



Airport Link / Northern Busway Project

Monthly Environmental Monitoring Report

September 2011

TABLE OF CONTENTS

1.0	Report Purpose and Scope	3
2.0	Monitoring Locations	3
3.0	Noise Monitoring	9
3.1	Overview of Noise Mitigation Measures.....	9
3.2	Noise Monitoring Results	9
3.3	Compliance with Noise Goals	19
4.0	Air Quality Monitoring.....	19
4.1	Overview of Air Quality Mitigation Measures	19
4.2	Air Quality Monitoring Results – PM10	19
4.3	Air Quality Monitoring Results – TSP Results.....	26
4.4	Air Quality Monitoring Results – Dust Deposition Results	26
4.5	Compliance with Air Quality Goals.....	36
5.0	Vibration Monitoring	36
5.1	Overview of Vibration Mitigation Measures.....	36
5.2	Vibration Monitoring Results	36
5.3	Compliance with Vibration Goals	38

1.0 Report Purpose and Scope

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

The monitoring data covered in this report is for the September 2011 reporting period, from 16th August 2011 to 15th September 2011.

2.0 Monitoring Locations

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

Figure 2.1 - Bowen Hills Monitoring Locations



Legend

● Noise (during construction)

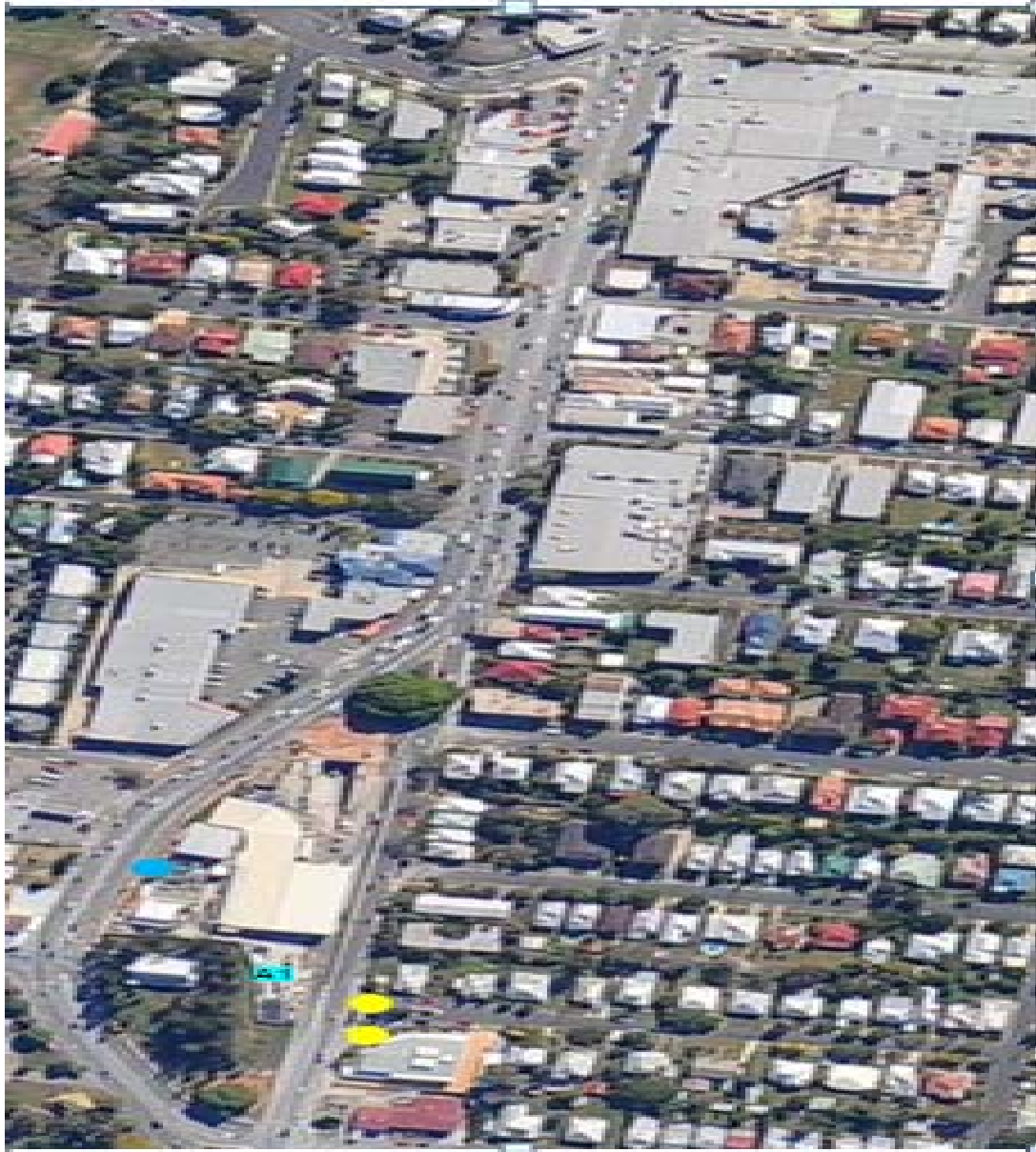
● Vibration

● Air (TSP/PM₁₀)

● Air (Dust Deposition)

Note: locations are indicative only

Figure 2.2 - Truro Street Mid Tunnel Monitoring Locations



Legend

● Noise (during construction)

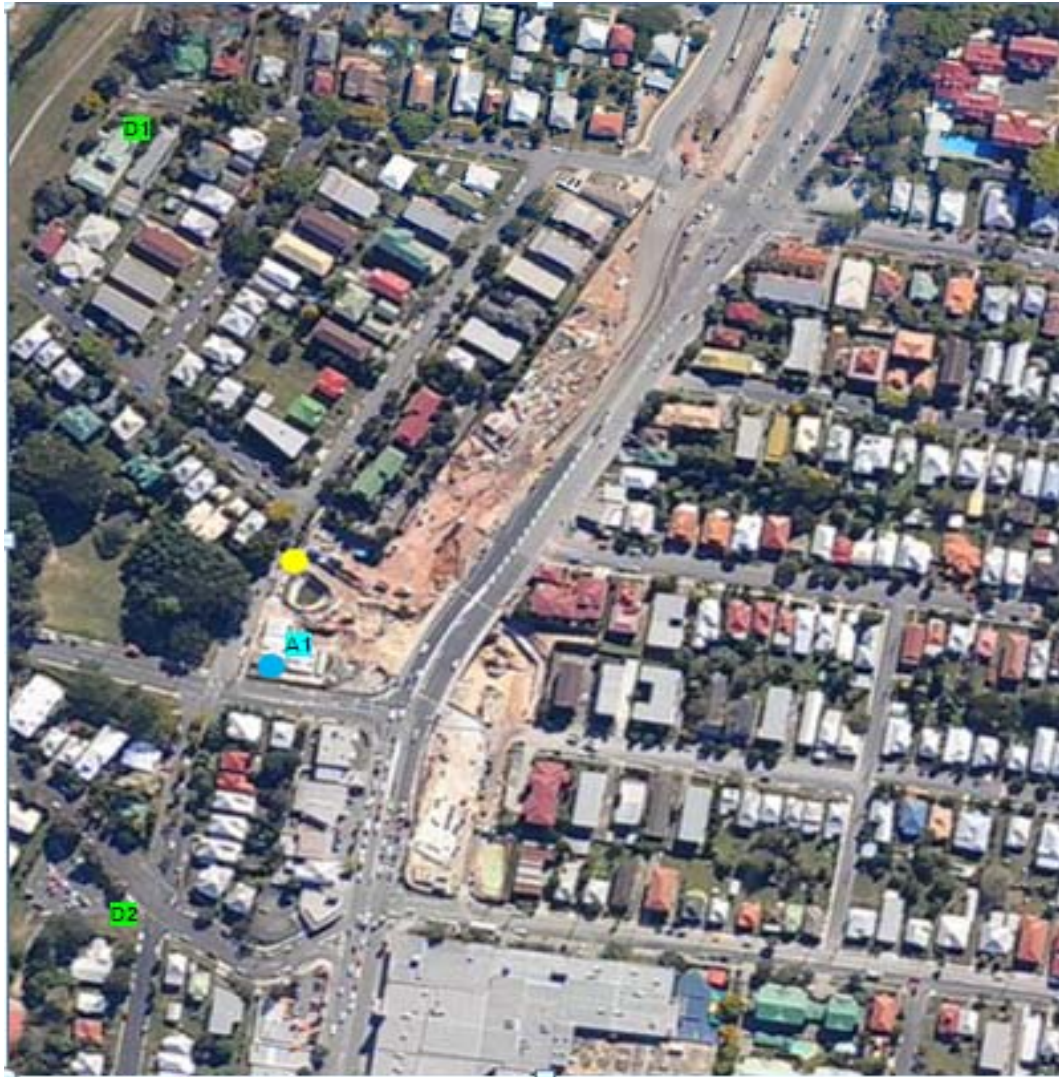
● Vibration

● 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

2.4 - Kedron Monitoring Locations



Source: NearMap 2011

Figure 2.4 – Kedron Monitoring Locations

Legend

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

Note: locations are indicative only

2.5 - Woolloowin Monitoring Locations



Legend

● Noise (during construction)

● Vibration

● Air (CO and NO₂)

● Air (PM₁₀/TSP)

● 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 in accordance with DERM's Noise Monitoring Manual (March 2000) and Australian Standard AS 1055:1997 to help measure impacts and assist the team plan works and appropriate mitigations if required. The type and timing of monitoring is influenced by the activities being undertaken and relevant Noise Goals (inside buildings and residents living areas where allowed at night and during the day).

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

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

3.1 Overview of Noise Mitigation Measures

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

1. Undertake noise modelling for sections of works adjacent to sensitive receptors.
2. Reasonable and practical mitigation measures that have been implemented to date include the following:
 - a. Temporary noise barriers (precast concrete barriers and plywood):
 - i. Federation/Morris Streets, Windsor
 - ii. Lutwyche Road (CC102), Windsor
 - b. Temporary noise barrier (shipping container) installations:
 - i. Federation/Morris/Cedric Streets, Windsor
 - c. Consultation with property owners prior to commencing works and during construction works
 - d. Installation of mitigation measures at affected residents on a case-by-case basis
 - e. Investigating the early installation of permanent noise barriers at early stages.
 - f. Acoustic shielding of various plant
 - g. Regular awareness, training and reinforcement of work behaviours of staff, subcontractors, spoil haulage drivers, and delivery drivers to prevent or minimise noise generation in work areas and carparks
 - h. Use of temporary acoustic treatment (e.g. sound curtains around onsite generators and access/ egress from sites)
 - i. Installation of directional reversing alarms (e.g. 'squawkers') on plant (especially those working out of normal working hours)

3.2 Noise Monitoring Results

There are no results of TJH attended noise monitoring this month for Bowen Hills.

On August 16th at 7.14 pm internal monitoring was conducted at 30 Federation St, Windsor. TJH is unable to report this session as the resident ended the monitoring session before a full evaluation of noise levels could be completed.

Calls to access other properties for internal noise monitoring have either been declined or have not been responded to.

Table 3a: 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
2/49 Lamington Avenue, Lutwyche						
Ground Floor Brick Apartment (Living Room)	8/09/2011 10:43am – 10:57am	37.9	45	36.1	55	<p>Monitoring Type Attended. Internal. Windows and Doors closed</p> <p>Atmospheric Conditions Fine, very light breeze</p> <p>Noise Sources Dominant noise sources were from non-TJH activities. These included the hum of a fridge motor, traffic on Lamington Ave, birds, a clock, a plane and the resident. TJH noises came from trucks leaving the site and metal on metal bangs</p> <p>Discussion Monitoring was to assess the level of impact being caused to residents in proximity to the Lamington Av/Lutwyche Rd 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 – 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
85 Jackson Street, Clayfield						
Double Storey Timber House (Living Room)	22/08/2011 1:35pm – 1:50pm	57.7	45	59	55	<p>Monitoring Type Internal attended monitoring, windows and doors open</p> <p>Atmospheric Conditions Moderate SE wind, overcast</p> <p>Noise Sources TJH sources (jack hammering, water blasting, 'hum' from site) plus non-TJH sources (train, birds, plane, resident's phone, gecko, talking, neighbour's vehicle)</p> <p>Discussion Monitoring indicates elevated LAeq and LA10 levels throughout the session. It should be noted that the session was significantly influence by non-TJH noise sources including resident, train, plane and neighbour's vehicle. However, TJH jack hammering activities were identified throughout the majority of the session. Please see mitigation discussion below</p> <p>Mitigation Measures Include a 6m noise wall and the master bedroom of this property in mitigated in consultation with the resident (not operational throughout the session) Please note that the stakeholder was offered portable air-conditioning or relocation throughout duration of jack hammering works (3-5days) which were both declined prior to works commencing. An NCR was raised.</p>

Double Storey Timber House (Living Room)	22/08/2011 1:56pm – 2:11pm	39.4	45	39.9	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Atmospheric Conditions Moderate SE wind, overcast</p> <p>Noise Sources No TJH sources identified plus non-TJH sources ('hum' from fridge, birds, plane, house, train, local traffic, resident)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and the master bedroom of this property in mitigated in consultation with the resident (not operational throughout the session)</p>
66 Kalinga Street, Clayfield						
Double Storey Queenslander (Living Room)	23/08/2011 2:42pm – 2:57pm	33.9	45	34.6	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed, mitigation operating</p> <p>Atmospheric Conditions Gusty SE wind, overcast</p> <p>Noise Sources TJH noise sources (jackhammer, site hum, TJH horn, bang/drop) plus non-TJH sources (resident, traffic, plane, birds)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and master bedroom is mitigated</p>
Double Storey Queenslander (Living Room)	23/08/2011 2:57pm – 3:11pm	34.3	45	34.6	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed, mitigation operating</p> <p>Atmospheric Conditions Gusty SE wind, overcast</p> <p>Noise Sources TJH noise sources (jackhammer, site hum, bang/drop, metal scrape, TJH horn, drilling) plus non-TJH sources (resident, train, birds).</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and master bedroom is mitigated</p>

