



Airport Link / Northern Busway Project

Monthly Environmental Monitoring Report

November 2010

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1.0 Report Purpose and Scope

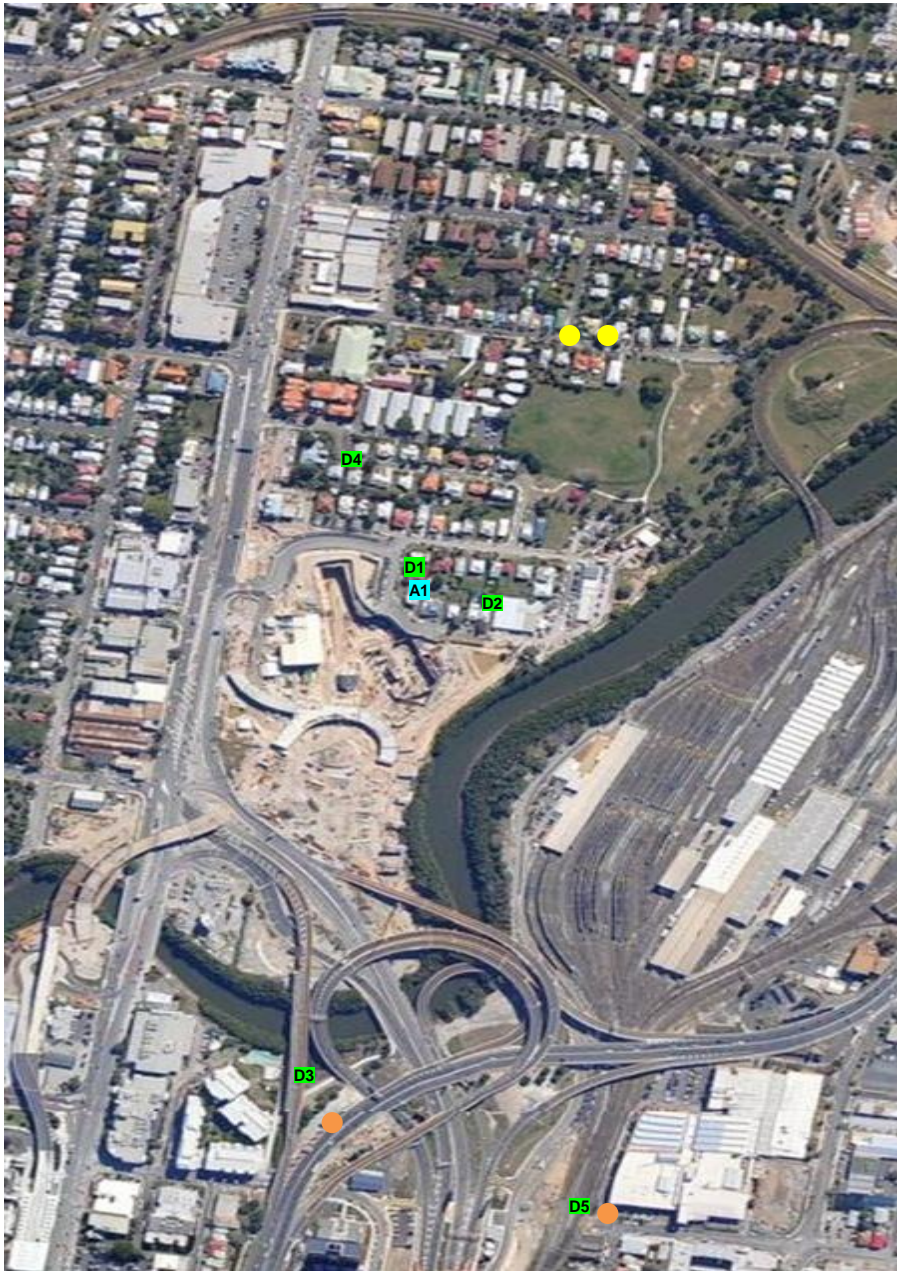
The report has been compiled to summarise the results of noise, air quality and vibration monitoring on the Airport Link and Northern Busway project. The report also compares those results with compliance thresholds for environmental harm, community nuisance and loss of amenity nominated by the Coordinator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

The monitoring data covered in this report is for the November 2010 reporting period, from 15th October 2010 to 15th November 2010.

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 September 2010, though do serve a useful purpose in relating the monitoring locations to existing structures and infrastructure.

Bowen Hills Monitoring Locations



Source: NearMap 2010

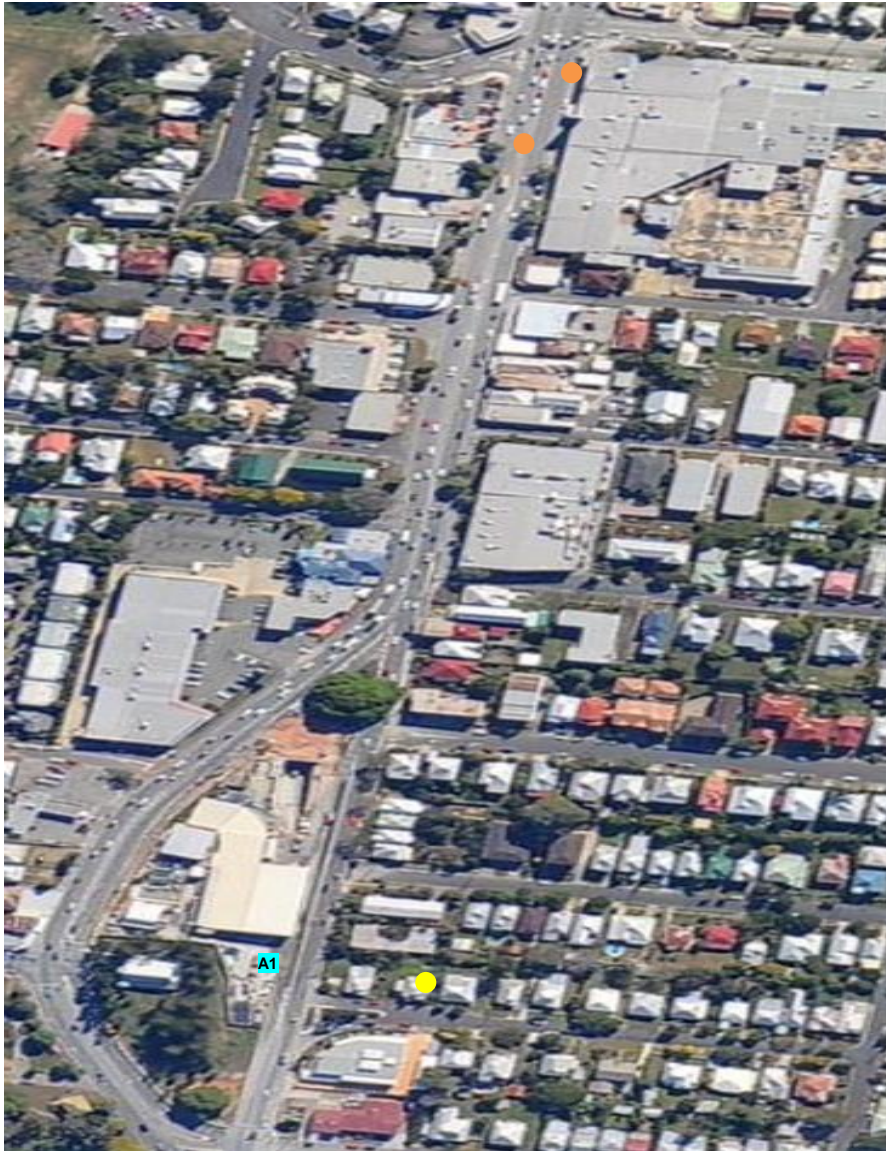
Figure 2.1 – Bowen Hills Monitoring Locations

Legend

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

Note: locations are indicative only

Truro Street Mid Tunnel Monitoring Locations



Source: NearMap 2010

Figure 2.2 – Truro Street Mid Tunnel Monitoring Locations

Legend

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

Note: locations are indicative only

Northern Busway Monitoring Locations



Source: NearMap 2010

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



Source: NearMap 2010

Figure 2.4 – Kedron Monitoring Locations

Legend

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

Note: locations are indicative only

Woollooin Monitoring Locations



Source: Nearmap 2010

Figure2.5 - Woollooin Monitoring Locations
Legend

- Noise (during construction)
- Vibration

- Air (PM₁₀)
- Air (Dust Deposition)
- Air (CO and NO₂)

Note: locations are indicative only

Toombul Monitoring Locations



Source: Nearmap 2010

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. Federation/Morris Street (Bowen Hills)
 - v. Stafford Road (Kedron)
 - vi. Rose Street (Wooloowin)
 - vii. Kalinga Park (Toombul)
 - viii. KBB Worksite (Kedron)
 - b. Temporary noise barrier (shipping container) installations:
 - i. Perry Street, (Kedron)
 - ii. Kalinga Park (Toombul)
 - 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-e

