



airportlink
northernbusway
windsor to kedron
airport roundaboutupgrade



Airport Link / Northern Busway Project

Monthly Environmental Monitoring Report

April 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 April 2011 reporting period, from 16th March 2011 to 15th April 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 March 2011, though do serve a useful purpose in relating the monitoring locations to existing structures and infrastructure.

Bowen Hills Monitoring Locations

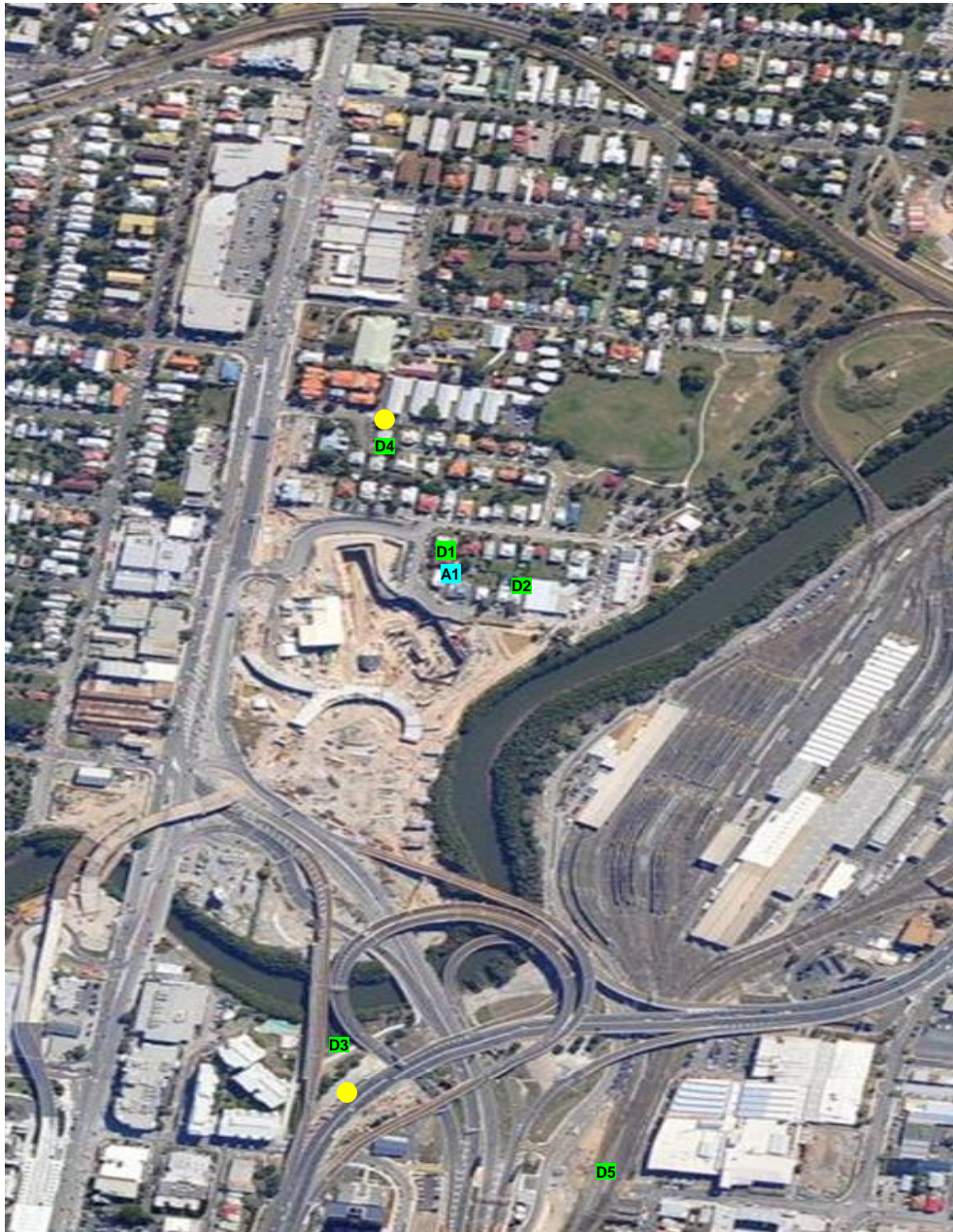


Figure 2.1 – Bowen Hills Monitoring Locations

Legend

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

Note: locations are indicative only

Truro Street Mid Tunnel Monitoring Locations

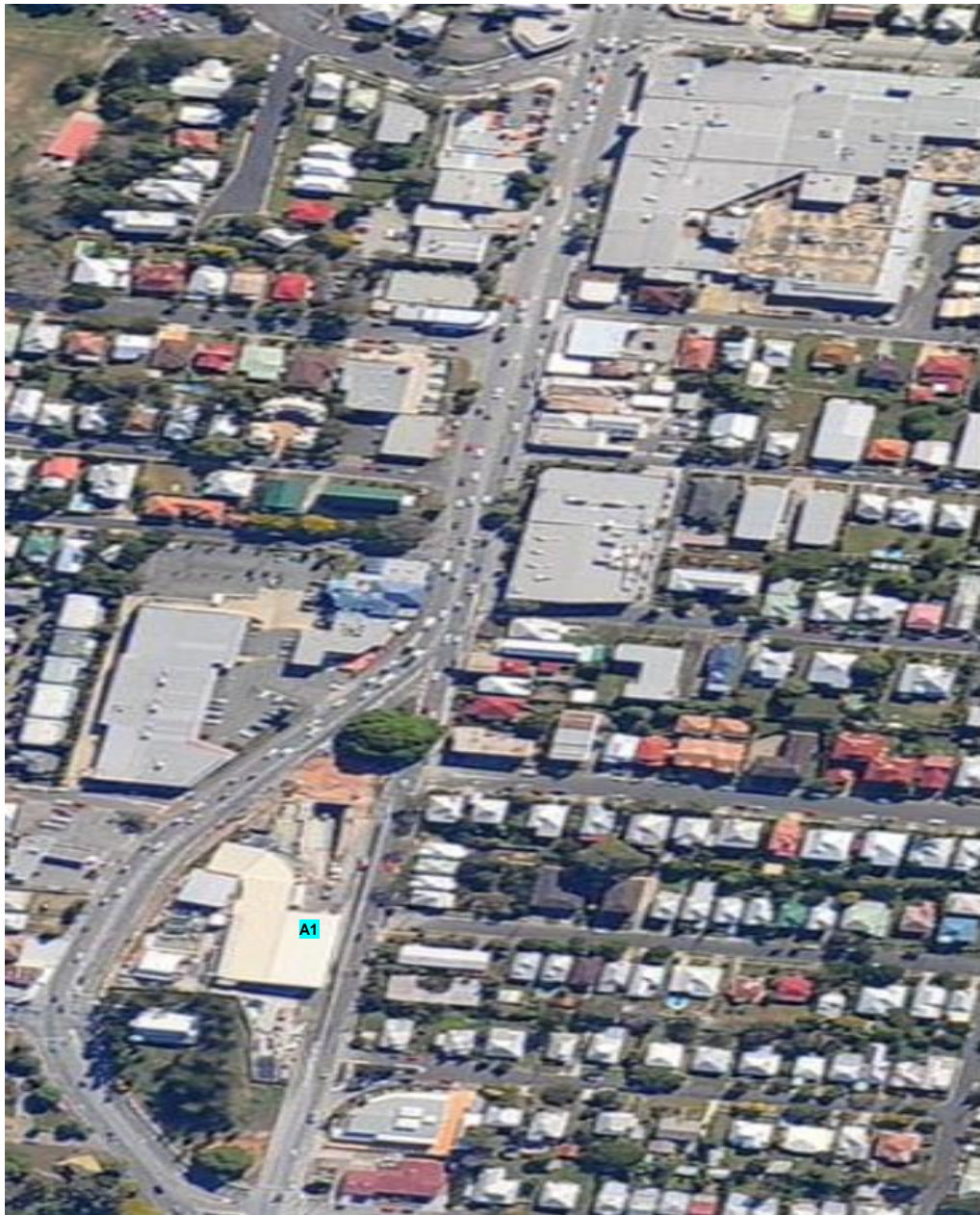


Figure 2.2 – Truro Street Mid Tunnel Monitoring Locations

Legend

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

Note: locations are indicative only

Northern Busway Monitoring Locations

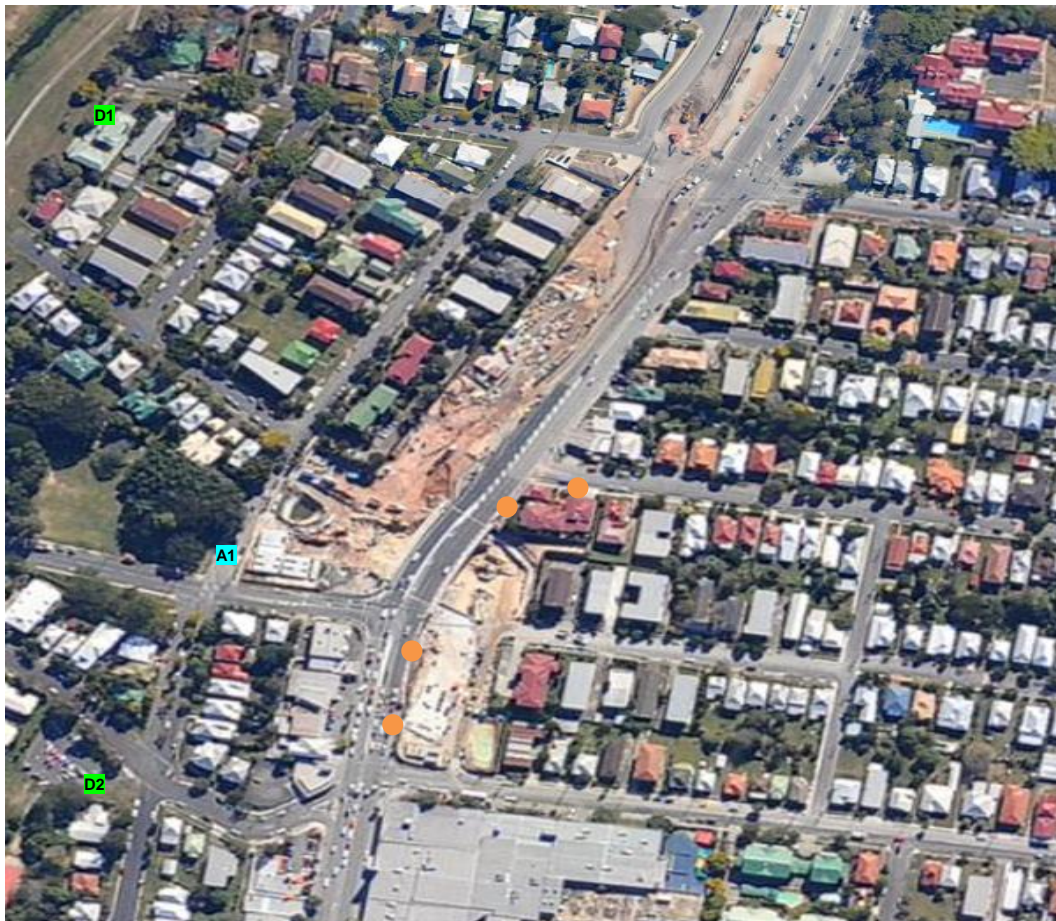


Figure 2.3 – Northern Busway Monitoring Locations
Legend

● Noise (during construction)