89 Jackson Street, Clayfield						
Double Storey Timber House (Front Bedroom)	8/09/2011 9:23am – 9:38am	44.4	45	40.3	55	Monitoring Type Internal attended monitoring, windows and doors open Atmospheric Conditions Fine, very light breeze Noise Sources TJH sources (exhaust fans, franna, hammering, site noise/banging). Non TJH sources (TV/resident, train, siren, plane, loud car) Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall
Double Storey Timber House (Front Bedroom)	8/09/2011 9:56am – 10:12am	35.1	45	35.5	55	Monitoring Type Internal attended monitoring, windows and doors closed Atmospheric Conditions Fine, very light breeze Noise Sources TJH sources (exhaust fan, franna, site noise, metal bang). Non-TJH sources (birds, residents, train). Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall
Double Storey Timber House (Front Bedroom)	8/09/2011 3:38pm – 3:53pm	34.8	45	35.5	55	Monitoring Type Internal attended monitoring, windows and doors closed Atmospheric Conditions Fine, very light breeze Noise Sources TJH sources (franna and site noise). Non-TJH sources (birds, train, resident, traffic and plane). Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall
Double Storey Timber House (Front Bedroom)	8/09/2011 3:19pm – 3:34pm	42.1	45	42.1	55	Monitoring Type Internal attended monitoring, windows and doors open Atmospheric Conditions Fine, very light breeze Noise Sources TJH sources (franna, hammering, banging, grinding/cutting). Non-TJH noise sources (resident, train, birds, dog). Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall

66 Kalinga Street, Clayfield						
Double Storey Queenslander (Living Room)	14/09/2011 3:14pm – 3:29pm	32.1	45	31.3	55	Monitoring Type Internal attended monitoring, windows and doors closed, mitigation operating Atmospheric Conditions Fine, still Noise Sources TJH noise sources (generator, site noise, banging, TJH horns) plus non-TJH sources (train, traffic, birds, resident, airplane) Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall and this property is mitigated
Double Storey Queenslander (Living Room)	14/09/2011 3:31pm – 3:46pm	32.2	45	31.6	55	Monitoring Type Internal attended monitoring, windows and doors closed, mitigation operating Atmospheric Conditions Fine, still Noise Sources TJH noise sources (generator, site noise, banging, grinding/cutting) plus non-TJH sources (train, traffic, birds, resident, airplane) Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall and this property is mitigated

Table 3c: 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						
Double Storey Queenslander (Living Room)	14/09/2011 8:33pm – 8:48pm	38.8	40	48.4	50	Monitoring Type Internal attended monitoring, windows and doors open Atmospheric Conditions Fine, still Noise Sources TJH sources (bangs & drops, crane engine, hum' from site fans) plus non-TJH sources (plane, siren, train, local traffic, resident) Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall

Double Storey Queenslander (Living Room)	14/09/2011 8:51pm – 9:06pm	39.2	40	46.2	50	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Atmospheric Conditions Fine, still</p> <p>Noise Sources TJH sources (bangs, power saw, 'hum' from site fans) plus non-TJH sources (train, traffic, resident).</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall.</p>
--	-------------------------------	------	----	------	----	---

Address of Monitoring Location	Date of Request	Time of Requested Monitoring	Construction Activity to be Monitored	Date Access Denied	Comments
5/81 Alma Road, Clayfield	30/08/2011	9:00am	General Construction	29/08/2011	TJH cancelled monitoring session due to urgent situation on site.

Table 3d: 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) (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, Wooloowin								
Single Level Brick Flat (Dining Room)	16/08/2011 11:33am – 11:48 am	48.2	45	47.3	55	-	-	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Open</p> <p>Atmospheric Conditions Fine, moderate gusty breeze</p> <p>Noise Sources Consistent throughout the session was general traffic which was louder than most construction noise heard (i.e. Spoil shed activity). Other Non-TJH noise sources included petrol operated landscaping tools from adjacent residence, car alarm, aircraft, and wind in nearby trees</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring session. Even though LAeq was exceeded during the monitoring sessions, the nature and volume of noise from sources not associated with TJH was determined to be the dominant noise sources. Therefore it was concluded that that day time CoG goals were met</p> <p>Mitigation Measures An acoustic shed and noise wall is in place around Wooloowin Site. This property is owned by DMR and is used by TJH for monitoring purposes</p>
Single Level Brick Flat (Dining Room)	23/08/2011 12:01am – 12:16am	28.7	40	-	-	35.8	50	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Closed</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)	Comments
								<p>Atmospheric Conditions Partly cloudy , breezy with gusts.</p> <p>Noise Sources The predominant sources of noise are listed below corresponding with the time that they occurred. Consistent throughout the session was a 'hum' from the spoil shed. Site Machinery was constant for the first the first three minutes (# Log 1 - 16). Other noises heard were Bang and Trucks. There were no possible noise issues</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring session. Monitoring indicates that night time CoG goals were met</p> <p>Mitigation Measure An acoustic shed and noise wall is in place around Wooloowin Site. This property is owned by DMR and is used by TJH for monitoring purposes</p>
Single Level Brick Flat (Dining Room)	24/08/2011 8:33pm – 8:48pm	31.8	40	-	-	38.2	50	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Closed</p> <p>Atmospheric Conditions Partly cloudy , breezy with gusts</p> <p>Noise Sources The predominant sources of noise are listed below corresponding with the time that they occurred. Consistent throughout the session was a 'hum' from the spoil shed. Other noises heard were site machinery, several bangs and truck movements inside the spoil shed. Non-TJH noise sources included aircraft, barking dogs, trains, Traffic on adjacent streets, emergency sirens and adjacent residents. There were no possible noise issues</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring session. Monitoring indicates that night time CoG goals were met</p> <p>Mitigation Measures An acoustic shed and noise wall is in place around Wooloowin Site. This property is owned by DMR and is used by TJH for monitoring purposes</p>
Single Level Brick Flat (Dining Room)	05/09/2011 3:50pm – 4:06pm	45.8	45	42.9	55	-	-	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Open</p> <p>Atmospheric Conditions overcast , gusty wind</p> <p>Noise Sources The predominant sources of noise are listed below corresponding with the time that they occurred. Consistent throughout the session was general traffic (23 out of the 30 loudest readings) which was consistently louder than construction related noise heard (i.e. Spoil shed activity, which only accounts for one of the 30 loudest events). As a result of the dominance of Non</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)	Comments
								<p>construction related noise levels, TJH has determined that noise levels in this monitoring session do not qualify as an NCR</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> <p>Mitigation Measures An acoustic shed and noise wall is in place around Woolloowin Site. This property is owned by DMR and is used by TJH for monitoring purposes</p>
Single Level Brick Flat (Dining Room)	14/09/2011 2:09am – 2:24am	31.3	40	-	-	34.7	50	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Closed</p> <p>Atmospheric Conditions Clear and still</p> <p>Noise Sources Site noise included: Hum from fans and noise from within the spoil shed, Other noise sources included traffic on adjacent streets</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring session. Monitoring indicates that night time CoG goals were met</p> <p>Mitigation Measures This property is owned by DMR and is used by TJH for monitoring purposes</p>
Single Level Brick Flat (Dining Room)	15/09/2011 7:41pm – 7:56pm	33.3	40	-	-	41.7	50	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Closed</p> <p>Atmospheric Conditions Fine, still</p> <p>Noise Sources The predominant sources of noise are listed below corresponding with the time that they occurred. Consistent throughout the session was a 'hum' from the spoil shed. Other noises heard were site machinery, several bangs, metal on metal and truck movements inside the spoil shed. Non-TJH noise sources included barking dogs, aircraft, traffic in adjacent streets and emergency sirens. There were no possible noise issues</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring session. Monitoring indicates that night time CoG goals were met</p> <p>Mitigation Measures This property is owned by DMR and is used by TJH for monitoring purposes</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
228 Gympie Road, Kedron								
In living room (doors and windows open)	23/08/2011 10:33 am – 10:48am	57.3	45	56.4	55	-	-	<p>Monitoring Type Attended. Internal.</p> <p>Atmospheric Conditions Overcast, light wind , patchy rain</p> <p>Noise Sources The highest recorded TJH noise was 59.5, with a range of non-TJH noises from 59.5 up to 63 for traffic and 71 for sirens. Non-TJH would be the main contributors to the high average</p> <p>Discussion Internal LAeq noise goals were exceeded as a result of activities mentioned. No complaints were received on this date. Monitoring was conducted in an uninhabited house owned by TJH with no mitigation measures applied to house.</p> <p>Mitigation Measures This property is owned by DMR and is used by TJH for monitoring purposes</p>
In living room (doors and windows closed)	23/08/2011 10:39 am – 10:54 am	45.4	45	44.5	55	-	-	<p>Monitoring Type Attended. Internal.</p> <p>Atmospheric Conditions Overcast, light wind , patchy rain</p> <p>Noise Sources The loudest ten second interval recorded where noise could be attributed solely to TJH was measured at 45.1 dB (resulting from a banging noise on site). Though is 0.1 db above the CoG noise goal for LAeq, there is an additional 50 out of the 90 total individual ten second intervals with L_{AMax} values ranging from 45.2 to 54.6 where non TJH noise sources are listed as the dominant noise source. Therefore, the resulting exceedance of the LAeq goal is a result of Non-TJH noise sources and not construction activities.</p> <p>Discussion Internal LAeq noise goals were exceeded as a result of activities mentioned. No complaints were received on this date. Monitoring was conducted in a uninhabited house owned by TJH with no mitigation measures applied to house.</p> <p>Mitigation Measures This property is owned by DMR and is used by TJH for monitoring purposes</p>

In living room (doors and windows open)	11/09/2011 15:26 – 15:40	65.8	45	65.2	55	-	-	<p>Monitoring Type Attended. Internal.</p> <p>Atmospheric Conditions Fine, light clouds</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic and tunnel “hum” from vent fan. Other audible noise sources include roller, grader, squawker, Gympie Rd traffic and site noise.</p> <p>Discussion Internal LAeq noise goals were exceeded as a result of all activities mentioned. No complaints were received on this date. Monitoring was conducted in an uninhabited house with no mitigation measures applied to house.</p> <p>Mitigation Measures This property is owned by DMR & is used by TJH for monitoring purpose.</p>
In living room (doors and windows closed)	11/09/2011 15:44 – 15:58	49.4	45	48.9	55	-	-	<p>Monitoring Type Attended. Internal.</p> <p>Atmospheric Conditions Fine, light clouds</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic and tunnel “hum” from vent fan. Other audible noise sources include roller, grader, squawker, Gympie Rd traffic and site noise.</p> <p>Discussion Internal LAeq noise goals were exceeded as a result of all activities mentioned. No complaints were received on this date. Monitoring was conducted in a uninhabited house with no mitigation measures applied to house.</p> <p>Mitigation Measures This property is owned by DMR and is used by TJH for monitoring purposes.</p>
2-16 Somerset Rd, Kedron								

In bedroom (Windows and doors open)	01/09/2011 7:47pm – 8:02pm	53.1	40	-	-	55	50	<p>Monitoring Type Attended. Internal.</p> <p>Atmospheric Conditions Clear, still wind</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road a generator and the resident.</p> <p>Discussion Noise from Gympie Road traffic, noise from the resident and a generator at the end of Somerset road used for the tunnel vent was audible throughout the monitoring sessions. Analysis of the data concluded that with windows and doors open the CoG noise goals were exceeded. The dominant noise sources throughout the period were Gympie Road traffic a generator and the resident.</p> <p>Mitigation Measures Concrete noise wall completed</p>
In bedroom (Windows and doors closed)	01/09/2011 8:05pm – 8:20pm	39.4	40	-	-	41.2	50	<p>Monitoring Type Attended. Internal.</p> <p>Atmospheric Conditions Clear, still wind</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic a generator and the resident.</p> <p>Discussion Noise goals set by CoG were met for this session.</p> <p>Mitigation Measures Concrete noise wall completed</p>

3.3 Compliance with Noise Goals

There was one exceedence of the Coordinator General's Noise Goals as a result of TJH construction activities at 85 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.

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

4.1 Overview of Air Quality Mitigation Measures

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

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

4.2 Air Quality Monitoring Results – PM10

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

Please note the outstanding PM10/PM2.5 results from last month's monitoring report for Kedron State School and 71 Park Road are included in this report.

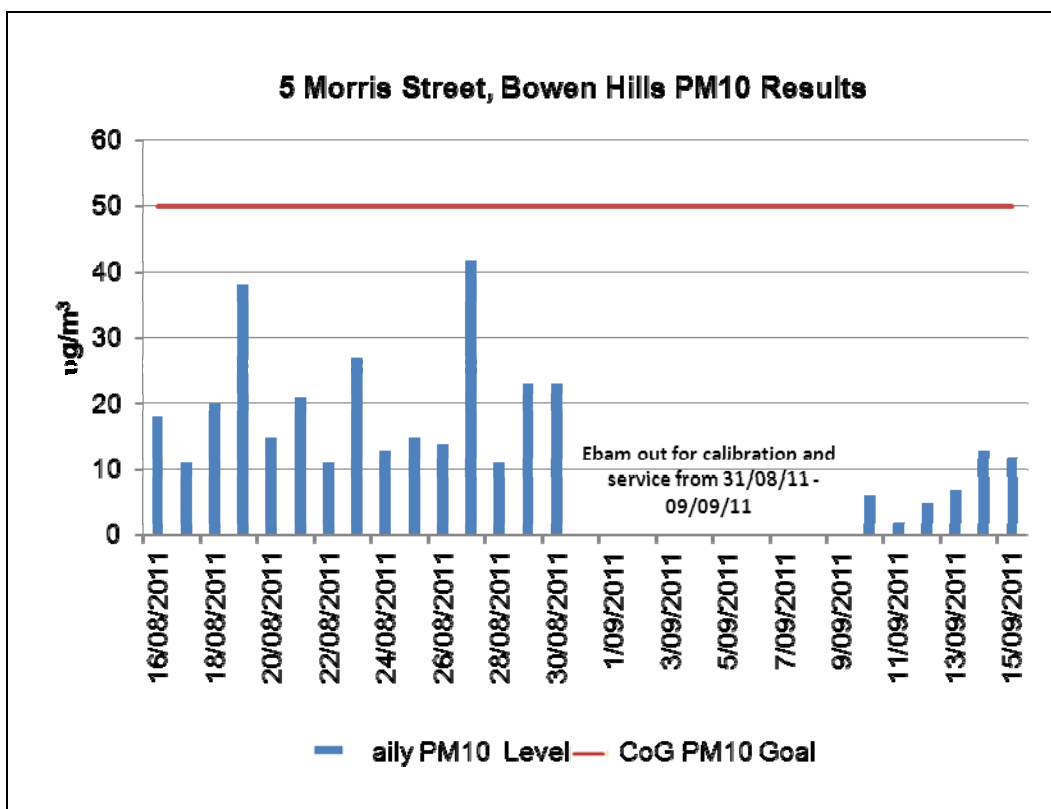


Figure 4.2.1: 5 Morris Street, Bowen Hills PM10 Results (for monitor location see figure 2.1)

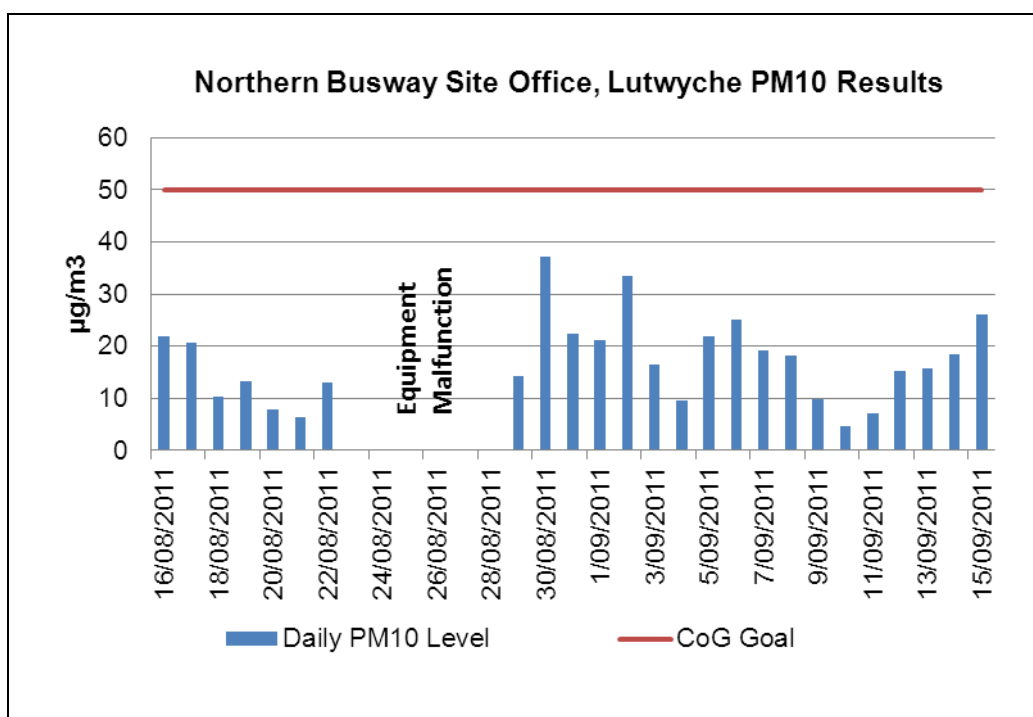


Figure 4.2.2: Northern Busway Site Office, Lutwyche PM10 Results (for location see figure 2.3 – A1)

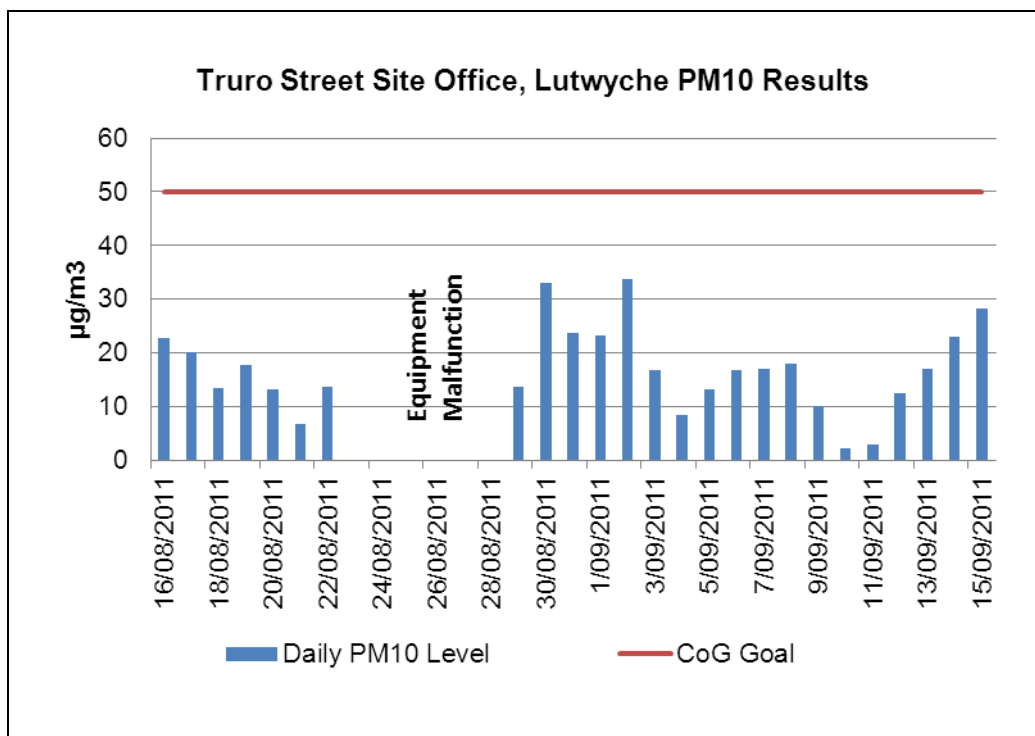


Figure 4.2.3: Truro Street Mid Tunnel Site Office, PM10 Results (for location see figure 2.2 – A1)

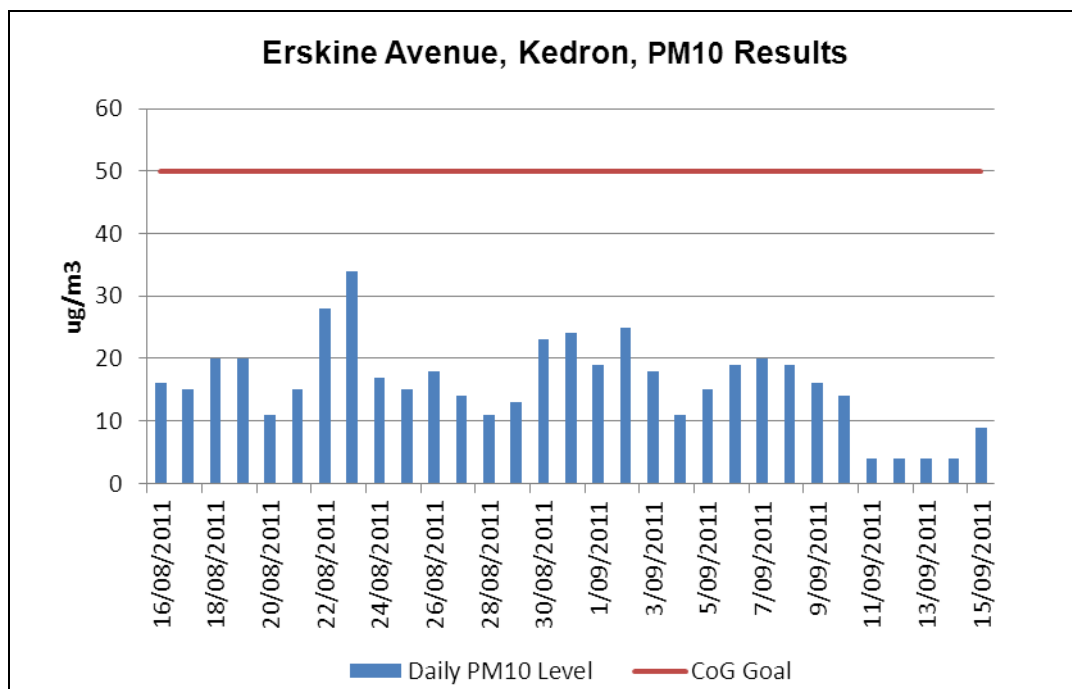


Figure 4.2.4: Erskine Avenue, Kedron PM10 Results (for monitor location see figure 2.4 – A1)

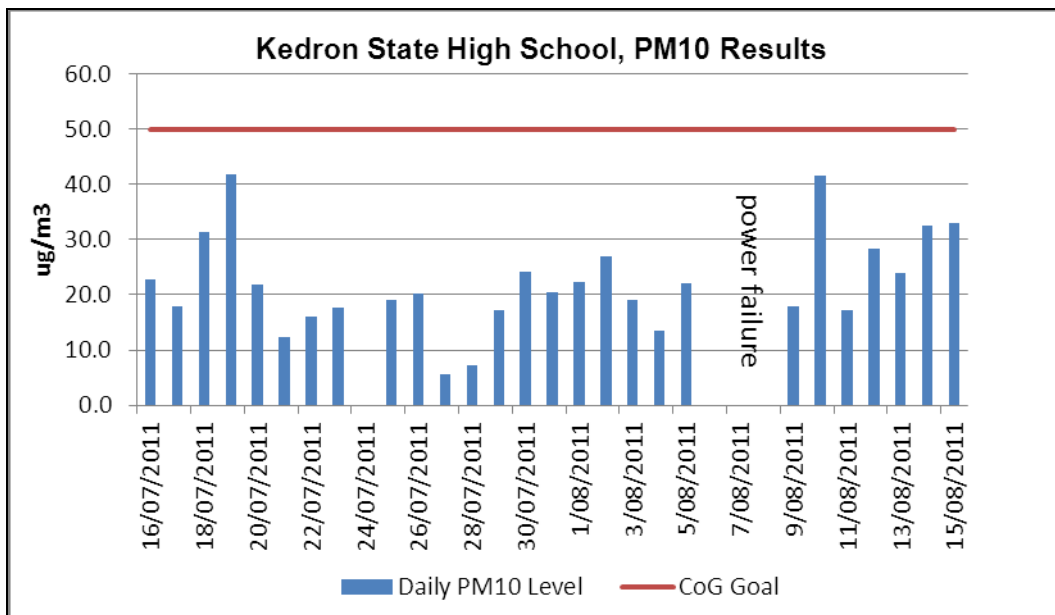


Figure 4.2.5: Kedron State High School, Kedron PM10 Results (for monitor location see figure 2.4 – A1)

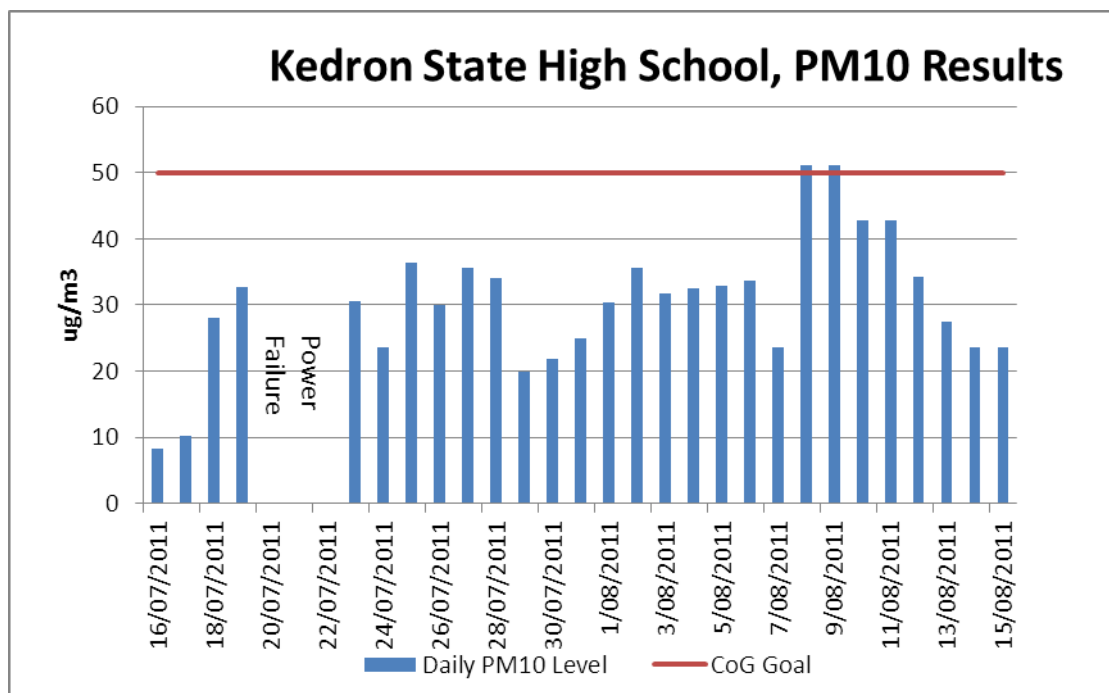


Figure 4.2.6: Kedron State High School, Kedron PM10 Results (for monitor location see figure 2.4 – A1)

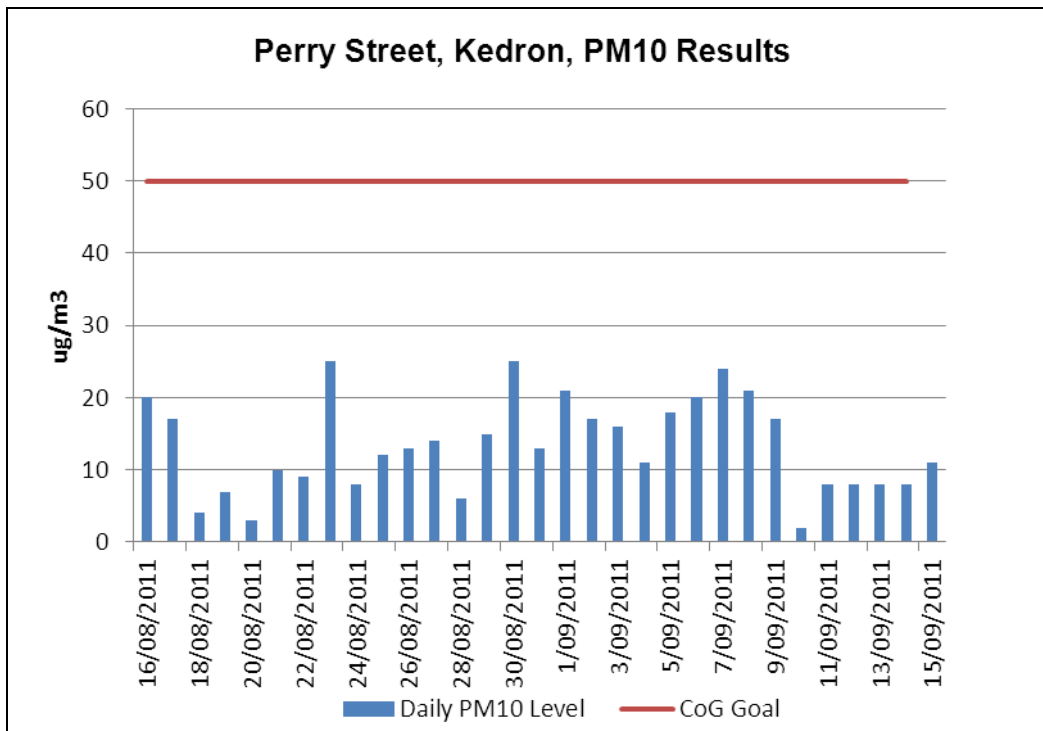


Figure 4.2.7: Perry Street, Lutwyche PM10 Results (for monitor location see figure 2.4 – A3)

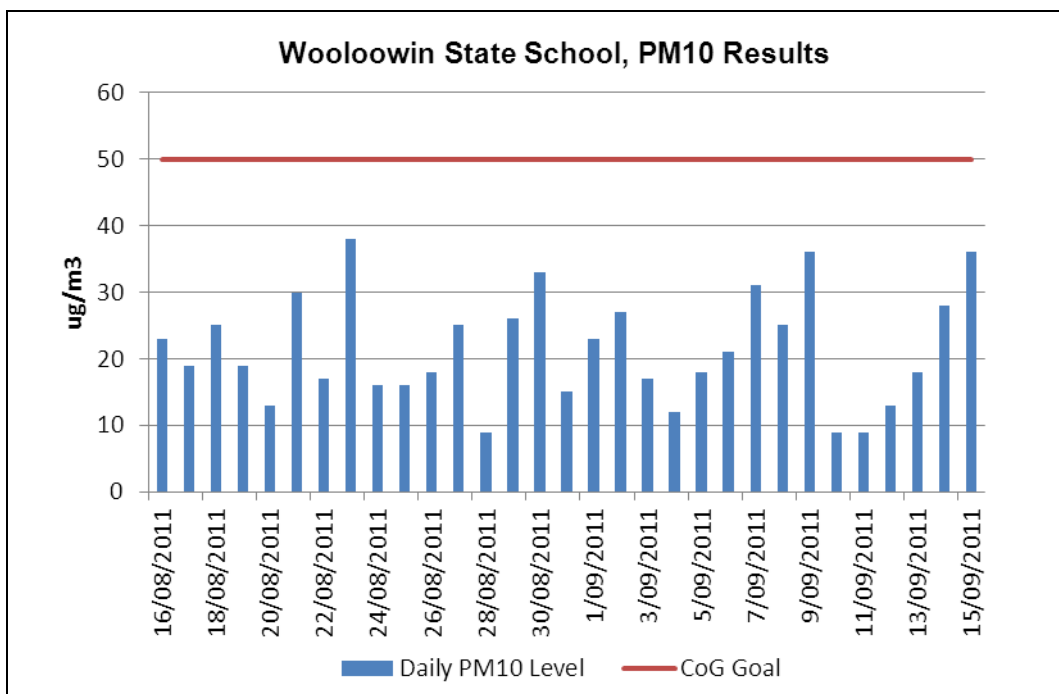


Figure 4.2.8: Woolloowin State School, Lutwyche PM10 Results (for monitor location see figure 2.4 – A4)

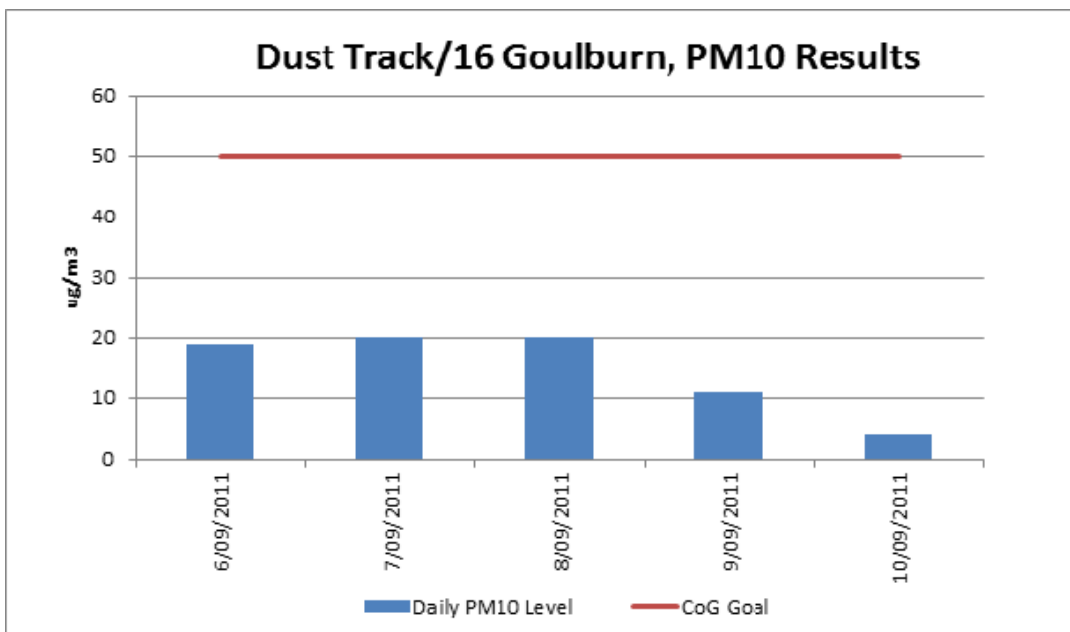


Figure 4.2.9: 16 Goulburn, Gordon Park Dust Trak PM10 Results (for monitor location see figure 2.4 – A4)

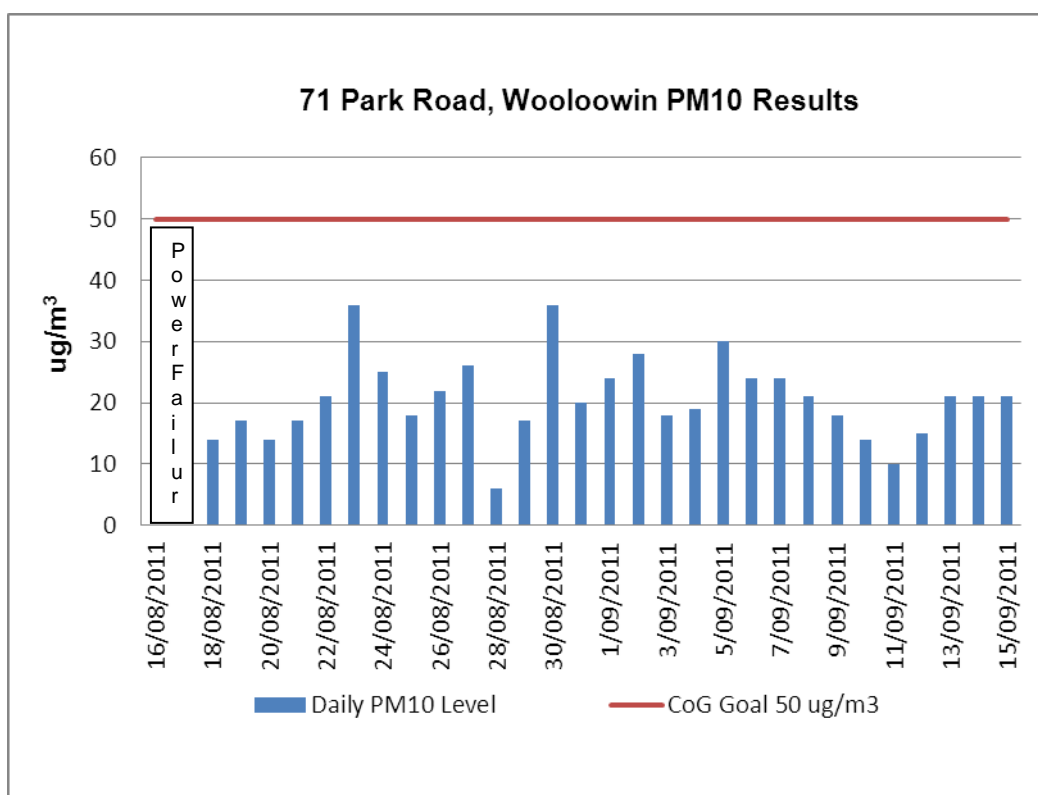


Figure 4.2.10: 71 Park Road, Wooloowin PM10 Results (for monitor location see figure 2.1 – A1)

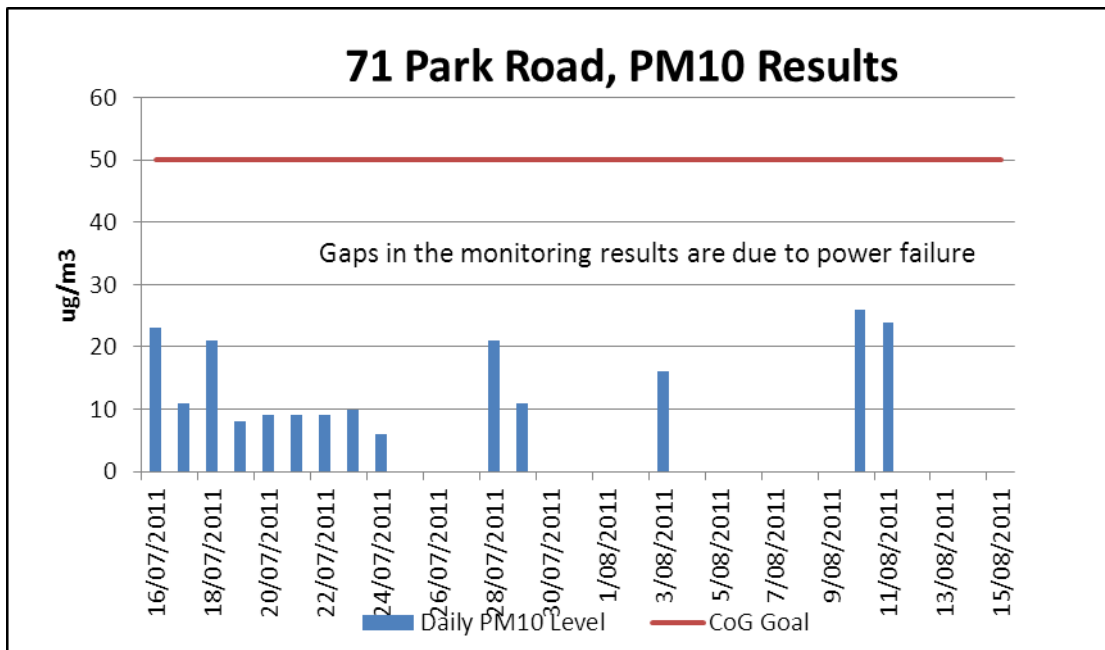


Figure 4.2.11: 71 Park Road, Wooloowin PM10 Results (for monitor location see figure 2.1 – A1)

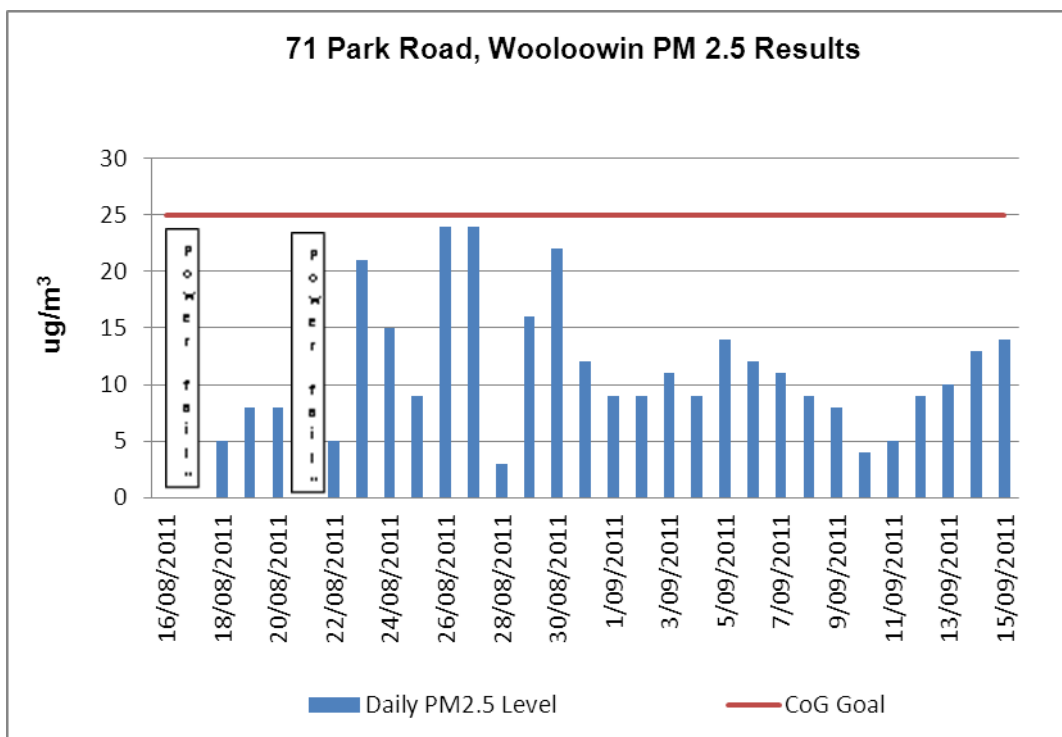


Figure 4.2.12: 71 Park Road, Wooloowin PM2.5 Results (for monitor location see figure 2.1 – A1)

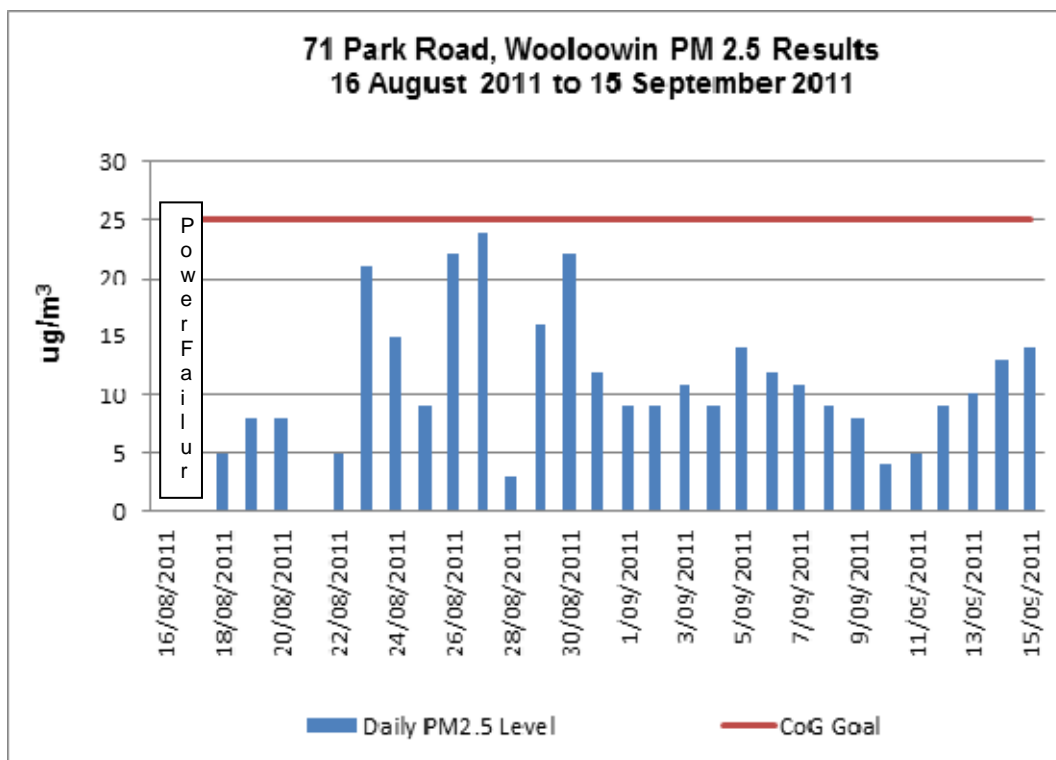


Figure 4.2.13: 71 Park Road, Woolloowin PM2.5 Results (for monitor location see figure 2.1 – A1)

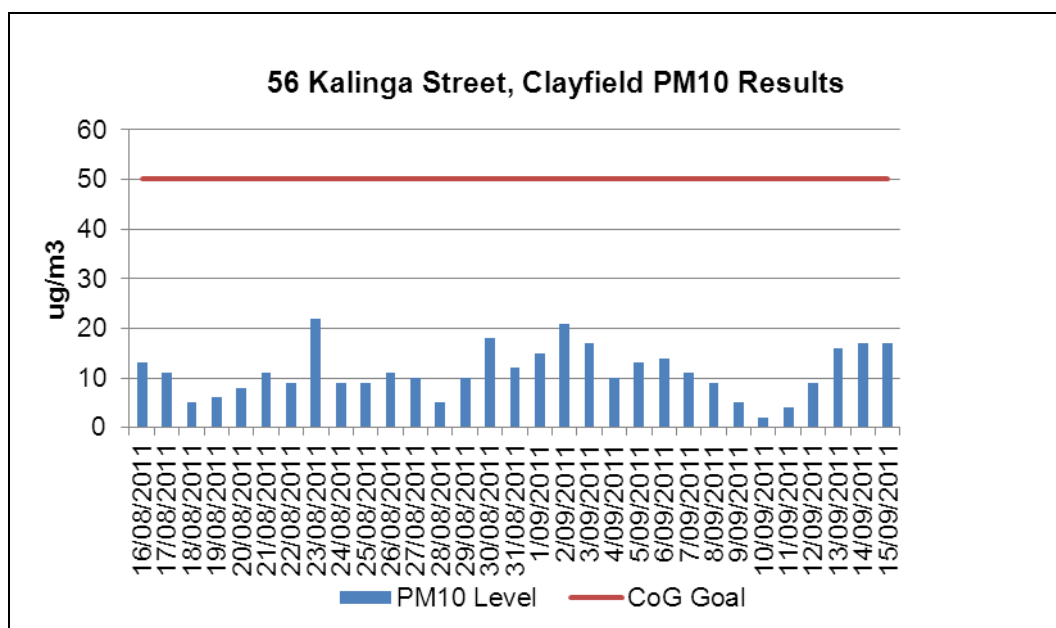


Figure 4.2.14: 56 Kalinga Street, Toombul PM10 Results (for monitor location see Figure 2.6 – A1)

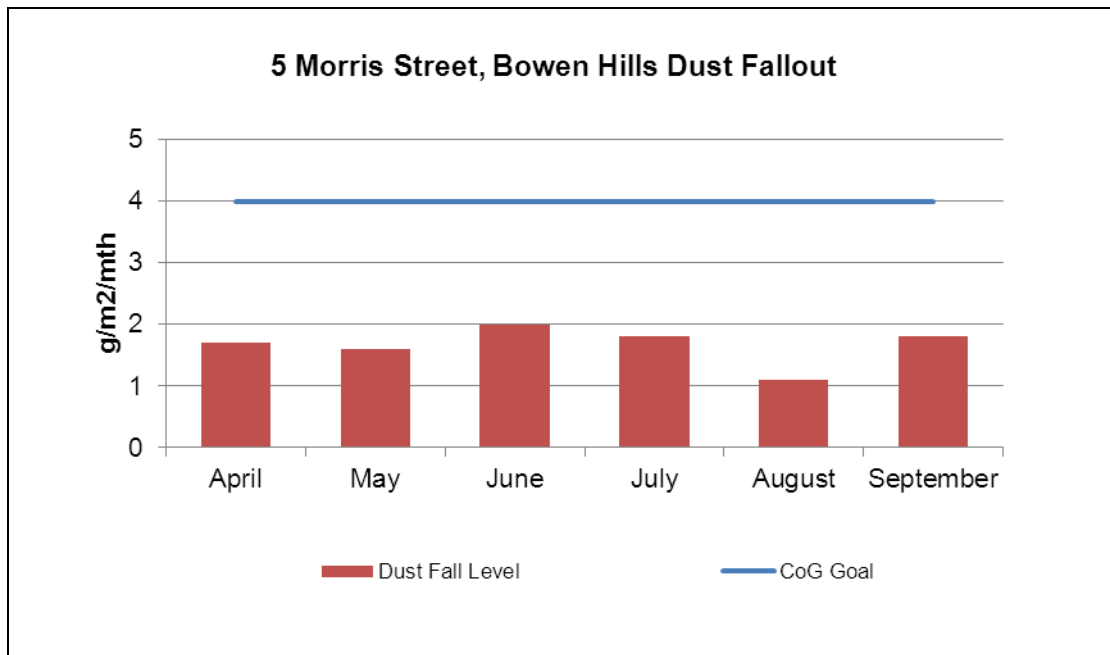


Figure 4.4.1: 5 Morris St Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1

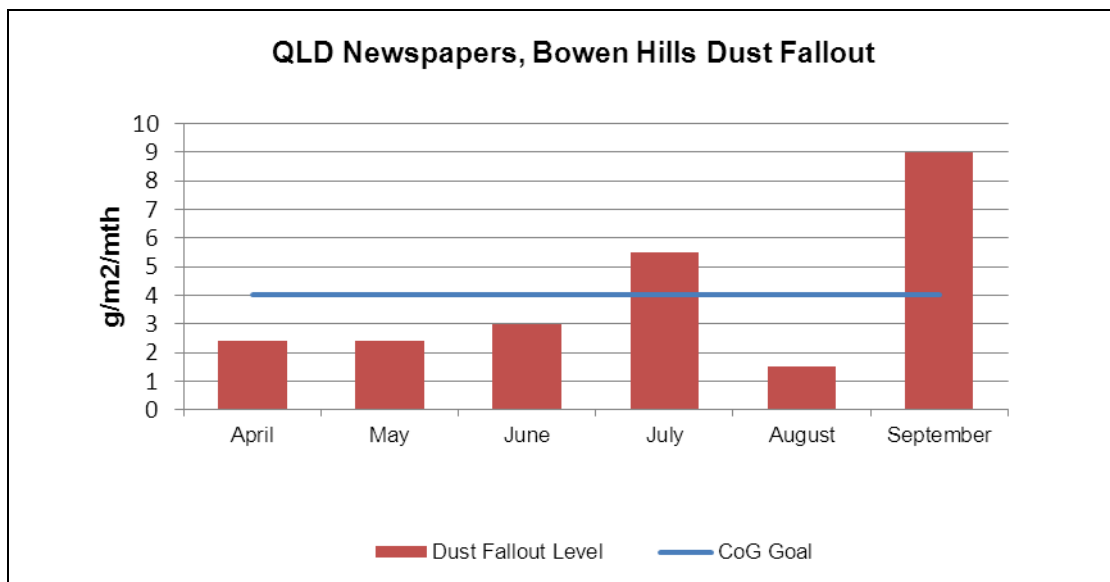


Figure 4.4.2: Queensland Newspapers, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1

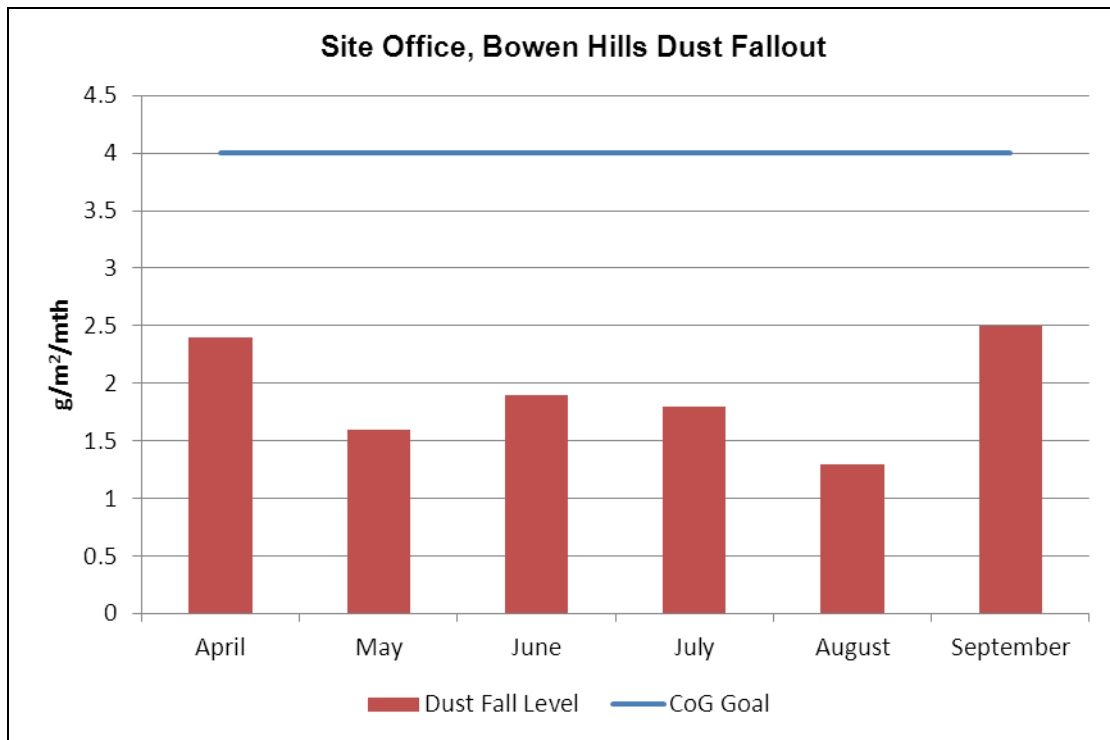


Figure 4.4.3: Site Office, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

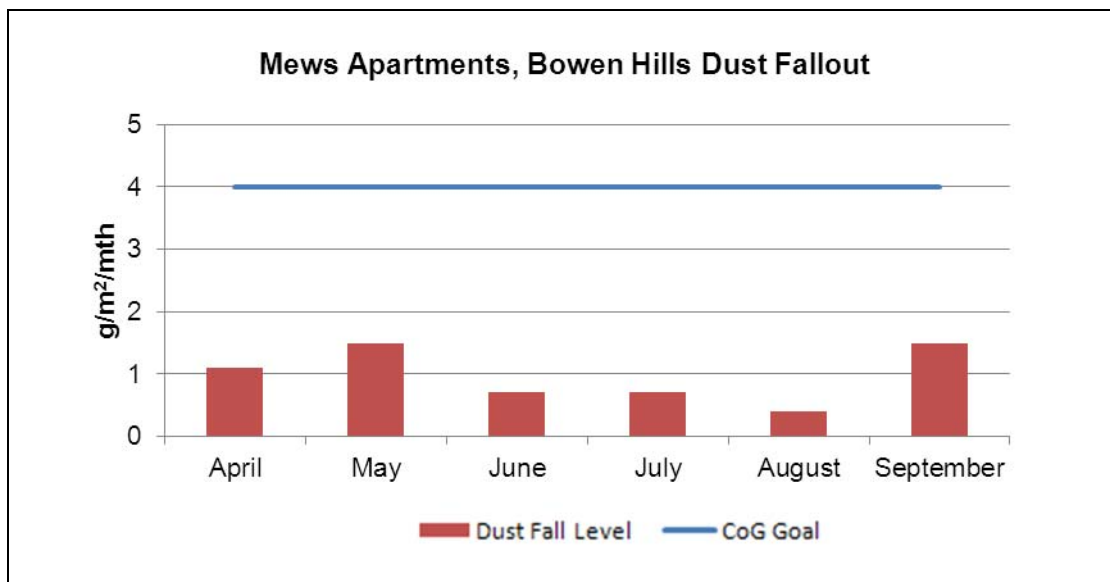


Figure 4.4.4: Mews Apartments, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

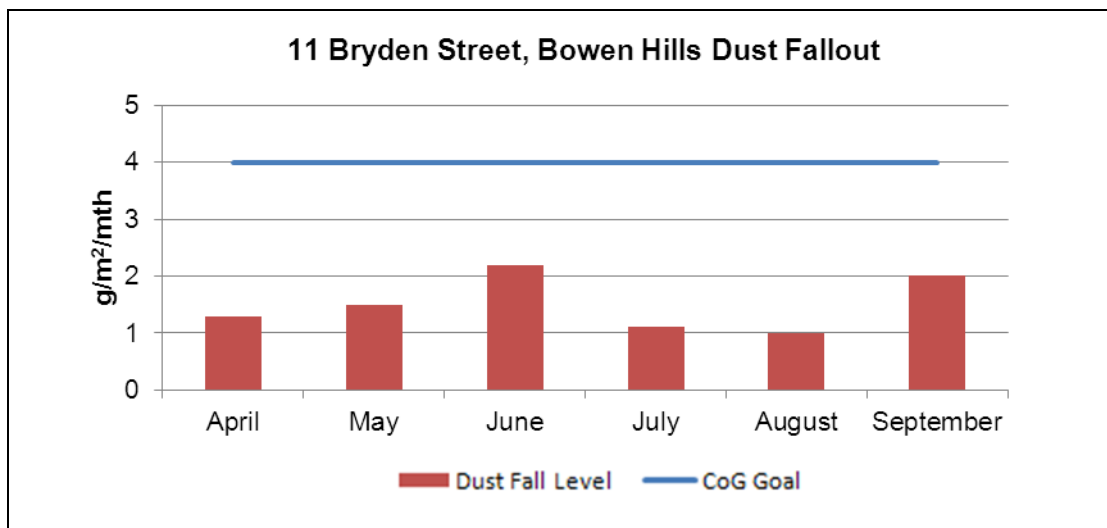


Figure 4.4.5: 11 Bryden Street, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

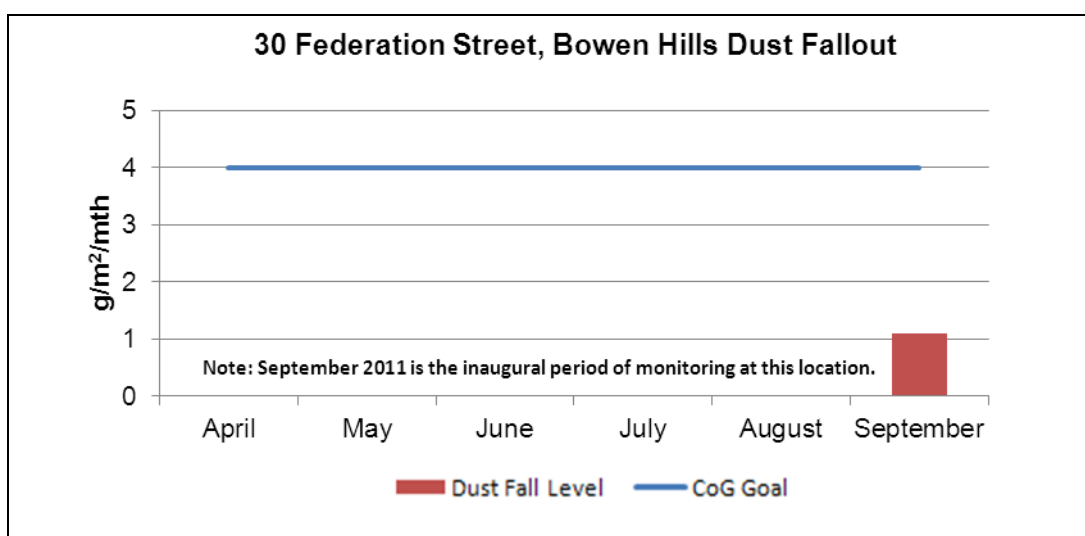


Figure 4.4.6: 30 Federation Street, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

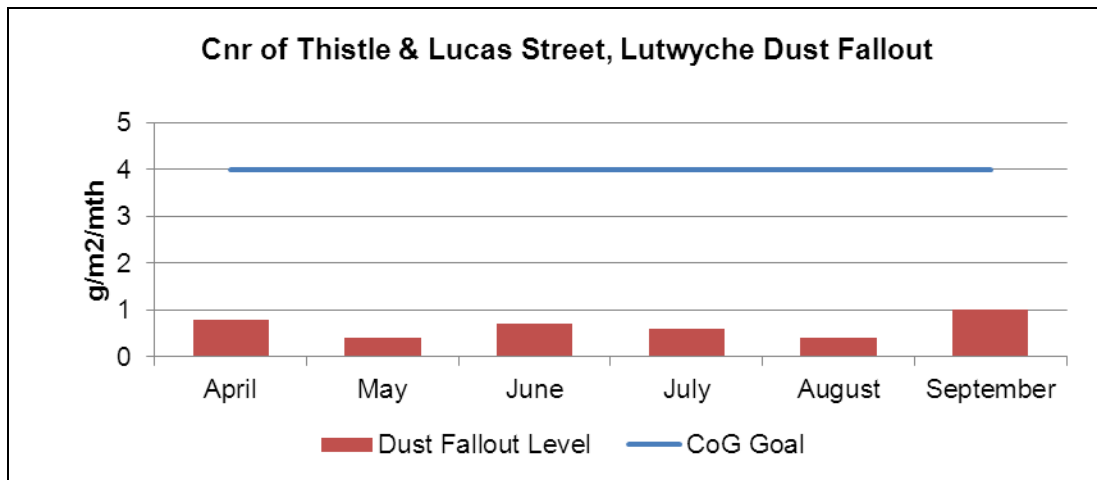


Figure 4.4.7: Cnr of Thistle & Lucas Street, Lutwyche Dust Fallout Results (location refer to figure 2.3 – D2)

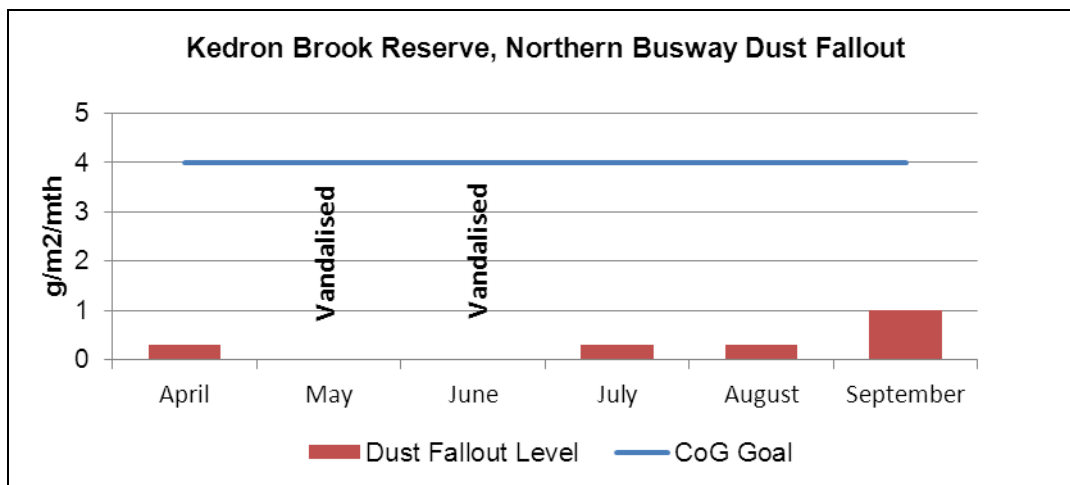


Figure 4.4.8: Kedron Brook Reserve, Northern Busway Dust Fallout Results (location refer to figure 2.3 – D1)

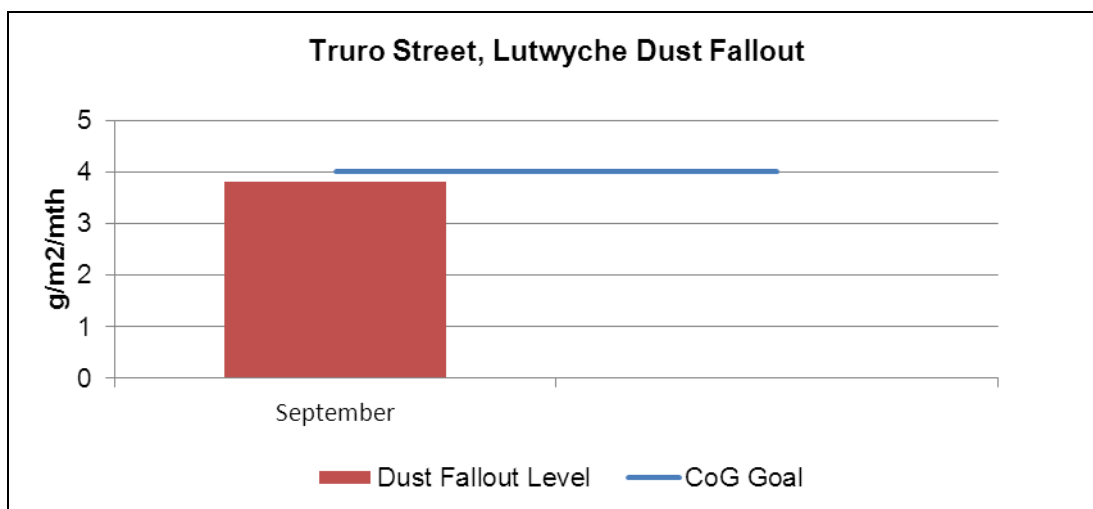


Figure 4.4.9: Truro Street, Lutwyche Fallout Results (location refer to figure 2.2)

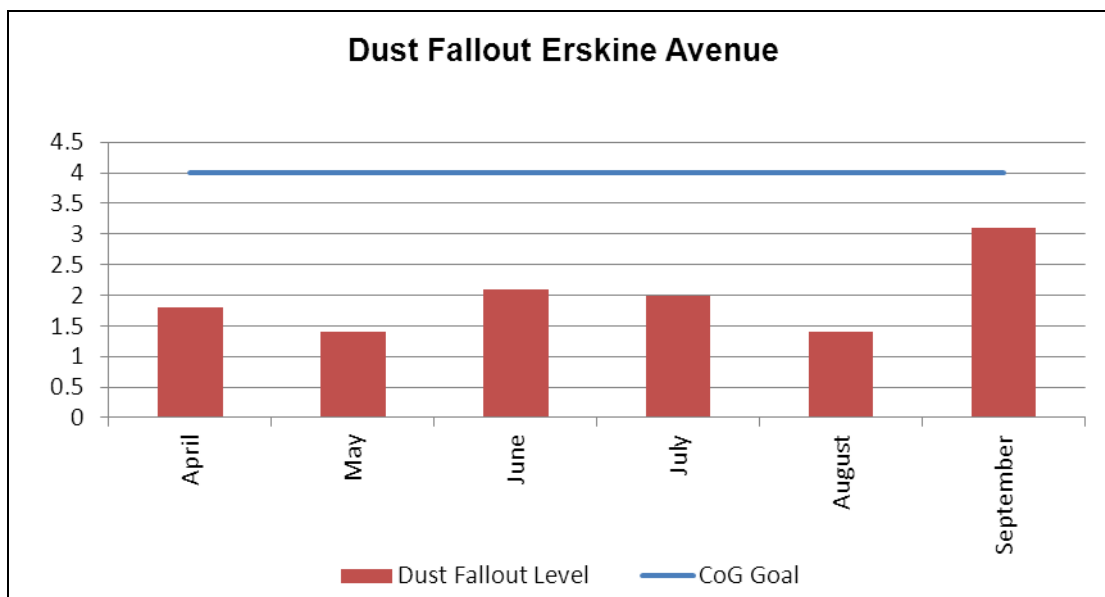


Figure 4.4.10: Erskine Avenue, Kedron Dust Fallout April – September 2011 (for monitor location see figure 2.4 – A1)

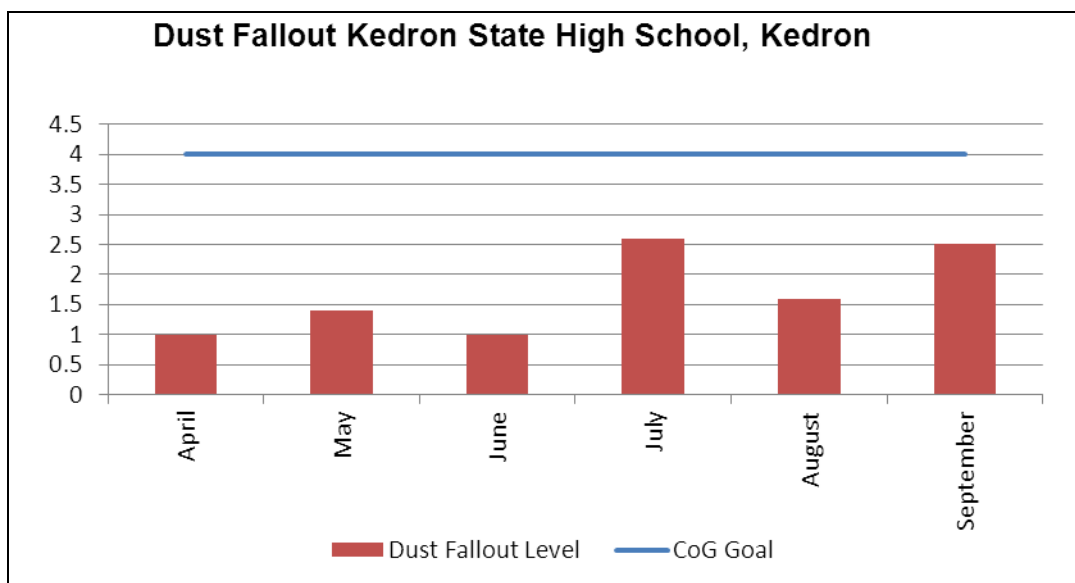


Figure 4.4.11: Kedron State High School, Dust Fallout April - September 2011 (for monitor location see figure 2.4 A2)

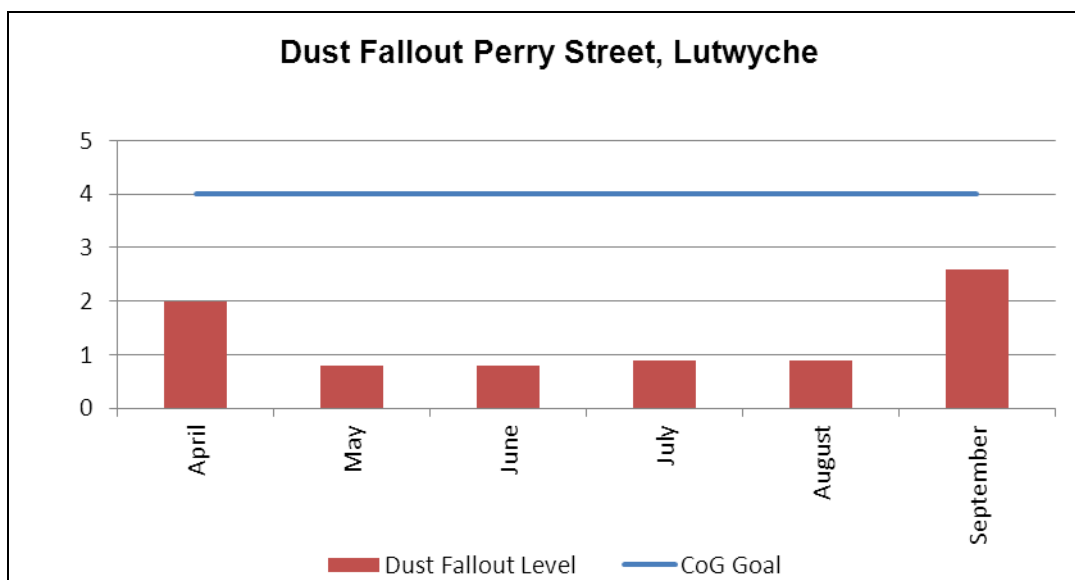


Figure 4.4.12: Perry Street, Lutwyche Dust Fallout April – September 2011 (for monitor location see figure 2.4 – A3)

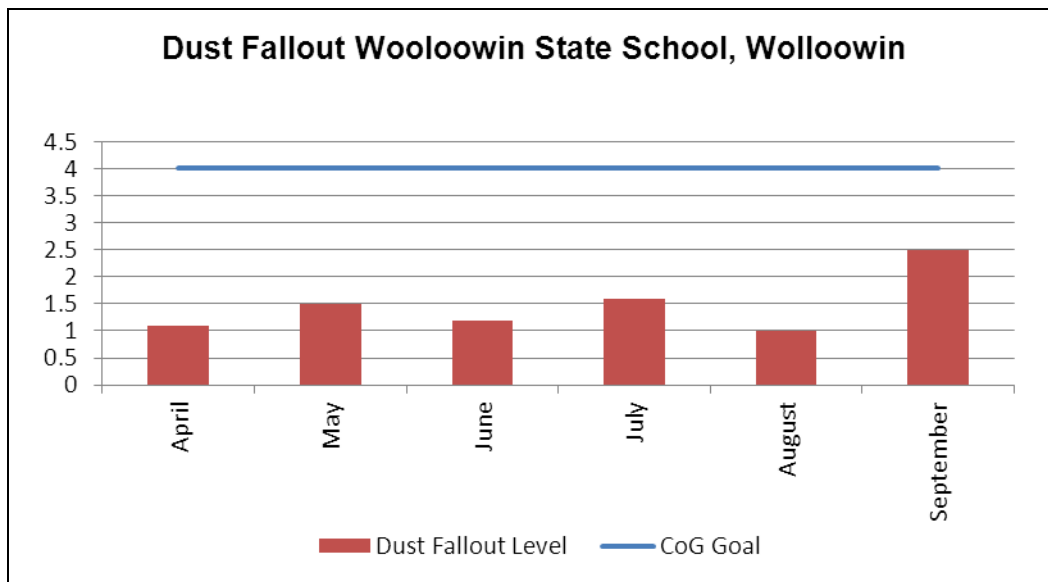


Figure 4.4.13: Woolloowin State School, Dust Fallout April - September 2011 (for monitor location see figure 2.4 – A4)

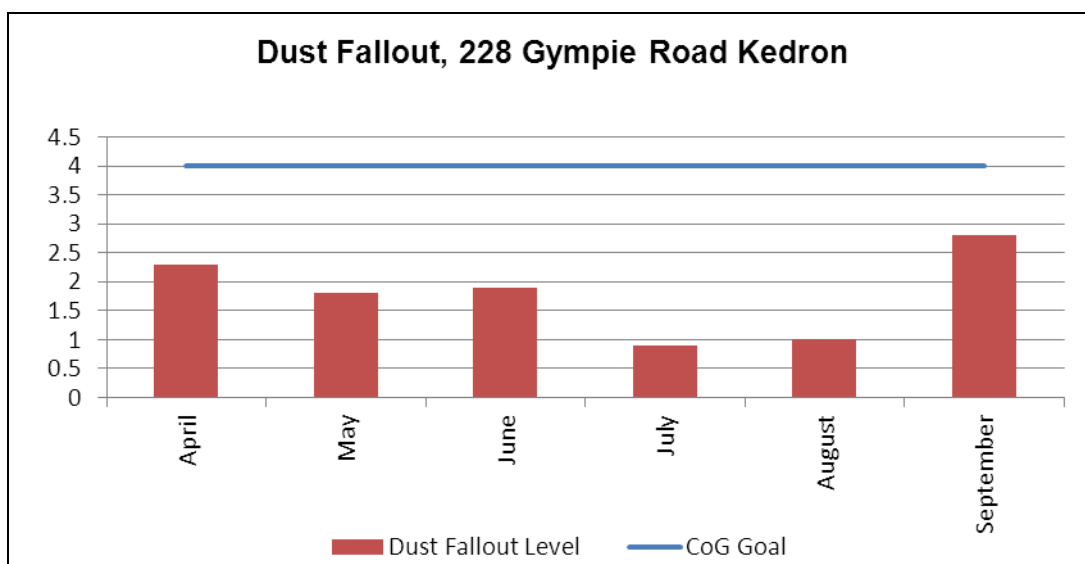


Figure 4.4.14: 228 Gympie Road, Kedron Dust Fallout April - September 2011 (for monitor location see figure 2.4)

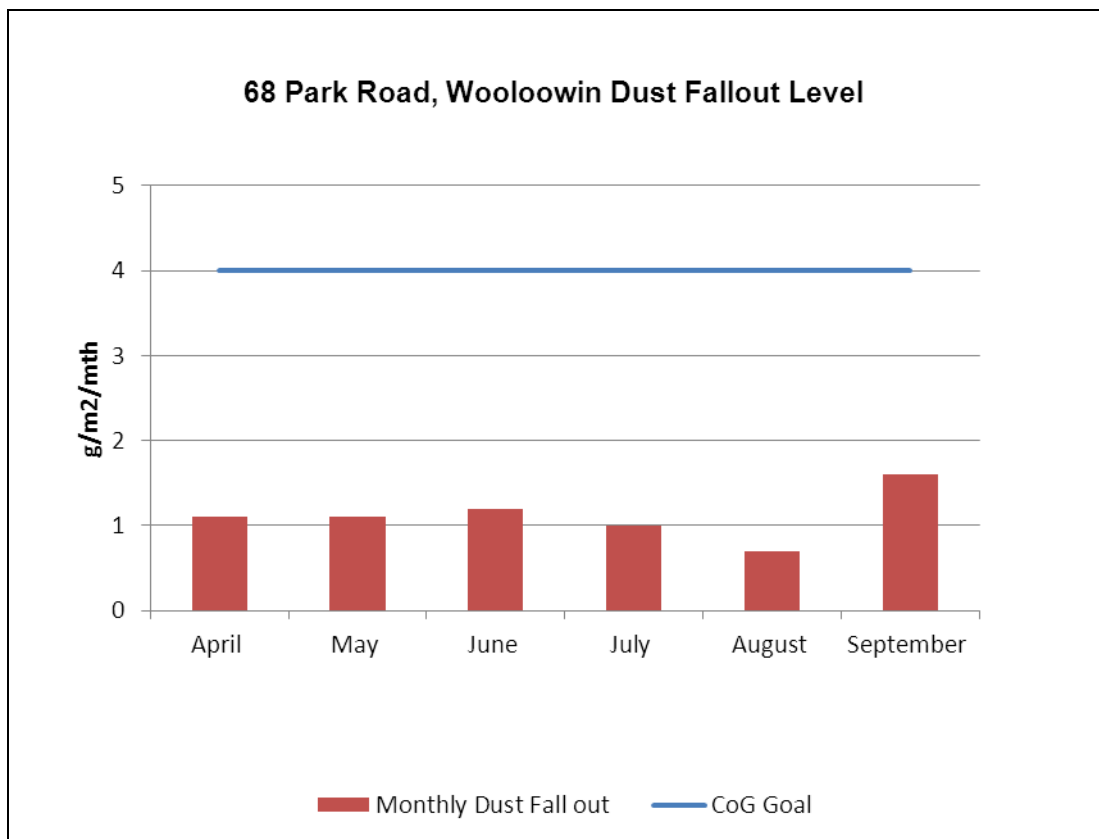


Figure 4.4.15: 68 Park Road, Wooloowin Dust Deposition Results (for monitor location refer to figure 2.1)

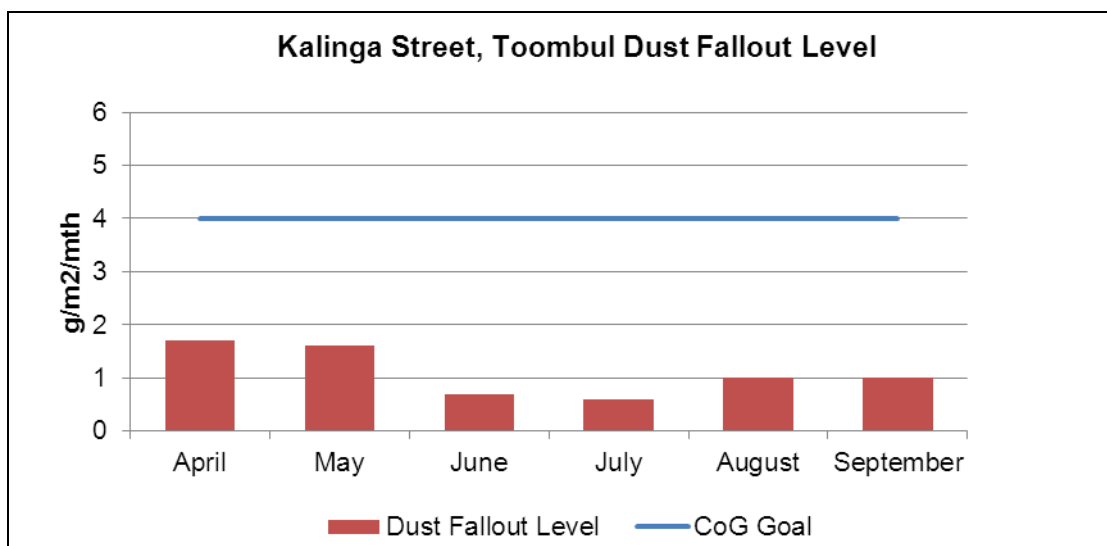


Figure 4.4.16: 56 Kalinga Street Toombul, Dust Fallout (location refer to figure 2.6 – D1)

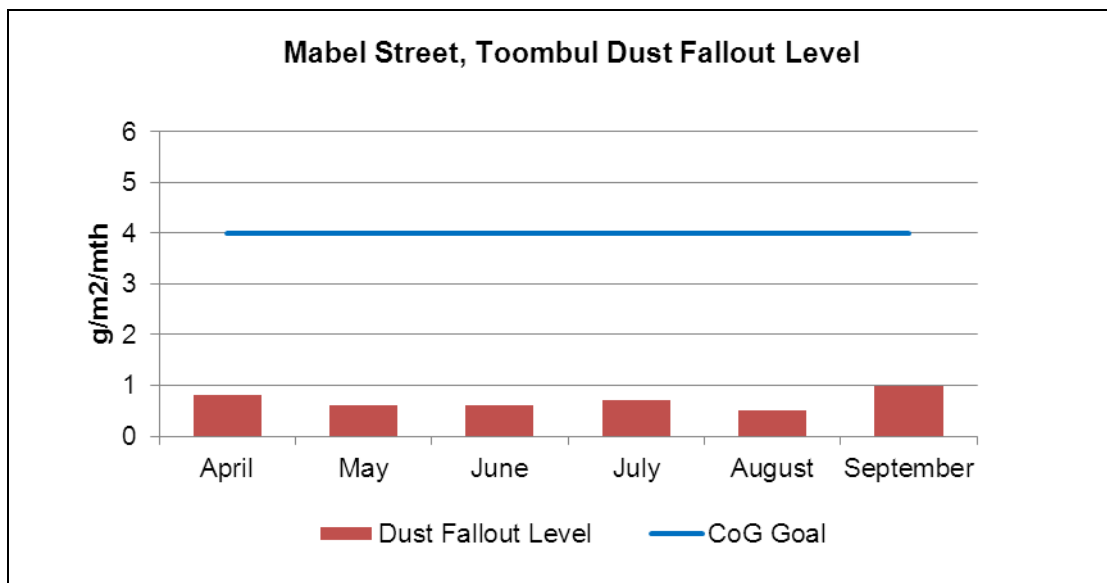


Figure 4.4.17: Mabel Street Toombul, Dust Fallout (location refer to figure 2.6 – D2)

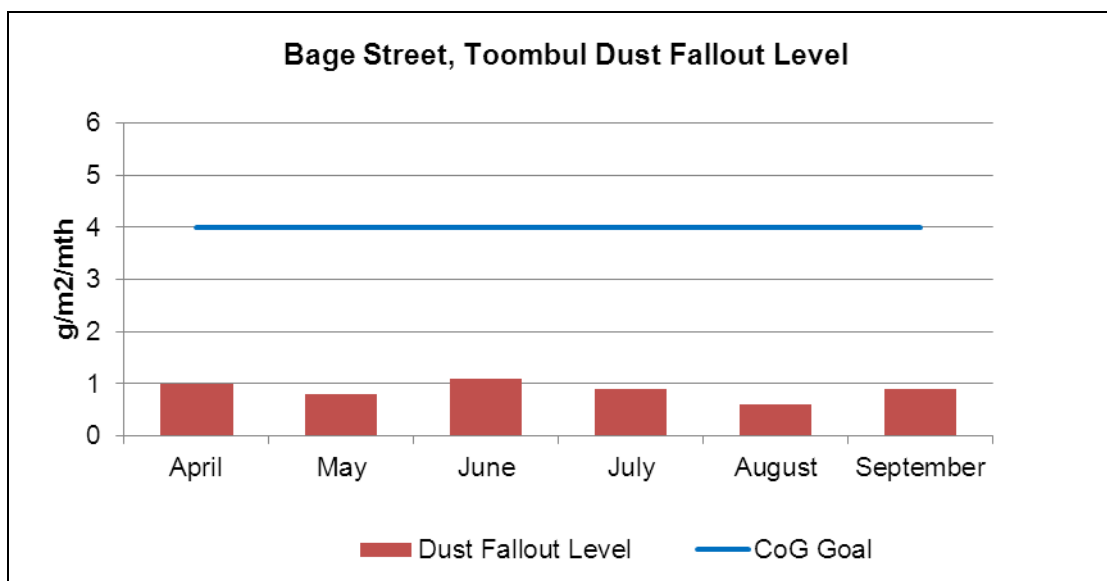


Figure 4.4.18: Bage Street Toombul, Dust Fallout (location refer to figure 2.6 – D3)

CO/NO₂ Monitoring – Wooloowin Worksite

TJH has been undertaking 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 (µg/m ³) Peak	CoG NO ₂ Limit (µg/m ³)
16/08/2011 to 15/09/2011	14/09/2011 00:45	0.69	11		
	26/08/2011 13:00			88	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 Kedron State School recorded a daily average of 51ug/m³ over a 24hr period on 8th and 9th August 2011. This is the fifth recorded 24hr average exceedance at this location within the last 12 months. The goal also states that the limit of 50ug/m³ should not be exceeded more than 5 times per year in any location.

5.0 Vibration Monitoring

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

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

5.1 Overview of Vibration Mitigation Measures

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

1. Predictive modelling of anticipated risks and impacts
2. Building condition surveys of properties which are likely to experience

vibration levels in excess of the levels for minimal risk of cosmetic damage outlined in the CoG Report

3. Selection of alternative construction equipment / methodology where possible
4. Review of monitoring data for the activities undertaken

5.2 Vibration Monitoring Results

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

Table 5a: Vibration Monitoring Results Summary – Bowen Hills

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
Queensland Newspapers	16/08/11-24/08/11	2.51	5	Results are within CoG goals
	24/08/11-29/08/11	0.31	5	Results are within CoG goals
	29/08/11-07/09/11	3.05	5	Results are within CoG goals
	07/08/11-15/09/11	1.9	5	Results are within CoG goals

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
30 Federation Street, Windsor	15/08/11- 19/08/11	1.08	5	Results are within CoG goals
	29/08/11- 01/09/11	0.22	5	Results are within CoG goals
	01/09/11-05/09/11	0.52	5	Results are within CoG goals
	05/09/11-08/09/11	0.68	5	Results are within CoG goals
	08/09/11-10/09/11	0.16	5	Results are within CoG goals
	10/09/11-15/09/11	0.38	5	Results are within CoG goals

Table 5b: Blast Monitoring Results Summary - Kedron CC216 Blasting

Monitoring Location	Property Type	Monitoring Type	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)
Date	16/08/2011			
Blast time	16:17			
B/Field Site Office	Commercial	Event Based	<1.5	25
Energex	Commercial	Event Based	1.65	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.5	10
Date	22/08/2011			
Blast time	7:30			
B/Field Site Office	Commercial	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	22/08/2011			
Blast time	12:13			
B/Field Site Office	Commercial	Event Based	2.02	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	1.27	10

Date	22/08/2011			
Blast time	15:19			
B/Field Site Office	Commercial	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	23/08/2011			
Blast time	15:16			
B/Field Site Office	Commercial	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	24/08/2011			
Blast time	15:20			
B/Field Site Office	Commercial	Event Based	1	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	25/08/2011			
Blast time	16:09			
B/Field Site Office	Commercial	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	26/08/2011			
Blast time	14:19			
B/Field Site Office	Commercial	Event Based	3.6	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	1.4	10
Date	27/08/2011			
Blast time	16:08			
B/Field Site Office	Commercial	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	29/08/2011			
Blast time	8:57			
B/Field Site Office	Commercial	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	1.14	10
Date	30/08/2011			
Blast time	10:51			
B/Field Site Office	Commercial	Event Based	1.13	25
Thrifty Car Hire	Commercial	Event Based	<1.0	25
Energex	Commercial	Event Based	1.4	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	1.13	10
Date	30/08/2011			
Blast time	16:11			
B/Field Site Office	Commercial	Event Based	2.54	25
Thrifty Car Hire	Commercial	Event Based	<1.0	25
Energex	Commercial	Event Based	6	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	31/08/2011			
Blast time	9:54			
B/Field Site Office	Commercial	Event Based	<1.0	25
Thrifty Car Hire	Commercial	Event Based	<1.0	25
Energex	Commercial	Event Based	<1.0	25

Kedron Med Centre	Sensitive Commercial/Medical	Event Based	1.73	10
Date	31/08/2011			
Blast time	16:46			
B/Field Site Office	Commercial	Event Based	2.21	25
Thrifty Car Hire	Commercial	Event Based	off	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	1/09/2011			
Blast time	9:06			
B/Field Site Office	Commercial	Event Based	1.02	25
Thrifty Car Hire	Commercial	Event Based	1.49	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	1.6	10
Date	1/09/2011			
Blast time	12:57			
B/Field Site Office	Commercial	Event Based	2.21	25
Thrifty Car Hire	Commercial	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	1/09/2011			
Blast time	16:14			
B/Field Site Office	Commercial	Event Based	<1.0	25
Thrifty Car Hire	Commercial	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	1.44	10
Date	2/09/2011			
Blast time	10:22			
B/Field Site Office	Commercial	Event Based	1.71	25
Energex	Commercial	Event Based	6.6	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	2/09/2011			
Blast time	15:32			
B/Field Site Office	Commercial	Event Based	1.3	25
Energex	Commercial	Event Based	1.52	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	1.35	10
Date	3/09/2011			
Blast time	16:02			
B/Field Site Office	Commercial	Event Based	1.92	25
Energex	Commercial	Event Based	5.21	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	5/09/2011			
Blast time	7:30			
B/Field Site Office	Commercial	Event Based	1.13	25
Energex	Commercial	Event Based	1.78	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	1.32	10
Date	5/09/2011			
Blast time	10:44			
B/Field Site Office	Commercial	Event Based	2	25
Energex	Commercial	Event Based	4.7	25

35 Homebush Rd.	Residential	Event Based	<0.5	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	6/09/2011			
Blast time	10:17			
B/Field Site Office	Commercial	Event Based	<1.0	25
Energex	Commercial	Event Based	<1.5	25
35 Homebush Rd.	Residential	Event Based	<0.5	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	6/09/2011			
Blast time	14:27			
B/Field Site Office	Commercial	Event Based	1.64	25
Energex	Commercial	Event Based	<1.5	25
35 Homebush Rd.	Residential	Event Based	<0.5	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	7/09/2011			
Blast time	16:29			
B/Field Site Office	Commercial	Event Based	<1.0	25
Energex	Commercial	Event Based	2.29	25
35 Homebush Rd.	Residential	Event Based	0.73	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	8/09/2011			
Blast time	16:12			
B/Field Site Office	Commercial	Event Based	<1.0	25
Energex	Commercial	Event Based	2.03	25
35 Homebush Rd.	Residential	Event Based	0.762	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	8/09/2011			
Blast time	16:15			
B/Field Site Office	Commercial	Event Based	1.49	25
Energex	Commercial	Event Based	1.65	25
35 Homebush Rd.	Residential	Event Based	0.825	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	9/09/2011			
Blast time	8:31			
B/Field Site Office	Commercial	Event Based	0.603	25
Energex	Commercial	Event Based	<1.5	25
35 Homebush Rd.	Residential	Event Based	<0.5	25
41 Jack St	Residential	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	9/09/2011			
Blast time	11:28			
B/Field Site Office	Commercial	Event Based	1.48	25
Energex	Commercial	Event Based	<1.5	25
35 Homebush Rd.	Residential	Event Based	<0.5	25
41 Jack St	Residential	Event Based	<1.0	25

Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	10/09/2011			
Blast time	7:19			
B/Field Site Office	Commercial	Event Based	1.71	25
Energex	Commercial	Event Based	<1.5	25
35 Homebush Rd.	Residential	Event Based	<0.5	25
41 Jack St	Residential	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	10/09/2011			
Blast time	14:48			
B/Field Site Office	Commercial	Event Based	<1.0	25
Energex	Commercial	Event Based	1.9	25
35 Homebush Rd.	Residential	Event Based	<0.5	25
41 Jack St	Residential	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	12/09/2011			
Blast time	7:34			
B/Field Site Office	Commercial	Event Based	1.56	25
Energex	Commercial	Event Based	3.94	25
35 Homebush Rd.	Residential	Event Based	<0.5	25
41 Jack St	Residential	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	13/09/2011			
Blast time	14:24			
B/Field Site Office	Commercial	Event Based	1.48	25
Energex	Commercial	Event Based	<1.5	25
35 Homebush Rd.	Residential	Event Based	0.952	25
41 Jack St	Residential	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	1.19	10
Date	14/09/2011			
Blast time	7:37			
B/Field Site Office	Commercial	Event Based	<1.0	25
35 Homebush Rd.	Residential	Event Based	<0.5	25
41 Jack St	Residential	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	14/09/2011			
Blast time	10:01			
B/Field Site Office	Commercial	Event Based	<1.0	25
35 Homebush Rd.	Residential	Event Based	<1.0	25
41 Jack St	Residential	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	14/09/2011			
Blast time	16:20			
B/Field Site Office	Commercial	Event Based	1.57	25
35 Homebush Rd.	Residential	Event Based	0.556	25

41 Jack St	Residential	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10
Date	15/09/2011			
Blast time	8:44			
B/Field Site Office	Commercial	Event Based	1.44	25
35 Homebush Rd.	Residential	Event Based	<0.5	25
41 Jack St	Residential	Event Based	<1.0	25
Kedron Med Centre	Sensitive Commercial/Medical	Event Based	<1.0	10

Table 5c: Vibration Monitoring Results Summary – Woolloowin

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
71 Park Road, Woolloowin	15/08/2011 to 30/08/2011	1.02	5	Results are within CoG goals

5.3 Compliance with Vibration Goals

There were no exceedences of the Coordinator Generals conditions this reporting period for vibration. However, one blast on 31st August 2011 for the CC216/CC211 structures was undertaken outside of the nominated hours for blasting (07:30-16:30 Monday to Saturday) contained within the CoG report. An NCR was raised for this event.

6.0 Community enquiries and complaints

A total of 292 community complaints were reported to the project between 16 August and 15 September 2011. The top issues raised are outlined in the pie chart below. For further details on how we are managing community issues, please refer to the [Community Enquiries and Complaints](#) page of the project website which is updated each month.

6.1 Top 10 issues raised