Table 3a: Night Time Noise Monitoring Results – Bowen Hills Civils

Location	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Average L _{Amax} (15 min) (dBA)	CoG Goal L _{Amax} (15 min) (dBA)	Comments
68 Cartwright Street, Windsor						
2 Storey House (Main Bedroom)	18/10/2010 5:30am - 5:44am	44.1	40	59.2	50	<p>Monitoring Type Attended. Internal. Windows and Doors closed</p> <p>Noise Sources The dominant noise source throughout the period was a flock of birds in the trees surrounding the house. Other noise sources noted were a train, cars leaving the adjacent carpark and people talking</p> <p>Discussion The recorded level for both Laeq and LAmx were as a result of non TJH noise sources. Laeq was exceeded due to the birds in the surrounding trees. The level for LAmx was caused by a train on the Ferry Grove rail line</p> <p>Mitigation Mitigation was not required as TJH works were not the cause of the noise levels</p>
64 Cartwright Street, Windsor						
2 Storey House (Main Bedroom)	20/10/2010 5:44am - 5:59am	38.9	40	54.8	50	<p>Monitoring Type Attended. Internal. Windows and Doors closed</p> <p>Noise Sources The dominant noise source throughout the period was a flock of birds in the trees surrounding the house. Other noise sources noted were a train, cars leaving the adjacent car park and people talking</p> <p>Discussion The level recorded for LAmx was as a result of the birds in the trees surrounding the property. The cars leaving the adjacent car park did not result in an increase in noise level</p> <p>Mitigation Mitigation was not required as TJH works were not the cause of the noise levels</p>

Table 3b: 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 _{Aeq} (15 min) (dBA)	Comments
68 Cartwright Street, Windsor						
2 Storey House (Living Room)	18/10/2010 5:03pm - 5:17pm	46.7	45	45.4	55	<p>Monitoring Type Attended. Internal. Windows and Doors closed</p> <p>Noise Sources The dominant noise sources throughout the period were trains moving along the Ferny Grove rail line. Cars leaving the car park on Cartwright Street were noted intermittently. Other noise sources noted were birds in the surrounding trees and people talking</p> <p>Discussion The level recorded for Laeq was as a result of trains moving along the Ferny Grove rail line. TJH noise sources did not result in an increase in noise level</p> <p>Mitigation Mitigation was not required as TJH works were not the cause of the noise levels</p>

Table 3c: Noise Monitoring Results – Truro Street Mid Tunnel

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
Unit 1 / 29 Truro Street, Windsor						
Ground Floor Unit (Living Room)	01/11/2010 8:54am - 9:08am	38.3	45	39.4	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 Truro Street. Works on the nearby TJH tunnelling site were noted two occasions. Other noise sources included internal noise and a dog barking</p> <p>Discussion Monitoring was to assess the level of impact which was being caused to residents adjacent to the Truro Street tunnel worksite. The majority of noise resulted from the traffic moving along Truro Street Works within the tunnelling site were noted but were not the dominant noise source. The results were within CoG goals</p> <p>Mitigation Mitigation was not required as results were within CoG goals</p>

Table 3d: Noise Monitoring Results – Kedron

Location	Monitoring Period	L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	L _{Amax} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Comments
5 / 9 Norman Street, Lutwyche						
Unit Block 2 nd Level (Living Room)	16/10/2010 9:31am – 9:45am	37.6	45	37.9	55	<p>Monitoring Type Attended, internal with windows and doors closed.</p> <p>Noise Sources TJH construction noise (Faint jackhammering, vibration like) also non-TJH noise (wind, Traffic on Lutwyche Road)</p> <p>Discussion Monitoring indicates CoG goals are being met. The predominant noise was the wind</p> <p>Mitigation Measures No mitigation measures are in place</p>
5 / 12 Suez Street, Kedron						
Unit Block 2 nd Level (Living Room)	9/11/2010 1:40pm – 1:54pm	54.3	45	54.6	55	<p>Monitoring Type Attended, internal with windows and doors open</p> <p>Noise Sources Non TJH noise was dominant (Mower, Traffic Gympie Road, Resident, Bird). TJH noise (General construction, Squawker, Street Sweeper)</p> <p>Discussion Monitoring indicates CoG goals are being met; exceedances were a result of Non TJH noise sources. Non TJH noise sources were dominant throughout the session; TJH works on Stafford Road were barely audible</p> <p>Mitigation Measures No mitigation measures are in place</p>
Unit Block 2 nd Level (Living Room)	9/11/2010 2:14pm – 2:28pm	45.9	45	46.2	55	<p>Monitoring Type Attended, internal with windows and doors closed and air conditioning on</p> <p>Noise Sources Non TJH noise was dominant (Traffic Gympie Road, Resident, Aeroplane, Birds)</p> <p>Discussion Monitoring indicates CoG goals are being met. Non TJH noise sources were dominant throughout the session; no TJH works were audible</p> <p>Mitigation Measures No mitigation measures are in place</p>
28 Brookfield Road, Kedron						
	10/11/2010 4:36pm – 4:50pm	37.7	45	38.2	55	<p>Monitoring Type Attended, internal with windows and doors closed</p> <p>Noise Sources General Construction (Excavator, Excavator Bucket, Squawker, Truck Onsite, Drill) and the dominant Non TJH noise (Local Traffic Brookfield Road, Traffic Gympie Road, Resident, Wheelie Bin, Outdoor Gate, Siren, Beeping).</p> <p>Discussion</p>

Location	Monitoring Period	L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	L _{Amax} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Comments
						Monitoring indicates CoG goals are being met. Mitigation Measures A noise wall is in place between the CC216/ALOC Sites and the residents property
	10/11/2010 4:55pm – 5:09pm	48.7	45	48.9	55	Monitoring Type Attended, internal with windows and doors. Noise Sources General Construction (Excavator, Squawker), Non TJH noise was dominant (Traffic Brookfield Road, Traffic Gympie Road, Local Residents, Bids, Dog Barking, Outside Gate). Discussion Monitoring indicates CoG goals are being met. Non TJH Traffic on Brookfield and Gympie Roads was the dominant noise throughout the session; Mitigation Measures A noise wall is in place between the CC216/ALOC Sites and the residents property

Table 3e – Noise Monitoring Results Wooloowin

Location	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Average L _{A10} (15 min)	CoG Goal L _{A10} (15 min) (dBA)	Average L _{AMAX} (15 min)	CoG Goal L _{AMAX} (15 min)	Comments
71 Park Road, Wooloowin								
Single level Brick Flat (Dining Room)	18/10/2010 6:35am – 6:49am	39.9	45	41.0	55	-	-	Monitoring Type Attended Noise Monitoring. Doors and Windows Closed Noise Sources Site noise included: scrubber, bang, truck and loader. Other noise sources included: traffic, truck, birds, house creaking and plane Discussion The dominant noise was from the scrubber and birds. Monitoring indicates that day time CoG goals are being met 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
Single level Brick Flat (Dining Room)	29/10/2010 11:26am – 11:40am	40.9	45	41.9	55	-	-	Monitoring Type Attended Noise Monitoring. Doors and Windows Closed Noise Sources Site noise included: scrubber, banging, truck, spoil loading and loader. Other noise sources included: traffic, truck, birds, dogs barking, train horn, house creaking and plane Discussion The dominant noise was from the scrubber, spoil loading and birds.

Location	Monitoring Period	Average L_{Aeq} (15 min) (dBA)	CoG Goal L_{Aeq} (15 min) (dBA)	Average L_{A10} (15 min)	CoG Goal L_{A10} (15 min) (dBA)	Average L_{AMAX} (15 min)	CoG Goal L_{AMAX} (15 min)	Comments
								Monitoring indicates that day time CoG goals are being met 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
Single level Brick Flat (Dining Room)	8/11/2010 10:05am – 10:20am	40.7	45	41.7	55	-	-	Monitoring Type Attended Noise Monitoring. Doors and Windows Closed Noise Sources Site noise included: scrubber, banging, truck, spoil loading and loader. Other noise sources included: birds, traffic, train horn and dogs barking Discussion The dominant noise was from the loader loading the trucks. Monitoring indicates that day time CoG goals are being met 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
41 Gorman Street, Woolloowin								
Highset dwelling (Internal)	28/10/2010 9:37pm – 9:52pm	26.9	40	-	-	44.3 (non-TJH) 31.1 (TJH)	50	Monitoring Type Attended Noise Monitoring. Doors and Windows Closed Noise Sources Site noise was from activity in the spoil shed at Woolloowin. Other noise sources included: traffic, frogs/crickets, movement in the room, movement outside the room and train Discussion The non-TJH L_{Amax} was from movement in the room. The only audible TJH noise was the spoil shed activity. There was no 10dBA reduction required for this session as it was internal. Monitoring indicates that night time CoG goals are being met Mitigation Measures An acoustic shed and noise wall is in place around Woolloowin Site
Highset dwelling (Internal)	28/10/2010	39.5	40	-	-	52.2 (non-TJH) 41.4 (TJH)	50	Monitoring Type Attended Noise Monitoring. Doors and Windows Closed Noise Sources Site noise was from activity in the spoil shed at Woolloowin. Other noise sources included: traffic, frogs/crickets, neighbour, dog, bird and plane Discussion The non-TJH L_{Amax} was from a dog barking. The only audible TJH noise was the spoil shed activity (including the loader). There was no 10dBA reduction required for this session as it was internal.