● Vibration

● Air (PM₁₀)

● Air (Dust Deposition)

Note: locations are indicative only

Kedron Monitoring Locations



Figure 2.4 – Kedron Monitoring Locations

Legend

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

Note: locations are indicative only

Woolloowin Monitoring Locations



Figure 2.5 – Woolloowin Monitoring Locations

Legend

- | | |
|---------------------------------|-------------------------------|
| ● Noise (during construction) | ● Air (PM ₁₀ /TSP) |
| ● Vibration | ● Air (Dust Deposition) |
| ● Air (CO and NO ₂) | |

Note: locations are indicative only

Toombul Monitoring Locations

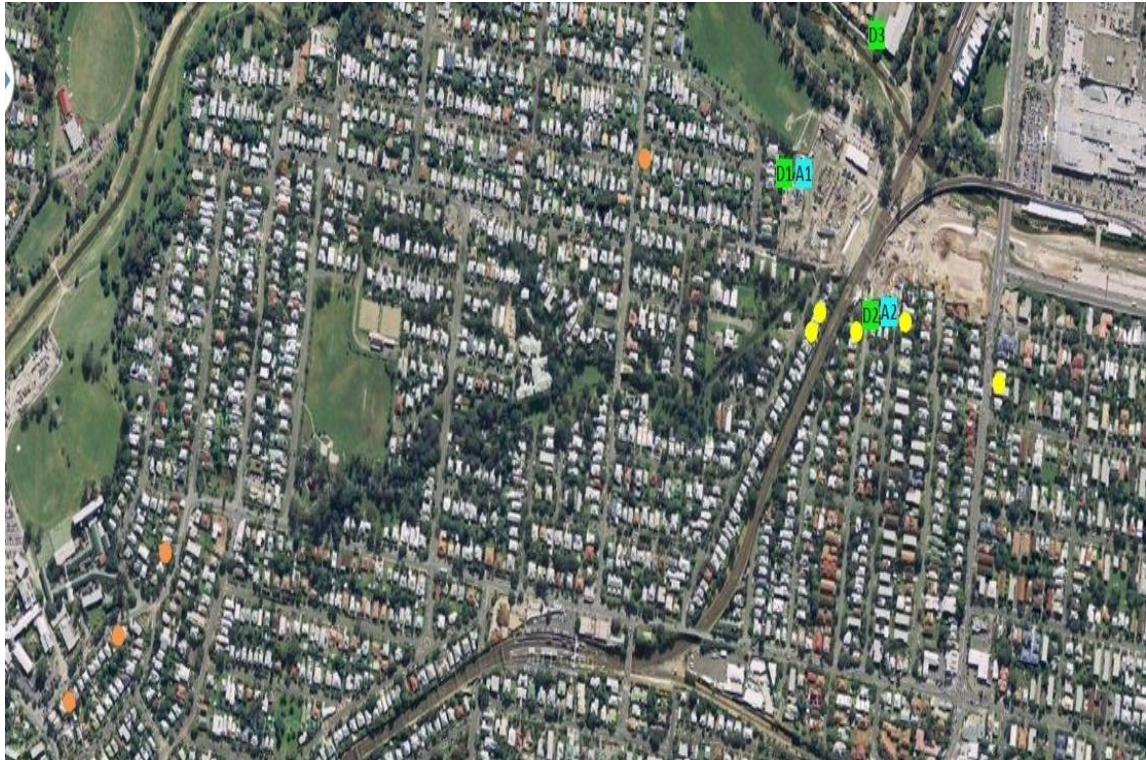


Figure 2.6 – Toombul Monitoring Locations

Legend

- Noise (during construction)
- Vibration

- Air (PM₁₀)
- Air (Dust Deposition)

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)

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

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. Gympie Road (Kedron)
 - iii. Truro Street on all sides of works (Lutwyche)
 - iv. Stafford Road (Kedron)
 - v. Rose St (Wooloowin)
 - vi. Kalinga Park (Toombul)
 - vii. KBB Worksite (Kedron)
 - b. Temporary noise barrier (shipping container) installations:
 - i. Perry Street, (Kedron)
 - ii. Kalinga Park (Toombul)
 - iii. Federation/Morris Street (Bowen Hills)
 - c. Acoustic shed has been built around the tunnel portals / shafts at:
 - i. Truro Street
 - ii. Wooloowin
 - iii. Kalinga Park (410 launch box)
 - 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. Acoustic shielding of various plant
 - h. 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
 - i. Use of temporary acoustic treatment (e.g. sound curtains around onsite generators and access/ egress from sites)
 - j. 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 monitoring efforts are summarised for each project area in Tables 3a-3f

Table 3a: Noise Monitoring Results – Bowen Hills Civils

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)	Comments
11 Bryden Street, Bowen Hills						
Single Storey Timber House (Living Room)	15/04/2011 9:27am - 9:41am	39.8	45	39.8	55	<p>Monitoring Type Attended. Internal. Windows and Doors closed</p> <p>Noise Sources The dominant noise source throughout the period was traffic on Lutwyche Road. General construction noise was noted intermittently throughout the session. Other noise sources included internal noise, a train, siren and a dog</p> <p>Discussion Monitoring was to assess the level of impact being caused to residents in proximity to the Bowen Hills worksite. The levels recorded were as a result of traffic moving along Lutwyche Road. Results were within CoG goals</p> <p>Mitigation Mitigation was not required as results were within CoG goals</p>
2502 Mews Apartments, Bowen Hills						
5 th Storey Unit (Living Room)	15/04/2011 10:26am -10:41am	33.8	45	39.2	55	<p>Monitoring Type Attended. Internal. Windows and Doors closed</p> <p>Noise Sources The dominant noise sources throughout the period was traffic moving along Bowen Bridge Road. TJH noise sources included a squawker and banging from the Area 6 worksite. Other noise sources included a plane, horn and birds</p> <p>Discussion Monitoring was to assess the level of impact being caused to residents in proximity to the Area 6 worksite. Results were within CoG goals</p> <p>Mitigation Mitigation was not required as results were within CoG goals</p>

Table 3b: Noise Monitoring Results – Northern Busway

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)	Comments
15 Norman Avenue, Lutwyche						
2 Storey Brick House (Living Room)	16/03/2011 10:31am -10:45am	44.8	45	44.5	55	<p>Monitoring Type Attended. Internal. Windows and Doors closed</p> <p>Noise Sources The dominant noise source throughout the period was traffic moving along Lutwyche Road. TJH noise sources included water blasting on CC701, a bobcat and steel banging. Other noise sources included traffic on Norman Avenue and a pedestrian</p> <p>Discussion Monitoring was to assess the level of impact being caused to residents adjacent to the Northern Busway worksite. TJH works were noted throughout the session. Results were within CoG goals</p> <p>Mitigation Mitigation was provided to the affected resident in the form of air conditioning</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)	Comments
4/21 Haines Street, Kedron						
Ground Floor Lounge/Kitchen (doors and windows closed)	18/03/2011 3:28pm – 3:44pm	37.2	45	38.0	55	<p>Monitoring Type Attended. Internal.</p> <p>Noise Sources The dominant noise sources throughout the period were non-TJH background noises, including a refrigerator, clock, creaking and traffic. Other audible noise sources included a jackhammer, banging, crane, horn and birds</p> <p>Discussion Internal noise goals were not exceeded. No noise complaints were received on this date</p> <p>Mitigation Measures N/A</p>

Ground Floor Lounge/Kitchen (doors and windows closed)	18/03/2011 3:47pm - 4:01pm	35.1	45	36.6	55	<p>Monitoring Type Attended. Internal.</p> <p>Noise Sources The dominant noise sources throughout the period were a clock, jack hammering and a crane. Other audible noise sources included banging, horn, squawkers, train/horn, birds, traffic and creaking</p> <p>Discussion Internal noise goals were not exceeded. No noise complaints were received on this date</p> <p>Mitigation Measures N/A</p>
Ground Floor Lounge/Kitchen (doors and windows closed)	08/04/2011 2:08pm - 2:22pm	38.8	45	36.5	55	<p>Monitoring Type Attended. Internal.</p> <p>Noise Sources The dominant noise sources throughout the period were background noises and metal on metal. Other audible noise sources included horn, squawkers and franna</p> <p>Discussion Internal noise goals were not exceeded. No noise complaints were received on this date</p> <p>Mitigation Measures N/A</p>
228 Gympie Road, Kedron						
Living Room (windows and door open)	01/04/2011 11:46am - 2:01pm	60.2	45	54.2	55	<p>Monitoring Type Attended. Internal. DTMR owned property. no one lives</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic, a smoke detector that needed new batteries and a franna engine. Other audible noise sources included squawkers, workers talking, banging, bobcat, rain, birds, plane and a horn (non-TJH)</p> <p>Discussion Internal LAeq and LA10 noise goals were exceeded as a result of Gympie Road traffic, the smoke detector and the TJH franna. No noise complaints were received on this date</p> <p>Mitigation Measures This property is owned by DMR and is used by TJH for monitoring purposes</p>

Living Room (windows and door closed)	01/04/2011 12:03pm-12:18pm	48.4	45	31.9	55	<p>Monitoring Type Attended. Internal. DTMR owned property. no one lives</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic (including compression braking), a smoke detector that needed new batteries and banging. Other audible noise sources included franna, workers talking, metal clang, horn, birds, plane and trees banging on the roof</p> <p>Discussion Internal LAeq noise goals were exceeded as a result of Gympie Road traffic and the smoke detector. No noise complaints were received on this date</p> <p>Mitigation Measures This property is owned by DMR and is used by TJH for monitoring purposes</p>
Living Room (windows and door open)	13/04/2011 3:18pm - 3:33pm	57.4	45	52.7	55	<p>Monitoring Type Attended. Internal. DTMR owned property. no one lives</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic , a smoke detector that needed new batteries, banging and a bobcat. Other audible noise sources included grinding, fencing, workers talking, siren and a plane</p> <p>Discussion Internal LAeq noise goals were exceeded as a result of Gympie Road traffic, the smoke detector and a bobcat. No noise complaints were received on this date</p> <p>Mitigation Measures This property is owned by DMR and is used by TJH for monitoring purposes</p>
Living Room (windows and door closed)	13/04/2011 3:00pm – 3:15pm	55.1	45	42.6	55	<p>Monitoring Type Attended. Internal. DTMR owned property. no one lives</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic, a smoke detector that needed new batteries and a bobcat. Other audible noise sources included workers talking, banging, horn (TJH), squawkers and a plane</p> <p>Discussion Internal LAeq noise goals were exceeded as a result of Gympie Road traffic, the smoke detector and the bobcat. No noise complaints were received on this date</p> <p>Mitigation Measures This property is owned by DMR and is used by TJH for monitoring purposes</p>

