vibration Monitoring Results Summary – Bowen Hills

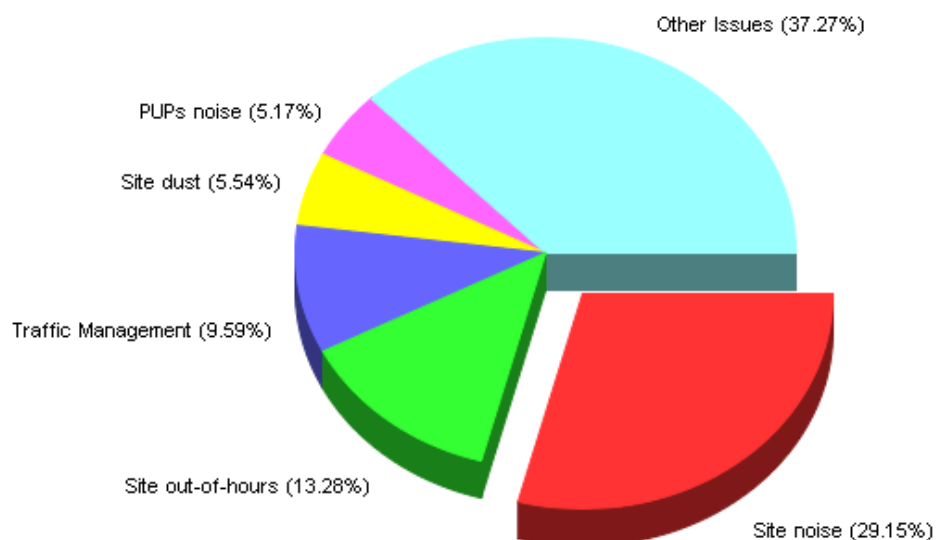
Location	Monthly Average Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
Byrne Street sewer VSO manhole	5.86	25	Monitoring vibration impacts from local rock hammering
Byrne Street sewer North	8.03	25	Monitoring vibration impacts from local rock hammering
Byrne Street sewer South	1.59	25	Monitoring vibration impacts from local rock hammering
Formule 1 Hotel (external)	4.06	10	Monitoring vibration impacts from local rock hammering and tunnelling by roadheader.
Formule 1 Hotel (internal)	2.17	10	Monitoring vibration impacts from local rock hammering and tunnelling by roadheader
28 Federation St	3.86	10	Monitoring vibration impacts from local rock hammering

5.3 Compliance with Vibration Goals

The monthly averages shown in Table 4 do not identify any exceedances with Vibration Goals.

6.0 Community Enquiries and Complaints

The following community issues were reported to the project between 15 June and 15 July 2009.



Issues Raised: 15 Jun 2009 - 15 Jul 2009			
Issue	Events	Stakeholders	
		distinct	total
General Site Construction: Site noise	79	51	79
General Site Construction: Site out-of-hours	36	25	36
Traffic: Traffic Management	26	12	26
General Site Construction: Site dust	15	14	15
PUPs: PUPs noise	14	14	14
Roadheader: Roadheader noise	11	1	11
General Construction: General Construction	9	9	9
PUPs: PUPs out-of-hours	9	8	9
Traffic: Driver Behaviour	9	7	9
General Site Construction: Site vibration	7	5	7
Traffic: Parking	7	7	7
PUPs: PUPs property access	5	4	5
Traffic: Haulage	5	4	5
General Site Construction: Site lighting	4	4	4
PUPs: PUPs reinstatement	4	4	4
Damage Claims: Building Damage	3	3	3
Traffic: Pedestrian/Cyclists	3	3	3
Environmental: Flora/ Fauna	2	2	2
General Construction: Security	2	2	2
General Construction: Worker Behaviour	2	2	2
General Project: Consultation	2	2	2
General Project: General Enquiry	2	2	2
General Project: Security	2	1	2
Property and Business Impact: Property Access	2	2	2
PUPs: PUPs service outage	2	2	2
Total issues reported	196	109	196