Location	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Average L _{A10} (15 min)	CoG Goal L _{A10} (15 min) (dBA)	Average L _{AMAX} (15 min)	CoG Goal L _{AMAX} (15 min)	Comments
								Monitoring indicates that night time CoG goals are being met Mitigation Measures An acoustic shed and noise wall is in place around Woolloowin Site
Two storey wooden house (Main bedroom) (Closed)	2/07/2010 10:01 – 10:17pm	30.6	40	N/A	N/A	43.7	50	Monitoring Type Attended Noise Monitoring. Doors and windows closed Noise Sources Neighbours (music), Traffic, child talking and running, banging chair, walking and door (resident), rain on roof. Note that construction works could not be heard. Discussion Monitoring indicates that CoG goals are being met Mitigation Measures An acoustic shed and noise wall is in place around Rose Street Site.
Two storey wooden house (Main bedroom) (Open)	2/07/2010 10:21 – 10:35pm	33.1	40	N/A	N/A	48.6	50	Monitoring Type Attended Noise Monitoring. Doors and windows open Noise Sources Rain on roof and trees, traffic, car backfiring, moved paper, neighbour talking and music, train, neighbour door, plane and dog barking. Note that construction works could not be heard. Discussion Monitoring indicates that CoG goals are being met Mitigation Measures An acoustic shed and noise wall is in place around Rose Street Site.

Table 3f: 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
83 Stuckey Road, Clayfield						
Front Lounge Room 1 st Floor	18/10/2010 9:08am–9:22am	37.4	45	54.9	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed, air-conditioning on</p> <p>Noise Sources TJH noise sources (general site hum, TJH horn, bang/drop, pressure release, engine rev, squawker, TJH gate, saw/grinder, jet blasting) plus non-TJH sources (resident, birds, television)</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 windows and doors were closed</p>
Front Lounge Room 1 st Floor	18/10/2010 2:34pm–2:49pm	42.4	45	54.2	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed, air-conditioning on</p> <p>Noise Sources TJH noise sources (bang/drop, engine rev, jet blasting, excavator, general site hum, jack hammering, saw/grinder, tower crane, TJH gate) plus non-TJH sources (train, resident, bird, traffic, public)</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 windows and doors were closed</p>
Front Lounge Room 1 st Floor	18/10/2010 2:53pm–3:08pm	40.8	45	52.3	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed, air-conditioning on</p> <p>Noise Sources TJH noise sources (engine rev, bang/drop, general site hum, jet blasting, TJH horn, saw/grinder, excavator, jack hammering) plus non-TJH sources (train, television, birds, 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 windows and doors were closed</p>

Table 3g: 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
89 Jackson Street, Clayfield						
Two Storey Timber House (Front Bedroom)	5/11/2010 3:04pm–3:18pm	41.3	45	40.4	55	<p>Monitoring Type Internal attended monitoring, windows and doors open</p> <p>Noise Sources TJH noise sources (bang, crane, horn, jack hammering and alarm) plus non-TJH sources (birds, resident, traffic and train)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m Noise Wall</p>
Two Storey Timber House (Front Bedroom)	5/11/2010 3:21pm–3:35pm	38.6	45	36.9	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Noise Sources TJH noise sources (crane, gantry alarm, bang, franna, horn drops and reverse beeping) plus non-TJH sources (birds, traffic, resident and train)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m Noise Wall</p>
3 / 25 Walkers Way, Toombul						
Unit Block, Lounge Room (1 st Floor)	9/11/2010 8:34am–8:49am	48.5	45	49.0	55	<p>Monitoring Type Internal attended monitoring, doors open</p> <p>Noise Sources TJH noise sources (conveyer, air breaks, horn, reverse squawker and franna) plus non-TJH sources (traffic, bird, truck, train, resident, wind and crickets)</p> <p>Discussion Monitoring indicates that CoG goals are being exceeded. With all external noise data excluded the CoG goals were exceeded – 47.6 dB. Monitoring was undertaken to assess the effectiveness of TJH mitigation.</p> <p>Mitigation Measures This property has received double glazing and air conditioning in the Master Bedroom</p>
Unit Block, Lounge Room (1 st Floor)	9/11/2010 8:52am–9:06am	38.0	45	38.5	55	<p>Monitoring Type Internal attended monitoring, doors closed</p> <p>Noise Sources TJH noise sources (conveyer, reverse beeping and franna) plus non-TJH sources (bird, traffic, resident, train and fridge)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures</p>

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
						This property has received double glazing and air conditioning in the master bedroom
Unit block, Lounge Room (1 st Floor)	9/11/2010 2:30pm–2:45pm	47.5	45	48.1	55	<p>Monitoring Type Internal attended monitoring, doors open</p> <p>Noise Sources TJH noise sources (conveyer and air breaks) plus non-TJH sources (traffic, birds, crickets, train, resident and wind)</p> <p>Discussion Monitoring indicates that CoG goals are being exceeded. With all external noise data excluded the CoG goals were exceeded – 46.3 dB. Monitoring was undertaken to assess the effectiveness of TJH mitigation.</p> <p>Mitigation Measures This property has received double glazing and air conditioning in the master bedroom</p>
Unit block, Lounge Room (1 st Floor)	9/11/2010 2:47pm–3:02pm	37.3	45	38.0	55	<p>Monitoring Type Internal attended monitoring, doors closed</p> <p>Noise Sources TJH noise sources (conveyer and reverse beeper) plus non-TJH sources (fridge, traffic, residents, gecko, crickets, plane, horn and train)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures This property has received double glazing and air conditioning in the master bedroom</p>
51 Wongara Street, Toombul						
Timber House, Front Lounge Room (1 st Floor)	10/11/2010 8:59am–9:13am	51.2	45	50.8	55	<p>Monitoring Type Internal attended monitoring, doors and windows open</p> <p>Noise Sources TJH noise sources (EBAM, excavator, air breaks, jack hammering, truck, horn, plant noise, franna, excavator bucket, reverse beep) plus non-TJH sources (East West Arterial Road traffic, Widdop Street traffic, resident typing, dog, bird, train, plane)</p> <p>Discussion Monitoring indicates that CoG goals are being exceeded. With all external noise data excluded the CoG goals were exceeded – 51.0 dB. Heavy influences from external noise sources included traffic from East West Arterial Road and Widdop Street. An EBAM, which had been installed earlier that morning, contributed to the exceedance. As a result, TJH noise sources could not be isolated. An NCR was raised regarding this exceedance.</p> <p>Mitigation Measures A second monitoring session has been arranged with the property owner</p>
Timber House, Front Lounge	10/11/2010	35.7	45	36.0	55	Monitoring Type

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
Room (1 st Floor)	9:16am–9:30am					<p>Internal attended monitoring, doors and windows closed</p> <p>Noise Sources TJH noise sources (plant noise, horn, bang) plus non-TJH sources (resident, dog, East West Arterial traffic, Widdop Street traffic, car squeal, downstairs bang, train, plane)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures A second monitoring session has been arranged with the property owner</p>

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:

- 51 Wongara Street, Toombul

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

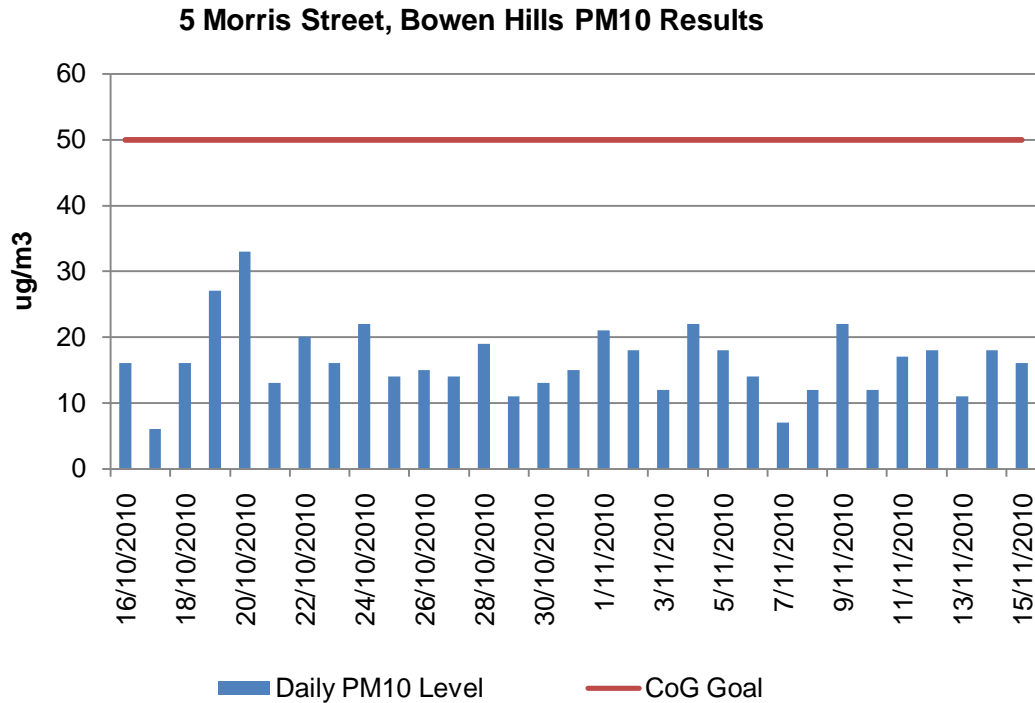


Figure 4.2.1 - 5 Morris Street, Bowen Hills PM10 Results (for monitor location see figure 2.1 – A1)