Table 3d: 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)	Comments
71 Park Road, Woolloowin								
Single level Brick Flat (Dining Room)	13/04/2011 10:00pm - 10:15pm	32.6	40	-	-	33.5	50	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Closed</p> <p>Noise Sources Site noise included: Hum from fans and banging. Other noise sources included: movement in room (creaking) and traffic from Park Rd and Rose Street</p> <p>Discussion The main fan in the shed sucks air into the tunnel. 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)	14/04/2011 3:47am - 04:02am	35.5	40	-	-	35.8	50	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Closed</p> <p>Noise Sources Site noise included: Hum from fans and site noise which included machinery movement. Other noise sources included: traffic from Park Rd and Rose Street and dog barking</p> <p>Discussion The main fan in the shed sucks air into the tunnel. 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)	15/04/2011 1:48pm – 2:04pm	43.5	45	42.0	55	-	-	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Closed</p> <p>Noise Sources Site noise included: Hum from fans and site, truck movement workers conversations. Other noise sources included: Traffic, pedestrians, barking dogs and birdlife</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 day time CoG goals were met</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
								Mitigation Measures An acoustic shed and noise wall is in place around Wooloowin Site. 71 Park Road is owned by DMR and is used by TJH for monitoring purposes

Table 3e: 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
78 Elliott Street, Clayfield						
Queenslander (Living Room)	28/03/2011 4:04pm – 4:18pm	45.1	45	46	55	Monitoring Type Internal attended monitoring, windows and doors closed Noise Sources TJH noise sources (jet blasting, engine rev, crane cables) and non-TJH sources (resident, birds (internal and external), train, plane) Discussion Monitoring indicates that CoG goals for LAeq are being exceeded. It should be noted that the session was heavily influenced by non-TJH noise sources including resident/s speaking and trains. The LAeq level after excluding non-TJH noise sources was 40.0dB, therefore satisfying CoG goals Mitigation Measures Include a 6m noise wall and double stack containers and air conditioning
Queenslander (Living Room)	28/03/2011 4:19pm – 4:33pm	43.3	45	40.8	55	Monitoring Type Internal attended monitoring, windows and doors closed Noise Sources TJH noise sources (jet blasting, crane cables) and non-TJH sources (resident, birds (internal and external), train, sirens) Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall and double stack containers and air conditioning

89 Jackson Street, Clayfield						
Double Storey Timber House (Front Bedroom)	07/04/2011 9:07am – 9:21am	39.6	45	39.3	55	Monitoring Type Internal attended monitoring, windows and doors open Noise Sources TJH noise sources (bang/drop, site hum, TJH horn, hammering, concrete drilling plus non-TJH sources (plane, train, resident) Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall
Double Storey Timber House (Front Bedroom)	07/04/2011 9:25am – 9:39am	37.2	45	37.3	55	Monitoring Type Internal attended monitoring, windows and doors closed Noise Sources TJH noise sources (TJH horn) plus non-TJH sources (resident, birds, plane, train, mower) Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall
Double Storey Timber House (Front Bedroom)	07/04/2011 2:00pm – 2:14pm	37.3	45	33.2	55	Monitoring Type Internal attended monitoring, windows and doors closed Noise Sources TJH noise sources (reverse beeper, site hum, TJH horn, concrete drilling, bang/drop) plus non-TJH sources (birds, resident, train) Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall
Double Storey Timber House (Front Bedroom)	07/04/2011 2:19pm – 2:32pm	41.5	45	38.1	55	Monitoring Type Internal attended monitoring, windows and doors open Noise Sources TJH noise sources (site hum, bang/drop, conveyor, concrete drilling, concrete pump, TJH horn, reverse beeper) plus non-TJH sources (birds, train, plane, wind, 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)	15/04/2011 9:15am – 9:29am	37.4	45	38.3	55	<p>Monitoring Type Internal attended monitoring, doors and windows closed, air-conditioning on</p> <p>Noise Sources TJH noise sources (hammering, bang/drop, concrete pumps, scaffold, CC421 chute pump, crane, agitators, TJH horn) plus non-TJH sources (plane, birds, resident, 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, this air conditioner was in use and the doors and windows were closed</p>
Double Storey Queenslander, (Living Room)	15/04/2011 9:30am – 9:44 m	40.7	45	39.5	55	<p>Monitoring Type Internal attended monitoring, doors and windows closed, air-conditioning on</p> <p>Noise Sources TJH noise sources (concrete pumps, hammering, scaffold, agitators, CC421 chute pump, bang/drop, bang/drop, TJH horn, crane, sucker truck) plus non-TJH sources (birds, train, 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, this air conditioner was in use and the doors and windows were closed</p>
Double Storey Queenslander, (Living Room)	15/04/2011 2:12pm – 2:26pm	43.7	45	44.5	55	<p>Monitoring Type Internal attended monitoring, doors and windows closed, air-conditioning on</p> <p>Noise Sources TJH noise sources (jet blasting, bang/drop, scaffold, hammering, TJH yelling, concrete truck, concrete pour, TJH horn) plus non-TJH sources (resident, 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, this air conditioner was in use and the doors and windows were closed</p>

Double Storey Queenslander, (Living Room)	15/04/2011 2:27pm – 2:41 pm	41.7	45	41	55	<p>Monitoring Type Internal attended monitoring, doors and windows closed, air-conditioning on</p> <p>Noise Sources TJH noise sources (jet blasting, concrete pour, scaffold, CC422 chute pump, hammering, bang/drop, TJH horn, Stuckey Rd gate, engine rev, crane) plus non-TJH sources (resident, 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, this air conditioner was in use and the doors and windows were closed</p>
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Table 3f: Night Shift Noise Monitoring Results – Toombul

Location	Monitoring Period	L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	L _{Amax} (15 min) (dBA)	CoG Goal L _{Amax} (15 min) (dBA)	Comments
85 Jackson Street, Clayfield						
High Set Timber House (Front Bedroom)	13/04/2011 8:25pm – 8:40 pm	36.1	40	52.3	50	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Noise Sources TJH noise sources (site hum, bang/drop, gantry alarm) plus non-TJH sources (train, plane, TV, residents)</p> <p>Discussion Monitoring indicates that CoG goals are being exceeded. L_{Amax} exceeded by a one off bang from site. A NCR was raised</p> <p>Mitigation Measures Include a 6m noise wall. Further potential mitigation measures are currently being investigated</p>
Unit 5 / 901 Sandgate Road, Clayfield						
3 Storey Brick Unit (3 rd floor unit, Main bedroom)	13/04/2011 9:23pm – 9:38 pm	51.3	40	62.1	50	<p>Monitoring Type Internal attended monitoring, windows and doors open</p> <p>Noise Sources TJH noise sources (shovel scrapes, bang) plus non-TJH sources (traffic, train, plane)</p> <p>Discussion Monitoring indicates that the levels have been significantly influenced by non-TJH sources audible at the time of session (traffic flows on Sandgate Road). No TJH L_{Amax} sources could be isolated throughout the session</p> <p>Mitigation Measures None</p>

3 Storey Brick Unit (3 rd floor, Main Bedroom)	13/04/2011 9:42pm – 9:54 pm	40.3	40	52.4	50	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Noise Sources TJH noise sources (shovel scrapes, bang) plus non-TJH sources (traffic, train, plane, residents)</p> <p>Discussion Monitoring indicates that the levels have been significantly influenced by non-TJH sources audible at the time of session (traffic flows on Sandgate Road). No TJH LAmix sources could be isolated throughout the session</p> <p>Mitigation Measures None</p>
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3.3 Compliance with Noise Goals

Exceedences of the Coordinator General's Noise Goals as a result of TJH construction activities (or a combination of external and TJH construction activities) have been found during this monitoring period at

- 83 Jackson Street, Clayfield

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. Real-time monitoring of Total Suspended Particulates (TSP) and CO/NO₂ is also occurring at a location in the vicinity of the Woolloowin Worksite.

Results of monitoring are compared to Air Quality Goals nominated by the Coordinator General (Change Report July 2008 & Woolloowin 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
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

4.2 Air Quality Monitoring Results – PM10/TSP

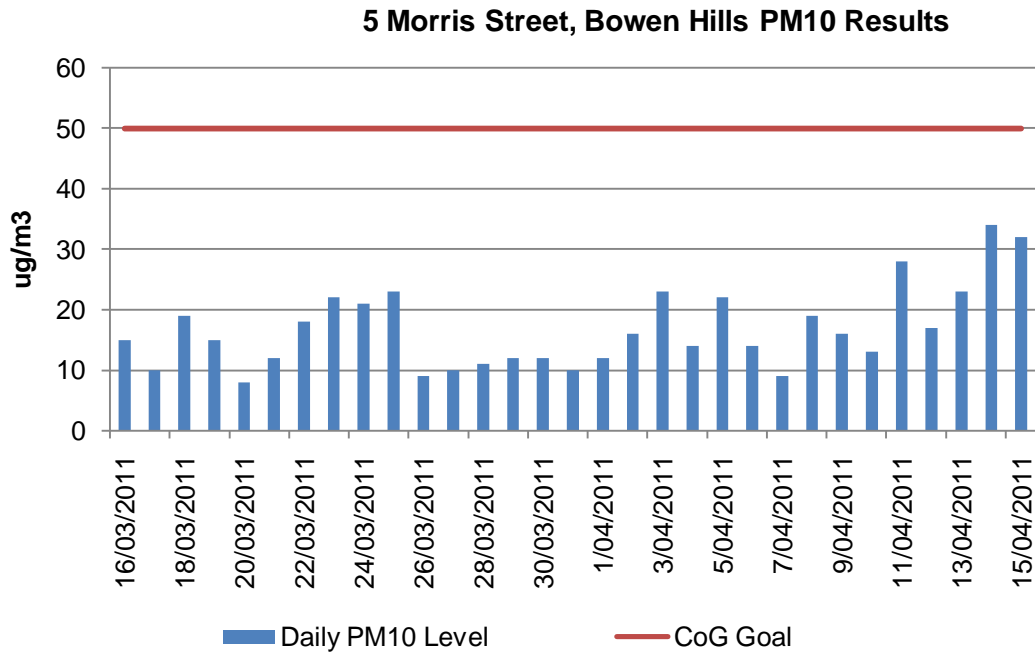


Figure 4.2.1 5 Morris St, Bowen Hills PM10 Results (for monitor location see figure 2.1 – A1)

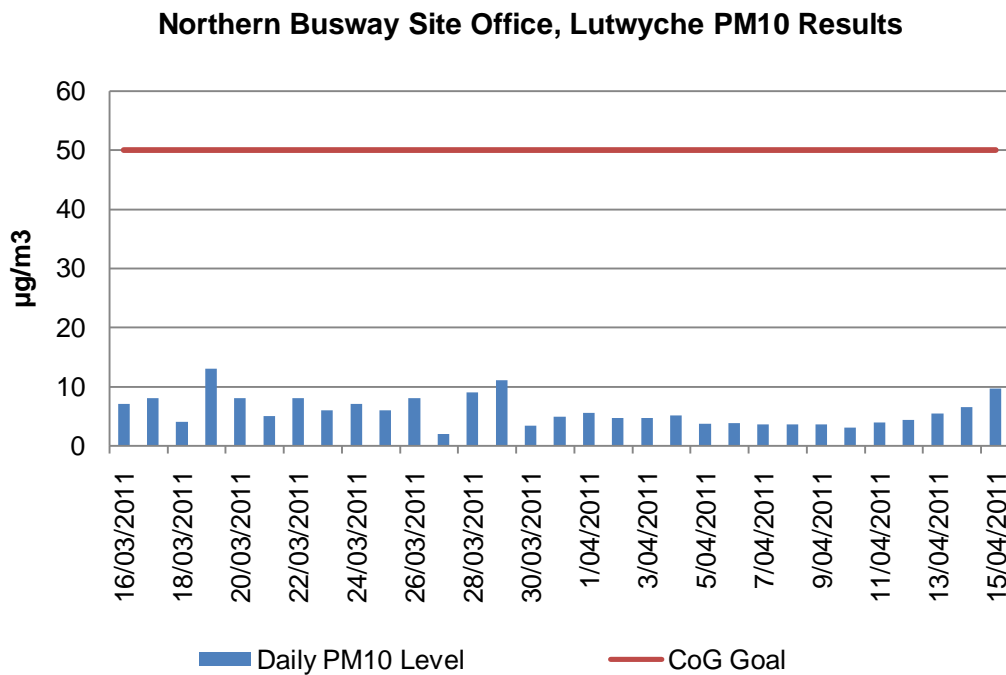


Figure 4.2.2: Northern Busway Site Office, Lutwyche PM10 Results (for location see figure 2.3 – A1)

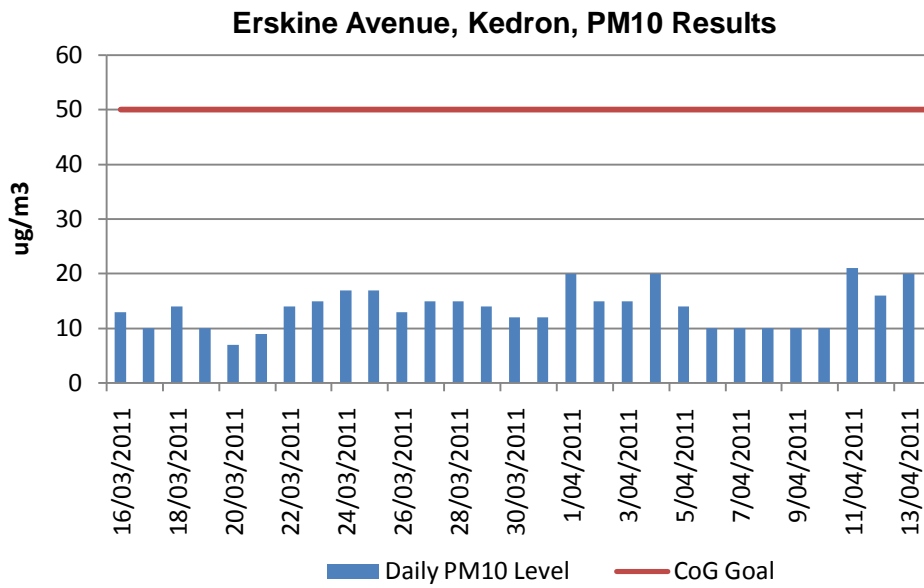


Figure 4.2.3: Erskine Avenue, Kedron PM10 Results (for monitor location see figure 2.4 – A1)

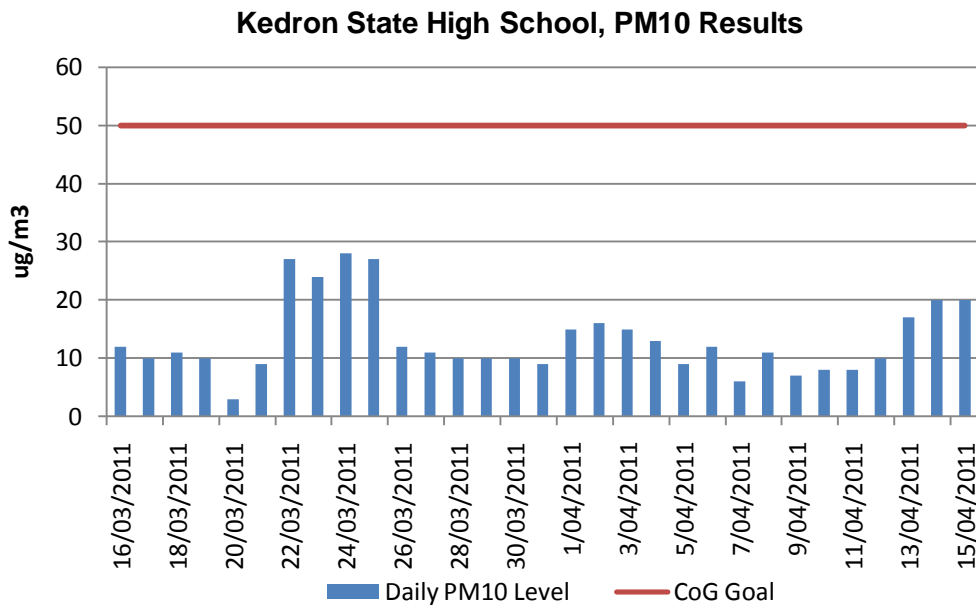


Figure 4.2.4: Kedron State High School (Adj), Kedron PM10 Results (for monitor location see figure 2.4 – A2)

Perry Street, Kedron, PM10 Results

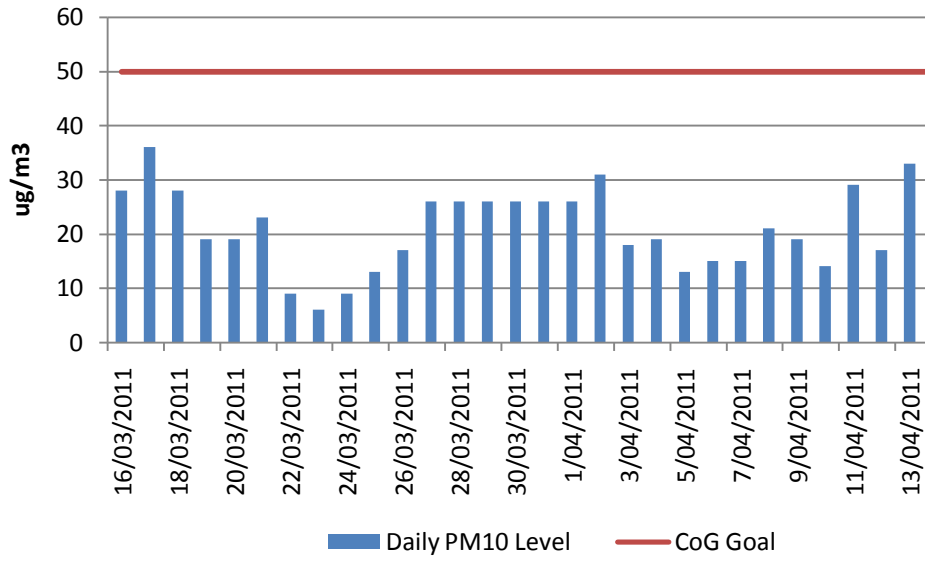


Figure 4.2.5: Perry Street, Lutwyche PM10 Results (for monitor location see figure 2.4 – A3)

Woolloowin State School, PM10 Results

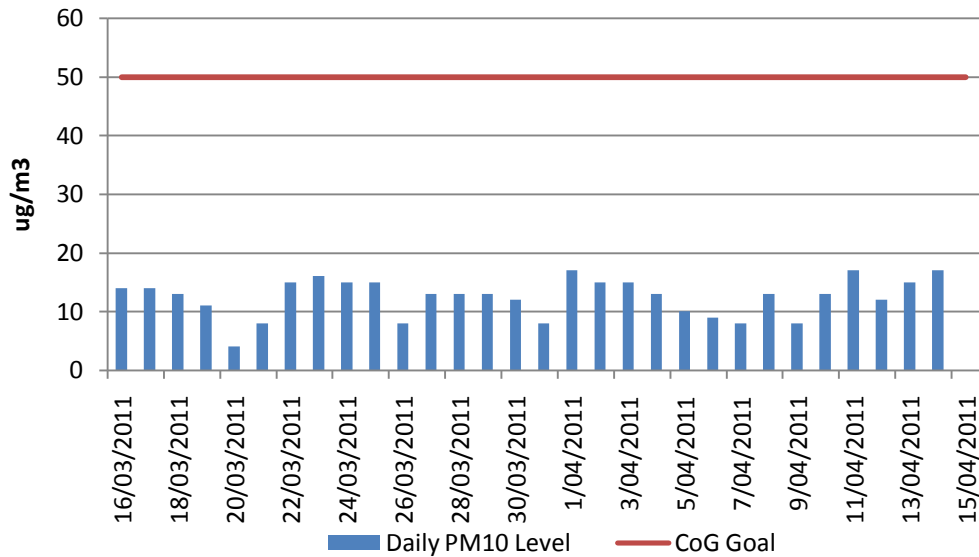


Figure 4.2.6: Woolloowin State School, Lutwyche PM10 Results (for monitor location see figure 2.4 – A4)

71 Park Road, Woolloowin PM10 Results 16/03/2011 to 15/04/2011

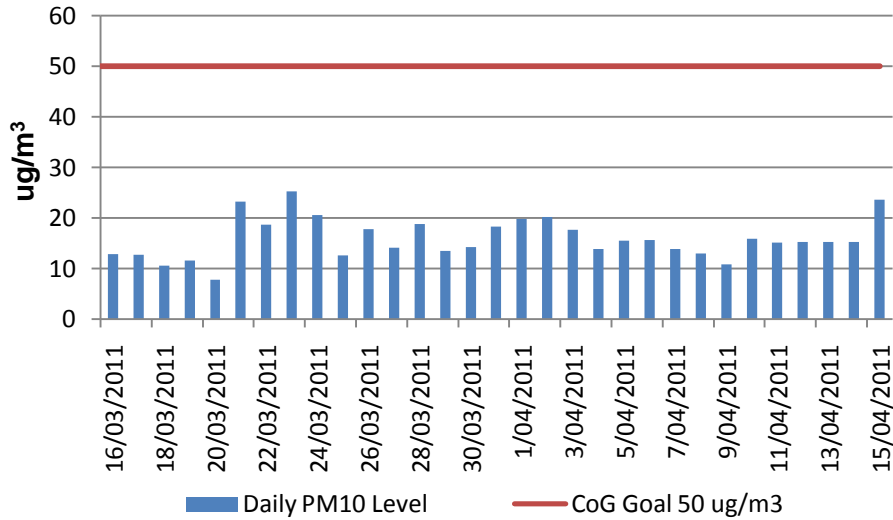


Figure 4.2.7: 71 park road PM10 Results (for monitor location see figure 2.5 – A4)

71 Park Rd, Woolloowin, Daily TSP Results 16/03/2011 to 15/04/2011

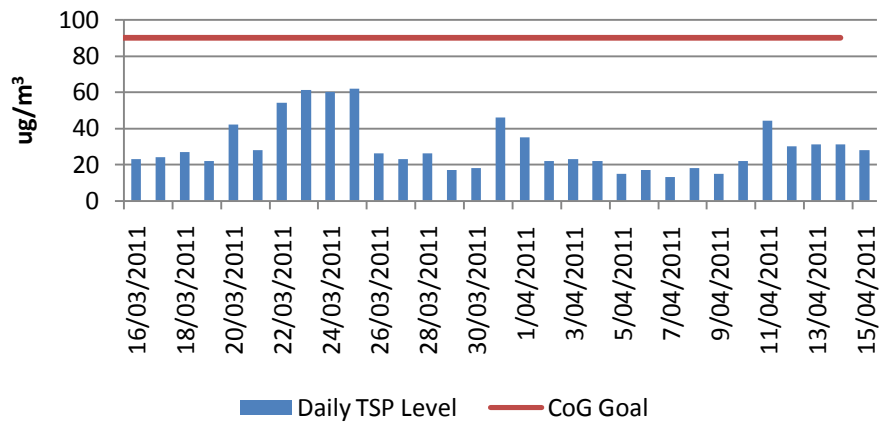


Figure 4.2.8: 71 park road TSP Results (for monitor location see figure 2.5 – A4)

71 Park Road, Wooloowin PM 2.5 Results 16/03/2011 to 15/04/2011

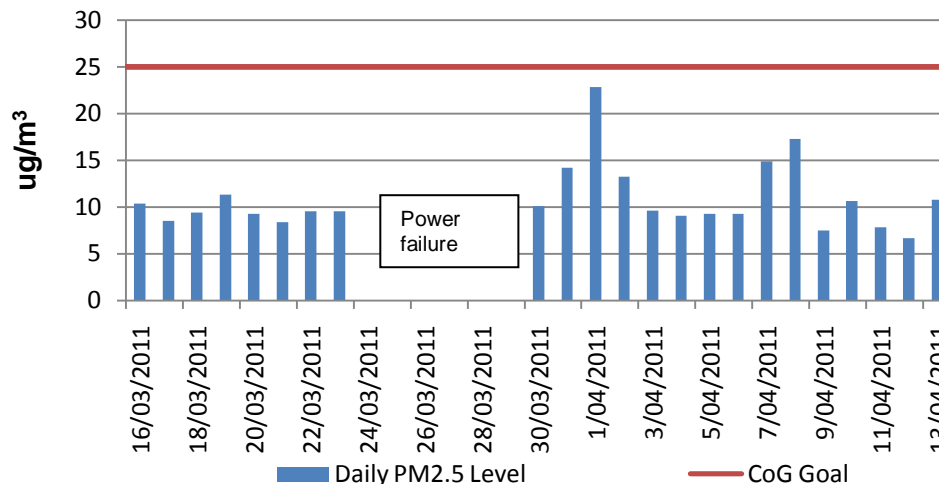


Figure 4.2.9: 71 park road PM2.5 Results (for monitor location see figure 2.5 – A4)

56 Kalinga Street, Clayfield PM10 Results

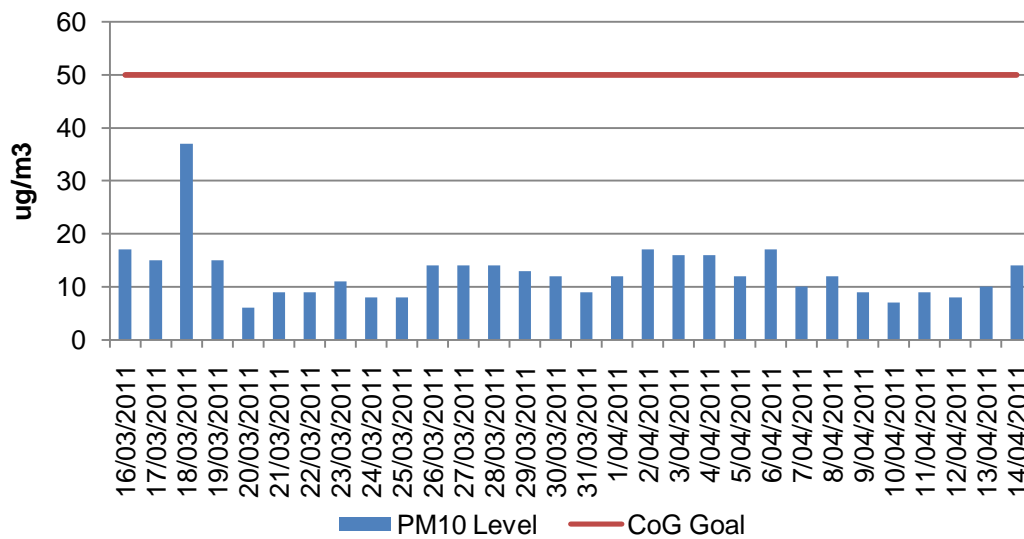


Figure 4.2.10: 56 Kalinga Street, Toombul PM10 Results (for monitor location see Figure 2.6 – A1)

5 Mabel Street, Clayfield PM10 Results

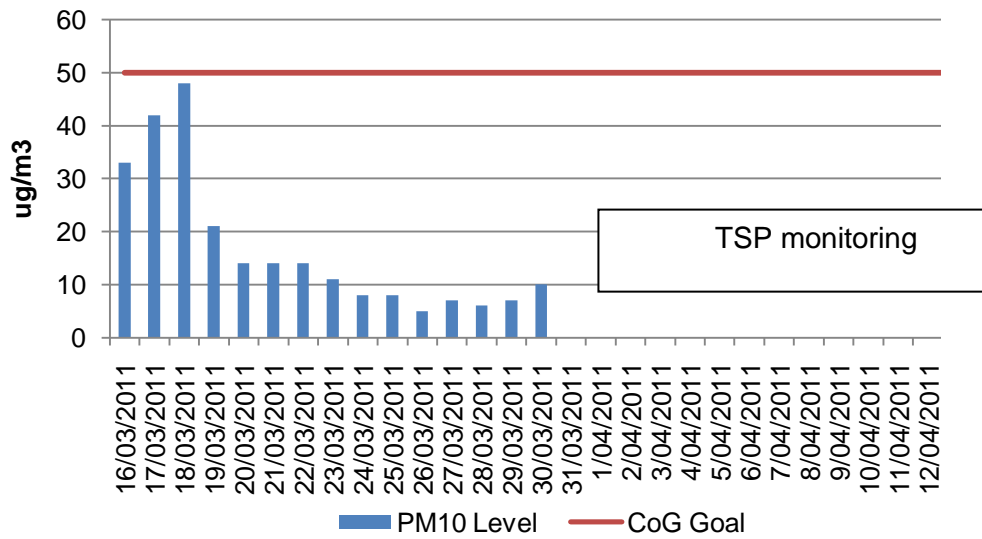


Figure 4.2.11: 5 Mabel Street, Clayfield PM10 Results (for monitor location see Figure 2.6- A2)

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 most locations the placement of the deposition gauges does not meet the standard due to location and security issues. Note: due to lab processing times and field placement some results are not available at time of report writing thus will be included in next month’s report.

5 Morris Street, Bowen Hills Dust Fallout Nov 2010 - Apr 2011

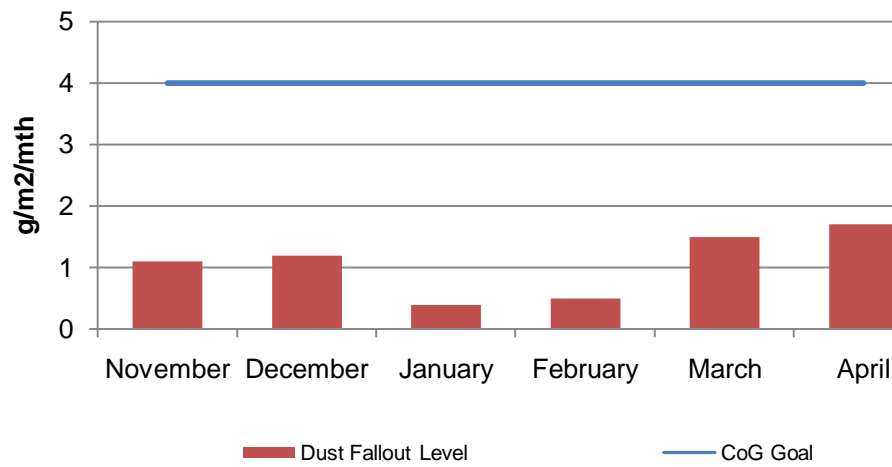


Figure 4.3.1: 5 Morris Street, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1 – D1)

Site Office, Bowen Hills Dust Fallout Nov 2010- Apr 2011

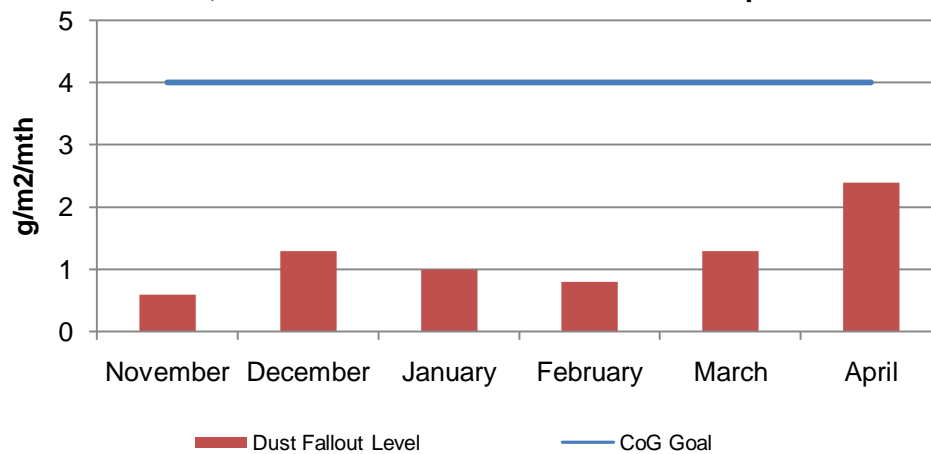


Figure 4.3.2: Site Office, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1- D2)

Mews Apartments, Bowen Hills Dust Fallout Nov 10- Apr 2011

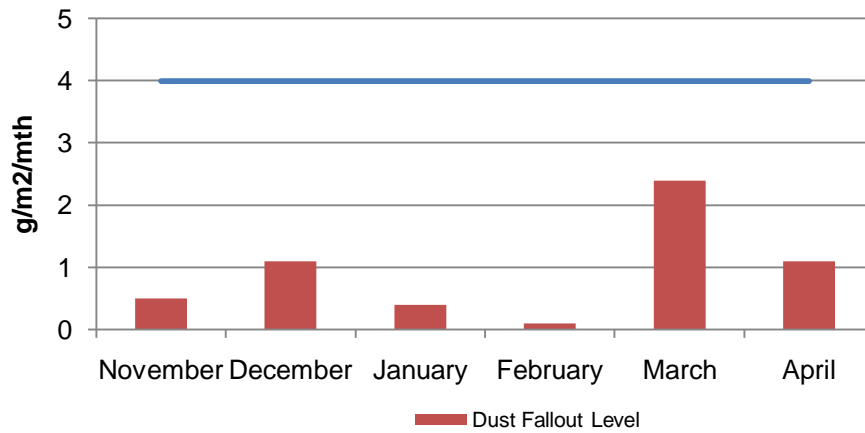


Figure 4.3.3: Mews Apartments, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1- D3)

11 Bryden Street, Bowen Hills Dust Fallout Nov 2010- Apr 2011

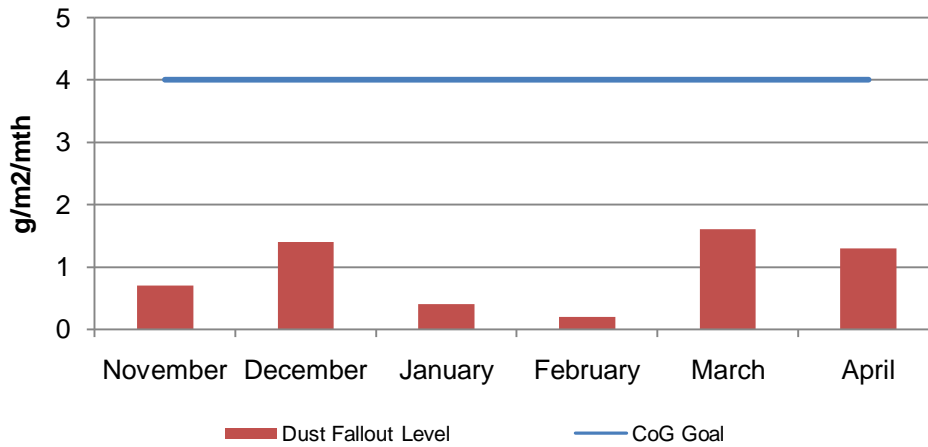


Figure 4.3.4: 11 Bryden Street, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1- D4)

QLD Newspapers, Bowen Hills Dust Fallout Nov 2010 - Apr 2011

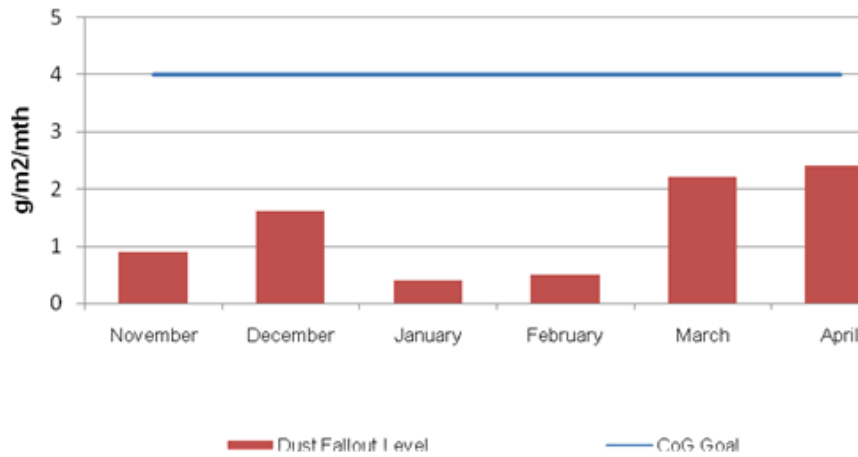


Figure 4.3.5 Queensland Newspapers, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1- D5)

Cnr of Thistle & Lucas Street, Lutwyche Dust Fallout Nov 2010 - Apr 2011

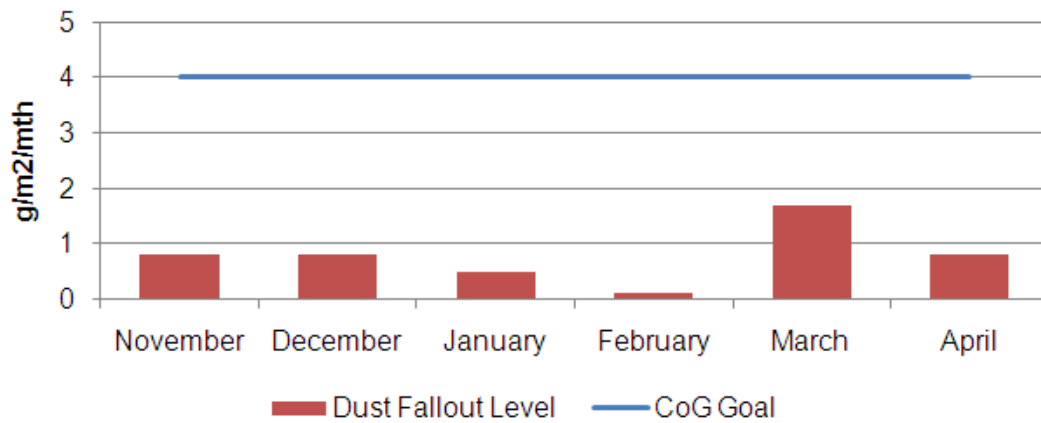


Figure 4.3.6: Cnr of Thistle & Lucas Street, Lutwyche Dust Fallout Results (location refer to figure 2.3 – D2)

Kedron Brook Reserve, Northern Busway Dust Fallout Nov 2010- Apr 2011

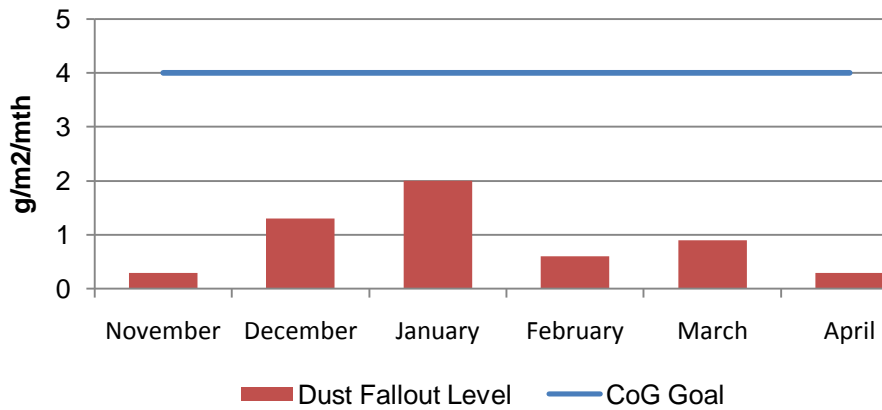


Figure 4.3.7: Kedron Brook Reserve, Northern Busway Dust Fallout Results (location refer to figure 2.3 – D1)

Dust Fallout Erskine Avenue, Kedron, November 2010 - April 2011

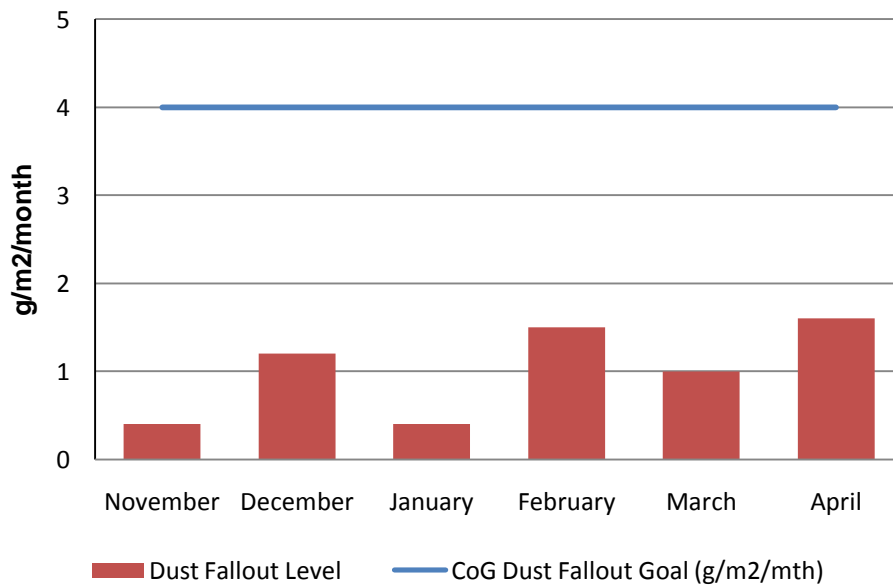


Figure 4.3.7: Erskine Avenue, Kedron Dust Fallout November 2010 – April 2011 (for monitor location see figure 2.4 – A1)

Dust Fallout Kedron State High School, Kedron, November 2010 - April 2011

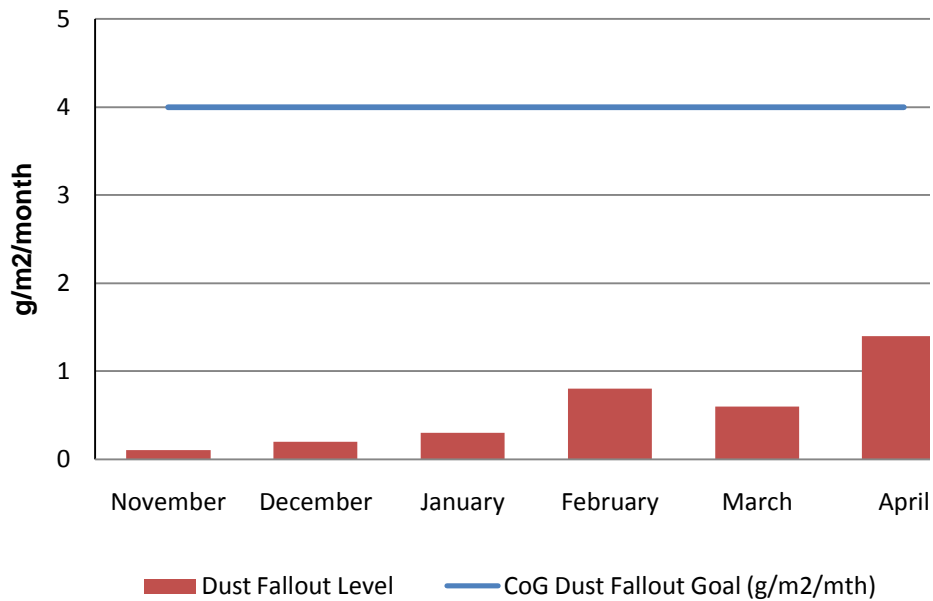


Figure 4.3.8: Kedron State High School, Dust Fallout November 2010 – April 2011 (for monitor location see figure 2.4 A2)

Dust Fallout Perry Street Lutwyche, November 2010 - April 2011

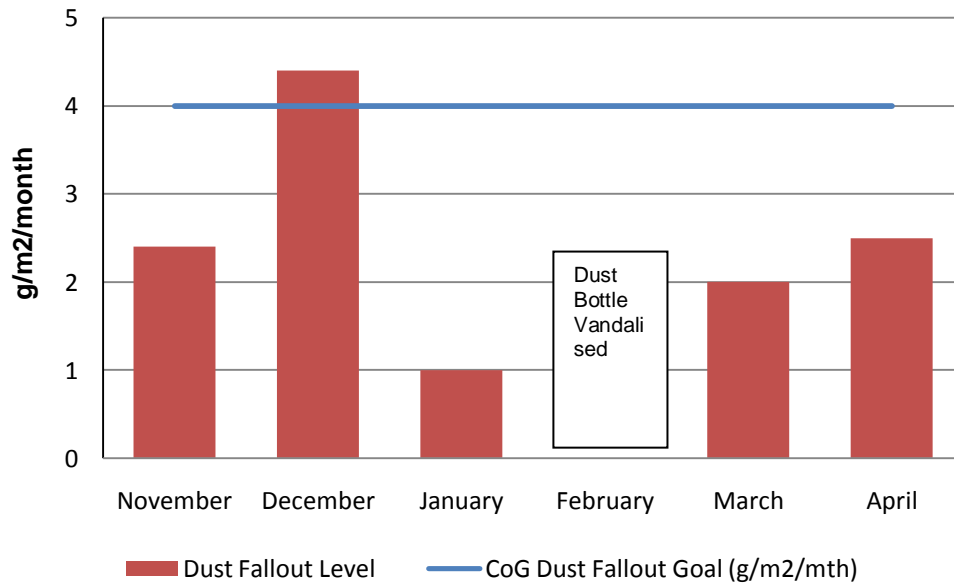


Figure 4.3.9: Perry Street, Lutwyche Dust Fallout November 2010 – April 2011 (for monitor location see figure 2.4 – A3)

Dust Fallout Woolloowin State School, Woolloowin, November 2010 - April 2011

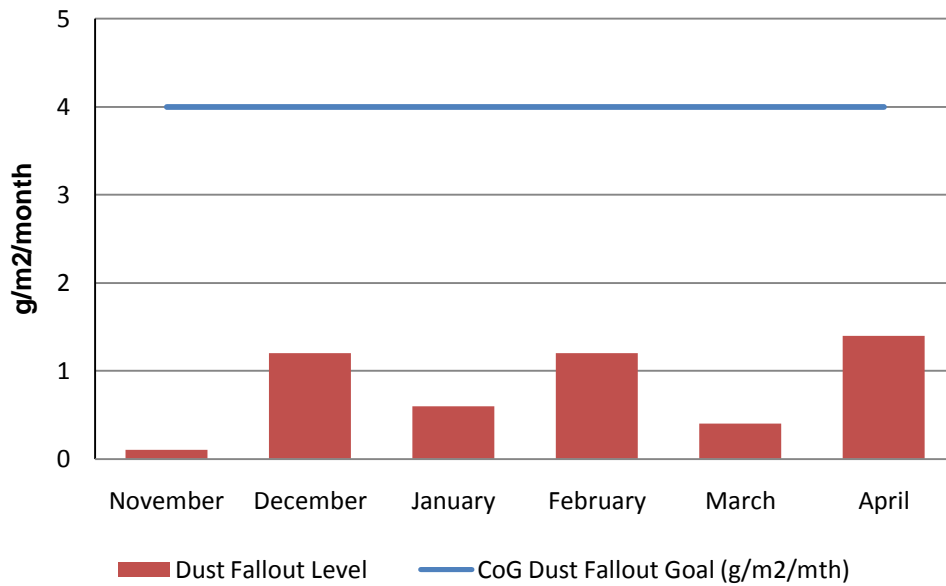


Figure 4.3.10: Woolloowin State School, Dust Fallout November 2010 – April 2011 (for monitor location see figure 2.4 – A4)

Dust Fallout 228 Gympie Road, Kedron, November 2010 - April 2011

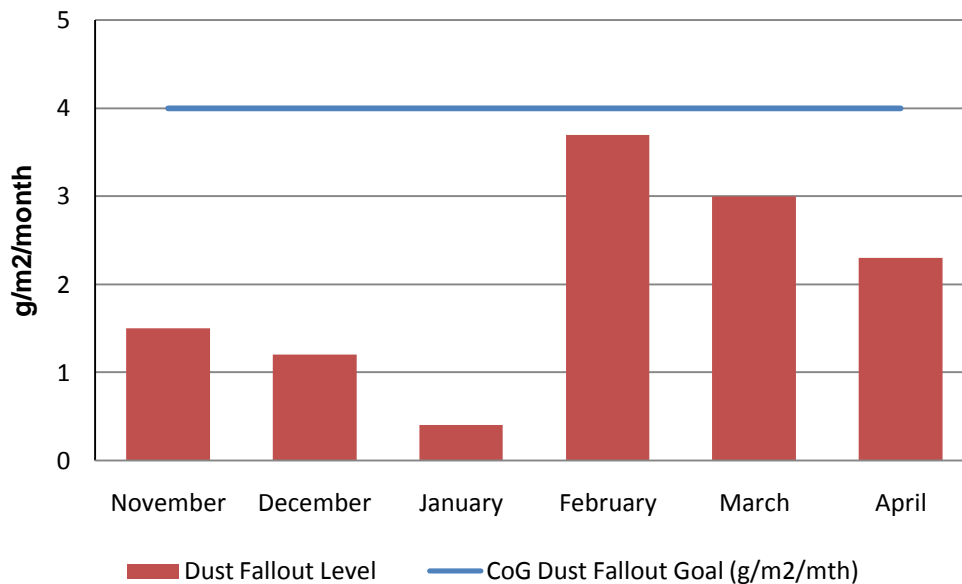


Figure 4.3.11: 228 Gympie Road, Kedron Dust Fallout November 2010 – April 2011 (for monitor location see figure 2.4)

Fig

**68 Park Road, Woolloowin Dust Fallout
November 2010 to April 2011**

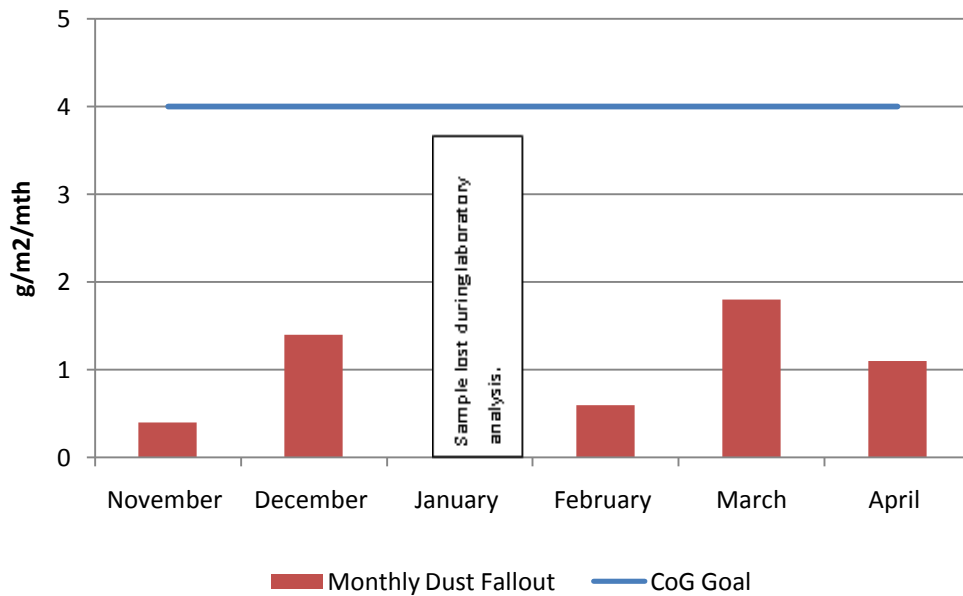


Figure 4.3.12: 68 Park Road, Woolloowin Dust Deposition Results (for monitor location refer to figure 2.1)

**Kalinga Street, Toombul Dust Fallout Level
November 2010 - April 2011**

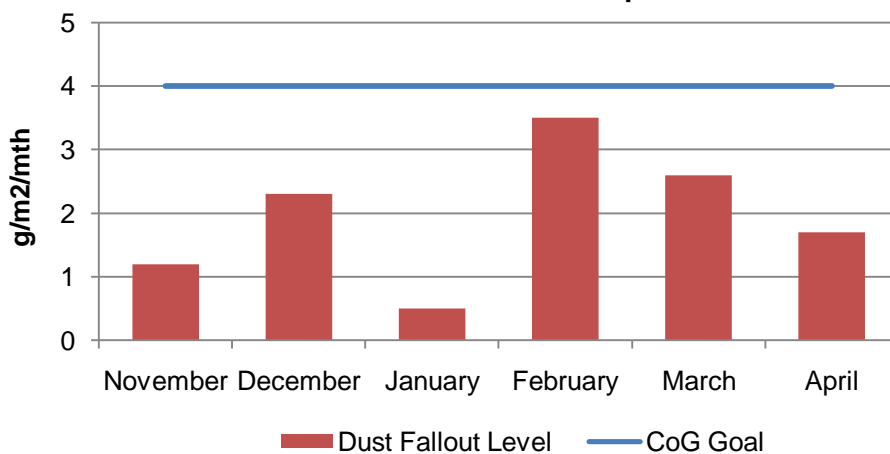


Figure 4.3.13: 56 Kalinga Street Toombul, Dust Fallout (location refer to figure 2.6 – D1)

Mabel Street, Toombul Dust Fallout Level November 2010 - April 2011

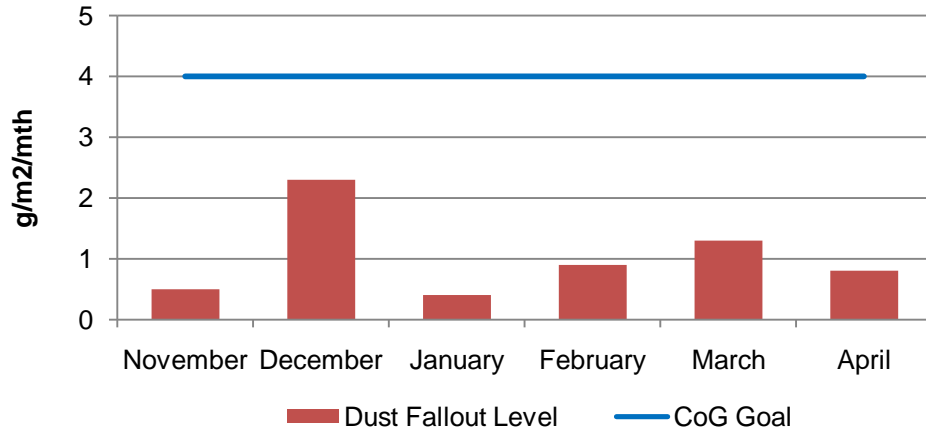


Figure 4.3.14: Mabel Street Toombul, Dust Fallout (location refer to figure 2.6 – D2)

Bage Street, Toombul Dust Fallout Level November 2010 - April 2011

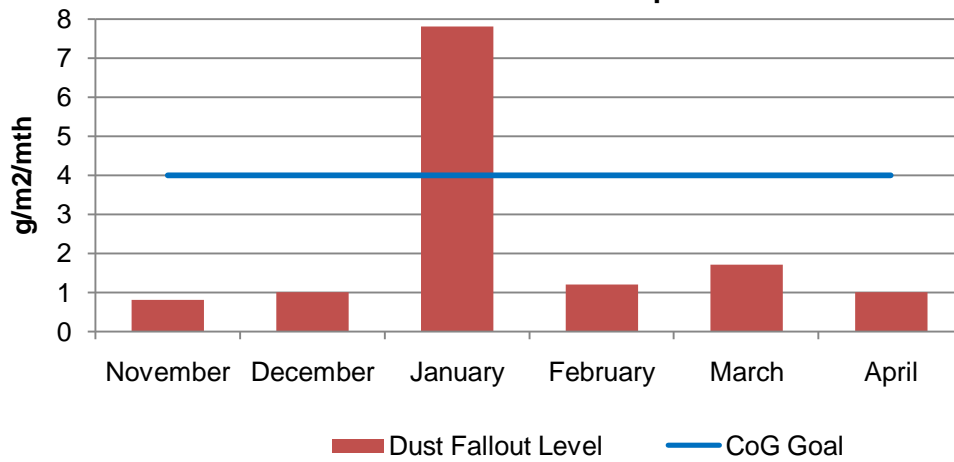


Figure 4.3.15: Bage Street Toombul, Dust Fallout (location refer to figure 2.6 – D3)

4.4 CO/NO₂ Monitoring – Wooloowin Worksite

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

Gas monitoring results

Gas Monitor at 71 Park Road, Wooloowin					
Date	Peak Date and Time	CO (mg/m ³) Peak	CoG CO Limit (mg/m ³)	NO ₂ (mg/m ³) Peak	CoG NO ₂ Limit (mg/m ³)
16/02/2011 to 15/03/2011	12:40pm, 4/03/2011	0.9	11	-	
	8:00pm, 21/02/2011	-	-	51.45	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 were no exceedences of the Coordinator Generals Air Quality Conditions this reporting period. Gas monitoring results for Wooloowin worksite has not been received from the lab. The May 2011 gas results will be published in next month's report.

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 adopted as listed by the Coordinator General (Change Report June 2008 & Wooloowin Worksite Change Report October 2009) 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-g

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

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
Queensland Newspapers	16/03/11-15/04/11	0.825	10.0	Results are within CoG goals

Table 5b: Blast Monitoring Results Summary – Truro Street Mid Tunnel

Location	Monitoring Period	Peak Particle Velocity (mm/s)	Vibration Goal (mm/s)	Comments
17th March (Ramp B)				
18 Felix Street	30 Seconds	14.2	25	Results are within CoG goals
7 Felix Street	30 Seconds	<2.5	25	Results are within CoG goals
18th March (Ramp B)				
18 Felix Street	30 Seconds	13.0	25	Results are within CoG goals
7 Felix Street	30 Seconds	4.83	25	Results are within CoG goals
19th March (Ramp B)				
18 Felix Street	30 Seconds	11.3	25	Results are within CoG goals
7 Felix Street	30 Seconds	4.83	25	Results are within CoG goals
21st March (Ramp B)				
18 Felix Street	30 Seconds	12.8	25	Results are within CoG goals
7 Felix Street	30 Seconds	3.17	25	Results are within CoG goals
23rd March (Ramp B)				
18 Felix Street	30 Seconds	16.0	25	Results are within CoG goals
7 Felix Street	30 Seconds	3.17	25	Results are within CoG goals
25th March (Northbound TBM shaft)				
26 Bradshaw Road	30 Seconds	23.7	25	Results are within CoG goals
133 Chalk Street	30 Seconds	6.22	25	Results are within CoG goals
26th March (Ramp B)				
18 Felix Street	30 Seconds	5.97	25	Results are within CoG goals

Location	Monitoring Period	Peak Particle Velocity (mm/s)	Vibration Goal (mm/s)	Comments
7 Felix Street	30 Seconds	<2.5	25	Results are within CoG goals
28th March (Ramp B)				
18 Felix Street	30 Seconds	16.5	25	Results are within CoG goals
7 Felix Street	30 Seconds	2.41	25	Results are within CoG goals
29th March (Ramp B)				
18 Felix Street	30 Seconds	4.57	25	Results are within CoG goals
7 Felix Street	30 Seconds	2.03	25	Results are within CoG goals
30th March (Ramp B)				
18 Felix Street	30 Seconds	8.76	25	Results are within CoG goals
7 Felix Street	30 Seconds	<2.5	25	Results are within CoG goals
2nd April (Ramp B)				
18 Felix Street	30 Seconds	<2.5	25	Results are within CoG goals
7 Felix Street	30 Seconds	<2.5	25	Results are within CoG goals
2nd April (Southbound TBM Shaft)				
7 Felix Street	30 Seconds	<2.5	25	Results are within CoG goals
26 Bradshaw Road	30 Seconds	<2.5	25	Results are within CoG goals
7th April (Northbound TBM Shaft)				
26 Bradshaw Road	30 Seconds	15.5	25	Results are within CoG goals
133 Chalk Street	30 Seconds	5.74	25	Results are within CoG goals
10th April (Southbound TBM Shaft)				
7 Felix Street	30 Seconds	<2.5	25	Results are within CoG goals
26 Bradshaw Road	30 Seconds	<2.5	25	Results are within CoG goals
14th April (Southbound TBM Shaft)				
7 Felix Street	30 Seconds	<2.5	25	Results are within CoG goals
26 Bradshaw Road	30 Seconds	<2.5	25	Results are within CoG goals

Table 5c: Vibration Monitoring Results Summary – Kedron

Location	Property Type	Monitoring Period	Monitoring Type	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)
Entrans (97 Gympie Road)	Commercial	16/03/2011 to 18/03/2011	Continuous	0.889	5
Entrans (97 Gympie Road)	Commercial	23/03/2011 to 25/03/2011	Continuous	1.02	5
Entrans (97 Gympie Road)	Commercial	29/03/2011 to 31/03/2011	Continuous	1.65	5
Entrans (97 Gympie Road)	Commercial	4/04/2011 to 6/04/2011	Continuous	1.02	5
Entrans (97 Gympie Road)	Commercial	7/04/2011 to 8/04/2011	Continuous	3.17	5

Table 5d: Vibration Monitoring Results Summary – Kedron

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	15/03/2011-15/04/2011	Continuous	0.99	2

Table 5e: Blast Monitoring Results Summary - Kedron CC210 Blasting – 23/03/2011

Location	Property Type	Monitoring Period	Monitoring Type	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)
15 Park Terrace	Residential	15:30	Even Based	1.27	25

- 28/03/2011

Location	Property Type	Monitoring Period	Monitoring Type	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)
15 Park Terrace	Residential	08:14	Event Based	3.17	25

Table 5f: Vibration Monitoring Results Summary – Woolloowin

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
71 Park Road, Woolloowin	01:43pm 25/03/2011 To 3:34pm 6/04/2011	1.41	5	Results are within CoG goals
71 Park Road, Woolloowin	3:47 pm 06/04 2011 To 10:23am 15/04/2011	2.16	5	Results are within CoG goals

Table 5g: Vibration Monitoring Results Summary – Toombul

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Goal (Continuous) (mm/s)	Comments
56 Park Road, Woolloowin	16/03/2011 – 07/04/2011	0.286	5	Monitoring indicates that CoG goals are being met
29 Park Road, Woolloowin	20/03/2011 – 15/04/2011	0.429	5	Monitoring indicates that CoG goals are being met
11 Park Road, Woolloowin	11/04/2011 – 15/04/2011	0.143	5	Monitoring indicates that CoG goals are being met
1 Lewis Street, Clayfield	11/04/2011 – 14/04/2011	0.254	10*	Monitoring indicates that CoG goals are being met * Cross-passage excavation works classified as transient vibration under CoG Change Report Guidelines

5.3 Compliance with Vibration Goals

As a result of vibration monitoring across the project there were exceedences of the adopted goals were identified.

6.0 Community enquiries and complaints

A total of 212 community complaints were reported to the project between 16 March and 15 April 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.

Complaints Raised: 16 March to 15 April 2011		
Issues	No.	No. of stakeholders
Construction vehicle movements	48	28
Site noise out-of-hours	44	34
Parking	25	18
Traffic Management	16	15
Lane closure	16	16
Driver Behaviour	15	14
Truck noise	13	11
Site dust	11	10
Road condition	10	10
General Construction	10	10
Other	9	9
Worker Behaviour	8	8
Site noise	8	7
Mitigation	7	5
Vehicle Damage	6	5
Tunnelling	6	5
Site vibration	5	4
Site lighting	4	4
Truck dust	4	4
Pedestrian/Cyclists	3	3
Other	29	27
Total complaints	212	151

6.1 Top 10 issues raised:

