



Airport Link / Northern Busway Project

Monthly Environmental Monitoring Report

July 2011

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1.0 Report Purpose and Scope

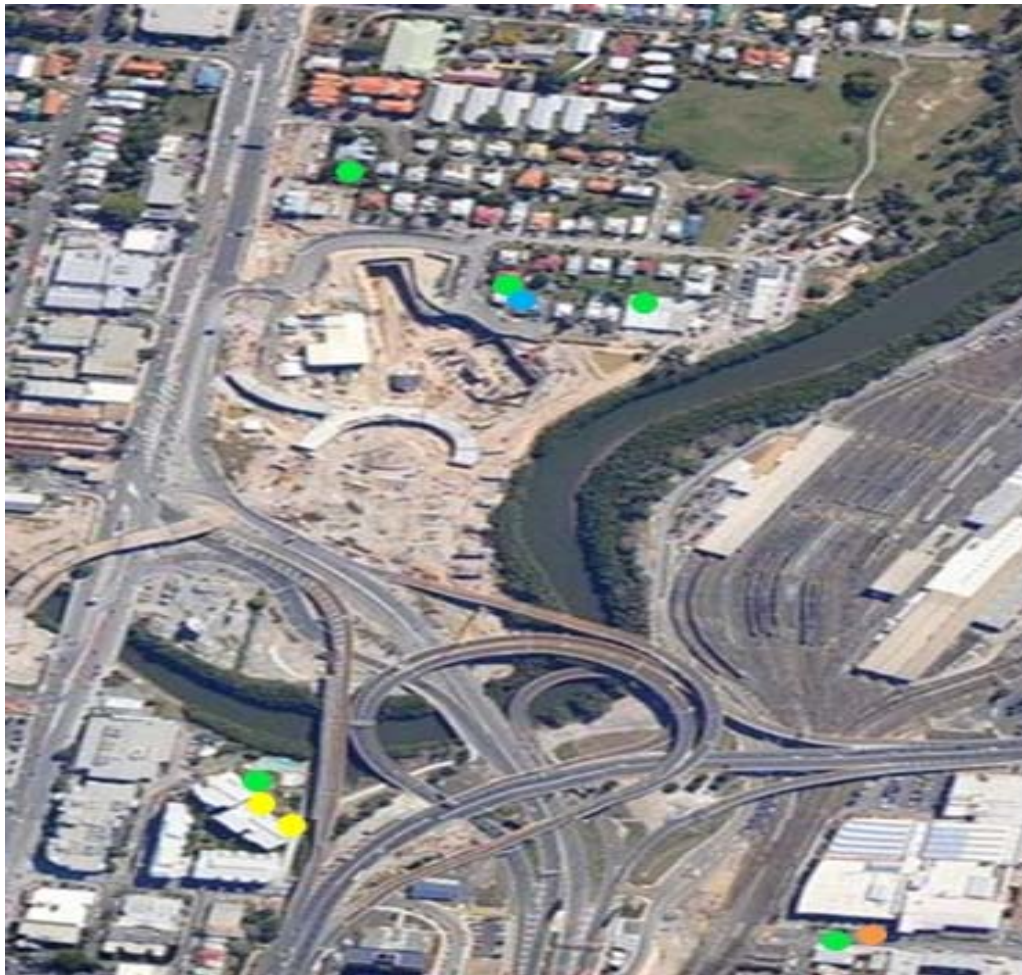
The report has been compiled to summarise the results of noise, air quality and vibration monitoring on the Airport Link and Northern Busway project. The report also compares those results with compliance thresholds for environmental harm, community nuisance and loss of amenity nominated by the Coordinator General (Change Report July 2008 and Woolloowin Worksite Report October 2009).

The monitoring data covered in this report is for the June 2011 reporting period, from 16th June 2011 to 15th July 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 mid-July 2011, though do serve a useful purpose in relating the monitoring locations to existing structures and infrastructure.

Figure 2.1 - Bowen Hills Monitoring Locations

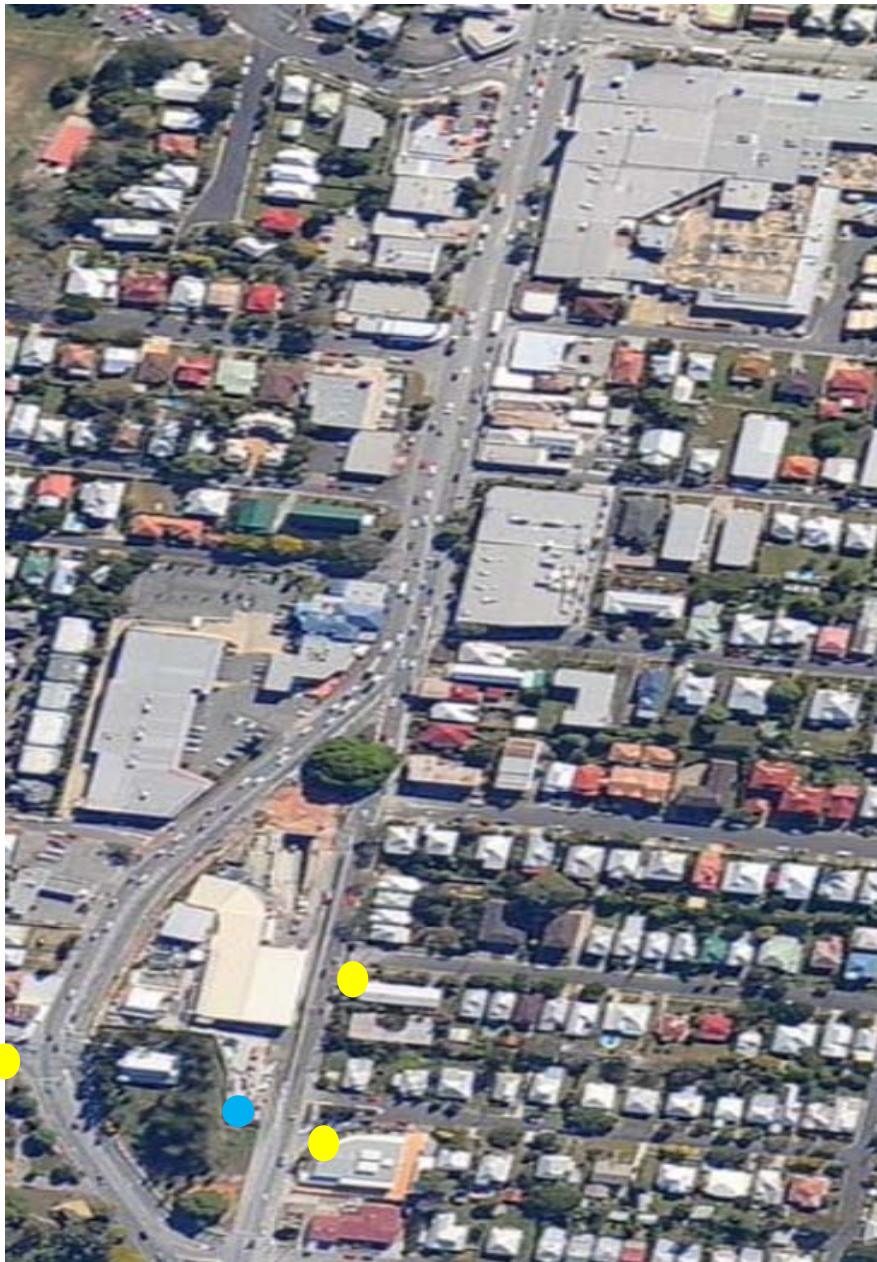


Legend

- | | |
|--|---|
| ● Noise (during construction) | ● Air (TSP/PM ₁₀) |
| ● Vibration | ● Air (Dust Deposition) |

Note: locations are indicative only

Figure 2.2 - Truro Street Mid-Tunnel Monitoring Locations



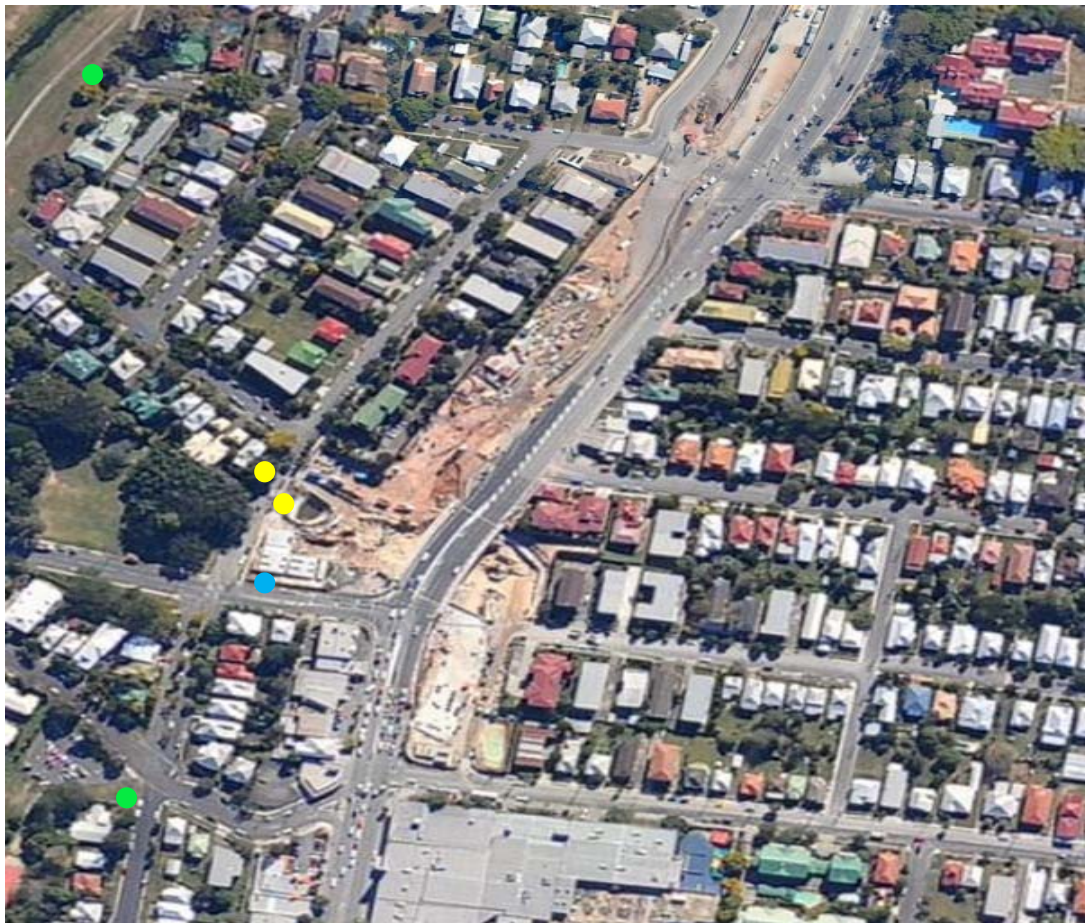
Legend

- Noise (during construction)
- Vibration

- Air (PM₁₀)
- Air (Dust Deposition)

Note: locations are indicative only

Figure 2.3 - Northern Busway Monitoring Locations



Legend

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

Note: locations are indicative only

Figure 2.4 - Kedron Monitoring Locations



Legend

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

Note: locations are indicative only

Figure 2.5 - Wooloowin Monitoring Locations



Legend

- 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



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 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 non-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).

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. Permanent noise barriers (precast concrete barrier)
 - I. Gympie Road (Kedron)
 - II. Brookfield Road (Kedron)
 - b. 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. Gympie Road (Kedron)
 - c. Temporary noise barrier (shipping container) installations:
 - i. Perry Street, (Kedron)
 - ii. Kalinga Park (Toombul)
 - iii. Arnott and Erskine St (Kedron)
 - iv. Haines Street, (Kedron)
 - v. Gympie Road (Kedron)
 - d. Acoustic shed has been built around the tunnel portals at:
 - i. Truro Street
 - ii. Bowen Hills
 - e. A Roller door has been installed on the entry side to the Kedron spoil shed for night time loading operations
 - f. Consultation with property owners prior to commencing works and during construction works.
 - g. Installation of mitigation measures at affected residents on a case-by-case basis.
 - h. Investigating the early installation of permanent noise barriers at early stages.
 - i. Acoustic shielding of various plant.
 - j. 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.
 - k. Use of temporary acoustic treatment (e.g. sound curtains around onsite generators and access/ egress from sites).
 - l. 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's monitoring efforts for this period are summarised for each project area in Table 3a-d.

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 3a: 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 _{A,max} (15 min) (dBA)	CoG Goal L _{AMAX} (15 min) (dBA)	Comments
3402/141 Campbell Street, Bowen Hills (Mews Apartments)								
Front Bedroom Doors /Windows Closed	17/06/2011 21:32am-1:47am	44.6	40	N/A	N/A	48.9	50	<p>Monitoring Type Attended noise monitoring, doors and windows closed.</p> <p>Noise Sources TJH noise sources: metal-on-metal banging, a bobcat, a crane working on the adjacent bridge, workers voices and hum of diesel generators. Other audible non-TJH noise sources: came from an internal resident and a water feature which ran constantly on balcony.</p> <p>Discussion L_{Aeq} CoG Goal was exceeded though sound readings were influenced by TJH and non-TJH sources. Making a determination of TJH noise levels against the CoG Goal is not possible.</p> <p>Additional Mitigation Measures Not required.</p>
3510/141 Campbell Street, Bowen Hills (Mews Apartments)								
Front Bedroom Doors /Windows Closed	23/06/2011 01:11pm – 01:26pm	32.8	45	33.8	55	N/A	N/A	<p>Monitoring Type Attended noise monitoring, doors and windows closed.</p> <p>Noise Sources TJH noise sources: a TJH watercart generator used for bridge works adjacent to monitoring location, another generator was heard from within the work site below the bridge under construction, metal-on-metal bangs and a reverse squawker. The generator powering the watercart vibrated the trailer, causing an irregular rattling noise. Non-TJH noise sources came from traffic on the ICB, and various sources within the unit: a wall clock (ticked throughout the session, and residents' voices and a phone ring from an adjacent room.</p> <p>Discussion No CoG Goals were exceeded.</p> <p>Additional Mitigation Measures Not required, though enquiries to remove rattling noise made to prevent recurrence.</p>

Table 3b : 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)	28/06/2011 3:06pm – 3:20pm	36.4	45	35.5	55	N/A	N/A	<p>Monitoring Type Attended noise monitoring. Doors and windows closed.</p> <p>Noise Sources TJH: hum from fans and general site activities. Other noise sources: traffic.</p> <p>Discussion No CoG Goals were exceeded. The shed is sealed and air is neither mechanically sucked in nor blown out. The sound from fans was constant throughout the monitoring session.</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. No additional mitigations required.</p>
Single Level Brick Flat (Dining Room)	28/06/2011 12:54am – 1:08am	33.1	40	N/A	N/A	45.8	50	<p>Monitoring Type Attended noise monitoring. Doors and windows closed.</p> <p>Noise Sources TJH: hum from fans and general site activities. Other noise sources: traffic.</p> <p>Discussion No CoG Goals were exceeded.</p> <p>Mitigation Measures No additional mitigations required beyond those described above.</p>
Single Level Brick Flat (Dining Room)	29/06/2011 10:54pm – 11:08pm	36.1	40	N/A	N/A	45.5	50	<p>Monitoring Type Attended noise monitoring. Doors and windows closed.</p> <p>Noise Sources TJH: hum from fans and site, machinery, shed activities and metal on metal banging. Other noise sources: traffic, train, and nearby residents.</p> <p>Discussion No CoG Goals were exceeded.</p> <p>Mitigation Measures No additional mitigations required beyond those described above.</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
Single Level Brick Flat (Dining Room)	06/07/2011 2:41pm – 2:56pm	36.4	45	34.7	55	N/A	N/A	<p>Monitoring Type Attended noise monitoring. Doors and windows closed.</p> <p>Noise Sources TJH: hum from fans and general site activities. Other noise sources: traffic, overhead aircraft, dog barking, trains, wind associated noises and pedestrians.</p> <p>Discussion No CoG Goals were exceeded.</p> <p>Mitigation Measures No additional mitigations required beyond those described above.</p>
Single Level Brick Flat (Dining Room)	11/07/2011 09:12pm – 09:26pm	33.7	40	N/A	N/A	36.3	50	<p>Monitoring Type Attended noise monitoring. Doors and windows closed.</p> <p>Noise Sources TJH: hum from fans and general site activities. Other noise sources: traffic, overhead aircraft, dog barking, trains, emergency siren and pedestrians.</p> <p>Discussion No CoG Goals were exceeded.</p> <p>Mitigation Measures No additional mitigations required beyond those described above.</p>
Single Level Brick Flat (Dining Room)	12/07/2011 02:24am – 02:38am	29.8	40	N/A	N/A	37.1	50	<p>Monitoring Type Attended noise monitoring. Doors and windows closed.</p> <p>Noise Sources TJH: hum from fans and general site activities. Other noise sources: traffic, overhead aircraft, dog barking, trains, and nearby residents.</p> <p>Discussion No CoG Goals were exceeded.</p> <p>Mitigation Measures No additional mitigations required beyond those described above.</p>
Single Level Brick Flat (Dining Room)	13/07/2011 11:47am – 12:02pm	33.1	45	31.2	55	N/A	N/A	<p>Monitoring Type Attended noise monitoring. Doors and windows closed.</p> <p>Noise Sources TJH: Hum from fans and site. Other noise sources: traffic, birds, shed noises and hammering.</p> <p>Discussion No CoG Goals were exceeded.</p> <p>Mitigation Measures No additional mitigations required beyond those described above.</p>

Table 3c: Noise Monitoring Results – Kedron

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
228 Gympie Road, Kedron								
Living Room	15/07/2011 9:51am – 10:06am	58.8	45	57.3	55	N/A	N/A	<p>Monitoring Type Attended noise monitoring. Doors and windows open.</p> <p>Noise Sources Audible TJH noise sources: hum from tunnel fans, a TJH franna, banging, beepers, and workers talking. Other audible noise sources: Gympie Road traffic, siren, birds and plane. The dominant noises reported comprised: Gympie Road traffic, tunnel hum, and aTJH franna.</p> <p>Discussion Both CoG Goals were exceeded, though sound readings were influenced by TJH and non-TJH sources. Making a determination of TJH noise levels against the CoG Goal is not possible. No complaints were received by residents.</p> <p>Mitigation Measures No additional mitigations implemented beyond TJH standard controls.</p>
Living Room	15/07/2011 10:08am – 10:23am	49.4	45	48	55	N/A	N/A	<p>Monitoring Type Attended noise monitoring. Doors and windows closed.</p> <p>Noise Sources Audible TJH noise sources: hum from tunnel fans, a TJH franna, banging, and beepers. Other audible noise sources: Gympie Road traffic, siren, birds and plane.</p> <p>Discussion L_{Aeq} CoG Goal was exceeded, though sound readings were influenced by TJH and non-TJH sources. Making a determination of TJH noise levels against the CoG Goal is not possible. No complaints were received by residents.</p> <p>Mitigation Measures No additional mitigations implemented beyond TJH standard controls.</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
70 Stafford Road, Kedron								
Living Room	12/07/2011 10:02am – 1016am	56.2	45	52.5	55	N/A	N/A	<p>Monitoring Type Attended noise monitoring. Doors and windows open.</p> <p>Noise Sources Audible TJH noise sources: pavers, vibratory rollers, reverse squarkers, workers talking, rock breaking. Other audible noise sources: Stafford Road traffic. The dominant noise source reported was paving activities directly in front of the residence.</p> <p>Discussion L_{Aeq} CoG Goal was exceeded. Whilst sound readings were influenced by TJH and non-TJH sources, the nature and level of noise caused by paving activities is more than likely attributable to this CoG Goal exceedance. A CoG notifiable Non-Conformance was raised (ref: AK-0026).</p> <p>Mitigation Measures Individual property mitigation has been provided after consultation with the resident.</p>
1/20 Brookfield Road, Kedron								
Bedroom	23/6/2011 7:21pm –7:36pm	34.9	40	N/A	N/A	40	50	<p>Monitoring Type Attended noise monitoring. Doors and windows closed.</p> <p>Noise Sources Audible TJH noise sources: reverse squarkers. Other audible noise sources: general traffic, wind noise, residents. The dominant noise source reported was general traffic and wind noise.</p> <p>Discussion No CoG Goals were exceeded.</p> <p>Mitigation Measures No additional mitigations implemented beyond TJH standard controls.</p>

Table 3d: 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
5/81 Alma Rd, Clayfield						
Second Storey Brick townhouse (Living room)	04/07/2011 2:10 – 2:25 pm	37.8	45	38.8	55	<p>Monitoring Type Internal attended monitoring, door / window closed, air conditioning on.</p> <p>Noise Sources TJH noise sources (rock hammer) plus non-TJH sources (resident, mower, dog, emergency sirens, train).</p> <p>Discussion Monitoring indicates that CoG goals are being met.</p> <p>Mitigation Measures Include a temporary 6m noise wall. The property has been mitigated by way of air-conditioning. At the time of monitoring, the air conditioner was in use and the doors and windows were closed.</p>
82 Alma Rd, Clayfield						
Double Storey Timber & Weatherboard (Living room)	01/07/2011 11:12 – 11:27 am	43.9	45	41.8	55	<p>Monitoring Type Internal attended monitoring, door / window closed, air conditioning off.</p> <p>Noise Sources TJH noise sources (jet blasting) plus non-TJH sources (resident, children, fridge, nail gun, truck, plane, dog).</p> <p>Discussion Monitoring indicates that CoG goals are being met.</p> <p>Mitigation Measures Include a temporary 6m noise wall. Property has been mitigated by way of air conditioning. At the time of monitoring, the air conditioner was not in use and the doors and windows were closed.</p>
83 Stuckey Road, Clayfield						
Double Storey Queenslander, (Living Room)	13/07/2011 9:10 – 9:25 am	40.9	45	41	55	<p>Monitoring Type Internal attended monitoring, doors and windows closed, air-conditioning on.</p> <p>Noise Sources TJH noise sources (jack hammering, hammering, concrete pumps, crane, concrete agitators, horn) plus non-TJH sources (resident, internal and external birds, dog, plane, train).</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 conditioner was in use and the doors and windows were closed.</p>

Double Storey Queenslander, (Living Room)	13/07/2011 9:25 – 9:40 am	58	45	45.3	55	<p>Monitoring Type Internal attended monitoring, doors and windows closed, air-conditioning on.</p> <p>Noise Sources TJH noise sources (jack hammering, hammering, concrete pumps, crane, concrete agitators, horn) plus non-TJH sources (resident, internal and external birds, dog, plane, train).</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 resident and internal pets (bird and dog). After isolating TJH specific noise sources, the LAeq level was 42.4 dBA.</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 conditioner was in use and the doors and windows were closed.</p>
Double Storey Queenslander, (Living Room)	13/07/2011 1:23 – 1:38 pm	40.9	45	42.6	55	<p>Monitoring Type Internal attended monitoring, doors and windows closed, air-conditioning on.</p> <p>Noise Sources TJH noise sources (jack hammering, crane) plus non-TJH sources (resident, train, crows, dog, traffic).</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 conditioner was in use and the doors and windows were closed.</p>
Double Storey Queenslander, (Living Room)	13/07/2011 1:38 – 1:52 pm	47.8	45	40.5	55	<p>Monitoring Type Internal attended monitoring, doors and windows closed, air-conditioning on.</p> <p>Noise Sources TJH noise sources (jack hammering, crane) plus non-TJH sources (resident, train, crows, dog, 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 resident and internal pets (bird and dog). After isolating TJH specific noise sources, the LAeq level was 38.9 dBA.</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 conditioner was in use and the doors and windows were closed.</p>

3.3 Compliance with Noise Goals

Exceedances of the Coordinator General's Noise Goals was noted on several occasions during the monitoring period though the significance of TJH activities contributing to those exceedances is not determinable. In scenarios where there is reasonable doubt that TJH was wholly or mainly attributable to a Noise Goal exceedance, a CoG notifiable Non-Conformance Report has not been raised (a method described in the CoG Change Reports).

On one occasion TJH considered its activities was a significant cause for a CoG Noise Goal to be exceeded during this monitoring period: 70 Stafford Road, Gordon Park on 12 July 2011. NCR reference AK-0026 was raised on this occasion.

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), real-time respiratory dust (PM10 or PM2.5) and Total Suspended Particulates (TSP) at a number of locations. Some of these locations are nominated by the Coordinator General, some are chosen by TJH for informing risk assessments and dust management.

Results of monitoring are compared to Air Quality Goals nominated by the Coordinator General (Change Report July 2008 & Wooloowin Worksite Modification October 2009) for the Airport Link and Northern Busway projects.

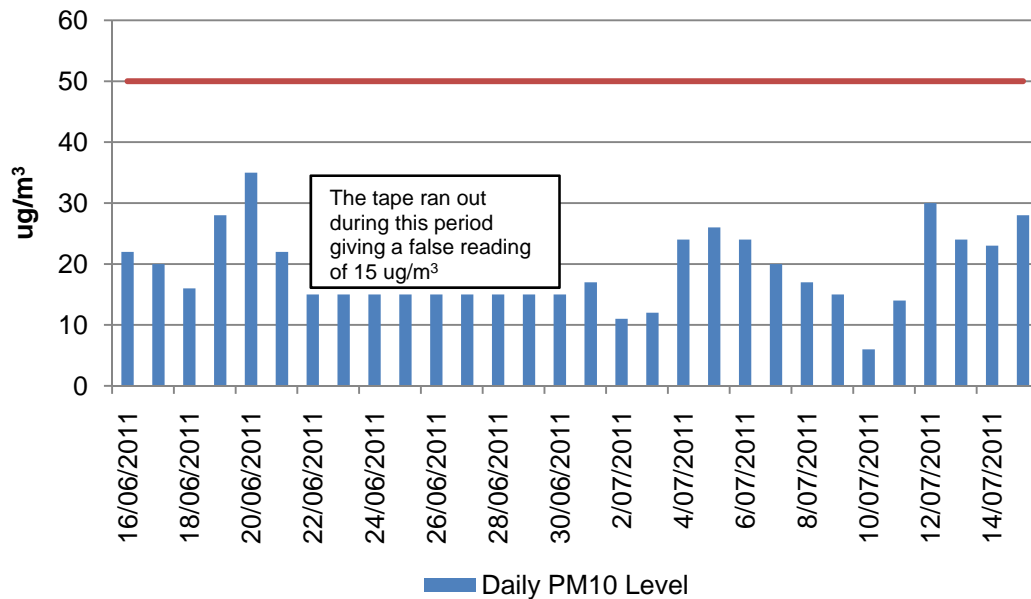
4.1 Overview of Air Quality Mitigation Measures

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

1. Continual use of water carts and water trailers during the following activities:
 - i. Bulk earthworks
 - ii. Haul roads
 - iii. Car parks and hardstands
 - iv. Clearing and grubbing (Airport Roundabout)
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. Road sweepers.
7. Mitigation measures at all site exits to remove excess dirt from wheeled vehicles.

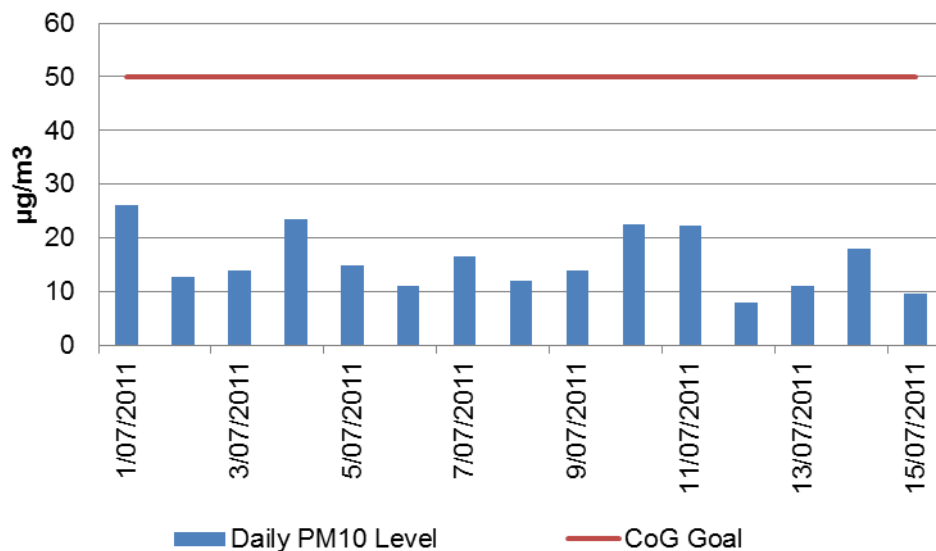
4.2 Air Quality Monitoring Results – PM10 / TSP

Figure 4.2.1
5 Morris Street, Bowen Hills PM10 Results



(for monitor location see figure 2.1)

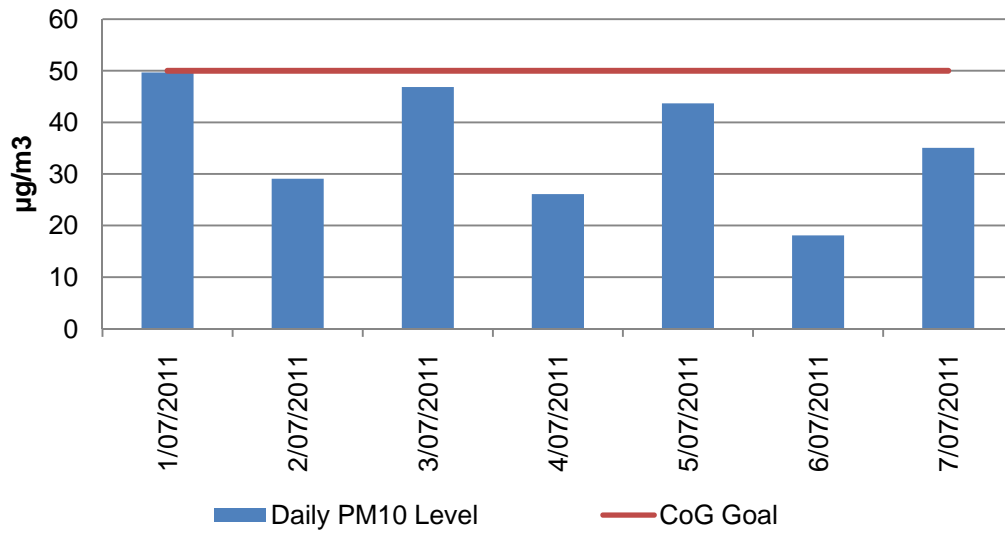
Figure 4.2.2
Northern Busway Site Office, Lutwyche PM10 Results



(for location see figure 2.3 – A1)

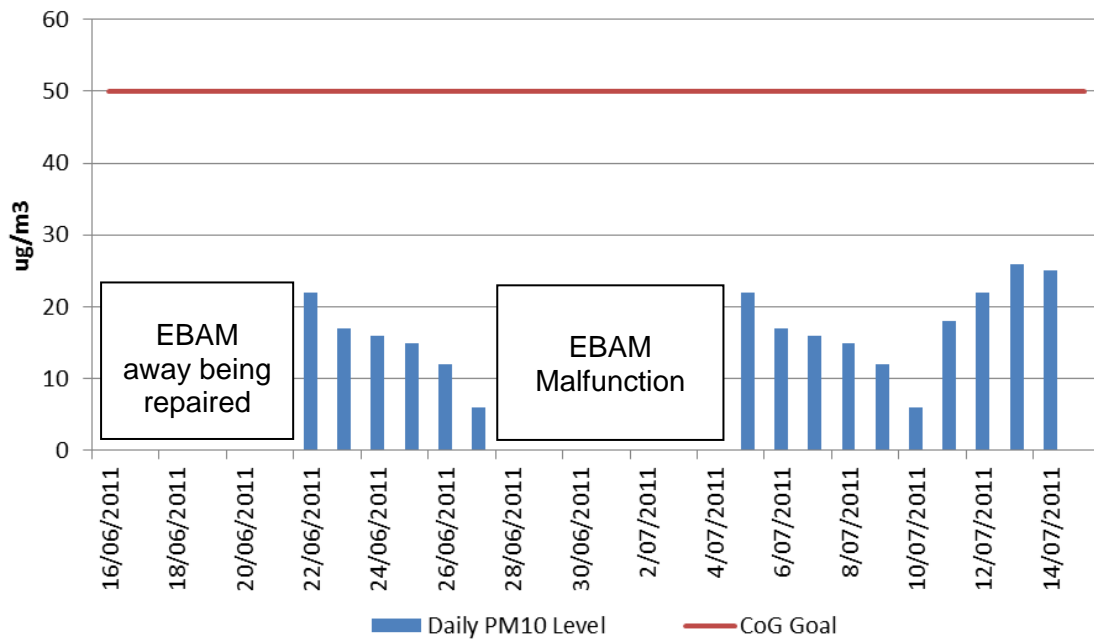
The two weeks prior to the above graph (from 16th June to 30th June 2011) were not available due to equipment failure. The Dust trak unit has been sent to the manufacturer for repair and re-calibration.

**Figure 4.2.3
Truro Street Site Office, PM10 Results**

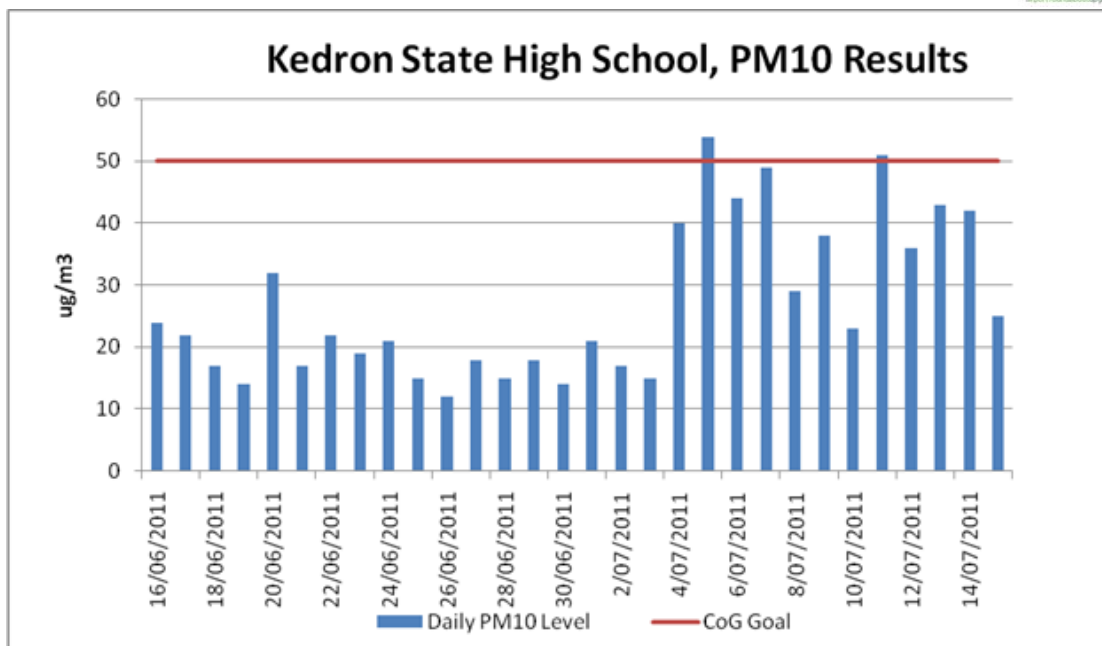


(for location see figure 2.2 – A1)

**Figure 4.2.4
Erskine Avenue, Kedron, PM10 Results**

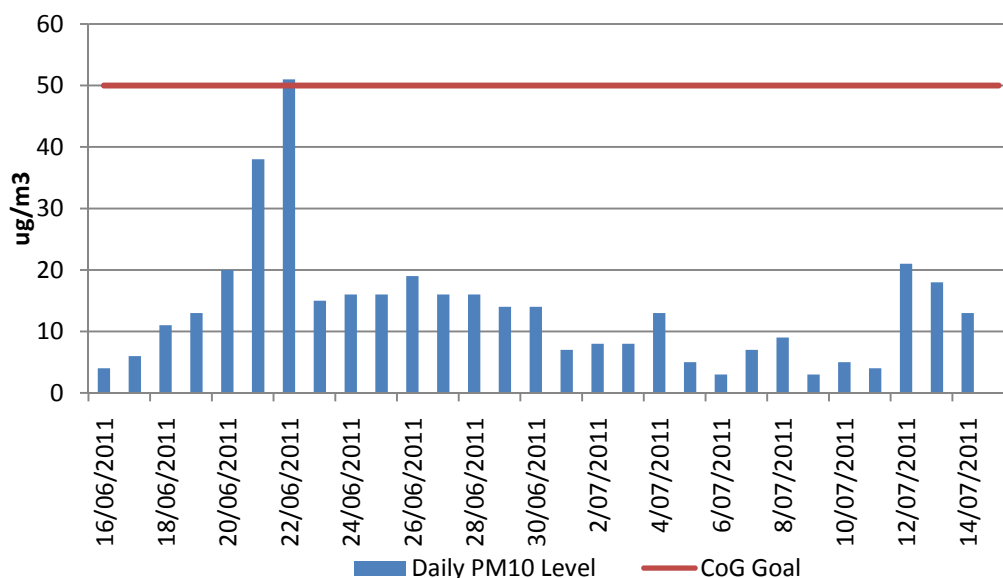


(for monitor location see figure 2.4 – A1)



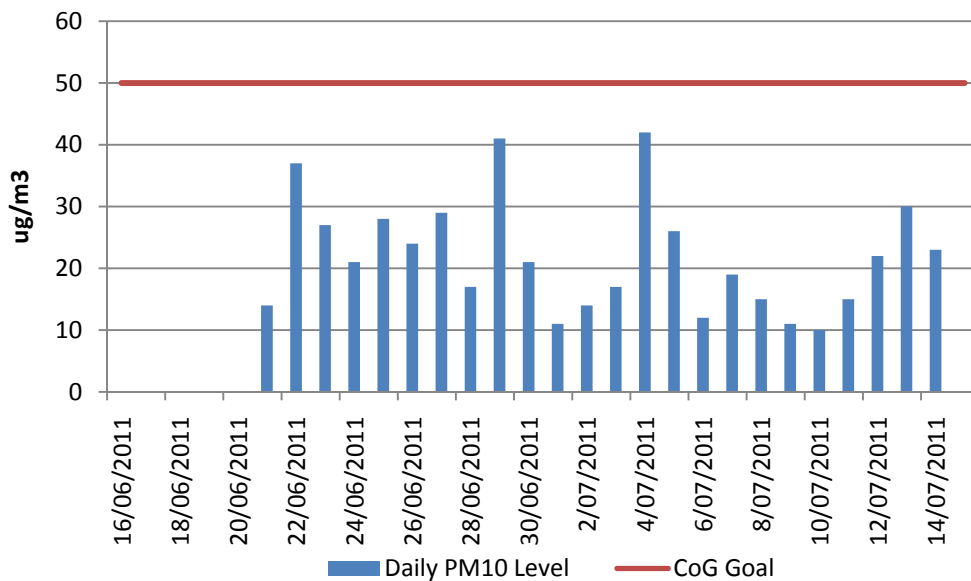
(for monitor location see figure 2.4 – A2)

**Figure 4.2.6
Perry Street, Kedron, PM10 Results**



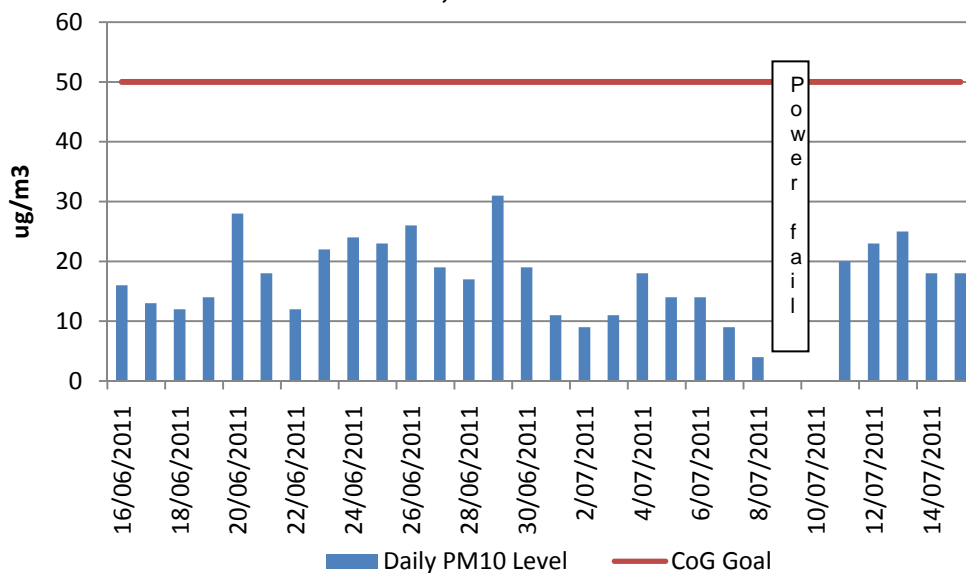
(for monitor location see figure 2.4 – A3)

**Figure 4.2.7
Wooloowin State School, PM10 Results**



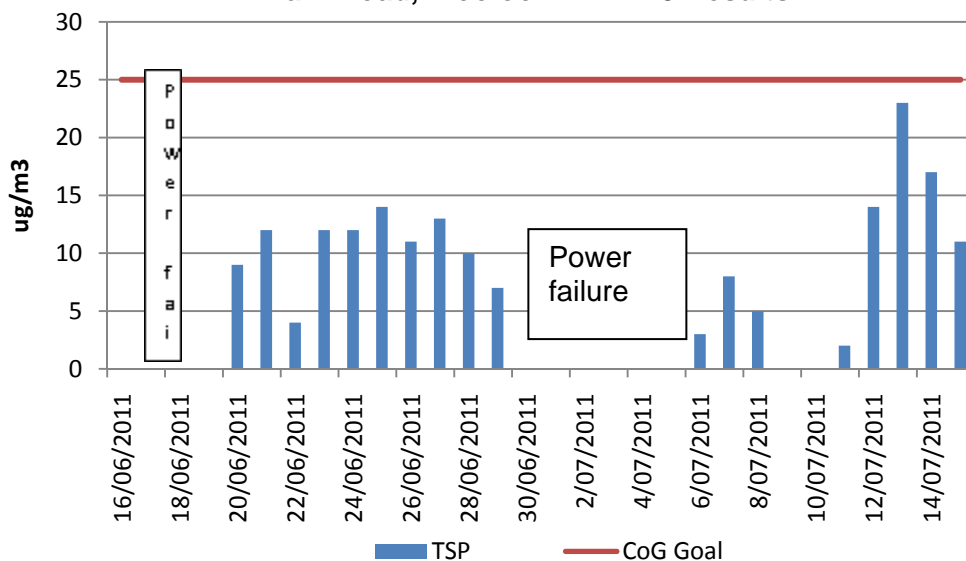
(for monitor location see figure 2.5 – A4)

**Figure 4.2.8
71 Park Road, Wooloowin PM10 Results**



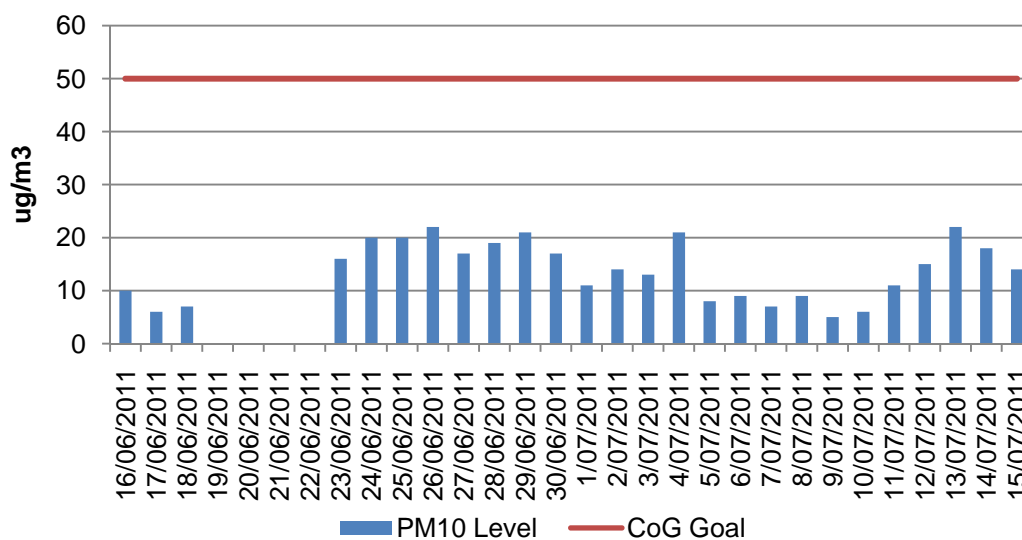
(for monitor location see figure 2.5 – A1)

Figure 4.2.9
71 Park Road, Woollooin PM2.5 Results



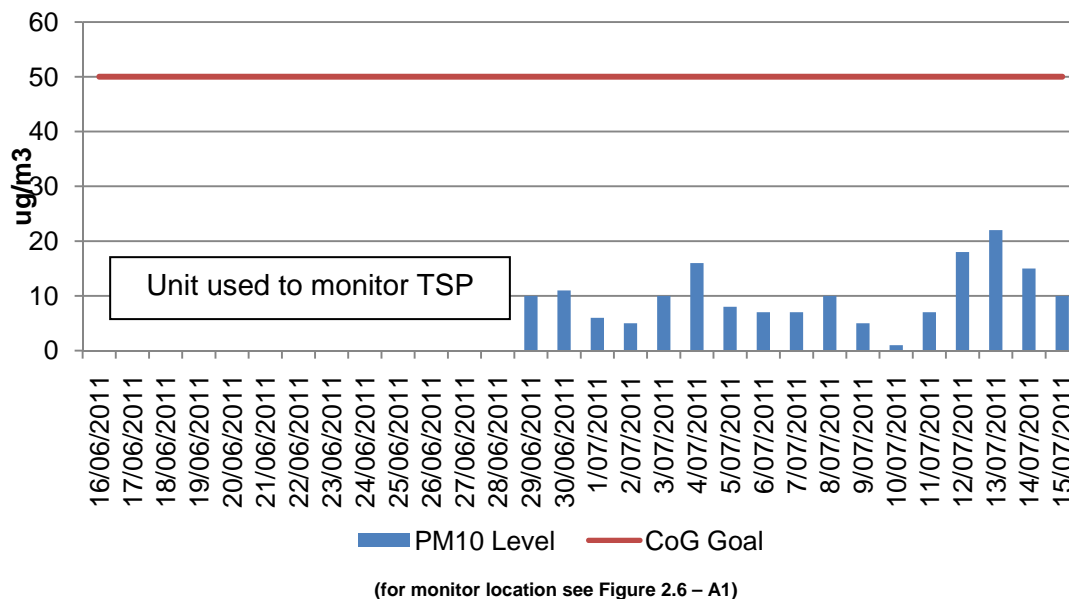
(for monitor location see figure 2.5 – A1)

Figure 4.2.10
56 Kalinga Street, Clayfield PM10 Results



(for monitor location see Figure 2.6 – A1)

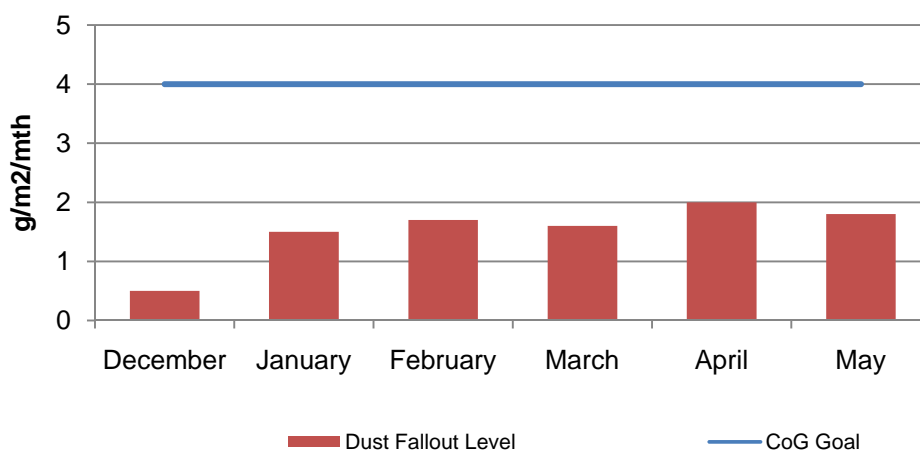
Figure 4.2.11
5 Mabel Street, Clayfield PM10 Results



4.3 Air Quality Monitoring Results – Dust Deposition

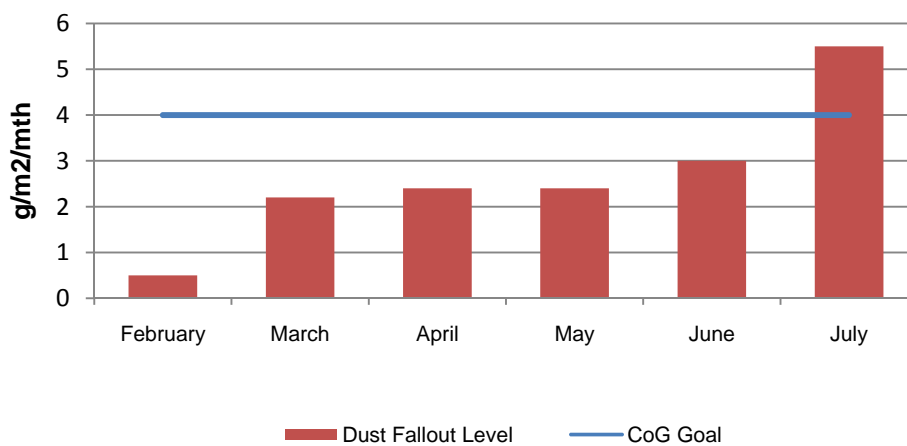
Dust deposition monitoring is undertaken on a monthly basis using a bottle and funnel placed 2m ± 0.2m above ground level in accordance with Australian Standard AS 3580.10.1: 2003. It should be noted that in many locations the placement of the deposition gauges does not strictly meet the location criteria in the above mentioned standard due to access and security difficulties, though best endeavours to comply with the criteria are undertaken. Morris Street dust result for June/July monitoring period were unavailable at the time of reporting. Dust results will be reported in Aug 2011 report.

Figure 4.3.1
5 Morris Street, Bowen Hills Dust Fallout February - July 2011



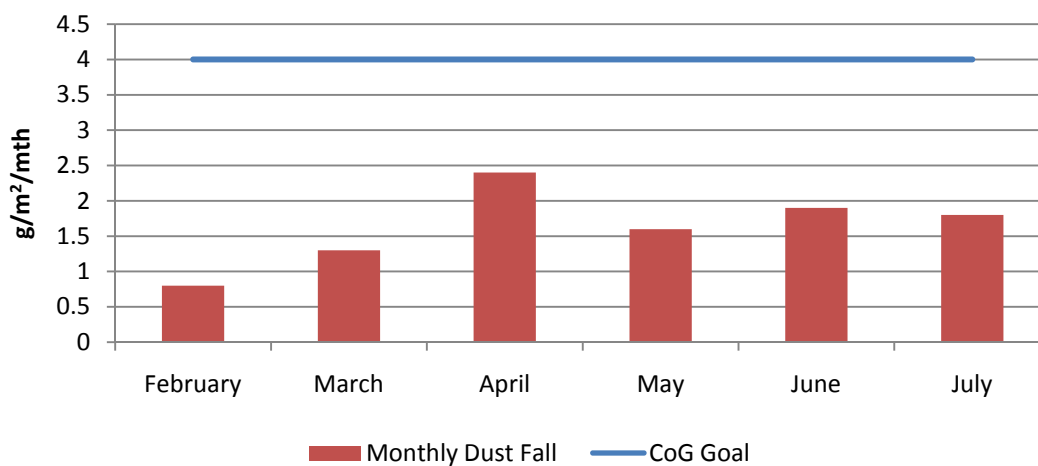
(for monitor location refer to figure 2.1)

Figure 4.3.2
QLD Newspapers, Bowen Hills Dust Fallout February- July 2011



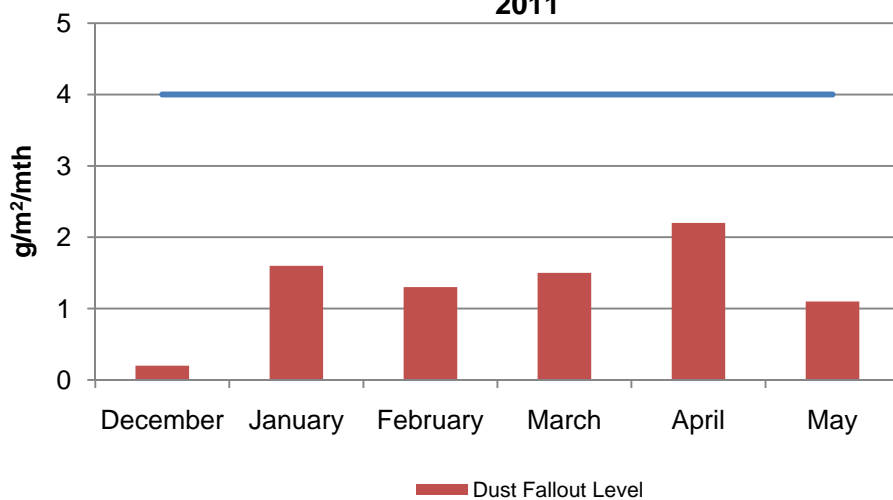
(for monitor location refer to figure 2.1)

Figure 4.3.3
Site Office, Bowen Hills Dust Fallout February - July 2011



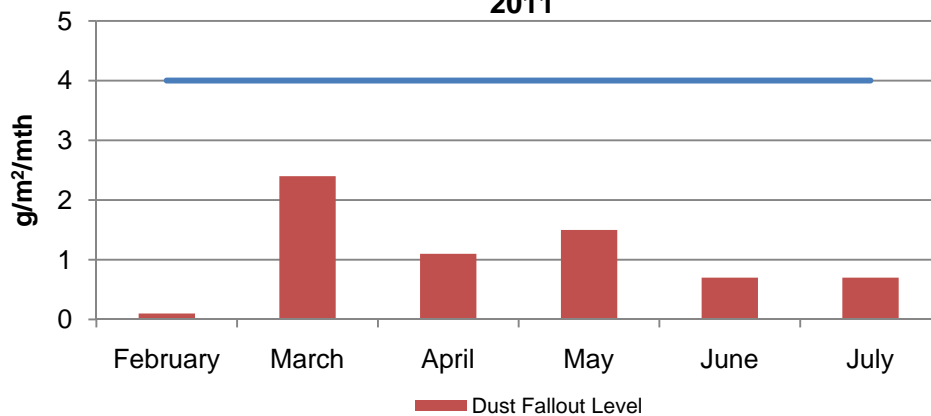
(for monitor location refer to figure 2.1)

**Figure 4.3.4:
11 Bryden Street, Bowen Hills Dust Fallout February - July
2011**



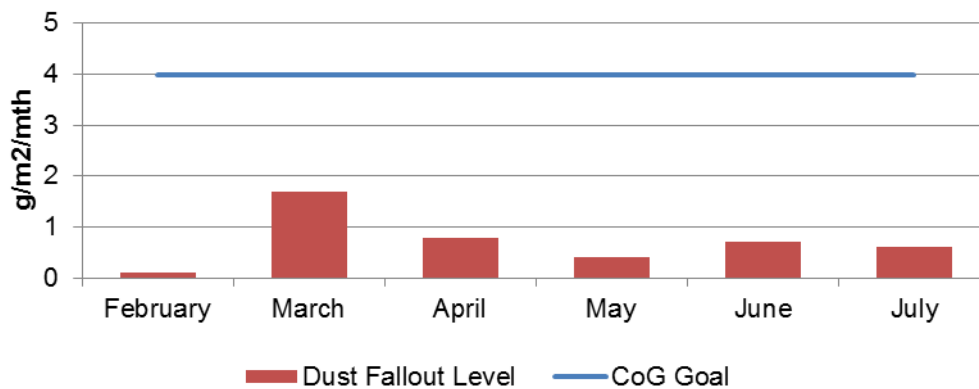
(for monitor location refer to figure 2.1)

**Figure 4.3.5
Mews Apartments, Bowen Hills Dust Fallout February - July
2011**



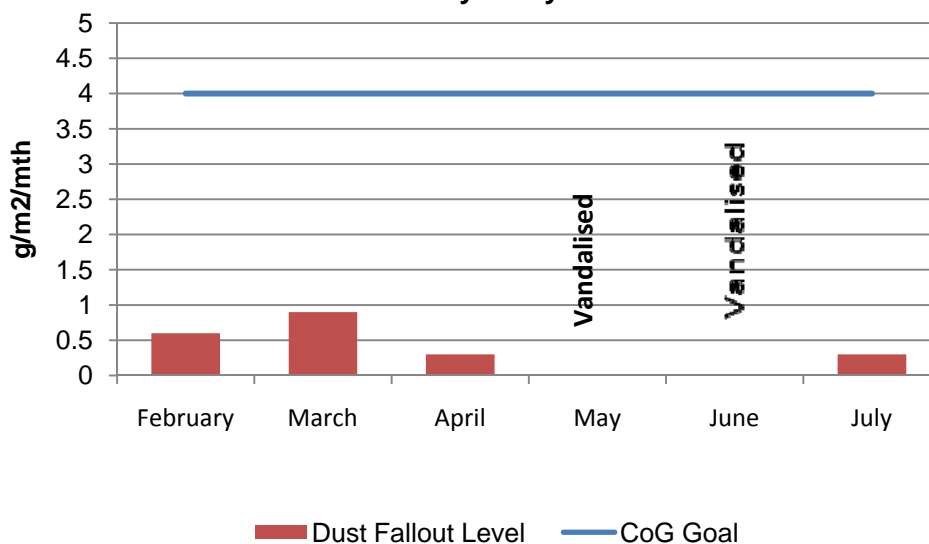
(for monitor location refer to figure 2.1)

Figure 4.3.6
Cnr of Thistle & Lucas Street, Lutwyche Dust Fallout
February - July 2011



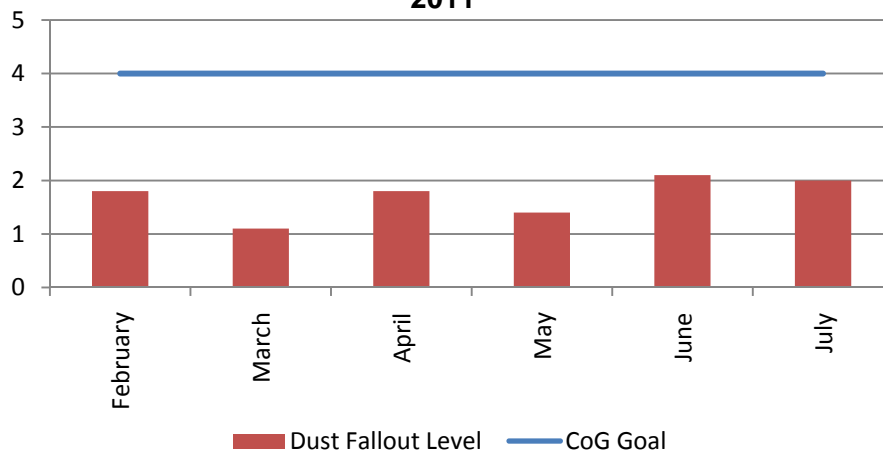
(for locations refer to figures 2-3)

Figure 4.3.7
Kedron Brook Reserve, Northern Busway Dust Fallout
February- July 2011



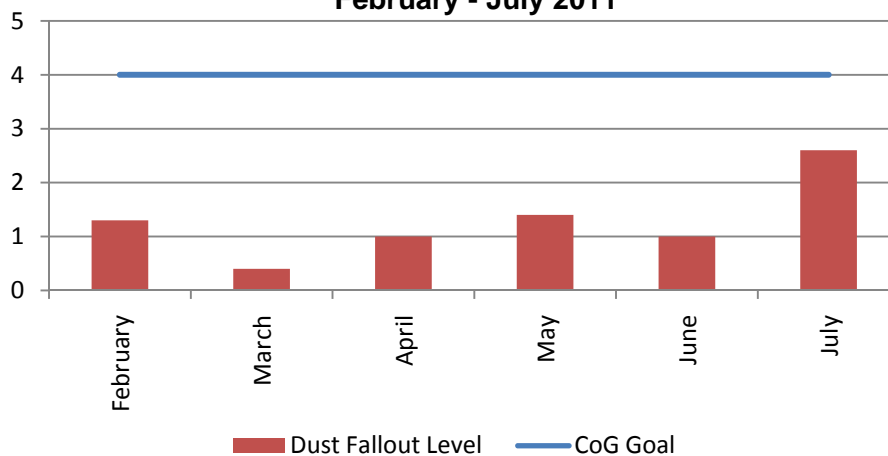
(location refer to figure 2.3 – D1)

**Figure 4.3.8:
Erskine Avenue Kedron Dust Fallout, February - July
2011**



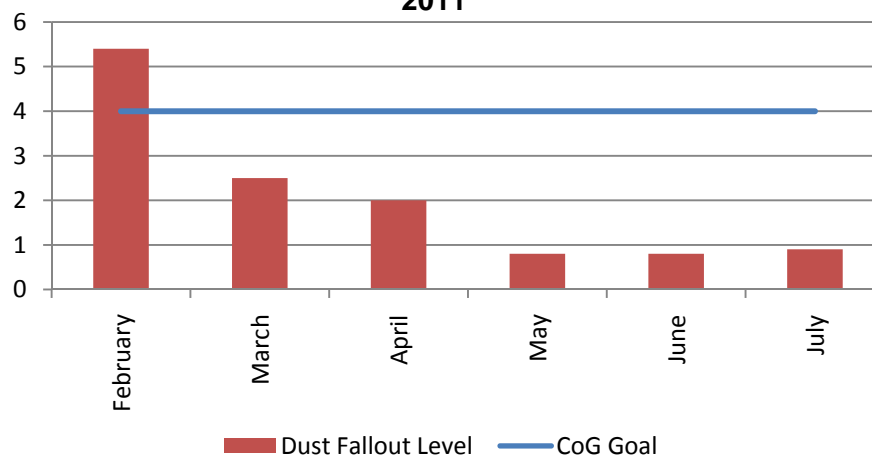
(for monitor location see figure 2.4 – A1)

**Figure 4.3.9:
Kedron State High School, Kedron, Dust Fallout
February - July 2011**



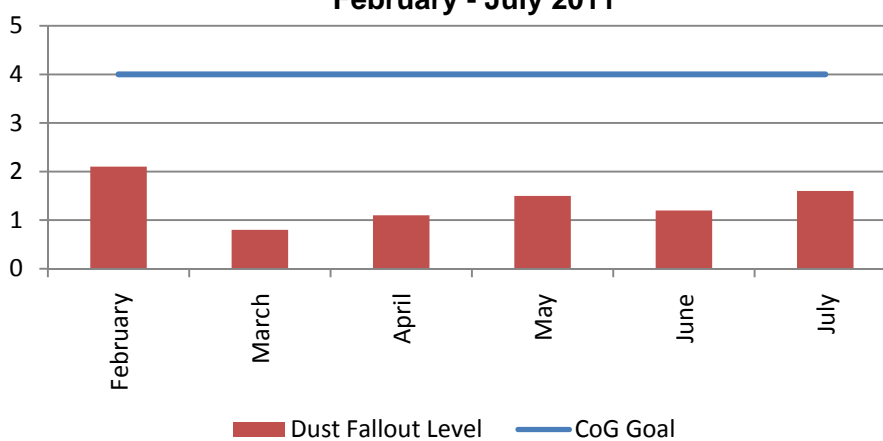
(for monitor location see figure 2.4 – A1)

Figure 4.3.10
Perry Street Lutwyche, Dust Fallout, February - July 2011



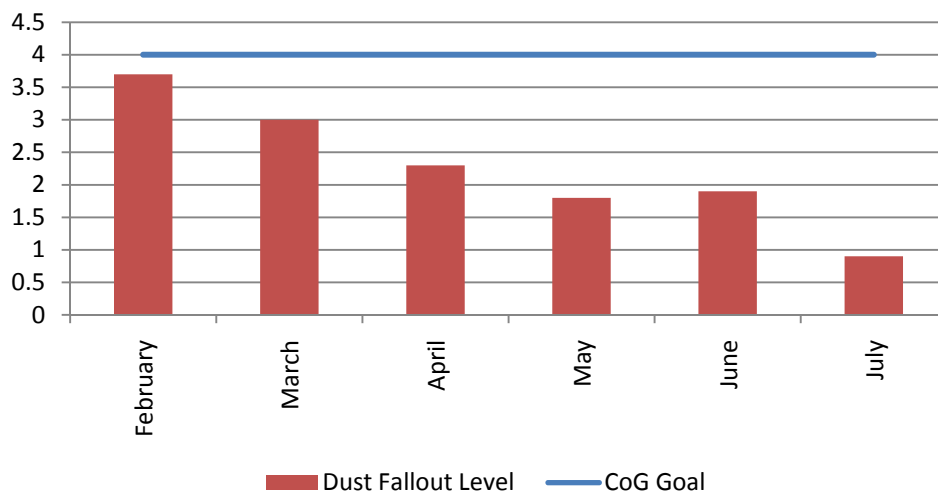
(for monitor location see figure 2.3)

Figure 4.3.11
Woollooin State School Woollooin, Dust Fallout, February - July 2011



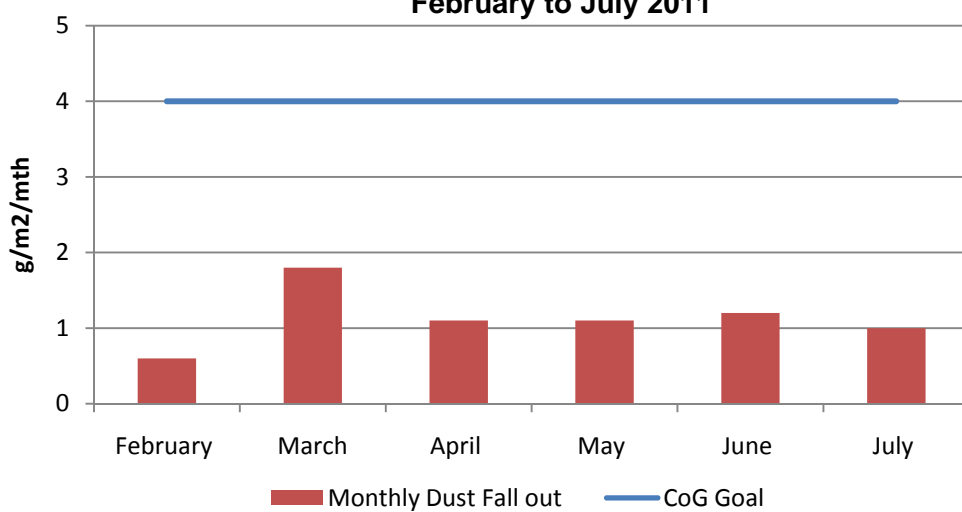
(for monitor location see figure 2.5)

Figure 4.3.12
228 Gympie Road Kedron, Dust Fallout February - July 2011



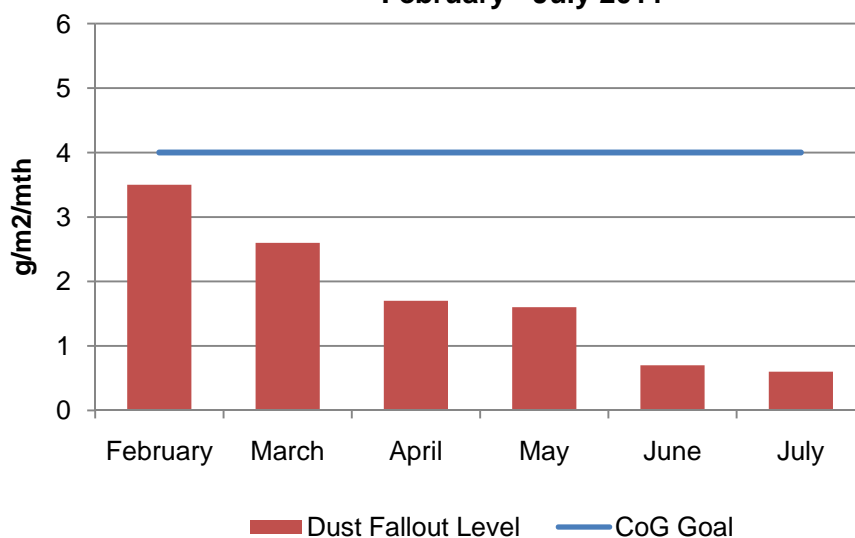
(for monitor location see figure 2.4)

Figure 4.3.13
68 Park Road, Wooloowin Dust Fallout February to July 2011



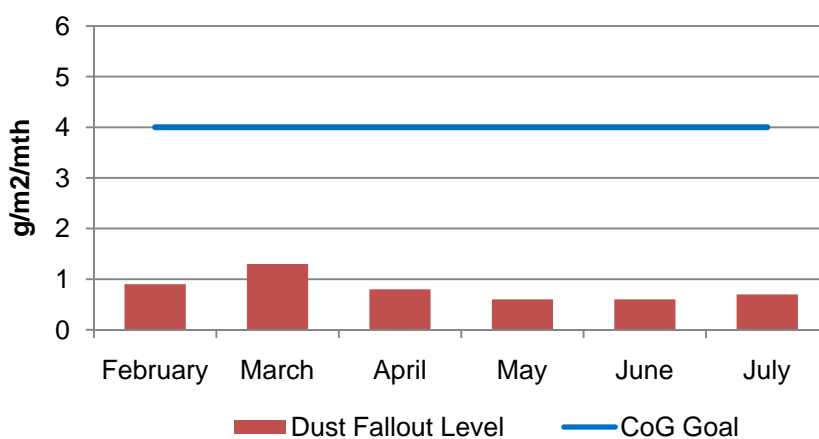
(for monitor location refer to figure 2.5)

Figure 4.3.14
Kalinga Street, Toombul Dust Fallout
February - July 2011



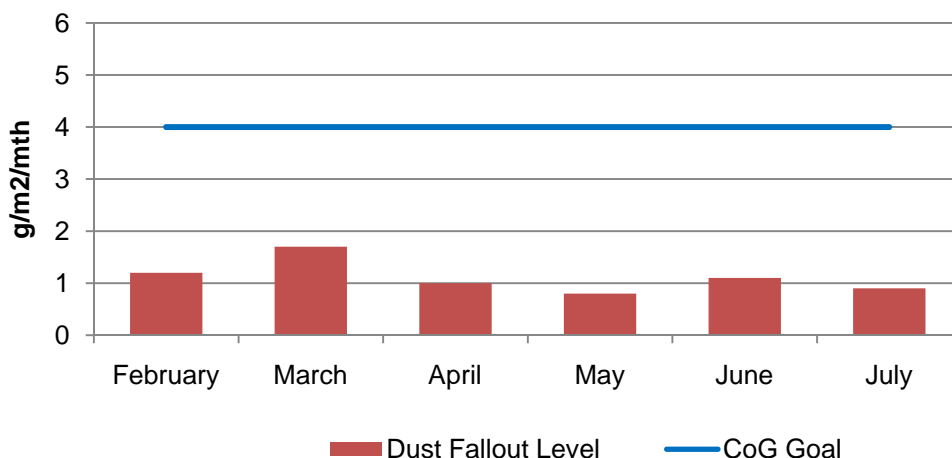
(location refer to figure 2.6 – D1)

Figure 4.3.15
Mabel Street, Toombul Dust Fallout February - July 2011



(location refer to figure 2.6 – D2)

Figure 4.3.16
Bage Street, Toombul Dust Fallout February - July 2011



(location refer to figure 2.6 – D3)

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 with results 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)
16/06/2011 to 15/07/2011	24/06/2011 01:05	1.63	11		
	12/07/2011 19:00			78.12	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

On one occasion this month the depositional dust levels at the Queensland Newspaper complex exceeded the CoG Goal of 4g/m²/month. A CoG NCR has been raised and an investigation is nearing completion to determine the root cause of this result and effective means to prevent recurrence.

The EBAM unit at Perry Street recorded a daily average of 51µg/m³ over a 24hr period on 22 June 2011. This is the third recorded 24hr average exceedance (51µg/m³ on 8 December 2010 and 54µg/m³ on 9 November 2010) at this location within the last 12 months. The goal also states that the limit of 50µg/m³ should not be exceeded more than 5 times per year in any location.

The EBAM unit at Kedron State School recorded a daily average of 54ug on 05 June 2011 and 51ug on 11 June 2011. These are the first and second exceedances for this location within the last 12 month period.

The TSP monitor at Woolloowin State School has yet to be returned to site and continues to be repaired by the manufacturers.

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 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-d below.

Table 5a: Continuous Vibration Monitoring Results Summary – Bowen Hills

Location	Date of Monitoring when peak detected	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
Queensland Newspapers	17/05/11	4.64	10	Results are within CoG goals
	17/05/11	1.81	10	Results are within CoG goals
	26/05/11	1.90	10	Results are within CoG goals
	01/06/11	0.92	10	Results are within CoG goals
	23/06/11	1.46	10	Results are within CoG goals
	11/07/11	0.75	10	Results are within CoG goals
	12/07/11	0.19	10	Results are within CoG goals
	12/07/11	0.71	10	Results are within CoG goals
	13/07/11	1.21	10	Results are within CoG goals

Table 5b: 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	13/07/2011	Event Based	1.41	25
Kedron Medical Centre, Brookfield Road	Commercial / Medical	13/07/2011	Event Based	3.17	25

Table 5c: Blast Monitoring Results Summary - Kedron CC210 Blasting

Location	Property Type	Monitoring Period	Monitoring Type	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)
15 Park Terrace	Residential	16/06/2011	Event Based	2.54	25
15 Park Terrace	Residential	17/06/2011	Event Based	2.16	25
15 Park Terrace	Residential	23/06/2011	Event Based	5.08	25
15 Park Terrace	Residential	24/06/2011	Event Based	2.92	25

Table 5d: Vibration Monitoring Results Summary – Toombul

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Goal (Continuous) (mm/s)	Comments
9 Norman Avenue, Lutwyche	16/06/2011 – 25/06/2011	0.8	5.0	Monitoring indicates that CoG goals are being met.
9 Isedale Street, Lutwyche	16/06/2011 – 05/07/2011	0.9	5.0	Monitoring indicates that CoG goals are being met.
7 Felix Street, Lutwyche	28/06/2011 – 11/07/2011	0.9	5.0	Monitoring indicates that CoG goals are being met.
12 Isedale Street, Lutwyche	13/07/2011 – 18/07/2011	0.1	10.0*	Monitoring indicates that CoG goals are being met.

*Transient Vibration: Cross-passage excavation works classified as transient vibration (10 mm/s peak particle velocity) under CoG Change Report Guidelines.

Location	Property Type	Monitoring Period	Monitoring Type	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)
134 Kedron Park Road, BCC Substation	Heritage listed	16/06/2011-15/07/2011	Continuous	(9.03)	2

5.3 Compliance with Vibration Goals

Vibration monitoring was undertaken at the heritage listed substation to monitor the adjacent works being carried out for the tunnel and Kedron Park Road re-instatement and services installation. A PPV of 5 mm/s was recorded on 7 June 2011 and 31 mm/s on 8 June 2011. These levels are the product of works undertaken by a subcontractor not associated with TJH. Monitoring of recorded levels resulting from TJH works adjacent the building have not indicated an exceedances with all vibration levels recorded below 2mm/s.

6.0 Community enquiries and complaints

A total of 216 community complaints were reported to the project between 16 June and 15 July 2011. Issues raised are outlined in the table 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

