



Airport Link / Northern Busway Project

Monthly Environmental Monitoring Report

August 2011

TABLE OF CONTENTS

1.0	Report Purpose and Scope	3
2.0	Monitoring Locations	3
3.0	Noise Monitoring	8
3.1	Overview of Noise Mitigation Measures.....	8
3.2	Noise Monitoring Results	8
3.3	Compliance with Noise Goals	22
4.0	Air Quality Monitoring.....	22
4.1	Overview of Air Quality Mitigation Measures	22
4.2	Air Quality Monitoring Results – PM10	22
4.3	Air Quality Monitoring Results – TSP Results.....	Error! Bookmark not defined.
4.4	Air Quality Monitoring Results – Dust Deposition Results	27
4.4	Compliance with Air Quality Goals.....	35
5.0	Vibration Monitoring	35
5.1	Overview of Vibration Mitigation Measures.....	35
5.2	Vibration Monitoring Results	36
5.3	Compliance with Vibration Goals	36

1.0 Report Purpose and Scope

This report has been compiled to summarise the results of noise, air quality and vibration monitoring on the Airport Link and Northern Busway project in the Bowen Hills precinct. The report also compares monitoring 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 August 2011 reporting period, from 16th July 2011 to 15th August 2011.

2.0 Monitoring Locations

Several monitoring locations exist within the project area as described in Figures 1-5. Note that the aerial photograph overlays used in Figures 1-5 do not accurately portray the extent of the project's progress to June 2011, though do serve a useful purpose in relating the monitoring locations to existing structures and infrastructure.

Figure 2.1 - Bowen Hills Monitoring Locations



Source: NearMap 2011

Legend

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

Note: locations are indicative only

Figure 2.2 - Truro Street Mid Tunnel Monitoring Locations



Source: NearMap 2011

Legend

● Noise (during construction)
● Vibration

● Air (PM₁₀)
● Air (Dust Deposition)

Note: locations are indicative only

Figure 2.3 - Northern Busway Monitoring Locations



Source: NearMap 2011

Legend

- Noise (during construction)
- Vibration

- Air (PM₁₀)
- Air (Dust Deposition)

Note: locations are indicative only

Figure 2.4 - Kedron Monitoring Locations



Source: NearMap 2011

Legend

● Noise (during construction)

● Vibration

● Air (PM₁₀)

● Air (Dust Deposition)

Note: locations are indicative only

Figure 2.5 - Woollooin Monitoring Locations



Source: NearMap 2011

- Noise (during construction)
- Vibration
- Air (CO and NO₂)
- Air (PM₁₀/TSP)
- Air (Dust Deposition)

Note: locations are indicative only

Figure 2.6 - Toombul Monitoring Locations



Source: NearMap 2011

Legend

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

Note: locations are indicative only.

3.0 Noise Monitoring

TJH undertakes regular monitoring of noise levels at a variety of locations across the project in accordance with DERM's Noise Monitoring Manual (March 2000) and Australian Standard AS 1055:1997 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).

Monitoring involves 'attended' monitoring (where a member of the TJH environment team is observing noise sources and durations whilst noise measurements are taken).

It should be noted that efforts are made to undertake internal monitoring at potentially affected residences and businesses, however opportunities to gain access outside of daylight hours is not common. As such, external monitoring is undertaken as a management tool.

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 barriers and plywood):
 - i. Federation/Morris Streets, Windsor
 - ii. Lutwyche Road (CC102), Windsor
 - b. Temporary noise barrier (shipping container) installations:
 - i. Federation/Morris/Cedric Streets, Windsor
 - c. Consultation with property owners prior to commencing works and during construction works
 - d. Installation of mitigation measures at affected residents on a case-by-case basis
 - e. Investigating the early installation of permanent noise barriers at early stages.
 - f. Acoustic shielding of various plant
 - g. 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 and carparks
 - h. Use of temporary acoustic treatment (e.g. sound curtains around onsite generators and access/ egress from sites)
 - i. Installation of directional reversing alarms (e.g. 'squawkers') on plant (especially those working out of normal working hours)

3.2 Noise Monitoring Results

The results of TJH attended noise monitoring efforts are summarised in Tables 3a and 3b.

Note that no internal attended noise monitoring could be done during this period for Truro Street or Northern Busway areas. TJH's Community Liaison Group have approached a variety of residents requesting access for internal attended noise monitoring, though all requests were denied.

Requests for internal monitoring at other residential locations throughout the project were also requested during the month which were refused or were not able to be followed through for reasons outside of TJH's control.

Table 3.2a: Noise Monitoring Results – Bowen Hills

Location	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Average L _{A10} (15 min) (dBA)	CoG Goal L _{A10} (15 min) (dBA)	Average L _{AMAX} (15 min) (dBA)	CoG Goal L _{AMAX} (15 min) (dBA)	Comments
8/3 Hamilton Place, Bowen Hills								
Front Bedroom (doors and windows closed)	03/08/2011 10:15pm – 10:30pm	46.9	40	N/A	N/A	54.2	50	<p>Monitoring Type Attended Noise Monitoring, doors and windows closed</p> <p>Noise Sources The dominant noise sources came from sucker trucks and non-TJH traffic on Hamilton Place. Other TJH noise sources came from an excavator, metal on metal bangs, a TJH truck and a pressure cleaner from a Special Circumstances Work. Other non-TJH noise sources came from a resident's computer and voice</p> <p>Discussion L_{Aeq} posed a possible noise issue due to all activities recorded, including non TJH Traffic. TJH L_{AMAX} posed a possible noise issue due to two sucker trucks on Hamilton Place</p> <p>Mitigation Measures Mitigation not required</p>
3610/141 Campbell Street, Bowen Hills (Mews Apartments)								
Front Bedroom (doors and windows closed)	11/08/2011 09:45am – 10:00am	31.8	45	33.3	55	N/A	N/A	<p>Monitoring Type Attended Noise Monitoring, doors and windows closed</p> <p>Noise Sources The dominant noise source throughout the session was non-TJH Traffic on the ICB exit/BR111. TJH noise sources came from a powersaw and the constant hum from a generator on BR111. Other non-TJH noise sources came from a plane</p> <p>Discussion Monitoring was undertaken to determine if construction noise is within the CoG goals. No exceedences were recorded and the session was within CoG goals</p> <p>Mitigation Measures Not required</p>

Table 3.2b: Noise Monitoring Results – Kedron

	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Average L _{A10} (15 min) (dBA)	CoG Goal L _{A10} (15 min) (dBA)	Average L _{AMAX} (15 min) (dBA)	CoG Goal L _{AMAX} (15 min) (dBA)	Comments
228 Gympie Road, Kedron								
Living Room (doors and windows open)	22/07/2011 10:39am – 10:54am	53.1	45	52.4	55	-	-	<p>Monitoring Type Attended. Internal. Windows and doors open</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic and tunnel “hum” from vent fan. Other audible noise sources included banging, site vehicle, saw cutter, resident interference, birds and plane</p> <p>Discussion Internal LAeq noise goals were exceeded as a result of all activities mentioned. Making a determination of TJH noise levels against the CoG goals is not possible. No complaints were received on this date</p> <p>Mitigation Measures No additional mitigations implemented beyond TJH standard controls.</p>
Living Room (doors and windows closed)	22/07/2011 10:57am – 11:12am	44.6	45	43.9	55	-	-	<p>Monitoring Type Attended. Internal. Windows and doors closed</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic and tunnel “hum” from vent fan. Other audible noise sources included franna, squawkers, banging, birds, plane and resident interference</p> <p>Discussion Internal LAeq noise goals were not exceeded. No complaints were received on this date</p> <p>Mitigation Measures No additional mitigations implemented beyond TJH standard controls.</p>
Living Room (doors and windows open)	09/08/2011 3:31pm – 3:46pm	53.9	45	53.4	55	-	-	<p>Monitoring Type Attended. Internal. Windows and doors open</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic and tunnel “hum” from vent fan. Other audible noise sources included horn, banging, birds, plane and resident interference</p> <p>Discussion Internal LAeq noise goals were exceeded as a result of all activities mentioned. No complaints were received on this date</p> <p>Mitigation Measures No additional mitigations implemented beyond TJH standard controls.</p>

Living Room (doors and windows closed)	09/08/2011 3:47pm – 4:02pm	45.2	45	44.1	55	-	-	<p>Monitoring Type Attended. Internal. Windows and doors closed</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic, tunnel “hum” from vent fan and noisy birds. Other audible noise sources included bang, engine revving, saw and workers talking</p> <p>Discussion Internal LAeq noise goals were exceeded as a result of the birds. No complaints were received on this date</p> <p>Mitigation Measures No additional mitigations implemented beyond TJH standard controls.</p>
14 Erskine Avenue, Kedron								
Living/Dining Room (door open)	09/08/2011 1:15pm – 1:30pm	56.9	45	56.4	55	-	-	<p>Monitoring Type Attended. Internal. Doors opened</p> <p>Noise Sources The dominant noise sources throughout the period was Gympie Road traffic, tunnel “hum” from vent fan, works associated with the construction of a concrete noise wall and noise from birds. Other audible noise sources included bang, engine revving, saw and workers talking</p> <p>Discussion Internal LAeq and LA10 noise goals were exceeded as a result of Gympie rd traffic and works associated with construction of mitigation measures.</p> <p>Mitigation Measures Concrete noise wall under construction</p>
Living/Dining Room (door closed)	08/08/2011 1:30pm – 1:45pm	44.0	45	66.3	55	-	-	<p>Monitoring Type Attended. Internal. Doors closed</p> <p>Noise Sources The dominant noise sources throughout the period was Gympie Road traffic, tunnel “hum” from vent fan works associated with the construction of a concrete noise wall and noise from birds. Other audible noise sources included bang, engine revving, saw cutter and workers talking</p> <p>Discussion Internal LAeq and LA10 noise goals were exceeded as a result of Gympie rd traffic and works associated with construction of mitigation measures</p> <p>Mitigation Measures Concrete noise wall under construction</p>

18 Erskine Avenue, Kedron								
Living/Dining Room (door open)	09/08/2011 1:15pm – 1:30pm	57.4	45	56.3	55	-	-	<p>Monitoring Type Attended. Internal. Rooms door open</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic and an excavator loading spoil. Other audible noise sources included a horn, beepers, squawkers, spoil truck, saw and roller</p> <p>Discussion Internal LAeq and LA10 noise goals were exceeded as a result of Gympie Road traffic.</p> <p>Mitigation Measures None</p>
Living/Dining Room (door closed)	08/08/2011 1:30pm – 1:45pm	47.9	45	46.0	55	-	-	<p>Monitoring Type Attended. Internal. Rooms door closed</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic, an excavator loading spoil and a saw cutter. Other audible noise sources included squawkers, horn, birds, resident interference and clock ticking</p> <p>Discussion Internal LAeq noise goals were exceeded as a result of Gympie Road traffic</p> <p>Mitigation Measures None</p>
3/26 Fifth Avenue, Kedron								
Living Room (doors and windows open)	21/07/2011 10:01pm - 10:16pm	37.2	40	-	-	37.7	50	<p>Monitoring Type Attended. Internal. Rooms windows open</p> <p>Noise Sources Consistent throughout the session was general traffic which was louder than most construction noise heard (i.e. hum from CC210 - North). Also, shutters on the next door neighbour's windows were creaking in the wind during monitoring session</p> <p>Discussion No CoG goals were exceeded</p> <p>Mitigation Measures None</p>

In Living Room (doors and windows closed)	21/07/2011 22:18pm – 22:33pm	25.7	40	-	-	28.6	50	<p>Monitoring Type Attended. Internal</p> <p>Noise Sources Consistent throughout the session was general traffic which was louder than most construction noise heard (i.e. hum from CC210 - North). Also, shutters on the next door neighbour's windows were creaking in the wind during monitoring session</p> <p>Discussion No CoG goals were exceeded</p> <p>Mitigation Measures None</p>
Living Room (doors and windows open)	03/08/2011 12:18am – 12:33am	37.1	40	-	-	44.2	50	<p>Monitoring Type Attended. Internal</p> <p>Noise Sources Consistent throughout the session was a very faint 'hum' from BR211. Revving was heard from a Franna, while banging from BR211 registered the loudest TJH noise. Source of reverse beeper was a pilot vehicle for the delivery of beams</p> <p>Discussion No CoG goals were exceeded</p> <p>Mitigation Measures None</p>
Living Room (doors and windows closed)	03/08/2011 12:35am – 12:50am	25.9	40	-	-	36.8	50	<p>Monitoring Type Attended. Internal</p> <p>Noise Sources Consistent throughout the session was a very faint 'hum' from BR211. Revving was heard from a Franna and a Truck, while formwork noises were heard infrequently (Hammering, Bang and Metal on Metal)</p> <p>Discussion No CoG goals were exceeded</p> <p>Mitigation Measures None</p>

Table 3.2d: 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
89 Jackson Street, Clayfield						
Double Storey Timber House (Front Bedroom)	29/07/2011 9:05am – 9:20am	40.3	45	39.9	55	Monitoring Type Internal attended monitoring, windows and doors open Noise Sources TJH noise sources (site hum, hammering, sawing, bang/drop, TJH horn, jack hammering) plus non-TJH sources (birds, house creak, plane, train, dog, residents) Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall
Double Storey Timber House (Front Bedroom)	29/07/2011 9:23am – 9:38am	35.6	45	36.6	55	Monitoring Type Internal attended monitoring, windows and doors closed Noise Sources TJH noise sources (metal scrape, site hum, bang/drop, crane CC421, TJH horn, sawing) plus non-TJH sources (resident, train, plane, birds) Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall
Double Storey Timber House (Front Bedroom)	29/07/2011 3:33pm – 3:48pm	36.5	45	37.1	55	Monitoring Type Internal attended monitoring, windows and doors closed Noise Sources TJH noise sources (hammering, crane, TJH horn, bang/drop, site hum, sawing, drilling) plus non-TJH sources (birds, resident, train, dog, sirens) Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall
Double Storey Timber House (Front Bedroom)	29/07/2011 3:50pm – 4:05pm	43.4	45	41.1	55	Monitoring Type Internal attended monitoring, windows and doors open Noise Sources TJH: bang/drop, crane/knock, TJH horn, hammering, drilling. Non-TJH: train, birds, resident, dog, traffic Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall
83 Stuckey Road, Clayfield						

Double Storey Queenslander (Living Room)	09/08/2011 10:08am – 10:23am	43.9	45	44.3	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Noise Sources TJH noise sources (concrete pump, jack hammering, single bang, concrete truck rev, squawker, reverse beeper, concrete truck entering and exiting) plus non-TJH sources (dog, resident)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers. This property has received air conditioning and external blinds from TJH to further mitigate noise. At the time of monitoring, the air-conditioning was in use and the doors and windows were closed</p>
Double Storey Queenslander (Living Room)	09/08/2011 10:23am – 10:38am	46.2	45	45.4	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Noise Sources TJH noise sources (concrete pump, jack hammering, concrete truck rev, concrete trucks entering and exiting) plus non-TJH sources (dog, resident, street sweeper)</p> <p>Discussion Monitoring indicates elevated LAeq levels throughout the session. It should be noted that the session was heavily influenced by non-TJH noise sources including dog barking inside the house and resident activities. TJH specific LAeq levels could not be isolated from these external noise sources</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers. This property has received air conditioning and external blinds from TJH to further mitigate noise. At the time of monitoring, the air-conditioning was in use and the doors and windows were closed</p>
Double Storey Queenslander (Living Room)	10/08/2011 1:01pm – 1:16pm	75	45	47.5	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Noise Sources TJH noise sources (jet blasting, jack hammering, crane operation, bang/drop, TJH horn) plus non-TJH sources (resident, dog, train, traffic)</p> <p>Discussion Monitoring indicates elevated LAeq levels throughout the session. It should be noted that the session was heavily influenced by non-TJH noise sources including dog barking inside the house, resident activities and trains. TJH specific LAeq levels could not be isolated from these external noise sources</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers. This property has received air conditioning and external blinds from TJH to further mitigate noise. At the time of monitoring, the air-conditioning was in use and the doors and windows were closed</p>

Double Storey Queenslander (Living Room)	10/08/2011 1:16pm – 1:31pm	40.1	45	40.4	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Noise Sources TJH noise sources (jack hammering, TJH horn, jet blasting, bang/drop, crane operation, metal scrape) plus non-TJH sources (traffic, resident, train, birds, dog)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers. This property has received air conditioning and external blinds from TJH to further mitigate noise. At the time of monitoring, the air-conditioning was in use and the doors and windows were closed</p>
66 Kalinga Street, Clayfield						
Single Storey Queenslander (Living Room)	09/08/2011 9:18am – 9:33am	39.7	45	40.5	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Noise Sources TJH noise sources (site hum) plus non-TJH sources (traffic, resident, birds, plane, dog)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers. This property has received air conditioning from TJH to further mitigate noise. At the time of monitoring, the air-conditioning was in use and the doors and windows were closed</p>
Single Storey Queenslander (Living Room)	09/08/2011 1:40am – 1:55am	34.2	45	33.1	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Noise Sources TJH noise sources (site hum, bang) plus non-TJH sources (train, resident, birds, plane)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers . This property has received air conditioning from TJH to further mitigate noise. At the time of monitoring, the air-conditioning was in use and the doors and windows were closed</p>

62 Kalinga Street, Clayfield						
Double Storey Queenslander (Living Room)	15/08/2011 5:10pm – 5:25pm	44.3	45	43.6	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Noise Sources TJH noise sources (ventilation fans, crane operation) plus non-TJH sources (train, dog, resident, crows, traffic, dog, home phone)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers. At the time of monitoring, the doors and windows were closed</p>
Double Storey Queenslander (Living Room)	15/08/2011 5:10pm – 5:25pm	44.5	45	42.7	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Noise Sources TJH noise sources (ventilation fans) plus non-TJH sources (train, traffic, crows, resident)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers. At the time of monitoring, the doors and windows were closed</p>

Table 3.2e: Night Shift Noise Monitoring Results – Toombul

There were no internal night shift noise monitoring for this month.

Address of Monitoring Location	Date of Request	Time of Requested Monitoring	Construction Activity to be Monitored	Date Access Denied	Comments
78 Elliot Street	18/07/2011	8:55am	General Construction	18/07/2011	Stakeholder advised that she would contact TJH when available for monitoring

Table 3.2f: Noise Monitoring Results – Woolloowin

Location	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Average L _{A10} (15 min) (dBA)	CoG Goal L _{A10} (15 min) (dBA)	Average L _{AMAX} (15 min) (dBA)	CoG Goal L _{AMAX} (15 min) (dBA)	Comments
71 Park Road, Woolloowin								
Single Level Brick Flat (Dining Room)	20/07/2011 20:25pm – 20:40pm	34.2	40	-	-	38.9	50	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Closed</p> <p>Noise Sources Site noise included: Hum from fans and noise from within the spoil shed, Other noise sources included traffic, aircraft and wind in trees</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring session. Monitoring indicates that night time CoG goals were met</p> <p>Mitigation Measures An acoustic shed and noise wall is in place around Woolloowin Site. 71 Park Road is owned by DMR and is used by TJH for monitoring purposes</p>
Single Level Brick Flat (Dining Room)	20/07/2011 12:31am – 12:36am	34.7	40	-	-	40.2	50	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Closed</p> <p>Noise Sources Site noise included: Hum from fans and noise from within the spoil shed, Other noise sources included traffic</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring session. Monitoring indicates that night time CoG goals were met</p> <p>Mitigation Measures An acoustic shed and noise wall is in place around Woolloowin Site. 71 Park Road is owned by DMR and is used by TJH for monitoring purposes</p>
Single Level Brick Flat (Dining Room)	20/07/2011 11:33am – 11:48am	48.2	45	47.3	55	-	-	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Open</p> <p>Noise Sources The predominant sources of noise are listed below corresponding with the time that they occurred. Consistent throughout the session was general traffic which was louder than most construction noise heard (i.e. Spoil shed activity)</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring session. Even though LAeq levels were exceeded, analysis of the</p>

Location	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Average L _{A10} (15 min) (dBA)	CoG Goal L _{A10} (15 min) (dBA)	Average L _{AMAX} (15 min) (dBA)	CoG Goal L _{AMAX} (15 min) (dBA)	Comments
								<p>monitoring data indicates that much of the 15 minute monitoring session, dominant noise sources were identified as wind in trees and traffic from Park Road and Rose Street. Therefore, it was concluded that day time CoG goals were met for noise levels associated with works within the spoil shed</p> <p>Mitigation Measures An acoustic shed and noise wall is in place around Woolloowin Site. 71 Park Road is owned by DMR and is used by TJH for monitoring purposes</p>
Single Level Brick Flat (Dining Room)	28/07/2011 03:52pm – 4:07pm	48.7	45	43.2	55	-	-	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Open</p> <p>Noise Sources The predominant sources of noise are listed below corresponding with the time that they occurred. Consistent throughout the session was wind and general traffic which was louder than most construction noise heard (i.e. Spoil shed activity)</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring session. . Even though LAeq levels were exceeded, analysis of the monitoring data indicates that for much of the 15 minute monitoring session, the dominant noise sources were identified as traffic from Park Road and Rose Street. Therefore, it was concluded that day time CoG goals were met for noise levels associated with works within the spoil shed</p> <p>Mitigation Measures An acoustic shed and noise wall is in place around Woolloowin Site. 71 Park Road is owned by DMR and is used by TJH for monitoring purposes</p>
Single Level Brick Flat (Dining Room)	11/08/2011 2:43am – 2:58am	31.1	40	-	-	34.7	50	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Closed</p> <p>Noise Sources Site noise included: Hum from fans and noise from within the spoil shed, Other noise sources included traffic</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring session. Monitoring indicates that night time CoG goals were met</p> <p>Mitigation Measures An acoustic shed and noise wall is in place around Woolloowin Site.</p>

Location	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Average L _{A10} (15 min) (dBA)	CoG Goal L _{A10} (15 min) (dBA)	Average L _{AMAX} (15 min) (dBA)	CoG Goal L _{AMAX} (15 min) (dBA)	Comments
								71 Park Road is owned by DMR and is used by TJH for monitoring purposes
Single Level Brick Flat (Dining Room)	11/08/2011 9:26pm – 9:41pm	31.4	40	-	-	39.4	50	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Closed</p> <p>Noise Sources Consistent throughout the session was a 'hum' from the spoil shed. Other noises heard were site machinery, several bangs and a squawker from a vehicle leaving gate WOO02 onto Park Road</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring session. Monitoring indicates that night time CoG goals were met</p> <p>Mitigation Measures An acoustic shed and noise wall is in place around Woolloowin Site. 71 Park Road is owned by DMR and is used by TJH for monitoring purposes</p>

3.3 Compliance with Noise Goals

No exceedences of the Coordinator General's Noise Goals as a result of TJH construction activities alone have been found during this monitoring period at the locations sampled where Special Circumstances Permits were not in place.

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 to 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.

Results of monitoring are compared to Air Quality Goals nominated by the Coordinator General (Change Report July 2008) for the Airport Link and Northern Busway projects.

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 / trucks and hand held hoses to aid dust suppression
2. Covering of haul vehicles
3. Stabilisation of cleared areas with hardstand materials such as concrete and crushed rock
4. Hydro-mulching and laying geofab to batters
5. Reduction of cleared / exposed soils with concrete paving and geo-fabric installation
6. Continual use of two road sweepers
7. Turfing of footpaths where utility works are now complete (eg Bryden and Cedric Streets, Windsor)

4.2 Air Quality Monitoring Results – PM10/TSP

PM10 monitoring was undertaken at various locations using an EBAM continuous sampler in accordance with Queensland Department of Environment and Resource Management's Air Sampling Manual. Results are summarised in Figure below. It should be noted that the placement of the sampler unit does not strictly meet the siting standards described in AS 3580.1.1:2007 due to location and security restrictions. Efforts to comply with location standards have been made however as much as possible.

Note that air quality results for the Kedron State School and 71 Park Road, Woolloowin were not available during this monitoring period due to some technical difficulties with the EBAM units. Results will be reported in next months report.

5 Morris Street, Bowen Hills PM10 Results

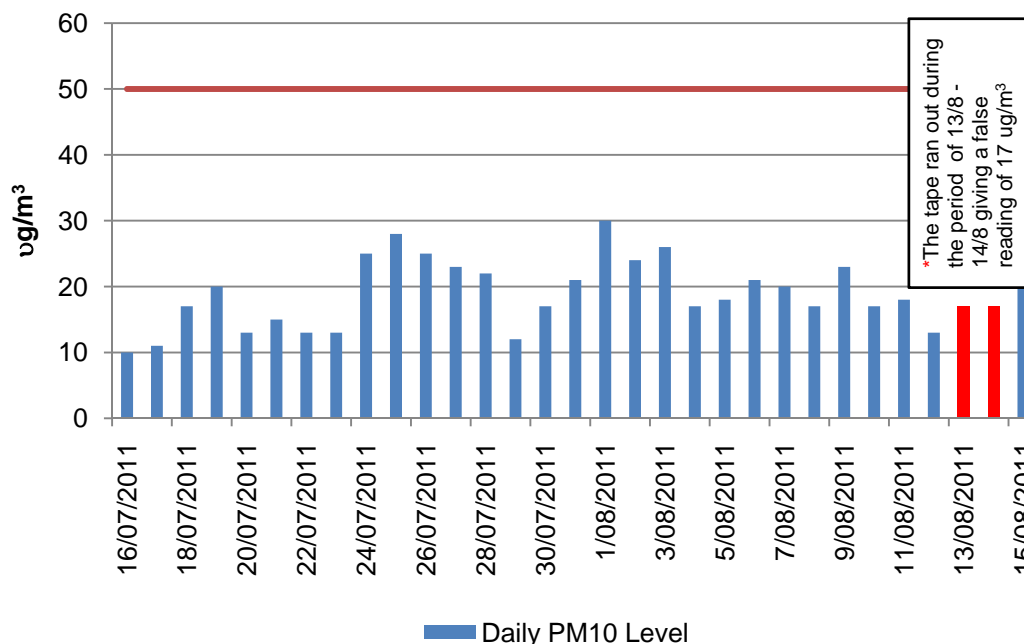


Figure 4.2.1: 5 Morris Street, Bowen Hills PM10 Results (for monitor location see figure 2.1)

Northern Busway Site Office, Lutwyche PM10 Results

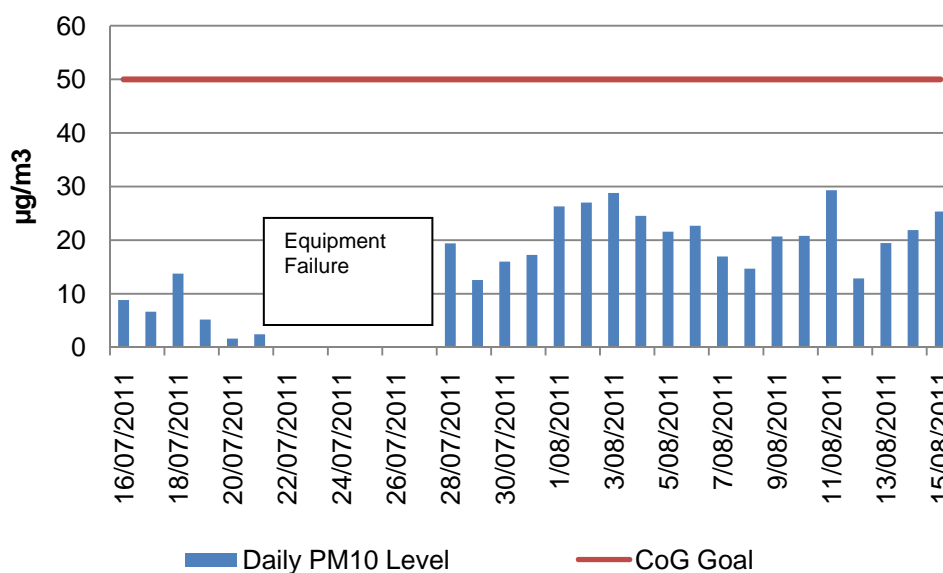


Figure 4.2.2: Northern Busway Site Office, Lutwyche PM10 Results (for location see figure 2.3 – A1)

Truro Street Site Office, Lutwyche PM10 Results

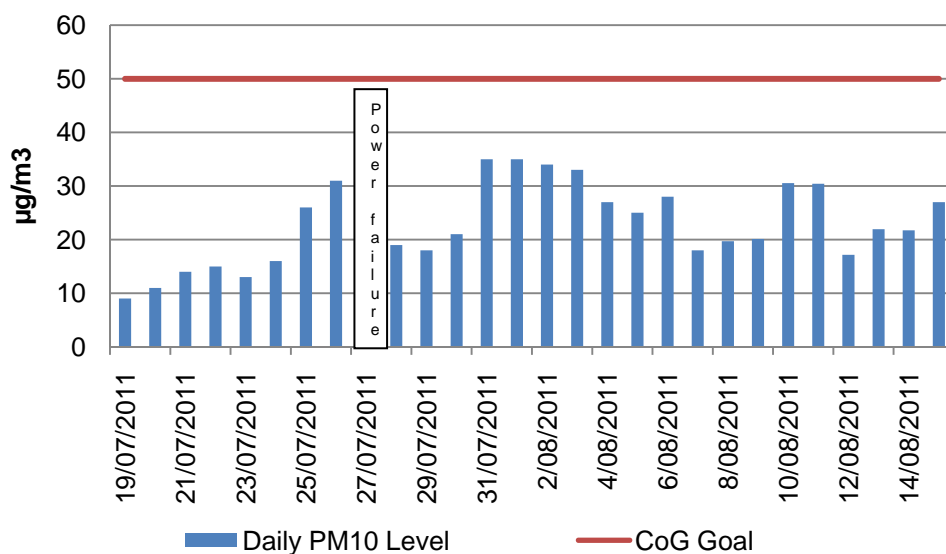


Figure 4.2.3 Truro St Mid Tunnel Site Office, PM10 Results (for location see figure 2.2 – A1)

Erskine Avenue, Kedron, PM10 Results

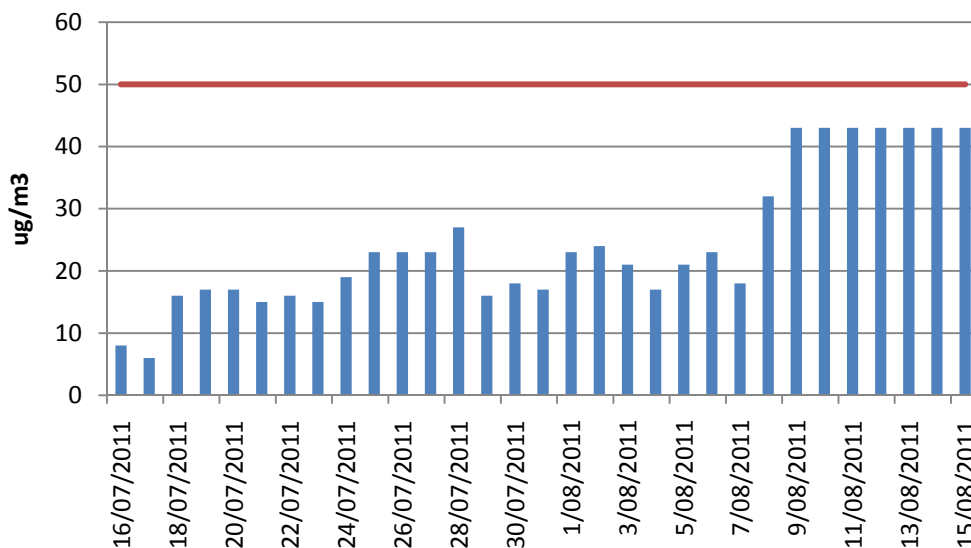


Figure 4.2.4: Erskine Avenue, Kedron PM10 Results (for monitor location see figure 2.4 – A1)

Perry Street, Kedron, PM10 Results

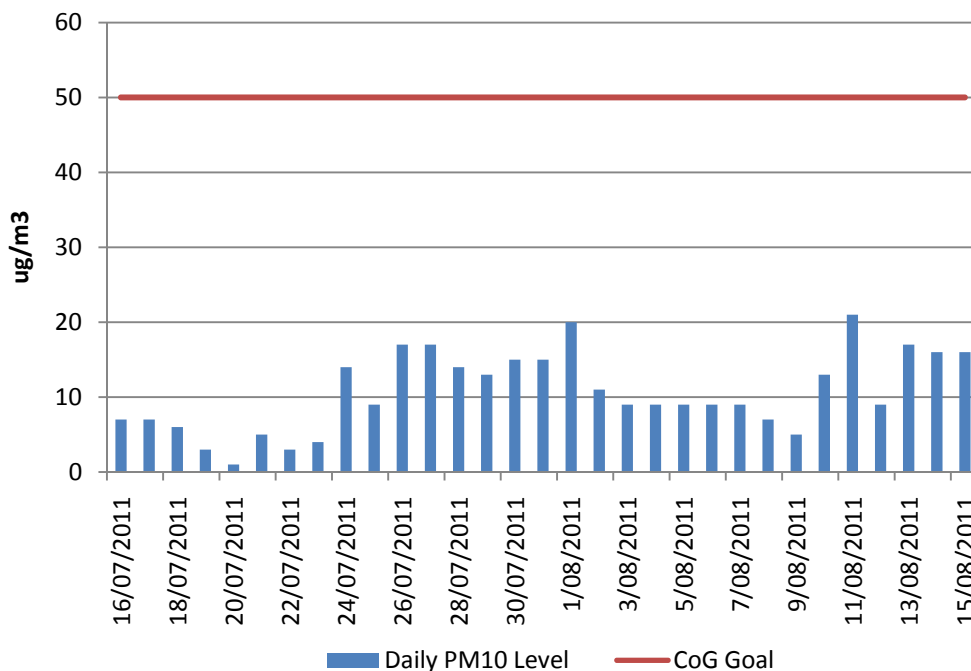


Figure 4.2.6: Perry Street, Kedron PM10 Results (for monitor location see figure 2.4 – A3)

Woollowin State School, PM10 Results

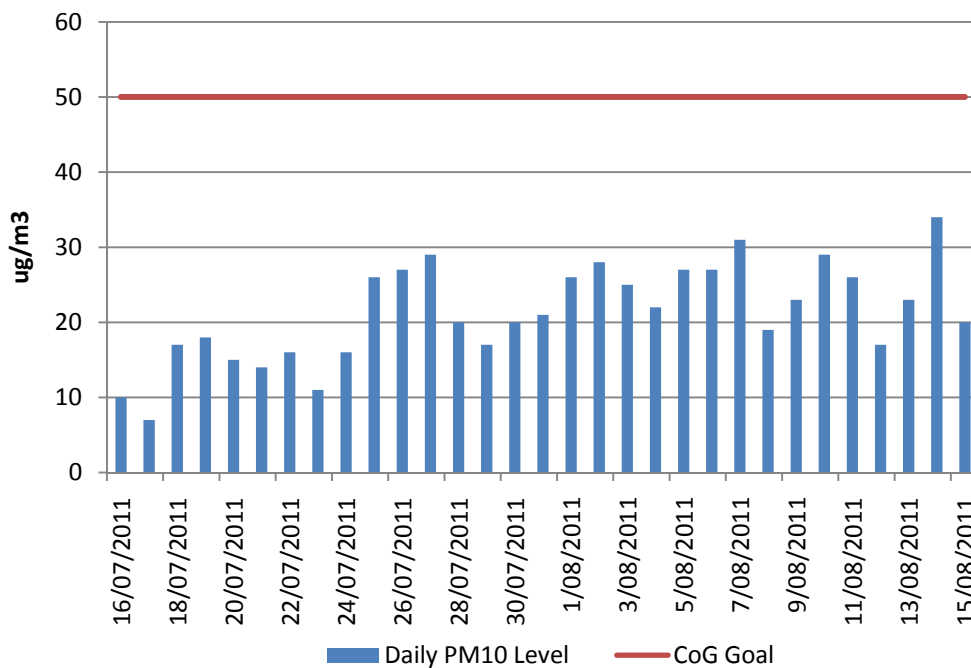


Figure 4.2.7: Woollowin State School, Lutwyche PM10 Results (for monitor location see figure 2.4 – A4)

56 Kalinga Street, Clayfield PM10 Results

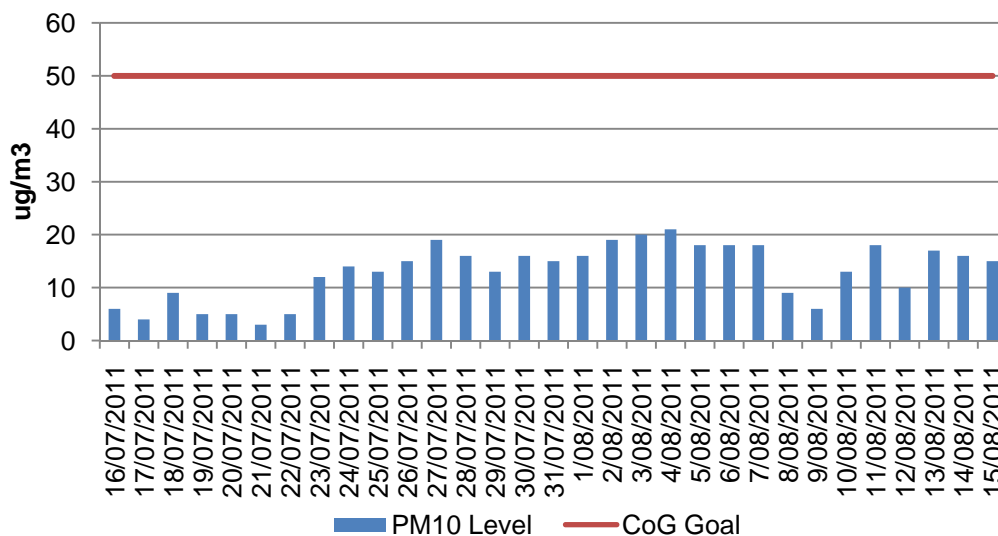


Figure 4.2.8: 56 Kalinga Street, Toombul PM10 Results (for monitor location see Figure 2.6 – A1)

5 Mabel Street, Clayfield PM10 Results

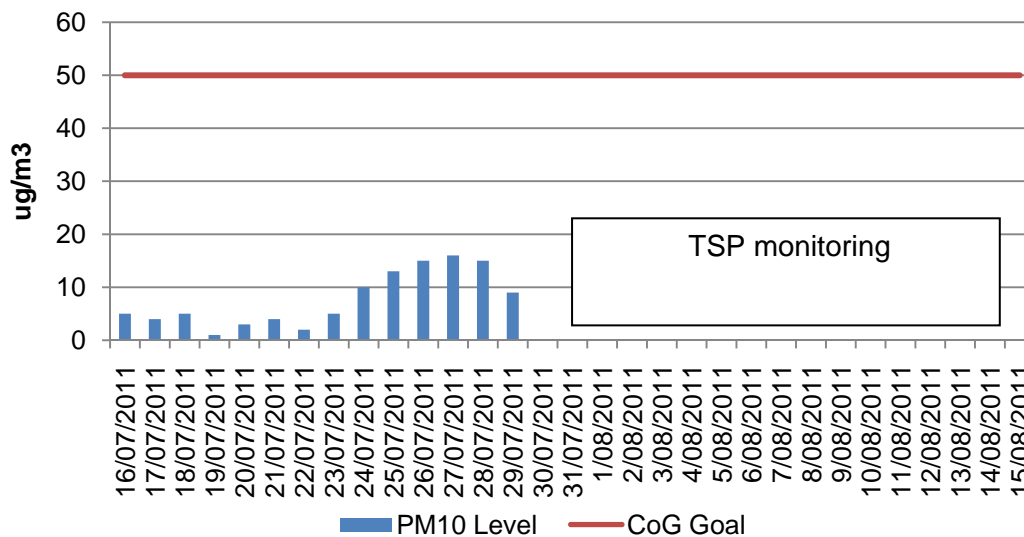


Figure 4.2.9: Kalinga Park Adj Alma Road, Toombul PM10 Results (for monitor location see Figure 2.6- A2)

4.3 Air Quality Monitoring Results – Dust Deposition Results

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. It should be noted that in all locations the placement of the deposition gauges does not strictly meet the standard due to location and security restrictions. Efforts to comply with location standards have been made however as much as possible.

5 Morris Street, Bowen Hills Dust Fallout March - August 2011

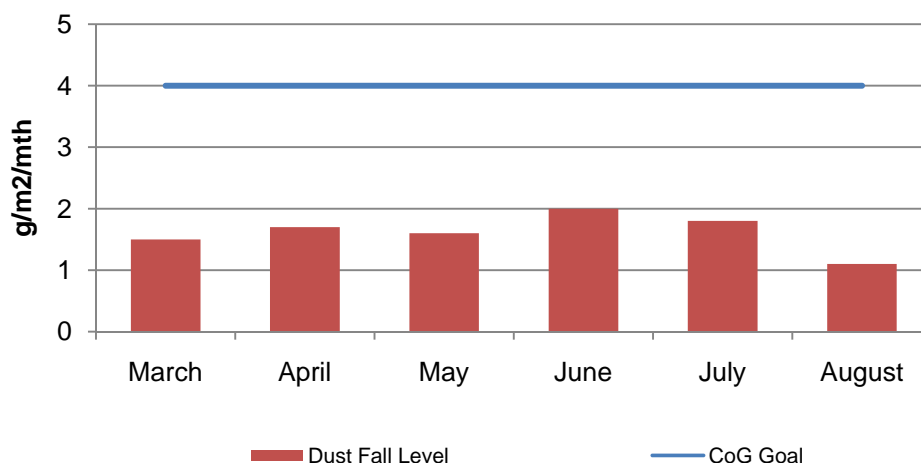


Figure 4.3.1: 5 Morris St Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

QLD Newspapers, Bowen Hills Dust Fallout March - August 2011

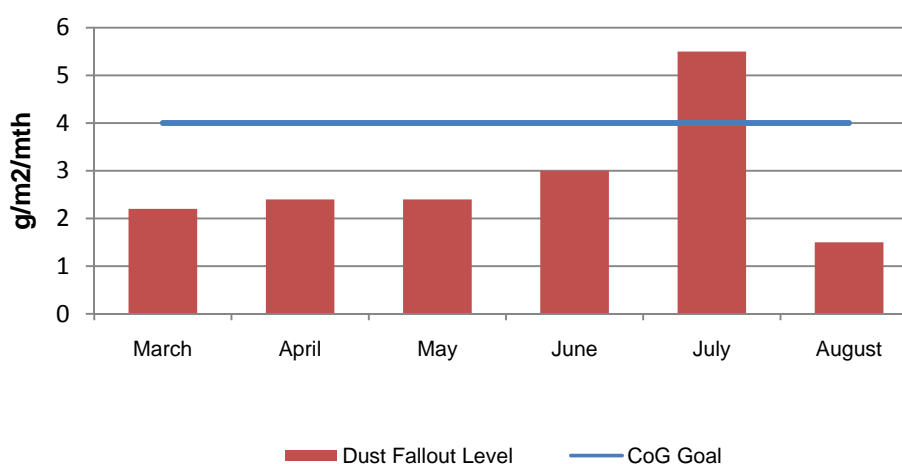


Figure 4.3.2: Queensland Newspapers, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

Site Office, Bowen Hills Dust Fallout March - August 2011

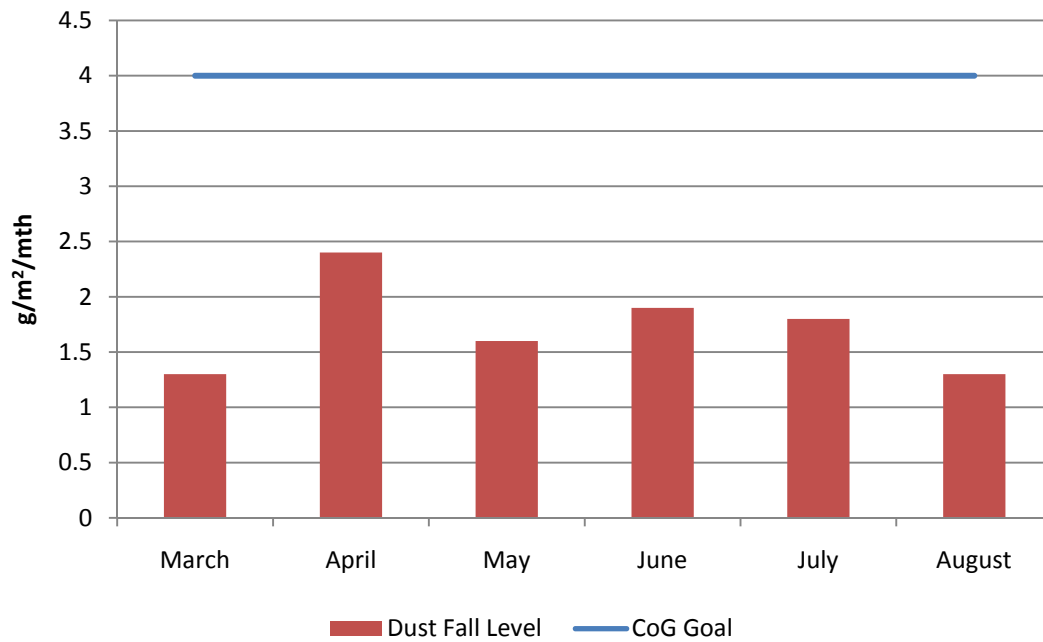


Figure 4.3.3: Site Office, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

Mews Apartments, Bowen Hills Dust Fallout March - August 2011

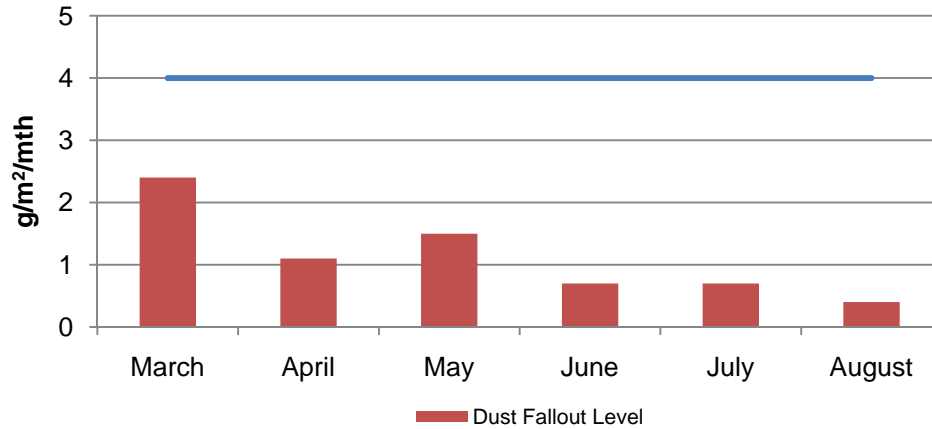


Figure 4.3.4: Mews Apartments, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

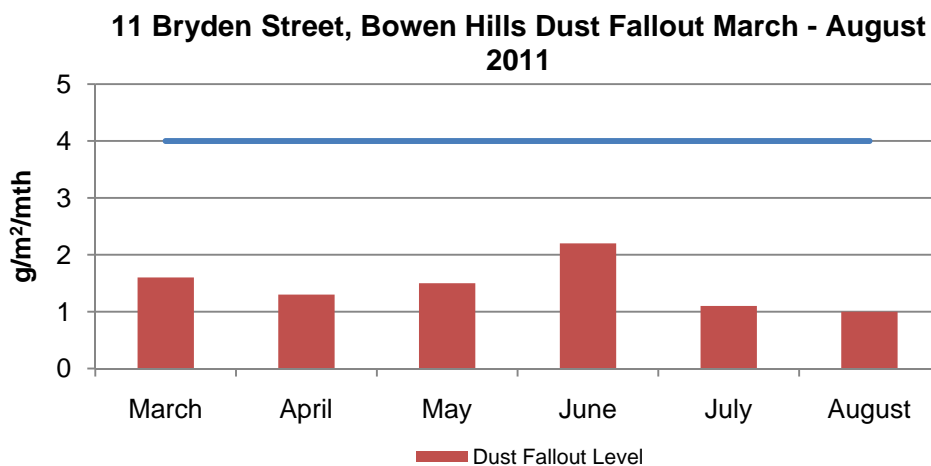


Figure 4.3.5: 11 Bryden Street, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

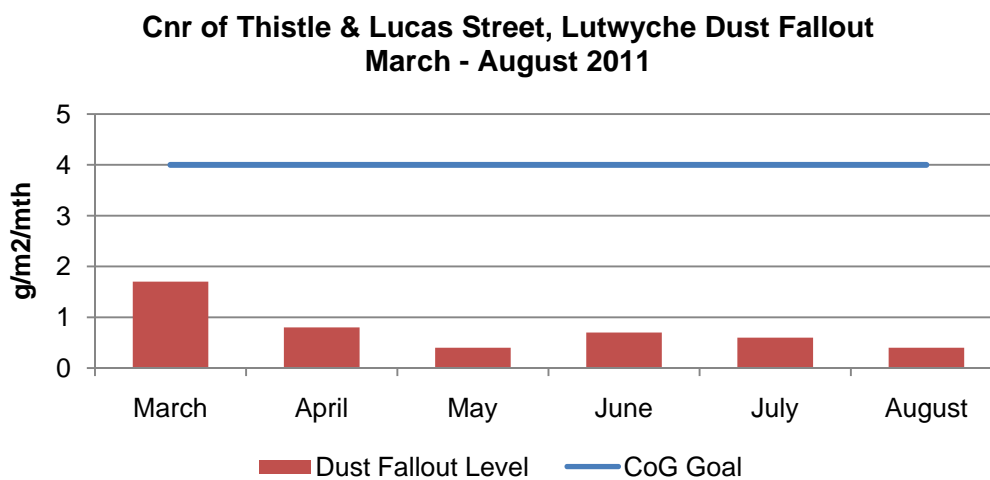


Figure 4.3.6: Cnr of Thistle & Lucas Street, Lutwyche Dust Fallout Results (location refer to figure 2.3 – D2)

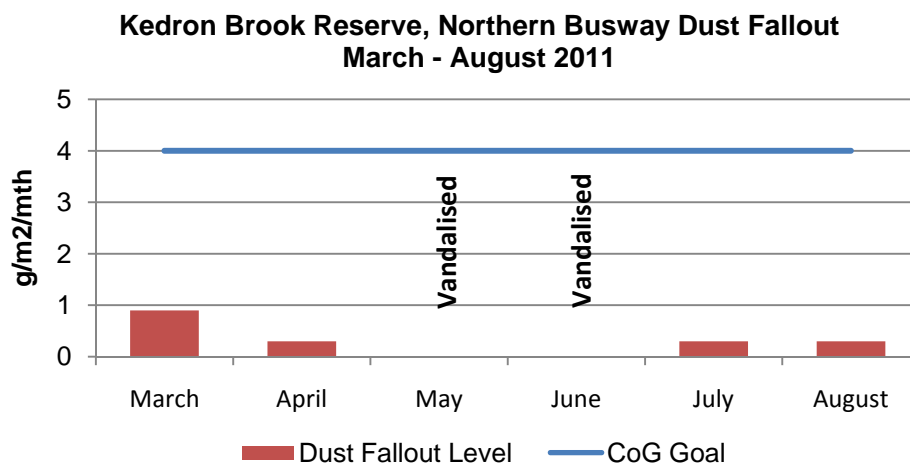


Figure 4.3.7: Kedron Brook Reserve, Northern Busway Dust Fallout Results (location refer to figure 2.3 – D1)

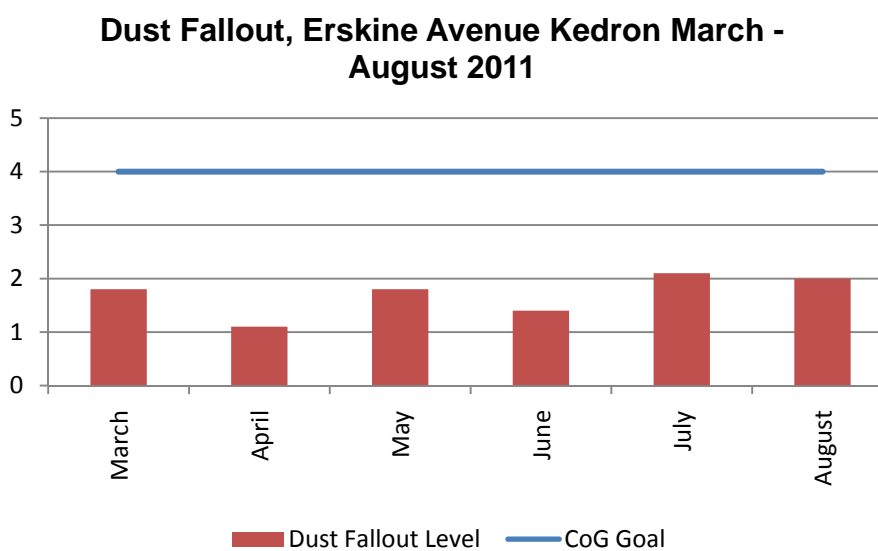


Figure 4.3.8: Erskine Avenue, Kedron Dust Fallout February – July 2011 (for monitor location see figure 2.4 – A1)

Dust Fallout Kedron State High School Kedron, March - August 2011

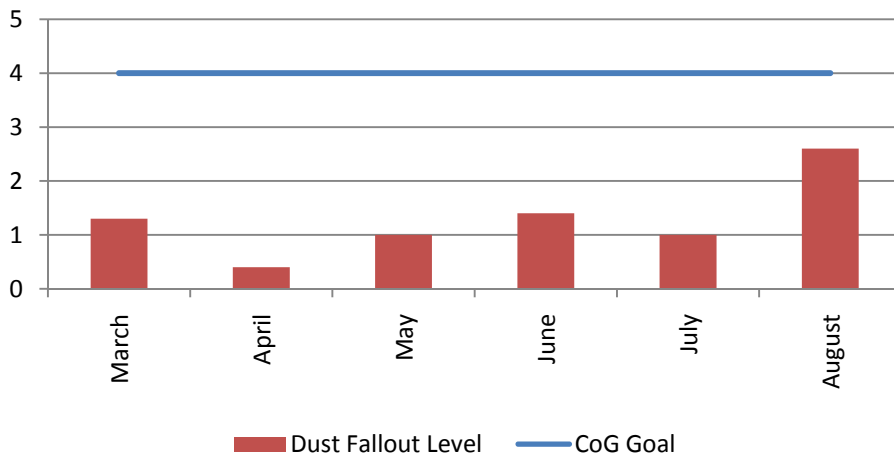


Figure 4.3.9: Kedron State High School, Dust Fallout February – July 2011 (for monitor location see figure 2.4 A2)

Dust Fallout Perry Street Lutwyche, March - August 2011

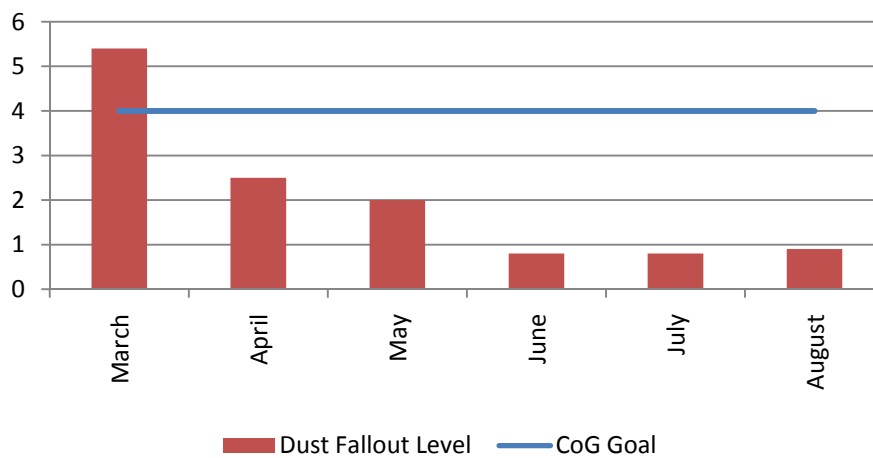


Figure 4.3.10: Perry Street, Lutwyche Dust Fallout February – July 2011 (for monitor location see figure 2.4 – A3)

Dust Fallout Woolloowin State School Wolloowin, March - August 2011

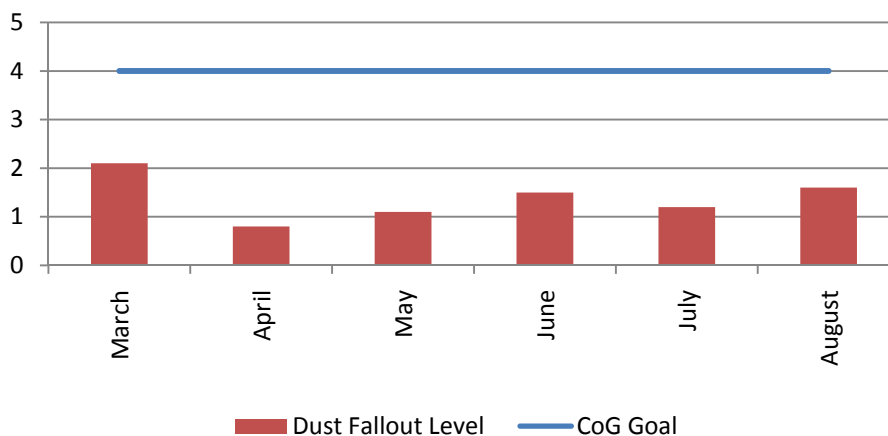


Figure 4.3.11: Woolloowin State School, Dust Fallout February - July 2011 (for monitor location see figure 2.4 – A4)

Dust Fallout, 228 Gympie Road Kedron, March - August 2011

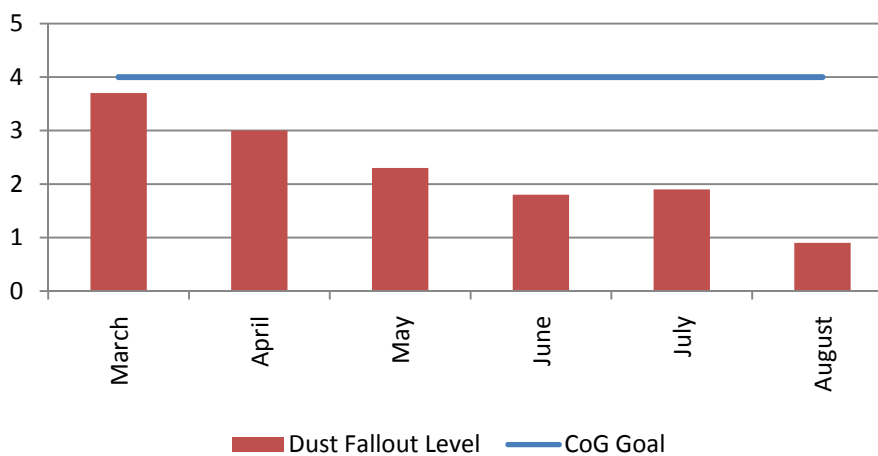


Figure 4.3.12: 228 Gympie Road, Kedron Dust Fallout February – July 2011 (for monitor location see figure 2.4)

68 Park Road, Woolloowin Dust Fallout March 2011 to August 2011

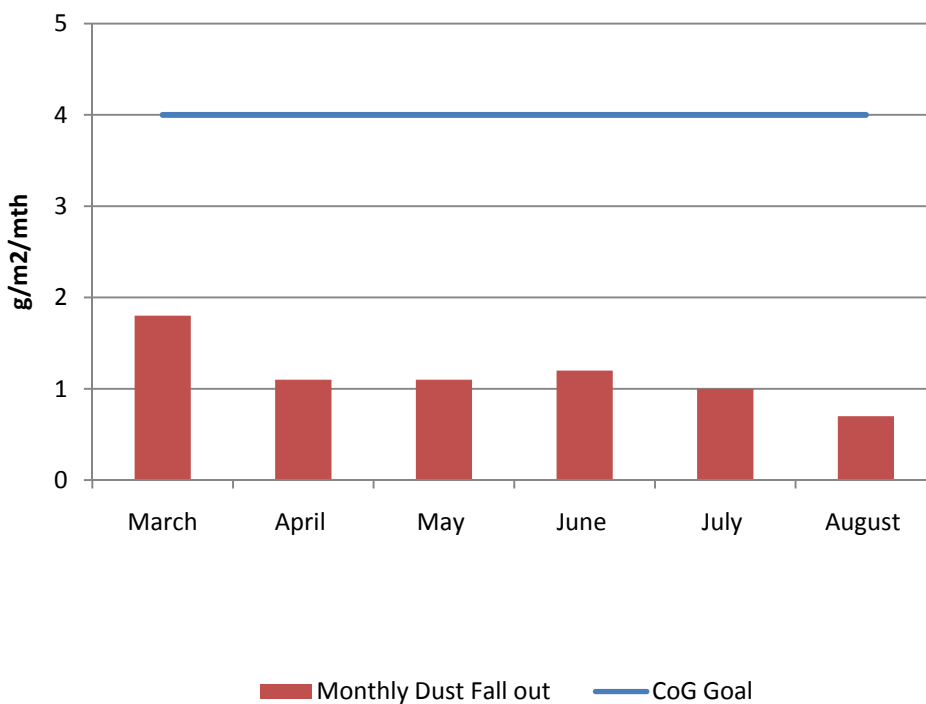


Figure 4.3.13: 68 Park road, Dust Fallout (location refer to figure 2.5 – D1)

Kalinga Street, Toombul Dust Fallout Level March - August 2011

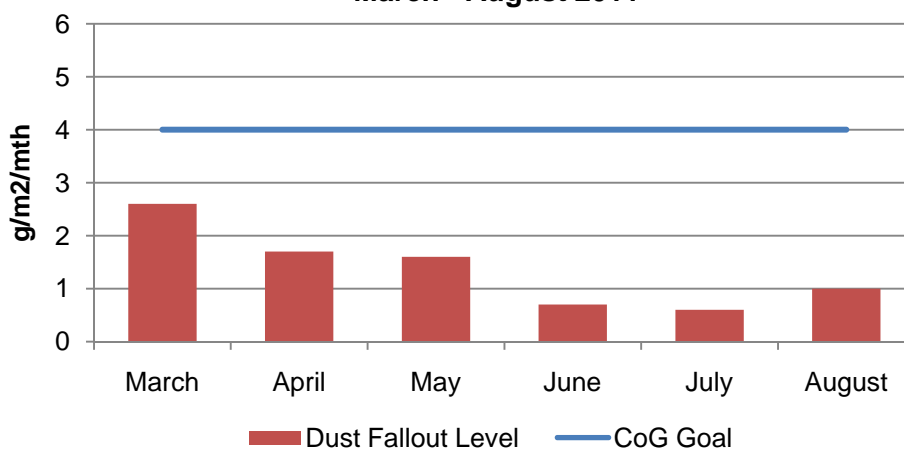


Figure 4.3.13: 56 Kalinga Street Toombul, Dust Fallout (location refer to figure 2.6 – D1)

Mabel Street, Toombul Dust Fallout Level March - August 2011

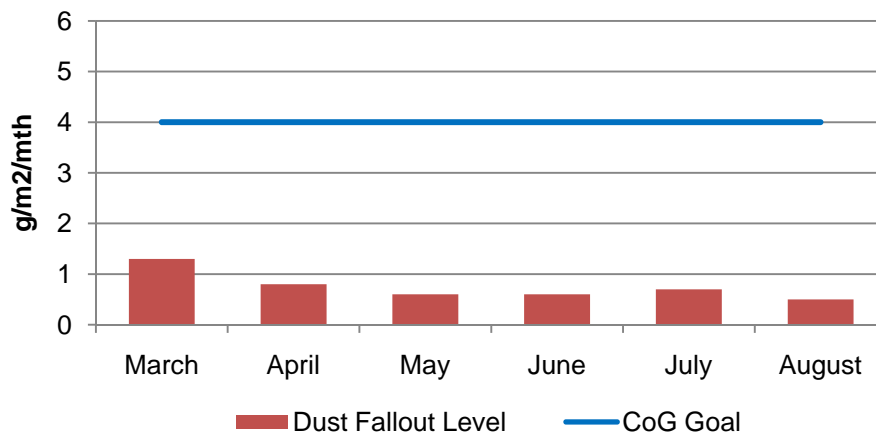


Figure 4.3.14: Mabel Street Toombul, Dust Fallout (location refer to figure 2.6 – D2)

Bage Street, Toombul Dust Fallout Level March - August 2011

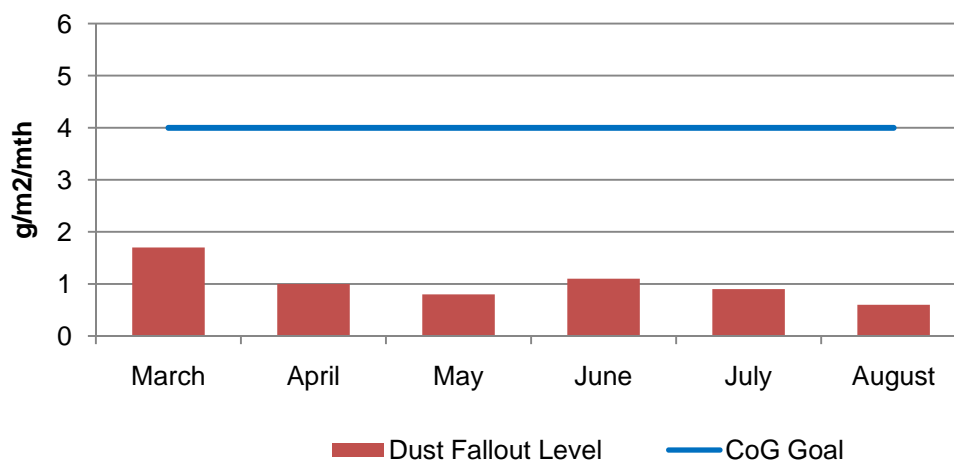


Figure 4.3.15: Bage Street Toombul, Dust Fallout (location refer to figure 2.6 – D3)

There were no PM10 dust exceedances recorded during this reporting period. Therefore there were no exceedances of the Coordinator General's Air Quality Goals recorded during this monitoring period.

4.4 CO/NO₂ Monitoring – Woolloowin Worksite

TJH undertakes regular monitoring of CO/NO₂ in the vicinity of the Woolloowin Worksite. Monitoring involves real-time sampling and results of monitoring are compared to Air Quality Goals nominated by the Coordinator General in the Woolloowin Worksite Modification Change Report - October 2009.

Gas monitoring results

Gas Monitor at 71 Park Road, Woolloowin					
Date	Peak Date and Time	CO (mg/m ³) Peak	CoG CO Limit (mg/m ³)	NO ₂ (µg/m ³) Peak	CoG NO ₂ Limit ((µg/m ³))
16/07/2011 to 15/08/2011	21/07/2011 00:50	0.83	11		
	22/07/2011 14:00			70	250

Note:

For Carbon monoxide (CO) an 8 hour averaging period is used

For Nitrogen dioxide (NO₂) a 1 hour averaging period is used

4.5 Compliance with Air Quality Goals

There was one exceedance of the Coordinator General's Air Quality Conditions this reporting period for dust deposition and no exceedances for PM10.

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 sensitive receptors.

Results of monitoring are compared to Vibration Goals adopted as listed by the Coordinator General (Change Report June 2008) for the Airport Link and Northern Busway projects.

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

5.2 Vibration Monitoring Results

Monitoring has been undertaken at a variety of sites along the Airport Link Project alignment this period. Results are detailed in Tables 5a.

Table 5a: Vibration Monitoring Results Summary – Bowen Hills

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
Queensland Newspapers	16/07/11 – 20/07/11	0.13	5	Results are within CoG goals
	20/07/11 – 21/07/11	1.78	5	Results are within CoG goals
	23/07/11 – 23/07/11	0.65	5	Results are within CoG goals
	04/08/11 – 05/08/11	0.37	5	Results are within CoG goals
	05/08/11 – 07/08/11	1.10	5	Results are within CoG goals
	07/08/11 – 10/08/11	0.27	5	Results are within CoG goals
	11/08/11 – 12/08/11	0.27	5	Results are within CoG goals
	12/08/11 – 14/08/11	0.78	5	Results are within CoG goals

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
30 Federation Street, Windsor	03/08/11 – 06/08/11	1.03	5	Results are within CoG goals
	06/08/11 – 08/08/11	0.49	5	Results are within CoG goals
	08/08/10 – 10/08/11	2.76	5	Results are within CoG goals

Table 5b: Vibration Monitoring Results Summary – Kedron Busway

Location	Property Type	Monitoring Period	Monitoring Type	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)
16 Colton Avenue	Residential	03/08/2011	Continuous 8 hr	1.14	5

Piling Works BR701 Highgrove Bath and Tile, Gympie Road, Kedron

Location	Property Type	Monitoring Period	Monitoring Type	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)
Highgrove Bath and Tile, Gympie Rd	Commercial	05/08/2011 – 11/08/2011	Continuous 8 hr	4.06	5

Table 5c: Blast Monitoring Results Summary – Kedron CC216 Blasting

Location	Property Type	Monitoring Period	Monitoring Type	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)
Site Office Compound	Commercial	19/07/2011	Event Based	2.41	25
Kedron Medical Centre, Brookfield Road	Commercial / Medical	19/07/2011	Event Based	1.78	25
Energex Substation, Stafford Road	Commercial	19/07/2011	Event Based	3.81	25

Table 5d: Blast Monitoring Results Summary - Kedron CC211 Blasting

Location	Property Type	Monitoring Period	Monitoring Type	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)
15 Park Terrace	Residential	30/07/2011	Event Based	13.3	25
Kedron Park Hotel	Residential	30/07/2011	Event Based	2.03	25

Table 5e: Vibration Monitoring Results Summary – Woolloowin

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
71 Park Road, Woolloowin	18/07/2011 To 07/08/2011	1.78	5	Results are within CoG goals

5.3 Compliance with Vibration Goals

There were no exceedences of the Coordinator Generals conditions this reporting period for the days vibration monitoring was undertaken this month.

6.0 Community enquiries and complaints

A total of 265 community complaints were reported to the project between 16 July and 15 August 2011. The top issues raised are outlined in the pie chart below. For further details on how we are managing community issues, please refer to the [Community Enquiries and Complaints](#) page of the project website which is updated each month.

6.1 Top 10 issues raised