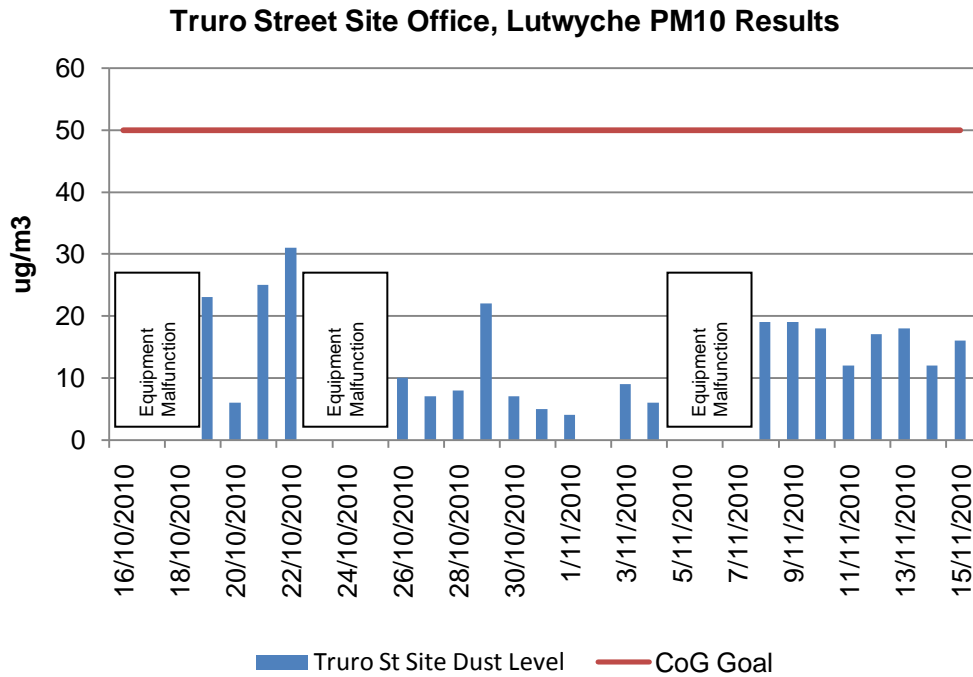


Figure 4.2.2 - Truro Street Site Office, Windsor PM10 Results (for location see figure 2.2 – A1)

Erskine Avenue, Kedron PM10 Results

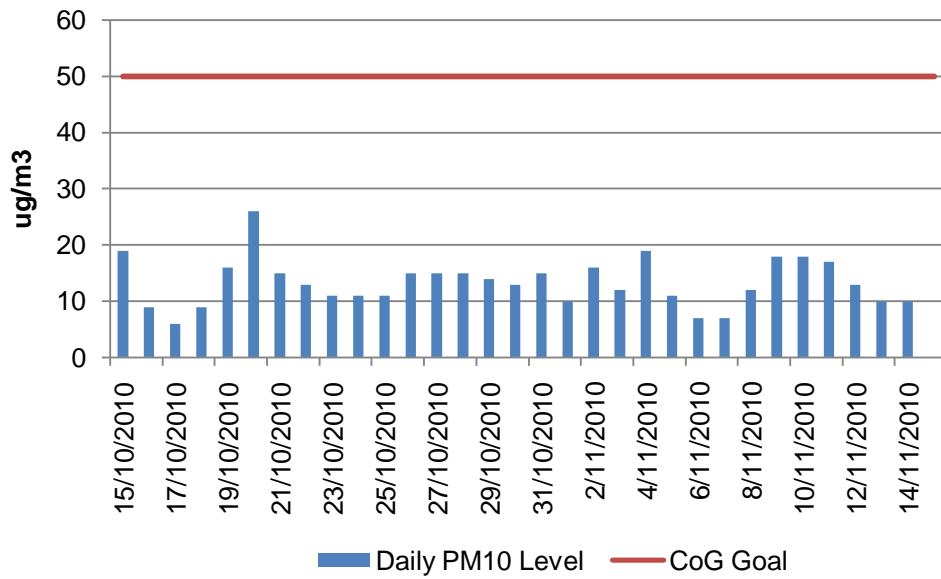


Figure 4.2.3 - Erskine Avenue, Kedron PM10 Results (for monitor location see figure 2.4 – A1)

Kedron State High School, Kedron PM10 Results

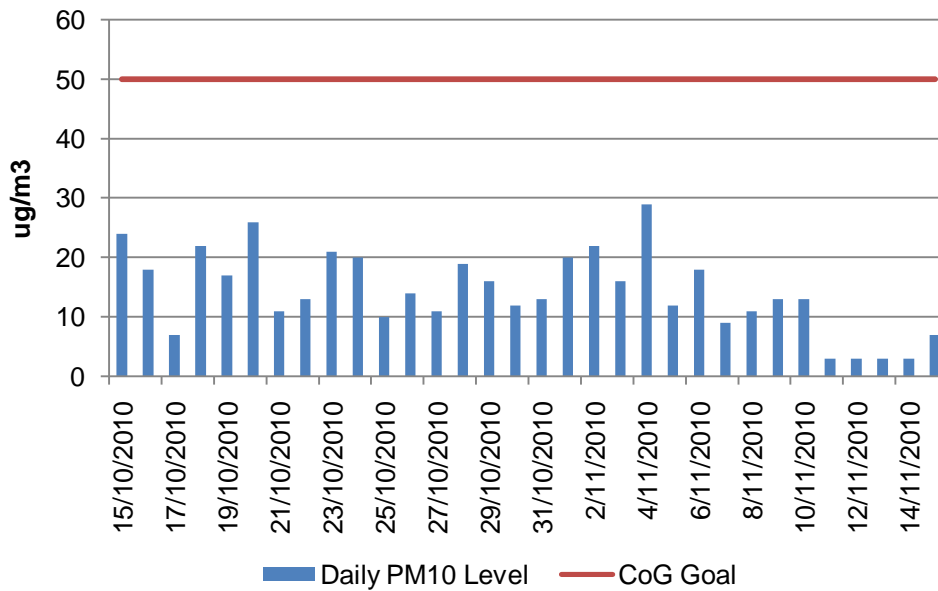


Figure 4.2.4 - Kedron State High School (Adj), Kedron PM10 Results (for monitor location see figure 2.4 – A2)

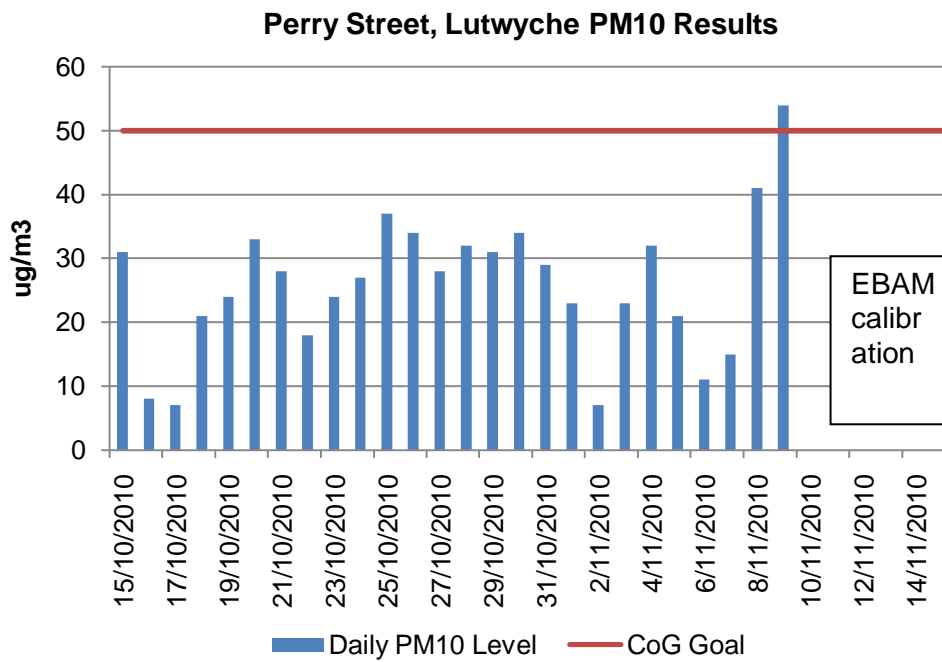


Figure 4.2.5 - Perry Street, Lutwyche PM10 Results (for monitor location see figure 2.4 – A3)

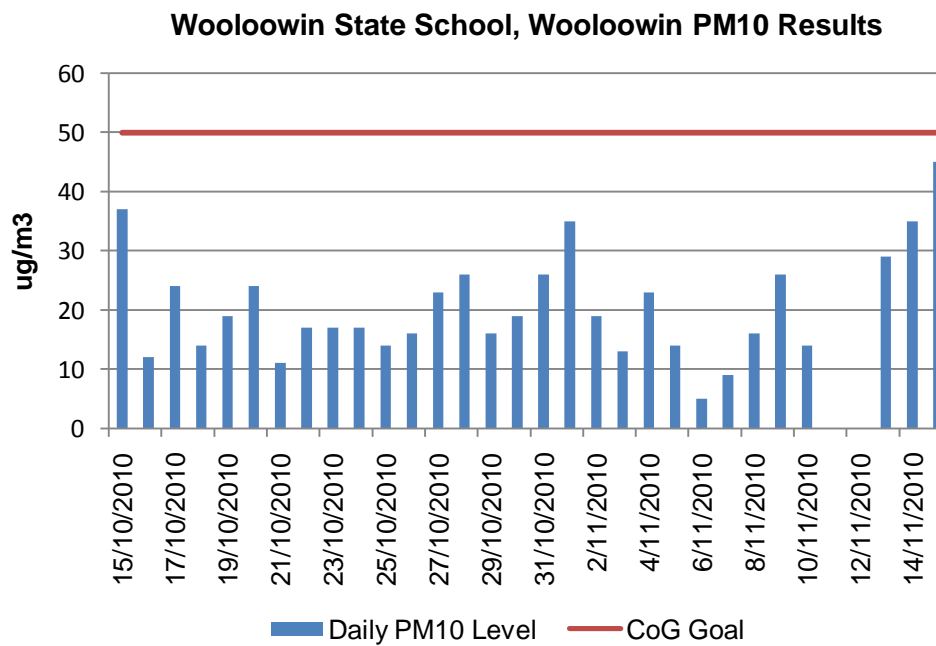


Figure 4.2.6 - Wooloowin State School, Lutwyche PM10 Results (for monitor location see figure 2.4 – A4)

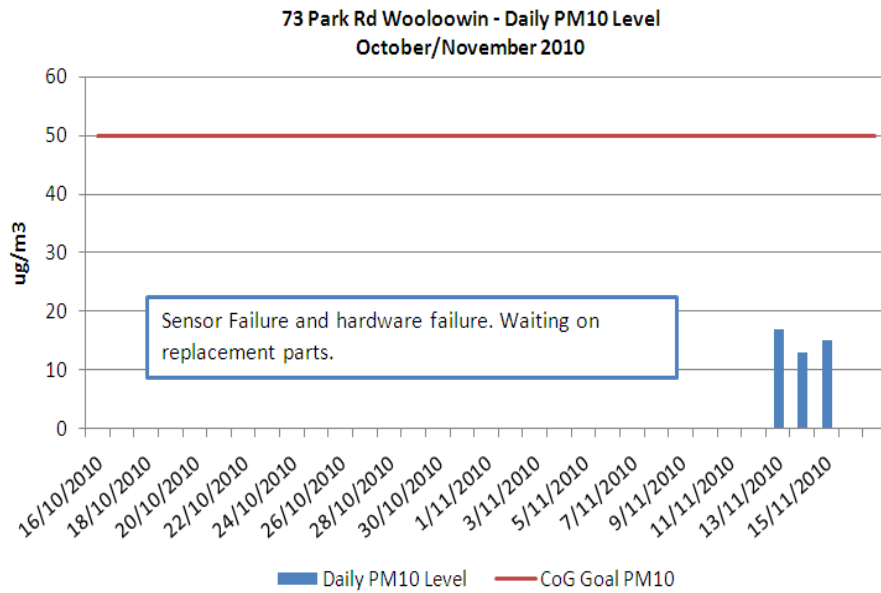


Figure 4.2.7 - 73 Park Road, Woolloowin PM10 Results (for monitor location see figure 2.5)

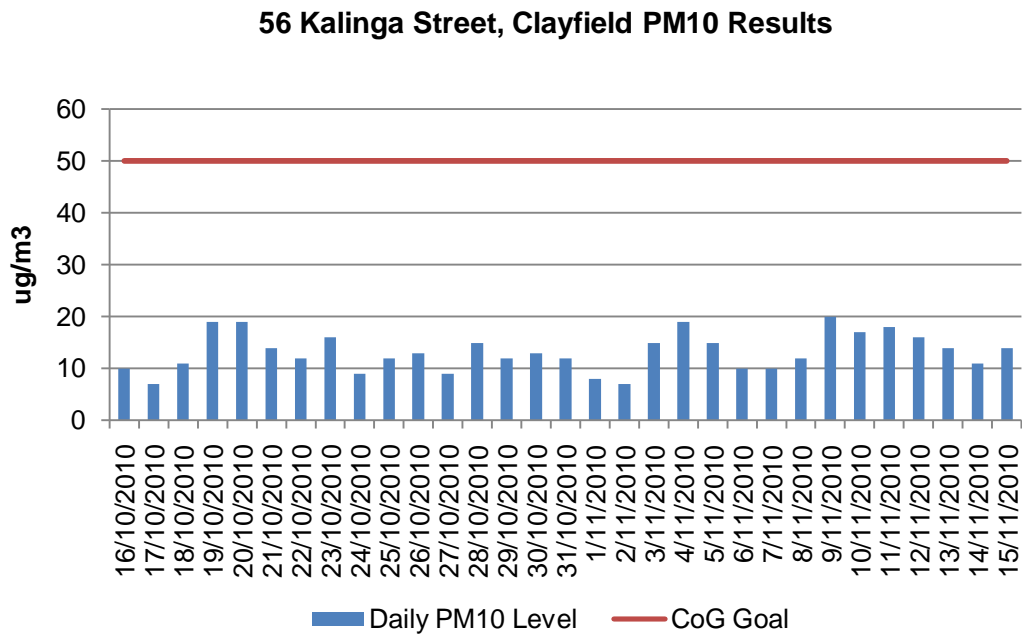


Figure 4.2.8 - 56 Kalinga Street, Clayfield PM10 Results (for monitor location see figure 2.6 – A1)

5 Mabel Street, Clayfield PM10 Results

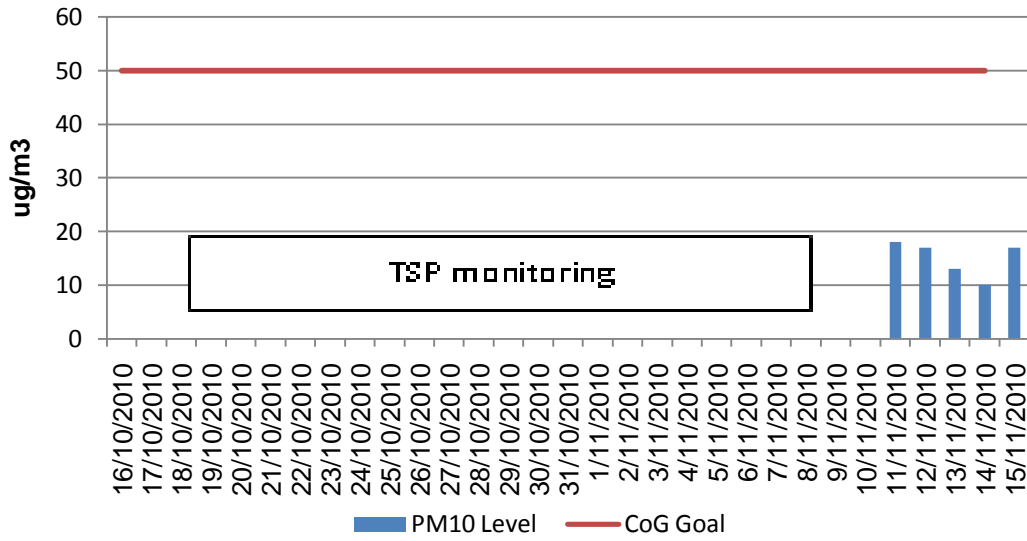


Figure 4.2.9 Kalinga Park Adj. Alma Road, Toombul PM10 Results (for monitor location see figure 2.6- A2)

74 Alma Road, Clayfield PM10 Results

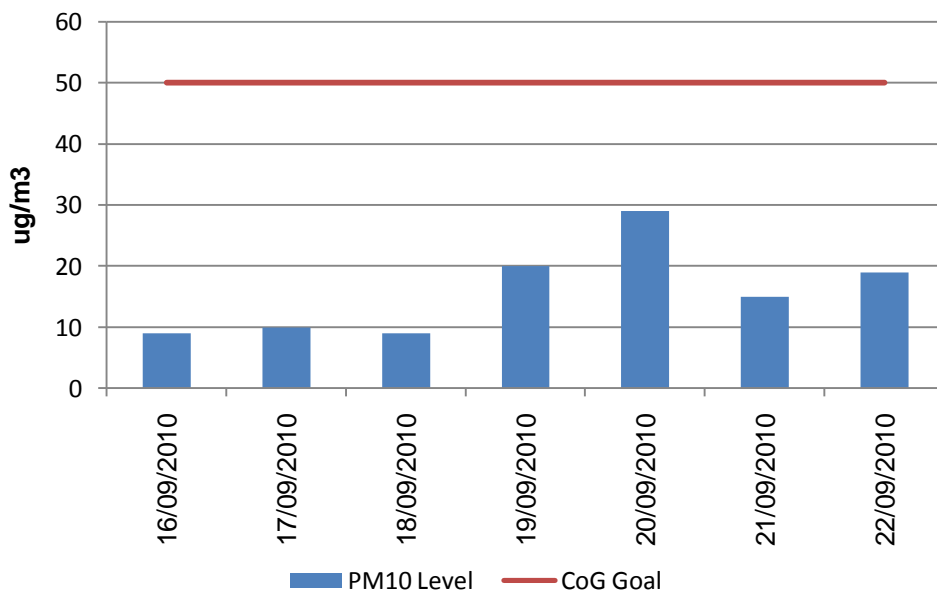


Figure 4.2.10 74 Alma Road, Clayfield PM10 Results (for monitor location see figure 2.6- A3)

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 Jun - Nov 2010

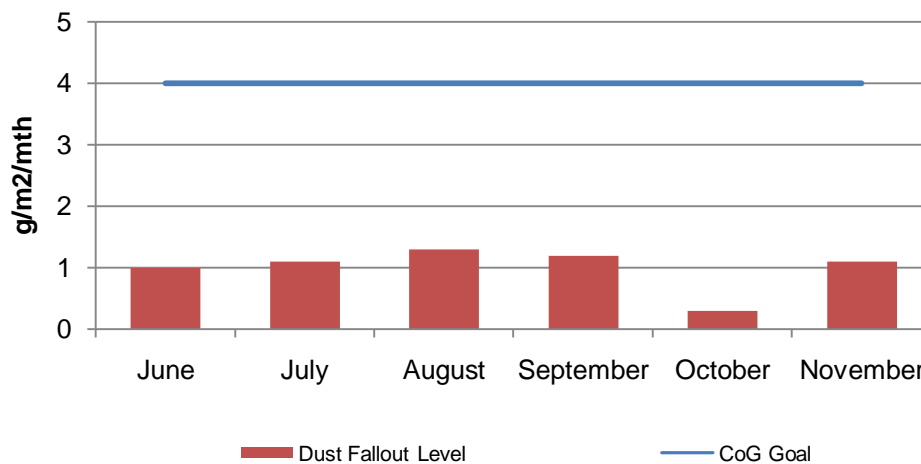


Figure 4.3.1 - 5 Morris Street, Bowen Hills Dust Deposition Results
(location refer to figure 2.1 – D1)

Site Office, Bowen Hills Dust Fallout Jun 2010- Nov 2010

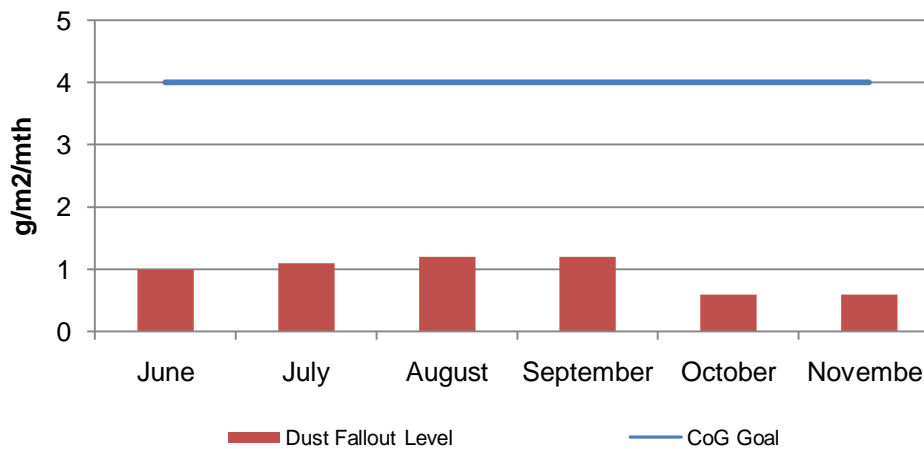


Figure 4.3.2 - Site Office, Bowen Hills Dust Deposition Results
(location refer to figure 2.1- D2)

Mews Apartments, Bowen Hills Dust Fallout Jul- Nov 2010

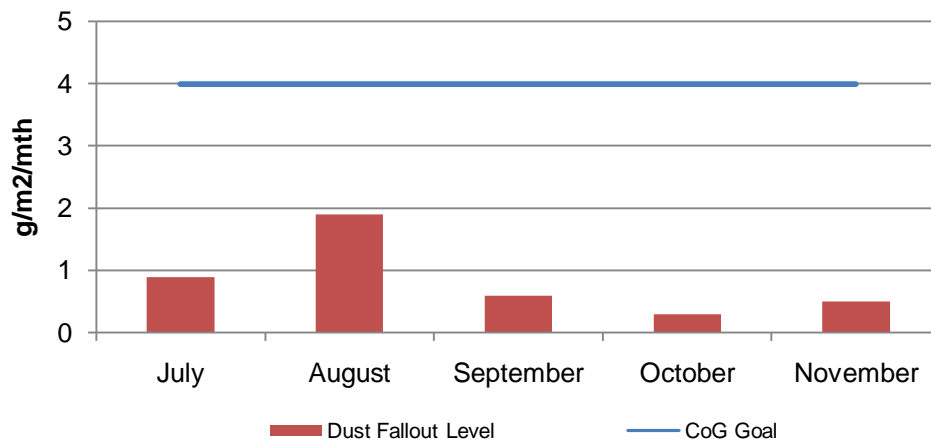


Figure 4.3.3 - Mews Apartments, Bowen Hills Dust Deposition Results
(location refer to figure 2.1- D3)

11 Bryden Street, Bowen Hills Dust Fallout Jul- Nov 2010

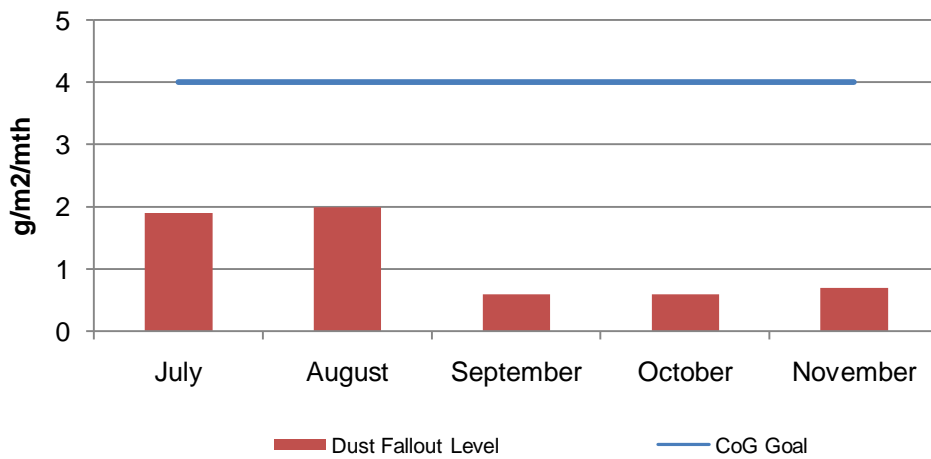


Figure 4.3.4 - 11 Bryden Street, Bowen Hills Dust Deposition Results
(location refer to figure 2.1 - D4)

QLD Newspapers, Bowen Hills Dust Fallout Jun 2010 - Nov 2010

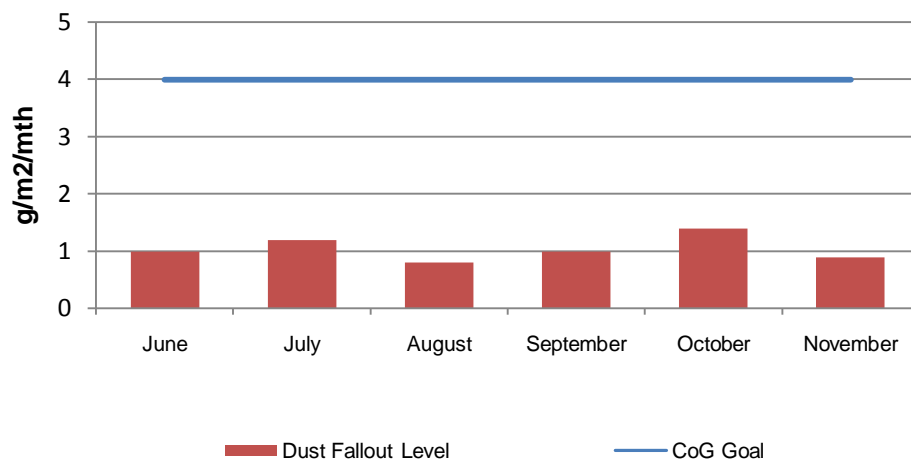


Figure 4.3.5 - Queensland Newspapers, Bowen Hills Dust Deposition Results
(location refer to figure 2.1- D5)

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

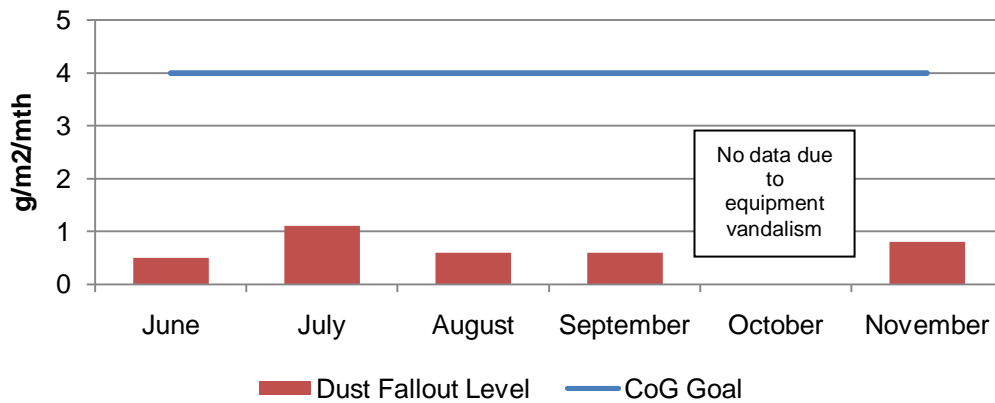


Figure 4.3.6 - Cnr of Thistle & Lucas Street, Lutwyche Dust Fallout Results
(location refer to figure 2.3 - D2)

Kedron Brook Reserve, Northern Busway Dust Fallout Jun- Nov 2010

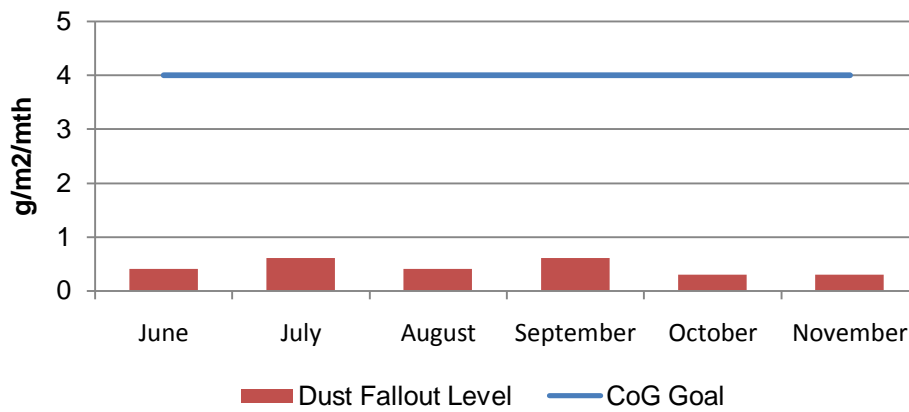


Figure 4.3.7 - Kedron Brook Reserve, Northern Busway Dust Fallout Results (location refer to figure 2.3 – D1)

68 Park Road, Wooloowin Dust Fallout June to November 2010

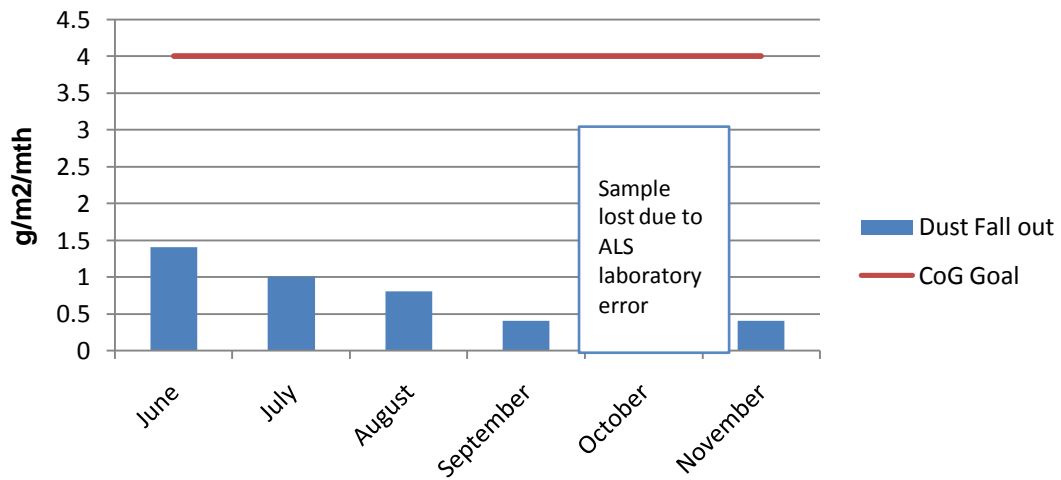


Figure 4.3.8 68 Park Road, Wooloowin Dust Fallout (location refer to fig 2.5)

104 Kent Road, Woolloowin Dust Fallout November 2010

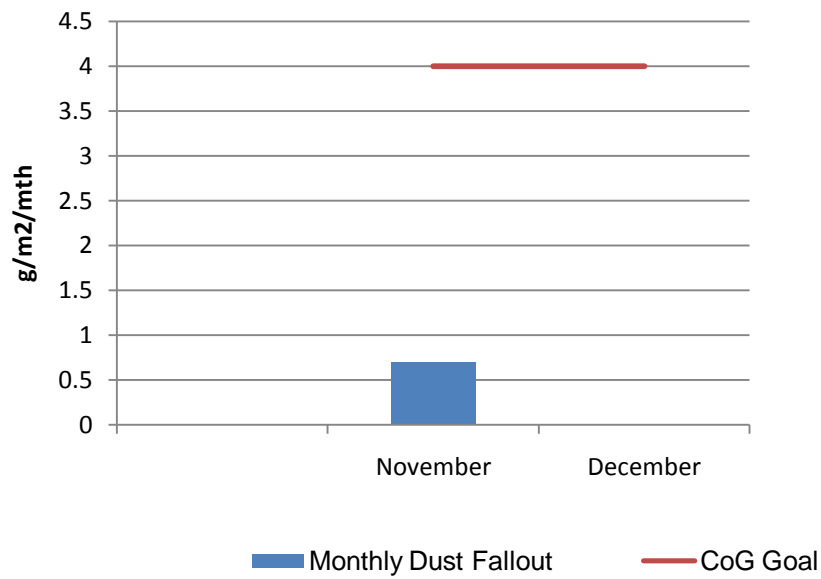


Figure 4.3.9 - 104 Kent Road, Woolloowin Dust Fallout (location refer to fig 2.5)

Kalinga Street, Toombul Dust Fallout June - November 2010

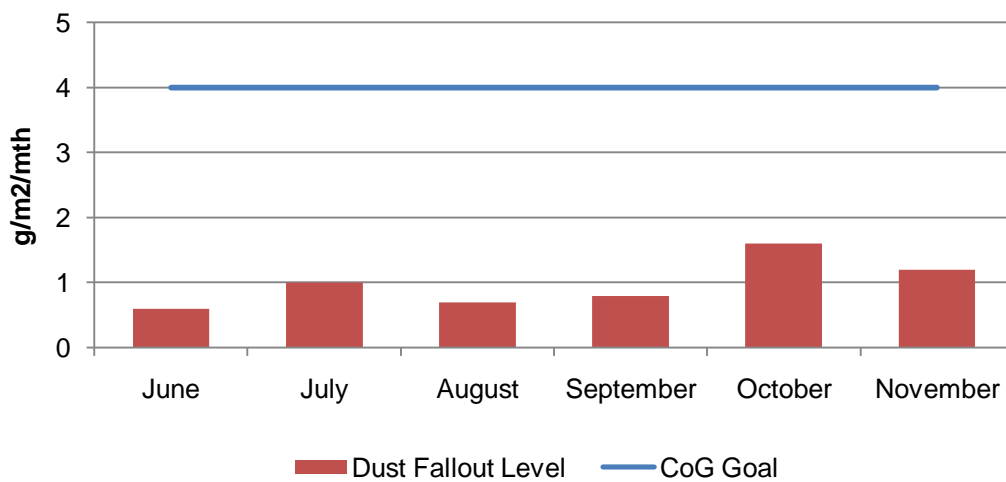


Figure 4.3.10 - 56 Kalinga Street Toombul, Dust Fallout (location refer to figure 2.6 – D1)

Mabel Street, Toombul Dust Fallout Level June - November 2010

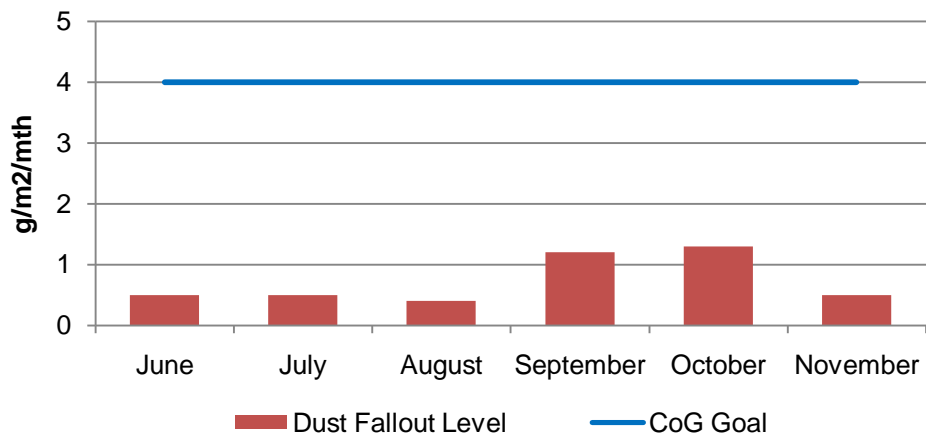


Figure 4.3.11 - Mabel Street Toombul, Dust Fallout (location refer to fig 2.6 – D2)

Bage Street, Toombul Dust Fallout Level June - November 2010

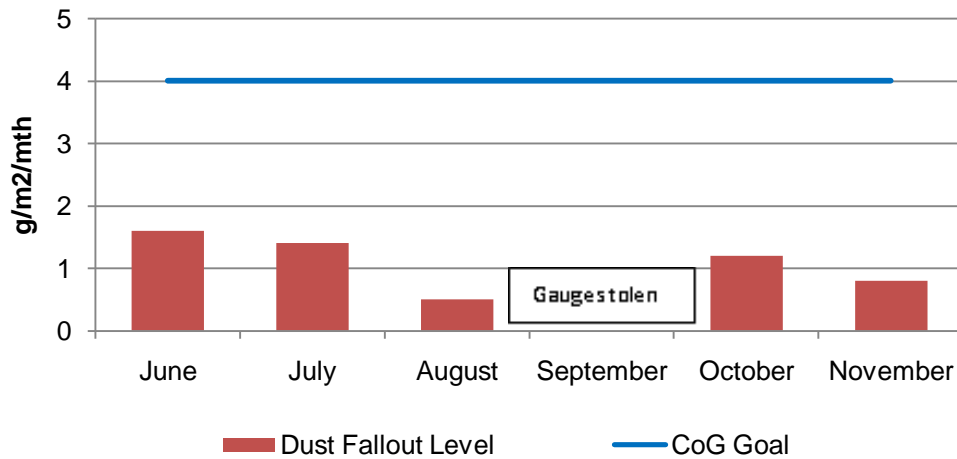


Figure 4.3.12 Mabel Street Toombul, Dust Fallout (location refer to fig 2.6 – D3)

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 Monitor at 71 Park Road, Wooloowin					
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)
16/10/2010 to 15/11/2010	5/11/2010 5:50pm	2.17	11	-	-
	4/11/2010 7:00pm	-	-	54.58	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 occasions this month the daily average recorded by the Dust Trak for PM10 on the Perry Street, Lutwyche was above the CoG goal. This goal is adopted from the Environmental Protection (*Air*) Policy 2008. This policy states that the limit of 50ug/m³ should not be exceeded more than 5 times per year. An onsite investigation was completed to determine the cause of the higher values. The higher values have been attributed to the units were not functioning properly at these times as the flow rate had dropped down below 10L/second. EBAM was recalibrated.

Dust deposition gauge results for Perry Street, Kedron State School and Wooloowin State School have not been received from ALS due some technical problems at ALS lab and will be report in the next month's monitoring 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 & Woollooin 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

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
Queensland Newspapers	16/10/10 - 15/11/10	1.71	10	Results are within CoG goals
Area 6 (Adjacent to Mews Apartments Boundary)	16/10/10 - 20/10/10	0.508	5	Results are within CoG goals

Table 5b: Blast Monitoring Summary – Truro Street K2 Tunnel

Location	Monitoring Period	Peak Particle Velocity (mm/s)	Vibration Goal (mm/s)	Comments
4th November				
Lutwyche Centro (North end of lower level car park)	30 seconds	2.81	25	Results are within CoG goals
Lutwyche Centro (Western side of	30 seconds	3.22	25	Results are within CoG goals

Location	Monitoring Period	Peak Particle Velocity (mm/s)	Vibration Goal (mm/s)	Comments
lower level car park)				
10th November				
Lutwyche Centro (North end of lower level car park)	30 seconds	<2.50	25	Trigger level set at 2.5mm/s. The blast did not trigger the monitor. Results are within CoG goals
Lutwyche Centro (Western side of lower level car park)	30 seconds	3.17	25	Results are within CoG goals

Table 5c: Vibration Monitoring Results Summary - Kedron

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
BCC Substation 8 134 Kedron Park Road	15/10/2010 - 15/11/2010	0.81	2	Monitoring road header tunnelling and extraction of blasted rock. Results within Goals for heritage building
15 Windsor Avenue, Lutwyche	28/10/2010 - 3/11/2010	0.89	10	Monitoring of piling in Kedron South for CC701 Busways structure.

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

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal Day time (mm/s)	Over blast Pressure (dB)	CoG Goal over blast pressure (dB)	Comments
30/10/2010						
15 Park Terrace	30/10/2010 20 seconds	3.81	25	112	130	Results are within adopted goals
46 Gympie Road	30/10/2010 20 seconds	1.27	25	111.8	130	Results are within adopted goals
Kedron Park Road 693 Lutwyche Road	30/10/2010 20 seconds	4.06	25	107.5	130	Results are within adopted goals
BCC Substation 134 Kedron Park Road	30/10/2010 20 seconds	Less than 1.0	25	Less than 120	130	Results are within adopted goals

Table 5e: Blast Monitoring Results Summary - Woolloowin Tunnels Blasting

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal Day time (mm/s)	Comments
11/11/2010				
71 Park Road	11/11/2010 20 seconds	3.81	25	Results are within adopted goals
105 Kent Road	11/11/2010 20 seconds	2.79	25	Results are within adopted goals
Kent Road (Bus Stop)	11/11/2010 20 seconds	2.36	25	Results are within adopted goals
Workshop on site	11/11/2010 20 seconds	3.33	25	Results are within adopted goals
Woolloowin Animal Hospital 86 Kent Road	11/11/2010 20 seconds	4.70	10	Results are within adopted goals
85 Kent Road	11/11/2010 20 seconds	2.29	25	Results are within adopted goals
12/11/2010				
71 Park Road	12/11/2010 20 seconds	5.46	25	Results are within adopted goals
105 Kent Road	12/11/2010 20 seconds	4.83	25	Results are within adopted goals
Kent Road (Bus Stop)	12/11/2010 20 seconds	4.06	25	Results are within adopted goals
Workshop on site	12/11/2010 20 seconds	3.81	25	Results are within adopted goals

Woolloowin Animal Hospital 86 Kent Road	12/11/2010 20 seconds	2.67	25	Results are within adopted goals
85 Kent Road	12/11/2010 20 seconds	4.19	25	Results are within adopted goals

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	5:16pm 20/10/2010 To 10:48am 2/11/2010	4.32	5	Results are within CoG goals. PPV occurred on 8:57am 21/10/2010 for this monitoring period.
71 Park Road, Woolloowin	8:40am 3/11/2010 To 2:07pm 11/11/2010	2.29	5	Results are within CoG goals. PPV occurred on 11:04am 11/11/2010 for this monitoring period.

Table 5g: Vibration Monitoring Results Summary – Toombul

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Goal (Continuous) (mm/s)	Comments
5 Lodge Road, Clayfield	9/11/2010 –15/11/2010	1.00	5	Monitoring indicates that CoG goals are being met
1 Lewis Street, Clayfield	20/10/2010 –15/11/2010	2.23	5	Monitoring indicates that CoG goals are being met
15 Lewis Street, Clayfield	18/10/2010 –15/11/2010	0.07	5	Monitoring indicates that CoG goals are being met
31 Lewis Street, Clayfield	6/10/2010 –19/10/2010	0.22	5	Monitoring indicates that CoG goals are being met
34 Lewis Street, Clayfield	15/10/2010 –27/10/2010	2.05	5	Monitoring indicates that CoG goals are being met

5.3 Compliance with Vibration Goals

As a result of vibration monitoring across the project there were no exceedances identified.

6.0 Community enquiries and complaints

A total of 266 community complaints were reported to the project between 16 October and 15 November 2010. 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 October to 15 November 2010		
Issues	No.	No. of stakeholders
Site noise out-of-hours	62	44
Construction vehicle movements	34	26
Parking	33	30
Driver Behaviour	25	21
Site noise	17	15
Traffic Management	16	15
Worker Behaviour	16	16
Spoil haulage routes and queuing	12	9
Vehicle Damage	10	9
Site out-of-hours	10	9
PUPs noise out-of-hours	10	8
Truck noise	9	9
Site vibration	9	7
Site dust	8	6
Property Access	8	6
Mitigation	8	8
General Construction	8	7
Lane closure	7	6
Roadheader out-of-hours	7	6
Consultation	7	7
Other	82	76
Total Complaints	266	189

6.1 Top 10 Issues Raised:

