



# Airport Link / Northern Busway Project

## Monthly Environmental Monitoring Report

October 2011

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## 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 October 2011 reporting period, from 16<sup>th</sup> September 2011 to 15<sup>th</sup> October 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 October 2011, though do serve a useful purpose in relating the monitoring locations to existing structures and infrastructure.

### 2.1 - Bowen Hills Precinct Monitoring Locations



#### Legend

● Noise (during construction )

● Vibration

● Air (TSP/PM<sub>10</sub>)

● Air (Dust Deposition)

**Note: locations are indicative only**

Figure 2.2 - Truro Street Mid Tunnel Monitoring Locations



**Legend**

- Noise (during construction )
- Vibration

- Air (PM<sub>10</sub>/PM<sub>2.5</sub>)
- Air (Dust Deposition)

**Figure 2.3 - Northern Busway Monitoring Locations**



Source: NearMap 2010

**Figure 2.3 – Nthn Busway Monitoring Locations**

**Legend**

- Noise (during construction )
- Vibration
- Air (PM<sub>10</sub>)
- Air (Dust Deposition)

Note: locations are indicative only

Figure 2.4 - Kedron Monitoring Locations



**Legend**

- Noise (during construction )
- Vibration

- Air (PM<sub>10</sub>/PM<sub>2.5</sub>)
- Air (Dust Deposition)

## 2.5 - Woollooin Monitoring Locations



### Legend

- Noise (during construction )
- Vibration

- Air (PM<sub>10</sub>/TSP)
- Air (Dust Deposition)

**Note: locations are indicative only**

## 2.6 - Toombul Monitoring Locations



### Legend

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

- Air (PM<sub>10</sub>)

**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):
  - b. Consultation with property owners prior to commencing works and during construction works
  - c. Installation of mitigation measures at affected residents on a case-by-case basis
  - d. Investigating the early installation of permanent noise barriers at early stages.
  - e. Acoustic shielding of various plant
  - f. 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
  - g. Use of temporary acoustic treatment (e.g. sound curtains around onsite generators and access/ egress from sites)
  - h. Installation of directional reversing alarms (e.g. 'squawkers') on plant and equipment

### 3.2 Noise Monitoring Results

The results of TJH attended noise monitoring efforts are summarised for the Airport link project in Tables 3a and 3d. Attended noise monitoring was undertaken at 228 Gympie Road, Kedron. This residence is an unoccupied DTMR owned property. Noise monitoring results from this location are used for management purposes only.

**Table 3a: Noise Monitoring Results – Bowen Hills**

Location	Monitoring Period	Average L <sub>Aeq</sub> (15 min) (dBA)	CoG Goal L <sub>Aeq</sub> (15 min) (dBA)	Average L <sub>A10</sub> (15 min) (dBA)	CoG Goal L <sub>A10</sub> (15 min) (dBA)	Average L <sub>AMAX</sub> (15 min) (dBA)	CoG Goal L <sub>AMAX</sub> (15 min) (dBA)	Comments
<b>30 Federation Street, Windsor</b>								
Spare Bedroom (west), Doors and Windows Closed	23/09/2011 07:44 – 07:59	42.8	45	40.5	55	N/A	N/A	<p><b>Monitoring Type</b> Attended Noise Monitoring, doors and windows closed.</p> <p><b>Atmospheric Conditions</b> Fine, no wind, 0% cloud cover, 18.9 C.</p> <p><b>Noise Sources</b> TJH noises came from saw-cutting, a reverse beeper, a street sweeper, hammering and an excavator. Non TJH noises sources included traffic, birds and resident.</p> <p><b>Discussion</b> Monitoring was undertaken to determine if construction noise is within the CoG goals. No exceedences were recorded and the session was within CoG goals.</p> <p><b>Mitigation Measures</b> This property has been mitigated. Precast barriers and ply have been installed along the site boundary.</p>
<b>30 Federation Street, Windsor</b>								
Spare Bedroom (west), Doors and Windows Open	23/09/2011 08:05 - 08:20	46.6	45	47.3	55	N/A	N/A	<p><b>Monitoring Type</b> Attended Noise Monitoring, doors and windows open.</p> <p><b>Atmospheric Conditions</b> Fine, no wind, 0% cloud cover, 18.9 C.</p> <p><b>Noise Sources</b> The predominant noise source came from Queensland Urban Utilities excavation activities. TJH noises from drilling, bangs and vacuum excavation. Non TJH noises came from traffic, reverse beeper and birds.</p> <p><b>Discussion</b> Noise levels recorded exceeded CoG Noise Goals due to all listed activities. The dominant noise sources throughout the session were QUU excavation activities and a steady flow of traffic.</p> <p><b>Mitigation Measures</b> This property has been mitigated. Precast barriers and ply have been installed along the site boundary.</p>

Location	Monitoring Period	Average L <sub>Aeq</sub> (15 min) (dBA)	CoG Goal L <sub>Aeq</sub> (15 min) (dBA)	Average L <sub>A10</sub> (15 min) (dBA)	CoG Goal L <sub>A10</sub> (15 min) (dBA)	Average L <sub>AMAX</sub> (15 min) (dBA)	CoG Goal L <sub>AMAX</sub> (15 min) (dBA)	Comments
<b>30 Federation Street, Windsor</b>								
Living Room, Doors and Windows Closed	11/10/2011 16:14 – 16:29	40.6	45	42.1	55	N/A	N/A	<p><b>Monitoring Type</b> Attended Noise Monitoring, doors and windows closed.</p> <p><b>Atmospheric Conditions</b> Fine, slight North East breeze, 0% cloud cover, 20.9 C.</p> <p><b>Noise Sources</b> TJH noise sources came from rock breaking from an excavator, metal on metal bangs and a reverse squawker. Non-TJH noises included birds, traffic and curtain movement.</p> <p><b>Discussion</b> Monitoring was undertaken to determine if construction noise is within the CoG goals. No exceedences were recorded and the session was within CoG goals.</p> <p><b>Mitigation Measures</b> This property has been mitigated. Precast barriers and ply have been installed along the site boundary.</p>
Living Room, Doors and Windows Closed	12/10/2011 15:55 – 16:10	49.0	45	39.5	55	N/A	N/A	<p><b>Monitoring Type</b> Attended Noise Monitoring, doors and windows closed.</p> <p><b>Atmospheric Conditions</b> Fine, no wind, 25% cloud cover, 20.6 C.</p> <p><b>Noise Sources</b> TJH noise sources came from a street sweeper, TJH truck movement, metal on metal bangs, a horn, a power grinder and a concrete truck. Non-TJH noises came from the resident, phone rings, non-TJH traffic, a train, a plane, birds and local resident's voices.</p> <p><b>Discussion</b> Noise levels recorded exceeded CoG Noise Goals due to all listed activities. The dominant noise sources were the street sweeper which was in close proximity in Federation St throughout much of the monitoring session, and the phone calls received by the resident. The windows in residents study could also not be fully closed.</p> <p><b>Mitigation Measures</b> This property has been mitigated. Precast barriers and ply have been installed along the site boundary.</p>

**Table 3b: Noise Monitoring Results – Northern Busway**

Location	Monitoring Period	Average $L_{Aeq}$ (15 min) (dBA)	CoG Goal $L_{Aeq}$ (15 min) (dBA)	Average $L_{A10}$ (15 min) (dBA)	CoG Goal $L_{A10}$ (15 min) (dBA)	Comments
<b>3/26 Bradshaw Street East, Lutwyche</b>						
Brick Apartment Living Room (first floor)	14/10/2011 08:39am – 08:54am	38.2	45	39.2	55	<p><b>Monitoring Type</b> Attended. Internal. Windows and Doors closed</p> <p><b>Atmospheric Conditions</b> Overcast, light easterly wind</p> <p><b>Noise Sources</b> Noise sources from non-TJH activities included fish tank filter and traffic on Lutwyche Road. TJH noises came from rock breaking by an excavator, a bobcat, power-saws and reverse squawkers</p> <p><b>Discussion</b> Monitoring was to assess the level of impact being caused to residents in proximity to the Bradshaw Street/Lutwyche Road worksite. Results were within CoG goals</p> <p><b>Mitigation</b> Mitigation was not required as results were within CoG goals</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)	Comments
<b>3/26 Bradshaw Street East, Lutwyche</b>						
Brick Apartment Living Room (first floor)	14/10/2011 09:00am – 09:15am	48.3	45	49.3	55	<p><b>Monitoring Type</b> Attended. Internal. Windows and Doors open</p> <p><b>Atmospheric Conditions</b> Overcast, light easterly wind</p> <p><b>Noise Sources</b> Noise sources from non-TJH activities included fish tank filter and traffic on Lutwyche Road. TJH noises came from rock breaking by an excavator, a bobcat, power-saws and reverse squawkers. The predominant noise throughout the session was the Lutwyche Road traffic with intermittent rock breaking</p> <p><b>Discussion</b> Monitoring was to assess the level of impact being caused to residents in proximity to the Bradshaw Street/Lutwyche Road worksite. The result for <math>L_{Aeq}</math> was above the CoG goal, this was due to the dominant traffic noise on Lutwyche Road. The audible TJH noise could not be separated from the noise of Lutwyche Road. <math>L_{A10}</math> was within goals.</p> <p><b>Mitigation</b> Mitigation was not required as results were within CoG goals</p>

**Table 3c: Noise Monitoring Results – Kedron**

Location	Monitoring Period	Average L <sub>Aeq</sub> (15 min) (dBA)	CoG Goal L <sub>Aeq</sub> (15 min) (dBA)	Average L <sub>A10</sub> (15 min) (dBA)	CoG Goal L <sub>A10</sub> (15 min) (dBA)	Average L <sub>AMAX</sub> (15 min) (dBA)	CoG Goal L <sub>AMAX</sub> (15 min) (dBA)	Comments
<b>6/12 Suez Street, Gordon Park</b>								
In living room (doors and windows open)	29/09/2011 11:30am–11:44am	51.9	45	51.0	55	-	-	<p><b>Monitoring Type</b> Attended. Internal</p> <p><b>Atmospheric Conditions</b> Overcast, light wind</p> <p><b>Noise Sources</b> Audible noises from site included an air compressor, saw and drilling activities, metal on metal bangs, a franna, and reverse squawkers. Non TJH background noise was audible from traffic on Gympie Rd and birds. Other insignificant noises were from the EO and resident, as well as workers talking.</p> <p><b>Discussion</b> LA 10 levels were below noise goals. However, as the LAeq value for the monitoring session was greater than the noise goals due to combination of TJH and non-TJH noise. CoG NCR was issued.</p> <p><b>Mitigation Measures</b> This property is mitigated</p>
Living Room (doors and windows closed)	29/09/2011 11:52am–12:06pm	38.4	45	37.5	55	-	-	<p><b>Monitoring Type</b> Attended. Internal</p> <p><b>Atmospheric Conditions</b> Overcast, light wind</p> <p><b>Noise Sources</b> Audible noises from site included an air compressor, saw and drilling activities, metal on metal bangs, a franna, and reverse squawkers. Non TJH background noise was audible from traffic on Gympie Rd and birds. Other insignificant noises were from the resident</p> <p><b>Discussion</b> Internal LAeq and LA10 levels were below noise goals set forth by the CoG. No noise issues</p> <p><b>Mitigation Measures</b> This property is mitigated</p>

**Table 3d: Noise Monitoring Results – Woolloowin**

Location	Monitoring Period	Average L <sub>Aeq</sub> (15 min) (dBA)	CoG Goal L <sub>Aeq</sub> (15 min) (dBA)	Average L <sub>A10</sub> (15 min) (dBA)	CoG Goal L <sub>A10</sub> (15 min) (dBA)	Average L <sub>AMAX</sub> (15 min) (dBA)	CoG Goal L <sub>AMAX</sub> (15 min) (dBA)	Comments
<b>71 Park Road, Woolloowin</b>								
Single level brick flat (Dining Room)	27/09/2011 08:50pm-09:05pm	32.6	40	-	-	36	50	<p><b>Monitoring Type</b> Attended Noise Monitoring. Doors and Windows Closed</p> <p><b>Atmospheric Conditions</b> Clear, Still</p> <p><b>Noise Sources</b> Consistent throughout the session was a 'hum' from equipment within the spoil shed. Other TJH noise sources included an alarm from inside the spoil shed and a single loud bang. Non TJH noises included traffic on adjacent streets.</p> <p><b>Discussion</b> Monitoring indicates that night time CoG goals were met.</p> <p><b>Mitigation Measures</b> An acoustic shed and noise wall is in place around Woolloowin Site. No mitigation measures have been installed on the property as 71 Park Road is owned by DMR and is used by TJH for monitoring purposes.</p>
Single level brick flat (Dining Room)	28/09/2011 11:32pm – 11:47pm	31.4	40	-	-	37.7	50	<p><b>Monitoring Type</b> Attended Noise Monitoring. Doors and Windows Closed</p> <p><b>Atmospheric Conditions</b> Clear and still.</p> <p><b>Noise Sources</b> The predominant sources of noise was a 'hum' from equipment within the spoil shed. Other noises heard were a car alarm from a nearby residence and trucks on Rose Street.</p> <p><b>Discussion</b> Monitoring indicates that night time CoG goals were met.</p> <p><b>Mitigation Measures</b> An acoustic shed and noise wall is in place around Woolloowin Site. No mitigation measures have been installed on the property as 71 Park Road is owned by DMR and is used by TJH for monitoring purposes.</p>
Single level brick flat (Dining Room)	11/10/2011 10:17pm – 10:32pm	30.7	40	-	-	37.0	50	<p><b>Monitoring Type</b> Attended Noise Monitoring. Doors and Windows Closed</p> <p><b>Atmospheric Conditions</b> Clear and calm</p> <p><b>Noise Sources</b> The predominant sources of noise were a 'hum' from</p>

Location	Monitoring Period	Average L <sub>Aeq</sub> (15 min) (dBA)	CoG Goal L <sub>Aeq</sub> (15 min) (dBA)	Average L <sub>A10</sub> (15 min) (dBA)	CoG Goal L <sub>A10</sub> (15 min) (dBA)	Average L <sub>AMAX</sub> (15 min) (dBA)	CoG Goal L <sub>AMAX</sub> (15 min) (dBA)	Comments
								<p>equipment within the the spoil shed. Other noises heard were site machinery, and truck movements inside the spoil shed. Non TJH noise included traffic on adjacent streets</p> <p><b>Discussion</b> Monitoring indicates that night time CoG goals were met.</p> <p><b>Mitigation Measures</b> An acoustic shed and noise wall is in place around Woolloowin Site. No mitigation measures have been installed on the property as 71 Park Road is owned by DMR and is used by TJH for monitoring purposes.</p>
Single level brick flat (Dining Room)	12/10/2011 0:48am – 1:03am	31	40	-	-	36.5	50	<p><b>Monitoring Type</b> Attended Noise Monitoring. Doors and Windows Closed</p> <p><b>Atmospheric Conditions</b> overcast , still</p> <p><b>Noise Sources</b> The predominant sources of noise were a hum from the spoil shed. Other site noises included truck movements, several bangs, site machinery, and an alarm inside the shed. Non TJH noise included traffic on adjacent streets</p> <p><b>Discussion</b> Monitoring indicates that night time CoG goals were met.</p> <p><b>Mitigation Measures</b> An acoustic shed and noise wall is in place around Woolloowin Site. No mitigation measures have been installed on the property as 71 Park Road is owned by DMR and is used by TJH for monitoring purposes.</p>

**Table 3e: Noise Monitoring Results – Toombul**

Location	Monitoring Period	L <sub>Aeq</sub> (15 min) (dBA)	CoG Goal L <sub>Aeq</sub> (15 min) (dBA)	L <sub>A10</sub> (15 min) (dBA)	CoG Goal L <sub>A10</sub> (15 min) (dBA)	Comments
<b>89 Jackson Street, Clayfield</b>						
Double Storey Timber House (Front Bedroom)	29/09/2011 09:12am – 09:27am	39.2	45	39.6	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors open</p> <p><b>Atmospheric Conditions</b> Moderate NNW breeze, overcast</p> <p><b>Noise Sources</b> TJH noise sources (site hum, bang/drop, squawker, drill, scaffold, metal scrape, water blasting) plus non-TJH sources (train, birds, neighbour, resident, traffic, reverse beeper, resident shower, plane)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being met</p> <p><b>Mitigation Measures</b> Include a 6m noise wall</p>
Double Storey Timber House (Front Bedroom)	29/09/2011 09:32am – 09:47am	35	45	35.6	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed</p> <p><b>Atmospheric Conditions</b> Moderate NNW breeze, overcast</p> <p><b>Noise Sources</b> TJH noise sources (bang/drop, site hum, drill, TJH horn, jet blasting/vent fans, gantry alarm, crane lift) plus non-TJH sources (train, birds, resident, traffic, plane)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being met</p> <p><b>Mitigation Measures</b> Include a 6m noise wall</p>
<b>66 Kalinga Street, Clayfield</b>						
Single Storey Queenslander (Living Room)	10/10/2011 01:08pm – 01:23pm	40.2	45	40.1	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed</p> <p><b>Atmospheric Conditions</b> Fine, light breeze</p> <p><b>Noise Sources</b> TJH noise sources (ventilation fans, drill) plus non-TJH sources (birds, resident, insects, air-conditioning, plane, train)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being met</p> <p><b>Mitigation Measures</b> Include a 6m noise wall and air-conditioning</p>

Single Storey Queenslander (Living Room)	10/10/2011 01:23pm – 01:38pm	40.2	45	40.5	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed</p> <p><b>Atmospheric Conditions</b> Fine, light breeze</p> <p><b>Noise Sources</b> TJH noise sources (ventilation fans, drill, bang) plus non-TJH sources (birds, resident, insects, air-conditioning, plane, train)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being met</p> <p><b>Mitigation Measures</b> Include a 6m noise wall and air-conditioning</p>
<b>3/10 Wongara Street, Clayfield</b>						
2 <sup>nd</sup> Floor Apartment (Living Room)	12/10/2011 01:08pm – 01:23pm	40.0	45	40.5	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed</p> <p><b>Atmospheric Conditions</b> Fine, light easterly breeze</p> <p><b>Noise Sources</b> TJH noise sources (drill) plus non-TJH sources (crows, fridge motors, traffic, resident, computer motor, birds, neighbour)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being met</p> <p><b>Mitigation Measures</b> East-West Arterial noise wall, double stack shipping containers</p>
2 <sup>nd</sup> Floor Apartment (Living Room)	12/10/2011 01:26pm – 01:41pm	50.5	45	50.9	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors opened</p> <p><b>Atmospheric Conditions</b> Fine, light easterly breeze</p> <p><b>Noise Sources</b> TJH noise sources (drill, saw cutting, drop/metal on metal) plus non-TJH sources (traffic, birds, train, car-alarm, resident, trees, neighbours)</p> <p><b>Discussion</b> Monitoring indicates elevated LAeq levels throughout the session. It should be noted that the LAeq level was heavily influenced by non-TJH noise sources including traffic on East-West Arterial and Sandgate Road, birds, car alarm, resident and neighbours. TJH specific LAeq levels could not be isolated from these external noise sources.</p> <p><b>Mitigation Measures</b> East-West Arterial noise wall, double stack shipping containers</p>

89 Jackson Street, Clayfield						
Double Storey Timber House (Front Bedroom)	13/10/2011 01:04pm – 01:19pm	40.6	45	41.3	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors open</p> <p><b>Atmospheric Conditions</b> Thunderclouds developing, gusty easterly wind</p> <p><b>Noise Sources</b> TJH noise sources (site hum, hammering/bangs, concrete vibrator, TJH horn, excavator, jib knock, saw, crane, squawker) plus non-TJH sources (wind, birds, train, resident, public, traffic)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being met</p> <p><b>Mitigation Measures</b> Include a 6m noise wall</p>
Double Storey Timber House (Front Bedroom)	13/10/2011 01:21pm – 01:36pm	39.1	45	39.1	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed</p> <p><b>Atmospheric Conditions</b> Thunderclouds developing, gusty easterly wind</p> <p><b>Noise Sources</b> TJH noise sources (excavator, TJH horn, site hum, hammering/bangs, concrete vibrator, drilling, grinding/sawing) plus non-TJH sources (train, birds, resident, traffic, house creak)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being met</p> <p><b>Mitigation Measures</b> Include a 6m noise wall</p>

**Table 3f: Night Shift Noise Monitoring Results – Toombul**

Location	Monitoring Period	L <sub>Aeq</sub> (15 min) (dBA)	CoG Goal L <sub>Aeq</sub> (15 min) (dBA)	L <sub>Amax</sub> (15 min) (dBA)	CoG Goal L <sub>Amax</sub> (15 min) (dBA)	Comments
<b>60 Jackson Street, Clayfield</b>						
Double Storey Timber House (Upper Rear Bedroom)	22/09/2011 09:01pm – 09:16pm	39.7	40	45.6	50	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors open</p> <p><b>Atmospheric Conditions</b> Nil breeze, clear</p> <p><b>Noise Sources</b> TJH noise sources (ventilation fans, bang/drop, bang hammering, crane, hydro blasting, squawker, gantry) plus non-TJH sources (train, dog bark, traffic, plane)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being met</p> <p><b>Mitigation Measures</b> Include a 6m noise wall</p>
Double Storey Timber House (Upper Rear Bedroom)	22/09/2011 09:18pm – 09:33pm	28	40	35	50	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed</p> <p><b>Atmospheric Conditions</b> Nil breeze, clear</p> <p><b>Noise Sources</b> TJH noise sources (ventilation fans) plus non-TJH sources (train, traffic, horn, outside noise, resident)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being met</p> <p><b>Mitigation Measures</b> Include a 6m noise wall</p>

89 Jackson Street, Clayfield						
Double Storey Timber House (Front Bedroom)	28/09/2011 08:53pm – 09:08pm	34.5	40	40.8	50	<b>Monitoring Type</b> Internal attended monitoring, windows and doors open <b>Atmospheric Conditions</b> No breeze, clear night <b>Noise Sources</b> TJH noise sources (ventilation fan, bang/drop, crane, metal hammering, hydro blasting) plus non-TJH sources (train, plane, resident, traffic, dog, resident talking) <b>Discussion</b> Monitoring indicates that CoG goals are being met <b>Mitigation Measures</b> Include a 6m noise wall
Double Storey Timber House (Front Bedroom)	28/09/2011 09:11pm – 09:26pm	33.5	40	35.4	50	<b>Monitoring Type</b> Internal attended monitoring, windows and doors closed <b>Atmospheric Conditions</b> No breeze, clear night. <b>Noise Sources</b> TJH noise sources (ventilation fans, crane) plus non-TJH sources (train, plane, resident, resident tap, gecko) <b>Discussion</b> Monitoring indicates that CoG goals are being met <b>Mitigation Measures</b> Include a 6m noise wall

5/81 Alma Road, Clayfield						
Double Storey Brick Unit (Lounge room)	06/10/2011  07:27pm – 07:42pm	41	40	48.7	50	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed, mitigation operating</p> <p><b>Atmospheric Conditions</b> No breeze, 100% cloud cover</p> <p><b>Noise Sources</b> TJH noise sources (franna crane) plus non-TJH sources (train, plane, resident, residents dog, traffic, air-conditioning unit)</p> <p><b>Discussion</b> Monitoring indicates elevated LAeq and LAmix levels throughout the session. It should be noted that the LAeq level was heavily influenced by non-TJH noise sources including residents' activities, train, traffic on Sandgate Road and dog barks. TJH specific LAeq levels could not be isolated from these external noise sources. The elevated LAmix level was attributed to resident activities, with TJH-specific LAmix from franna crane registering 48.7 dBA.</p> <p><b>Mitigation Measures</b> Include a 6m noise wall, TJH provided mitigation operating throughout the monitoring session</p>

The following properties were approached by TJH for internal noise monitoring and property access was denied by the residents.

Address of Monitoring Location	Date of Request	Time of Requested Monitoring	Construction Activity to be Monitored	Date Access Denied	Comments
66 Kalinga Street, Clayfield	26/09/2011	-	General construction	26/09/2011	Monitoring to be postponed until future date of convenience
55 Lewis Street, Clayfield	30/09/2011	7:30PM	Hydro-demolition, general construction	30/09/2011	Monitoring to be postponed until future date of convenience
55 Lewis Street, Clayfield	13/10/2011	7:00PM	Hydro-demolition, general construction	13/10/2011	Site flooded due to wet weather. Postponed until future date of convenience

### 3.3 Compliance with Noise Goals

Exceedances of the Coordinator General's Noise Goals has been found during this monitoring period at

- 6-12 Suez Street, Gordon Park

### 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.

#### 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 vehicle loads
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)
8. Hydro-mulching and re-vegetation on sites nearing completion (eg sites on Lanham Street, Bowen Hills)

#### 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 4.2.1 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.

Elevated PM 10 and TSP air quality results on the dates of 17th to 20th September 2011 were recorded at some monitoring locations within the Airport link corridor. Elevated air quality results on these dates can be attributed to widespread bushfires across South-East Queensland. DERM Air Quality Monitoring revealed city-wide elevated PM10 levels. Considering this, there were no exceedances of the Coordinator Generals Air Quality Conditions caused as a consequence of TJH construction activities throughout this period.

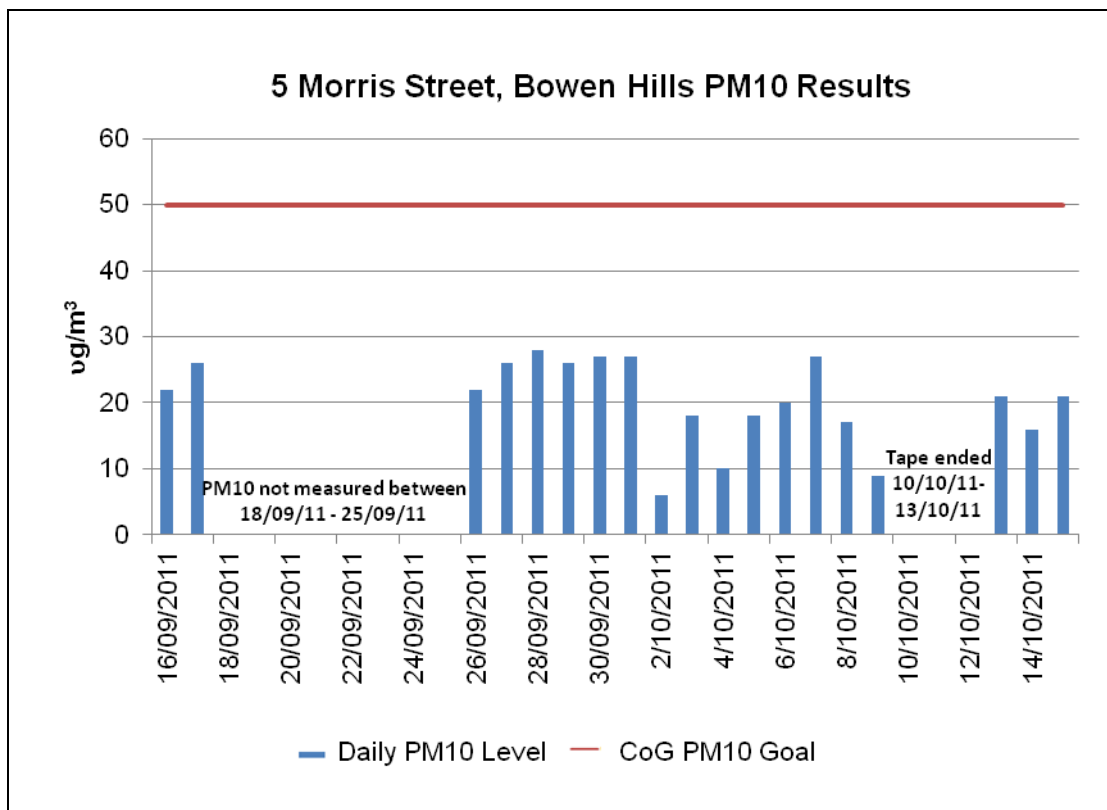


Figure 4.2.1: 5 Morris Street, Windsor PM10 Results (for monitor location see figure 2.1)  
Please note that PM10 was not measured between 18/9/11 to 25/09/11 due to equipment failure.

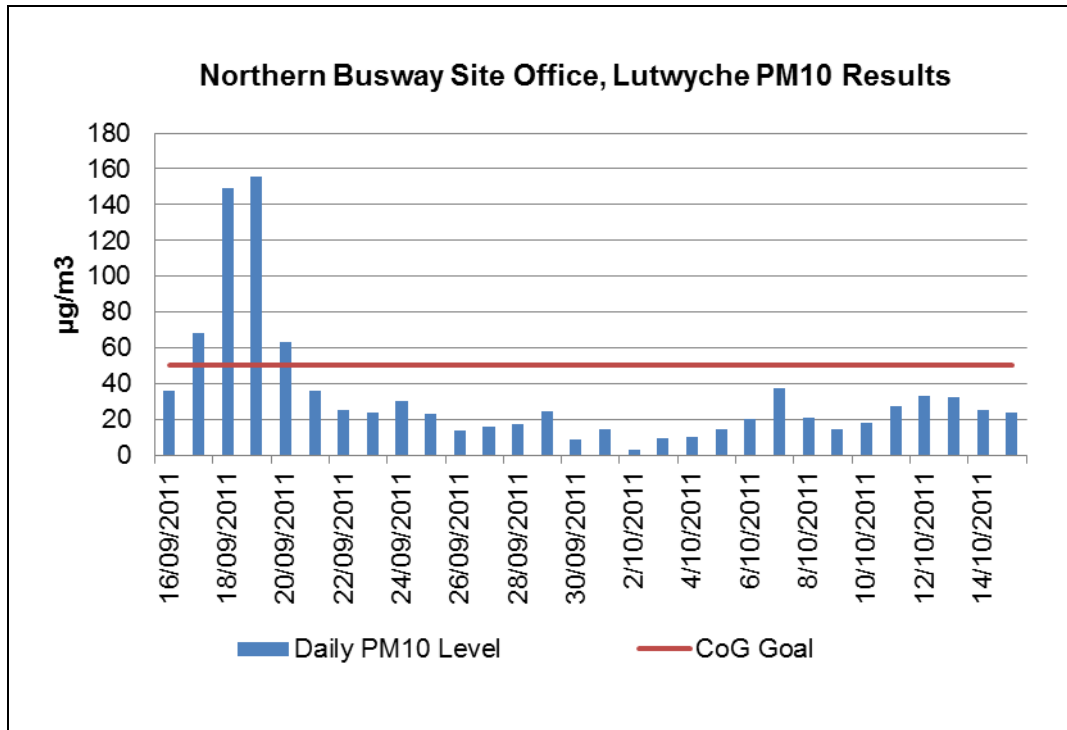


Figure 4.2.2: Northern Busway Site Office, Lutwyche PM10 Results (for location see figure 2.3 – A1)

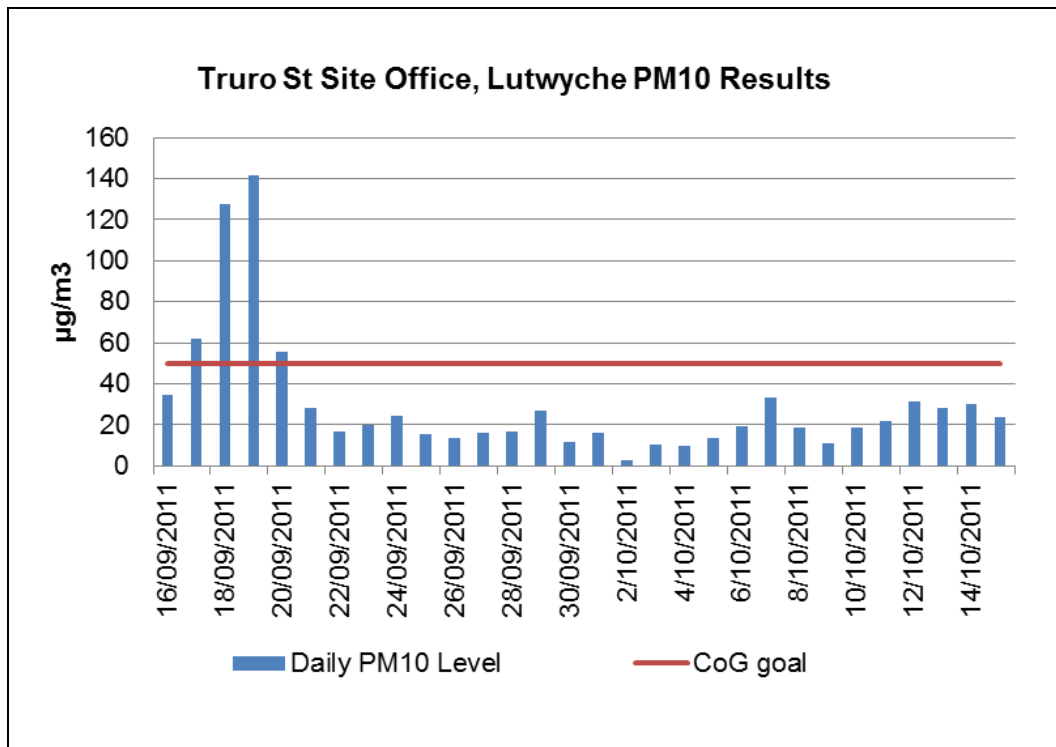


Figure 4.2.3: Truro Street Mid Tunnel Site Office, PM10 Results (for location see figure 2.2 – A1)

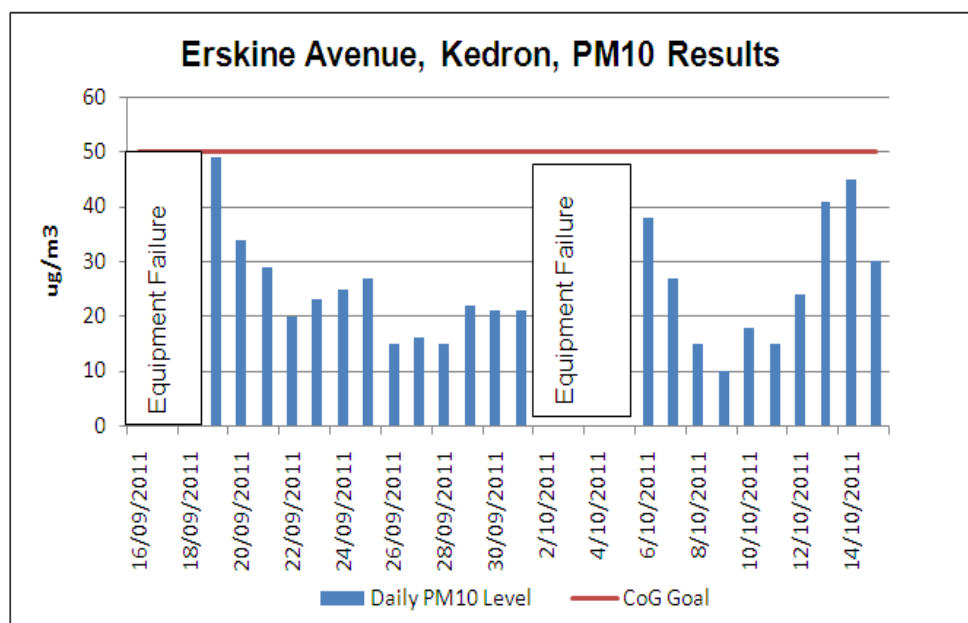


Figure 4.2.4: Erskine Avenue, Kedron PM10 Results (for monitor location see figure 2.4 – A1)

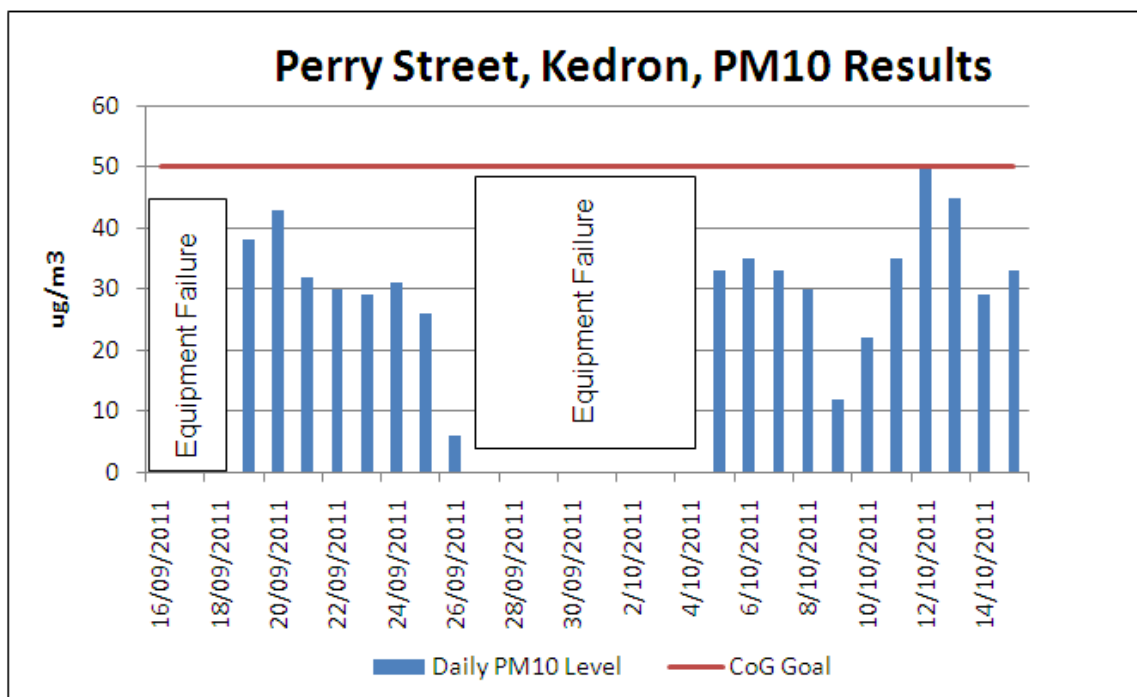


Figure 4.2.5: Perry Street, Kedron PM10 Results (for monitor location see figure 2.4 – A1)

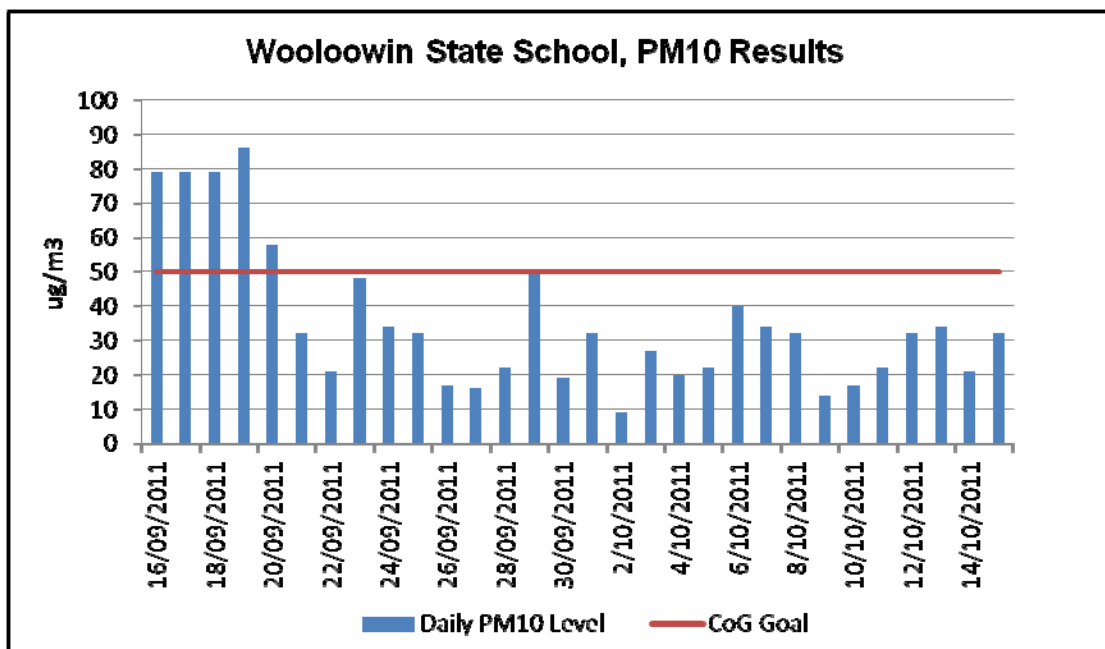


Figure 4.2.6: Wooloowin State School, Lutwyche PM10 Results (for monitor location see figure 2.4 – A4)

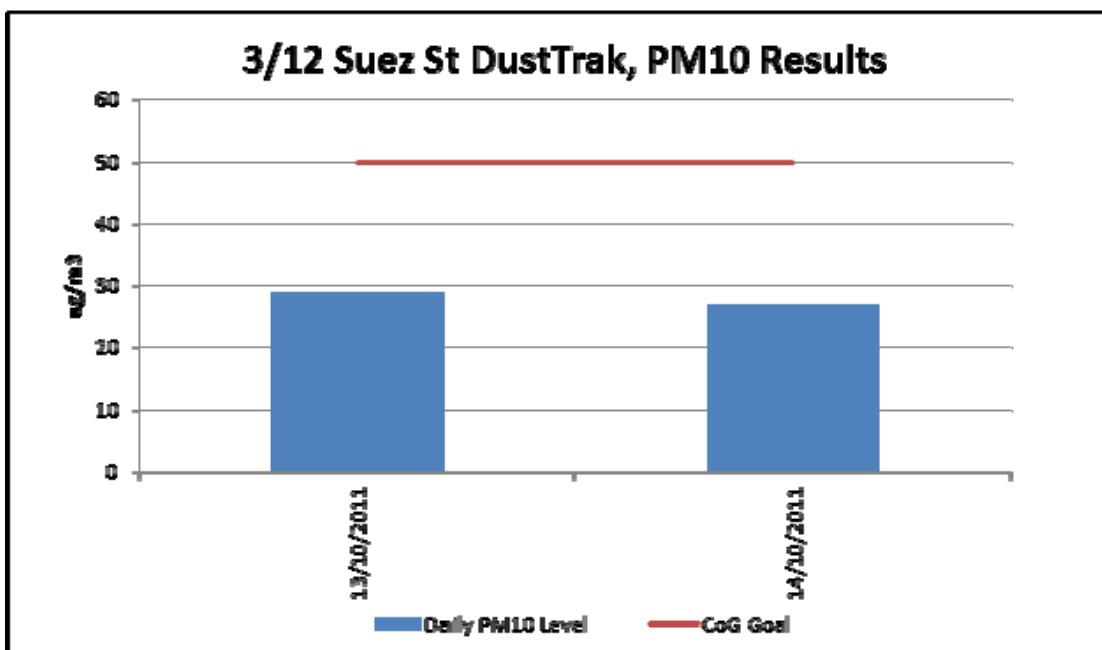


Figure 4.2.7: 3/12 Suez Street, PM10 Results (for monitor location see figure 2.4 – A4)

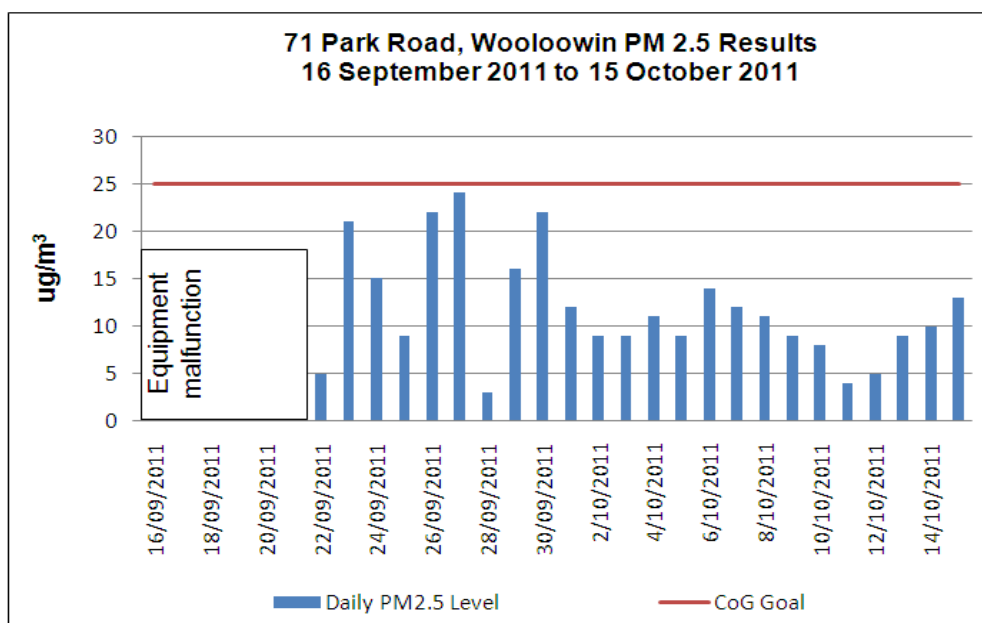


Figure 4.2.8: 71 Park road PM10 Results (for monitor location see figure 2.5 – A1)

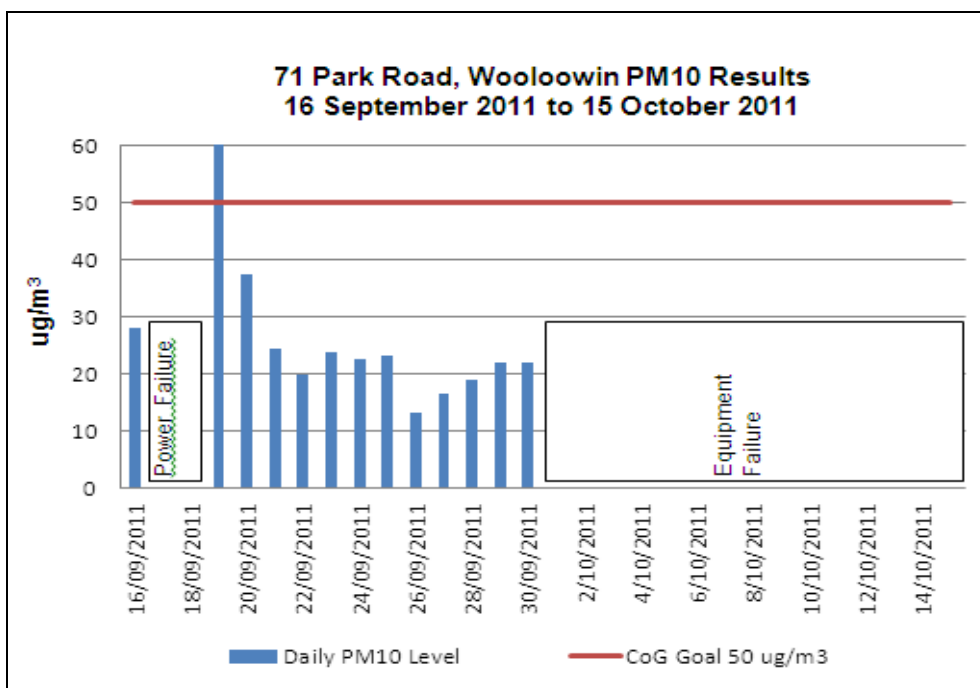


Figure 4.2.9: 71 Park Road, Woollowin PM2.5 Results (for monitor location see figure 2.4 – A1)

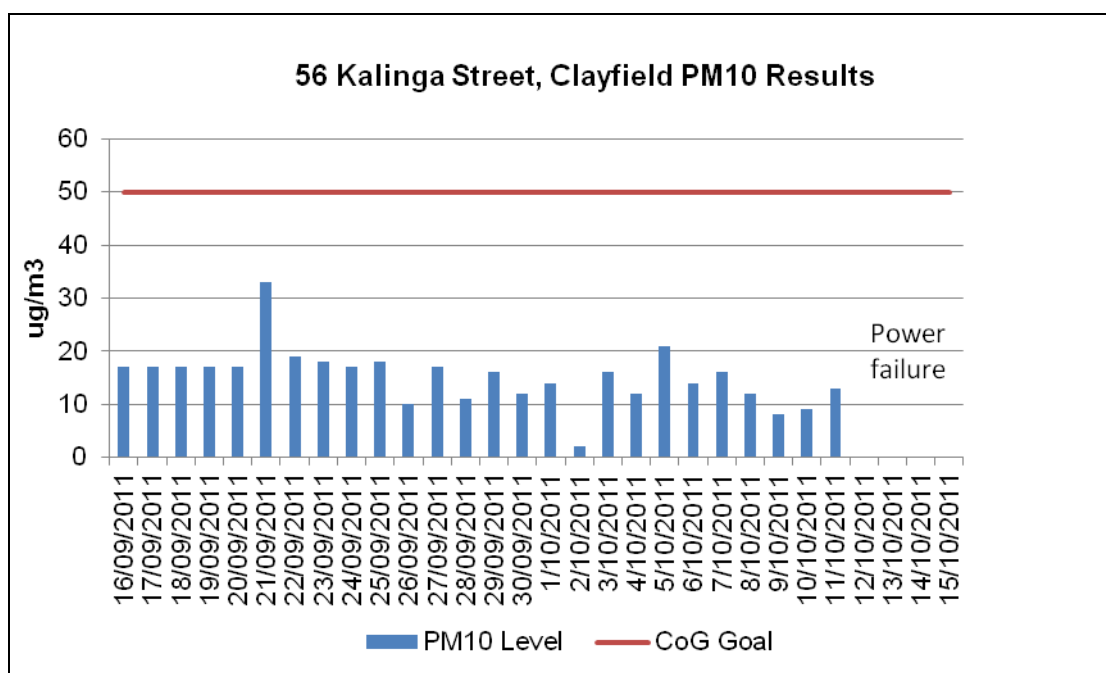


Figure 4.2.10: 56 Kalinga Street, Toombul PM10 Results (for monitor location see Figure 2.6 – A1)

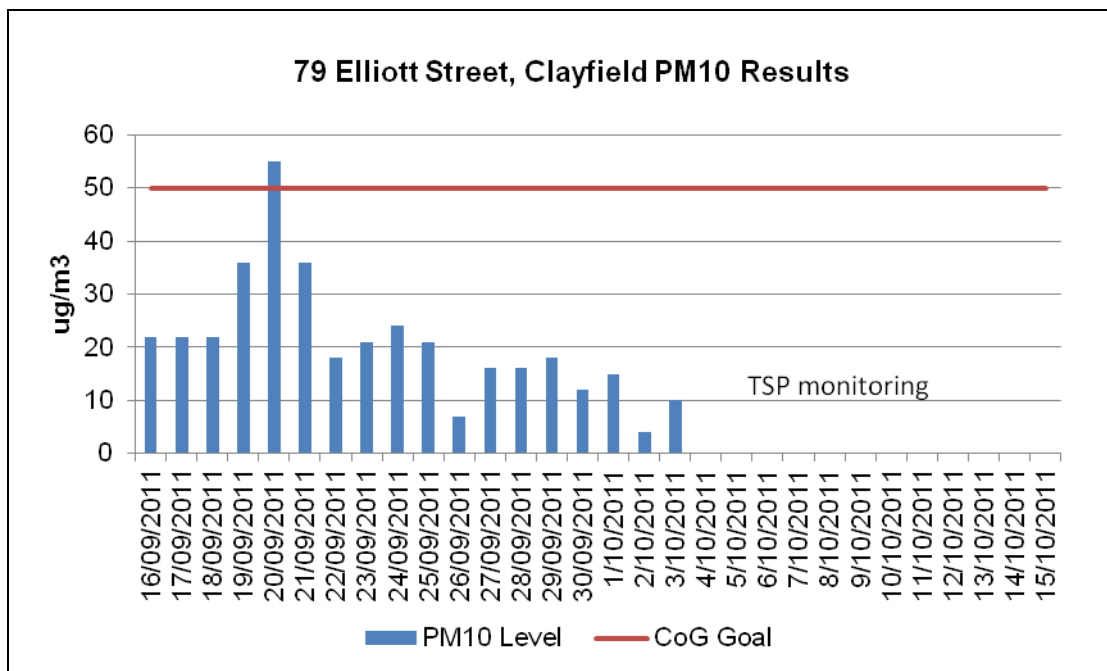


Figure 4.2.11: Kalinga Park Adj Alma Road, Toombul PM10 Results (for monitor location see Figure 2.6- A2)

### 4.3 Air Quality Monitoring Results – Dust Deposition Results

Dust deposition monitoring is undertaken on a monthly basis using a bottle and funnel placed 2m ± 0.2m above ground level in accordance with Australian Standard AS 3580.10.1:2003. It should be noted that in all locations the placement of the deposition gauges does not strictly meet the standard due to location and security restrictions. Efforts to comply with location standards have been made however as much as possible.

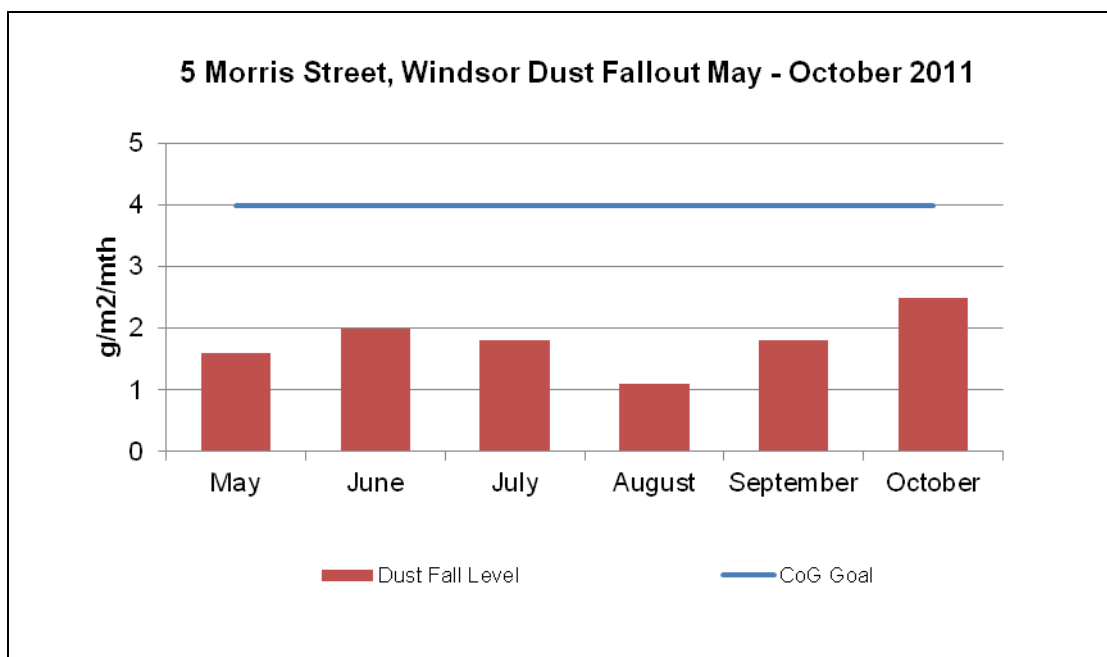


Figure 4.3.1: 5 Morris St Windsor Dust Deposition Results (for monitor location refer to figure 2.1)

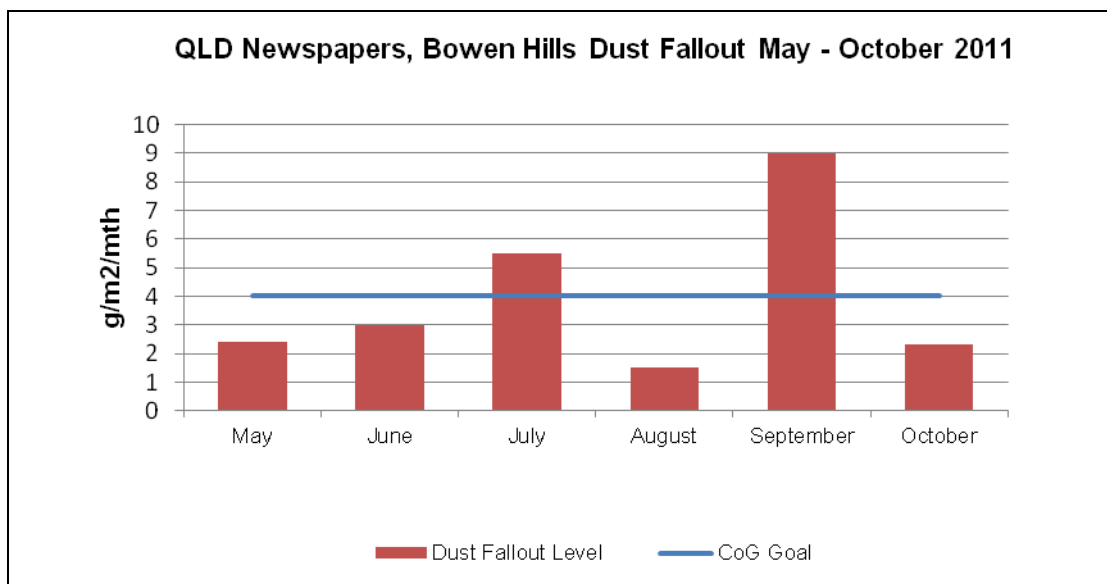


Figure 4.3.2: Queensland Newspapers, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

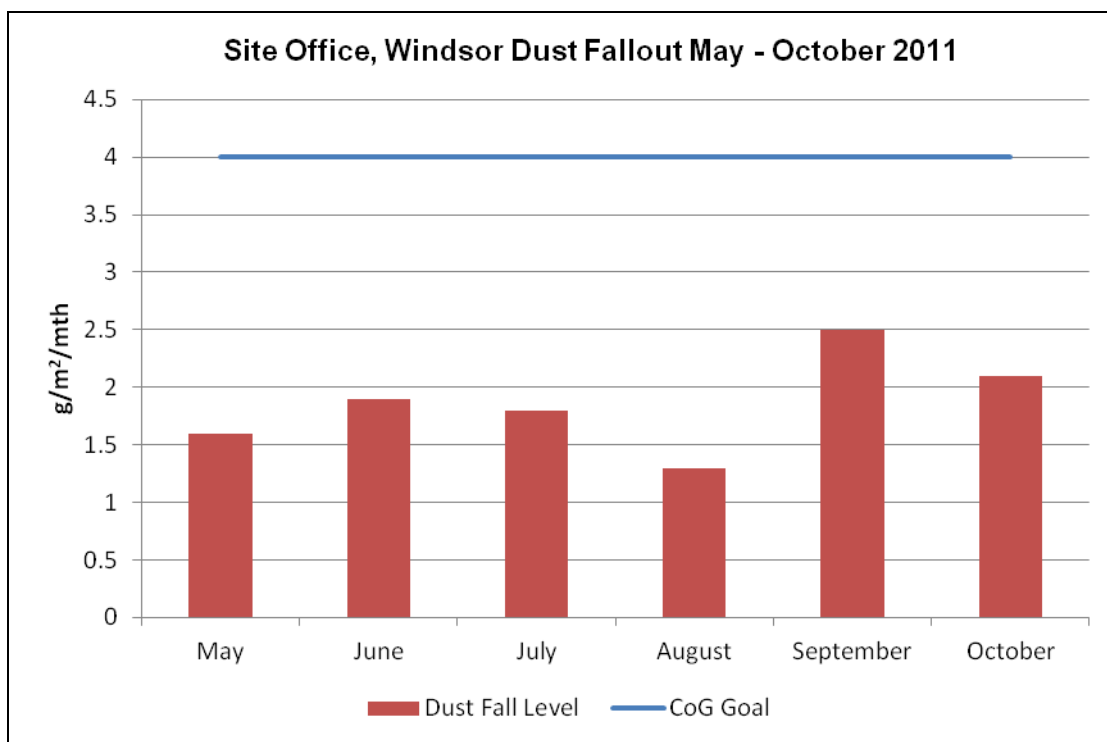


Figure 4.3.3: Site Office, Windsor Dust Deposition Results (for monitor location refer to figure 2.1)

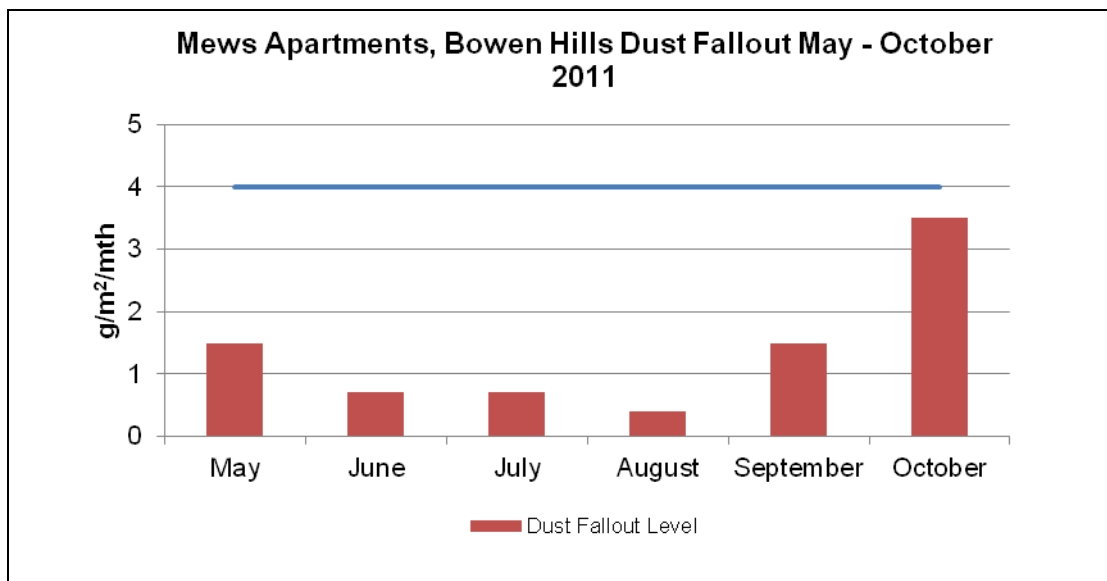


Figure 4.3.4: Mews Apartments, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

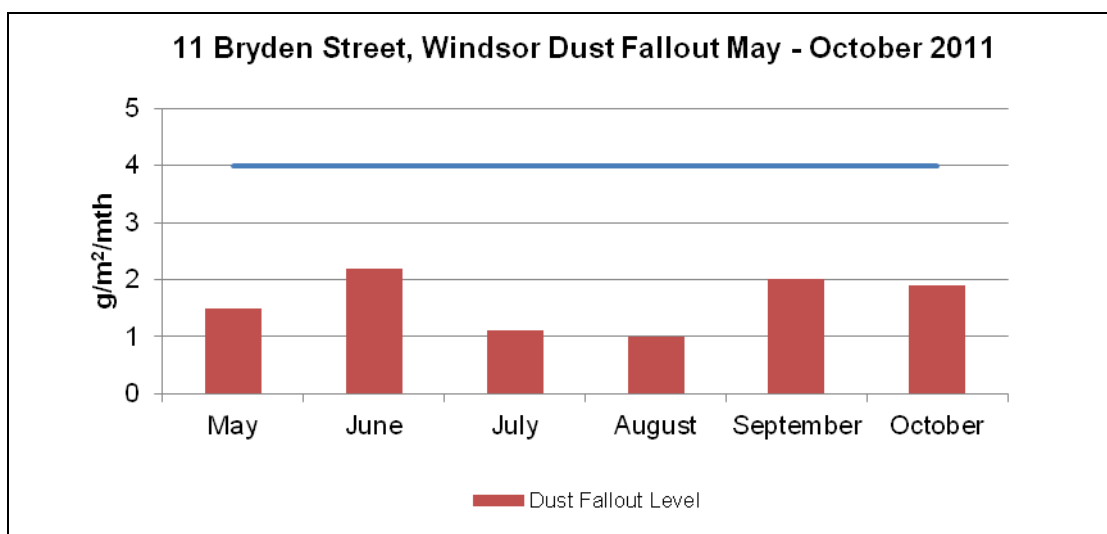


Figure 4.3.5: 11 Bryden Street, Windsor Dust Deposition Results (for monitor location refer to figure 2.1)

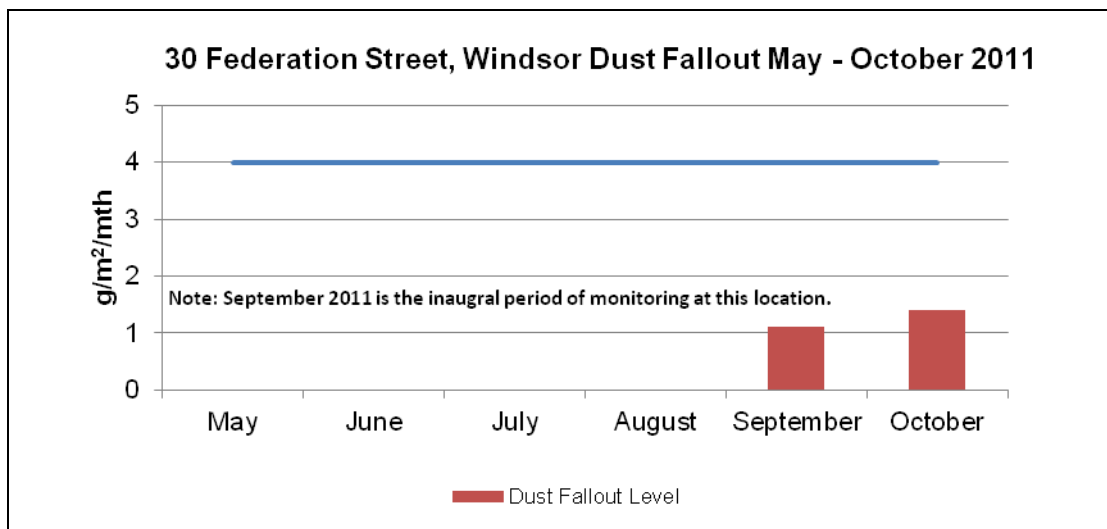


Figure 4.3.6: 30 Federation Street, Windsor Dust Deposition Results (for monitor location refer to figure 2.1)

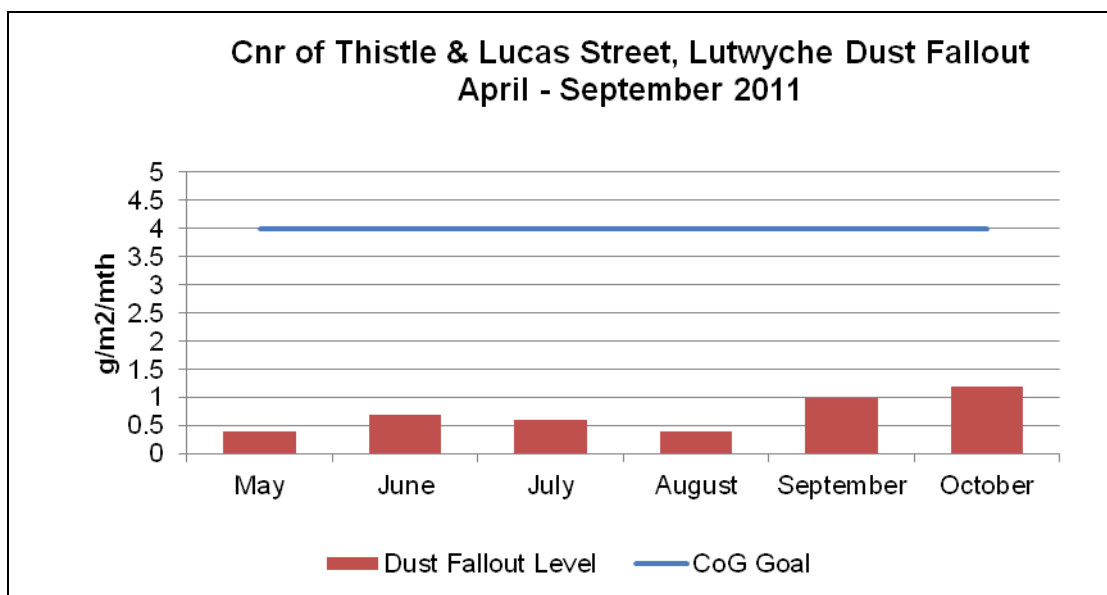


Figure 4.3.7: Cnr of Thistle & Lucas Street, Lutwyche Dust Fallout Results (location refer to figure 2.3 – D2)

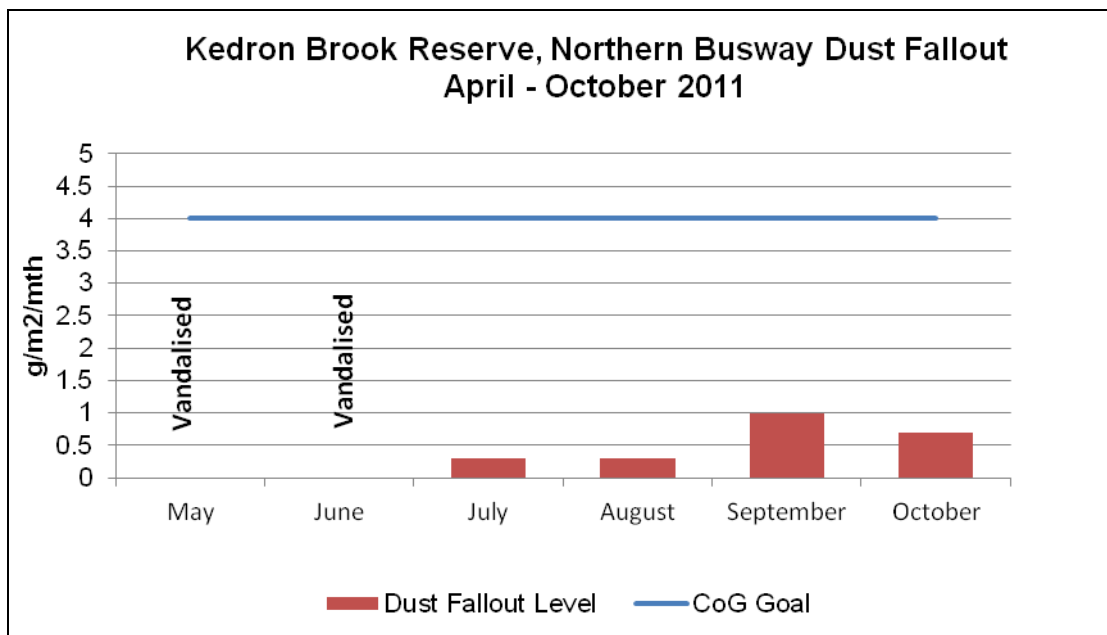


Figure 4.3.8: Kedron Brook Reserve, Northern Busway Dust Fallout Results (location refer to figure 2.3 – D1)

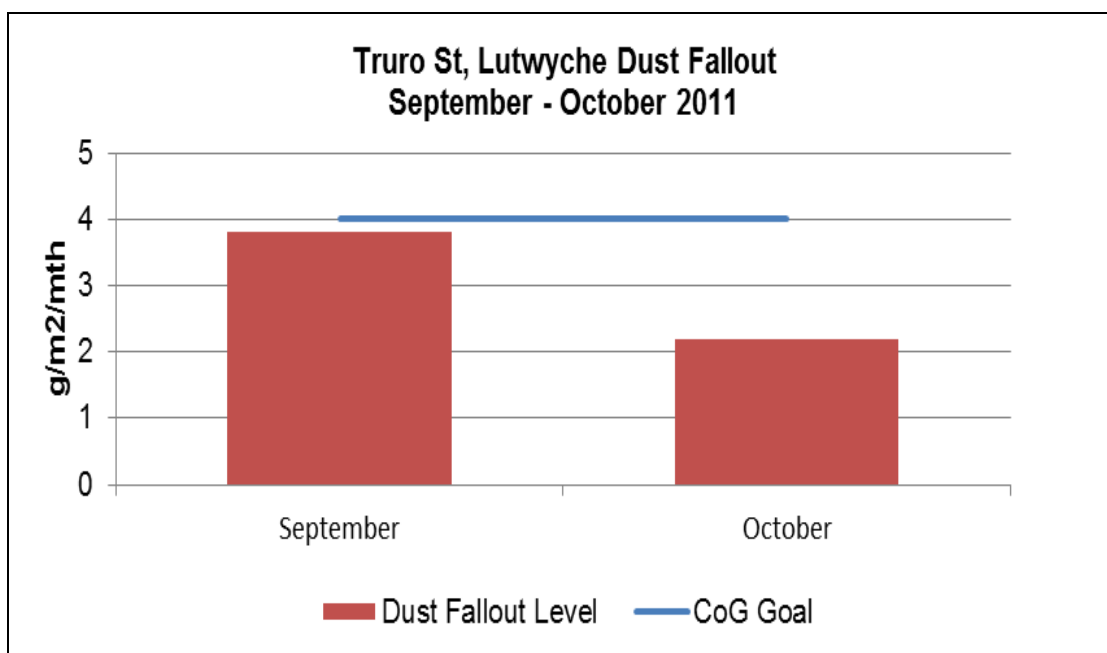


Figure 4.3.9: Truro Street, Lutwyche Fallout Results (location refer to figure 2.2)

The dust deposition result from Truro Street shown in Figure 4.3.7 is only the second time dust deposition monitoring has occurred in this location, therefore only the two results can be reported.

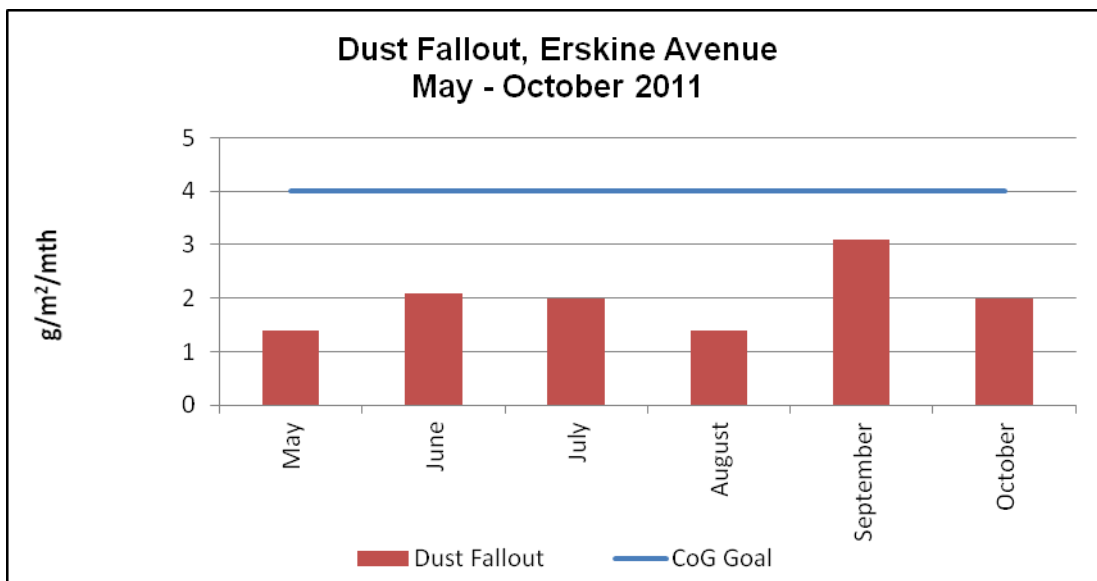


Figure 4.3.10: Erskine Avenue, Kedron Dust Fallout May – October 2011 (for monitor location see figure 2.4 – A1)

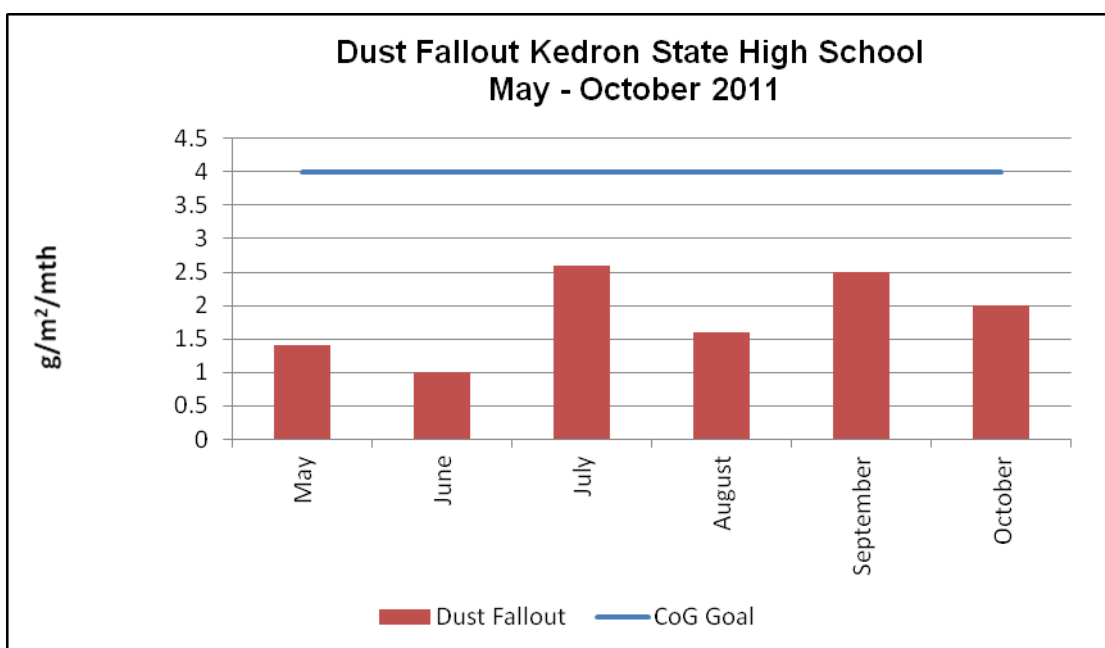


Figure 4.3.11: Kedron State High School, Dust Fallout May – October 2011 (for monitor location see figure 2.4 A2)

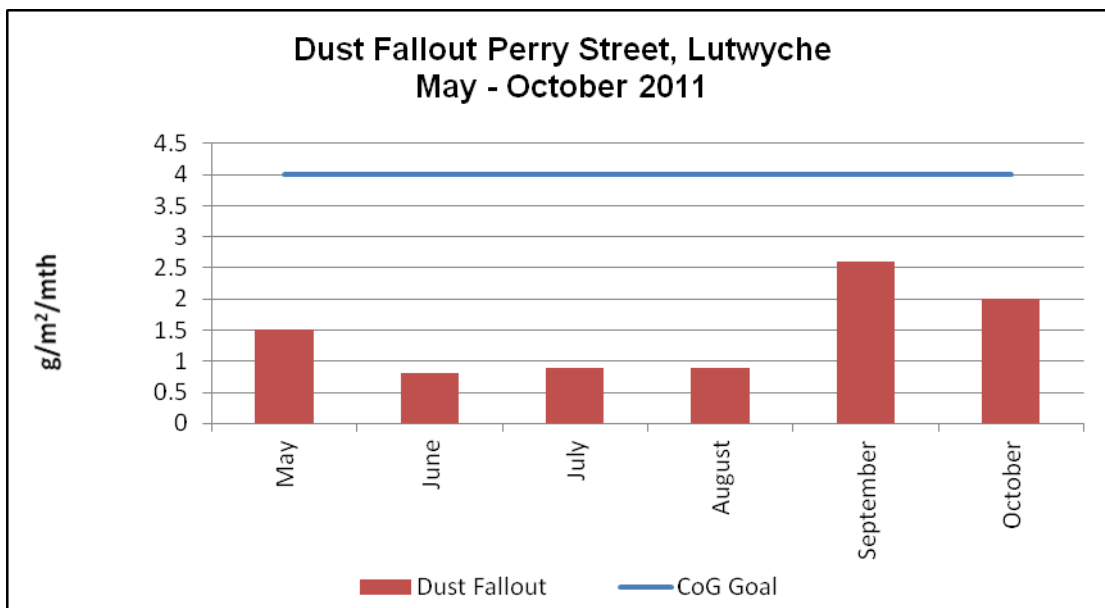


Figure 4.3.12: Perry Street, Lutwyche Dust Fallout May – October 2011 (for monitor location see figure 2.4 – A3)

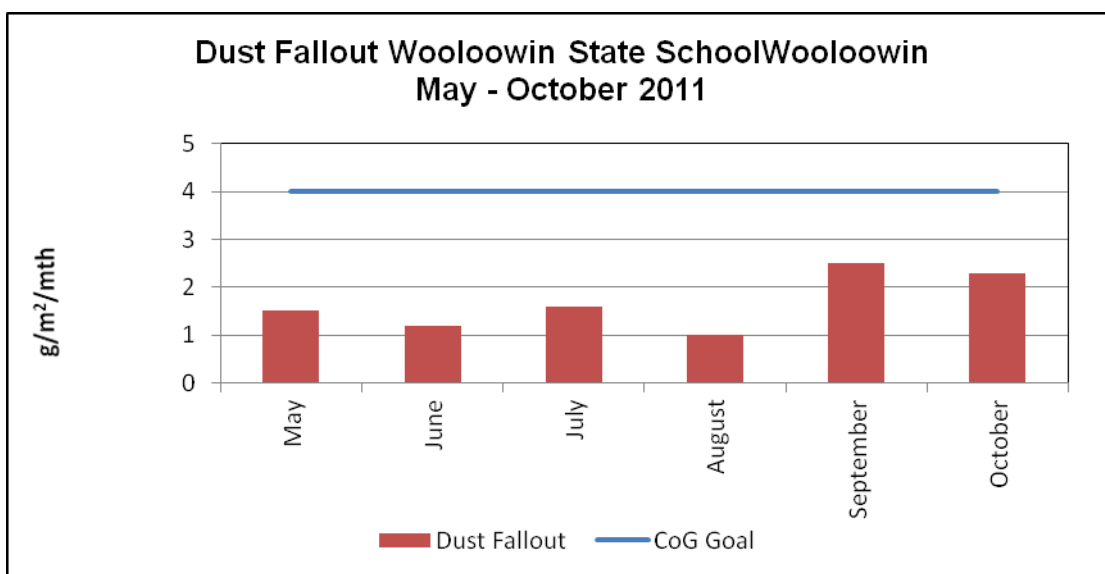


Figure 4.3.13: Woolloowin State School, Dust Fallout May – October 2011 (for monitor location see figure 2.4 – A4)

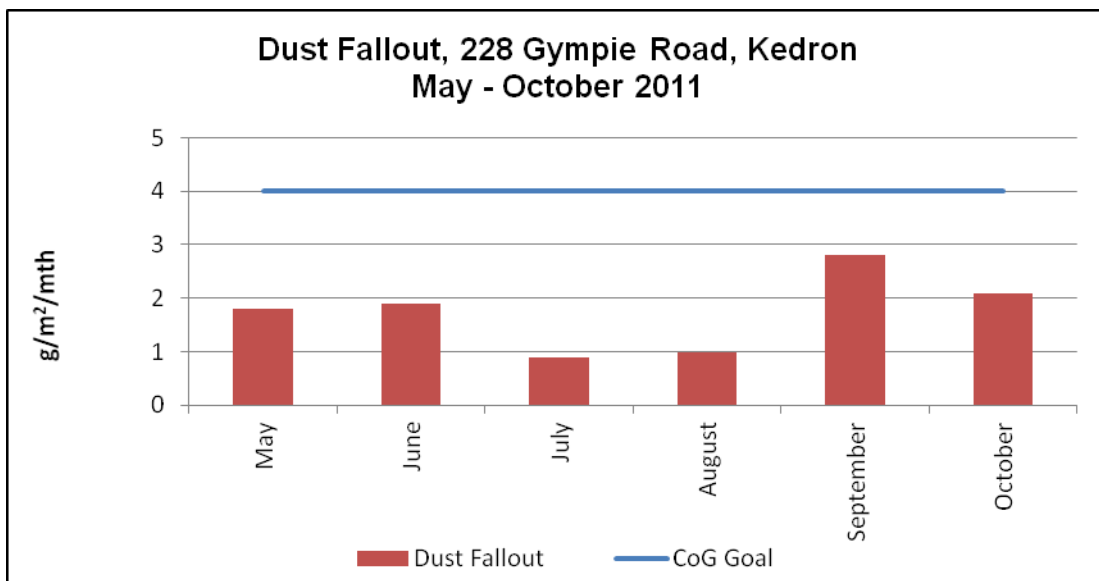


Figure 4.3.14: 228 Gympie Road, Kedron Dust Fallout May – October 2011 (for monitor location see figure 2.4)

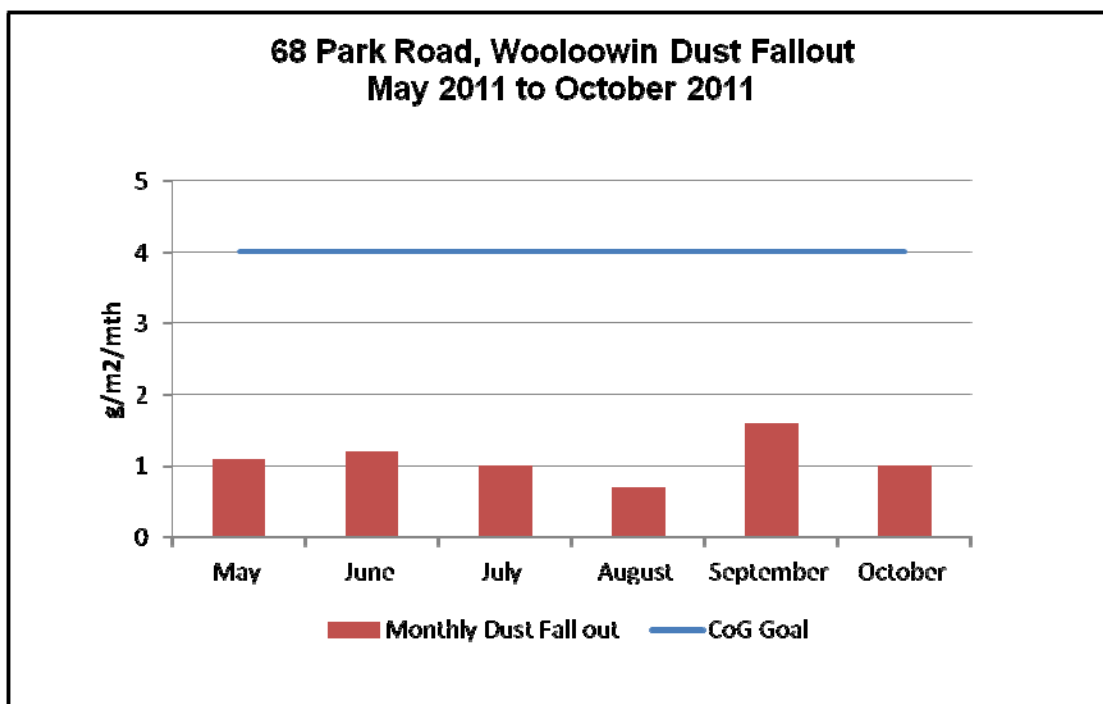


Figure 4.3.15: 68 Park Road, Wooloowin Dust Deposition Results (for monitor location refer to figure 2.1)

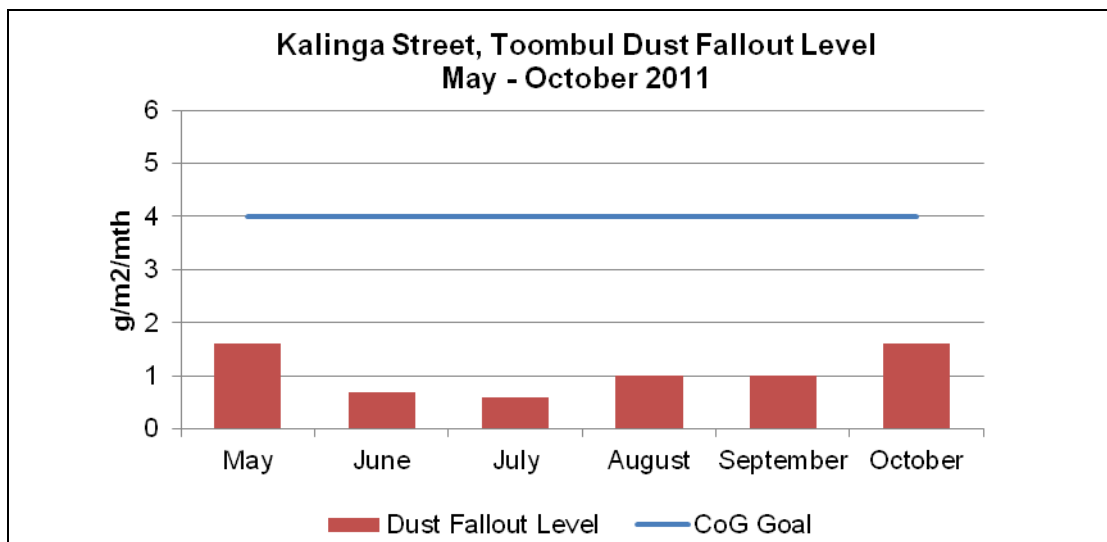


Figure 4.3.16: 56 Kalinga Street Toombul, Dust Fallout (location refer to figure 2.6 – D1)

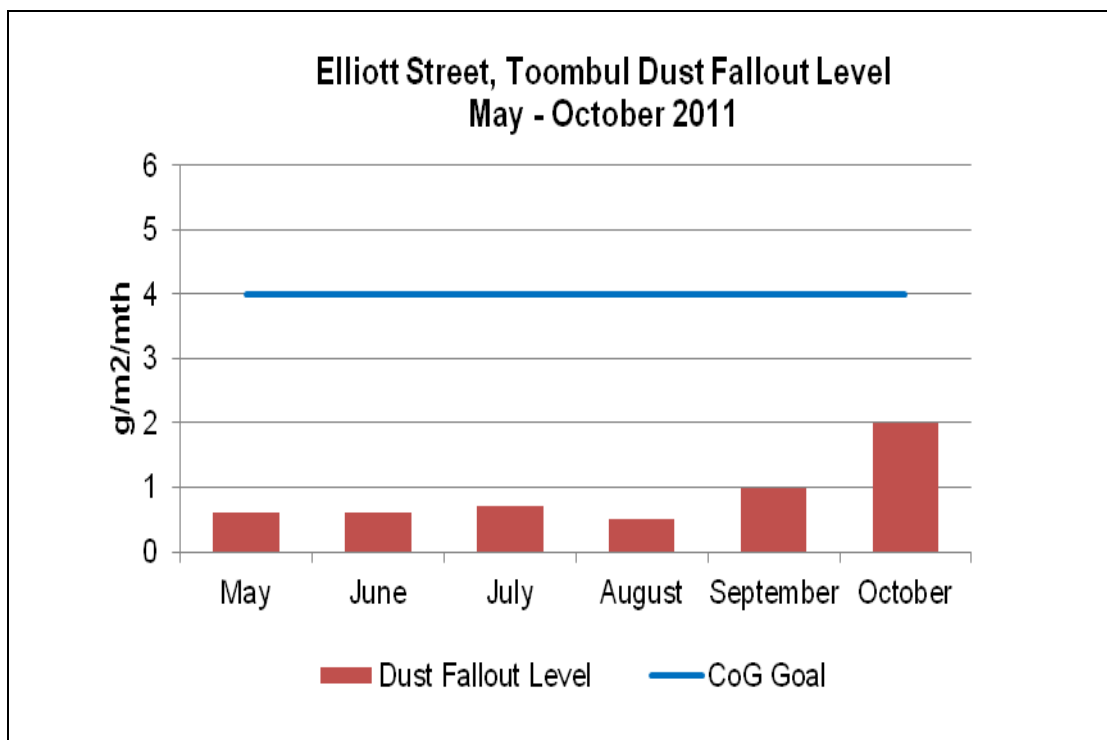


Figure 4.3.17: Mabel Street Toombul, Dust Fallout (location refer to figure 2.6 – D2)

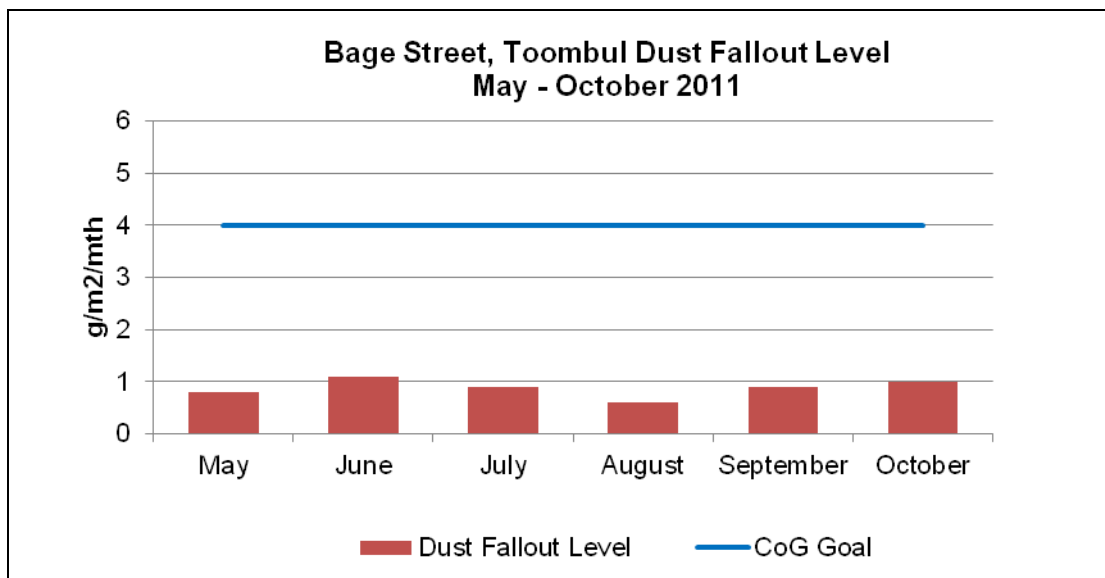


Figure 4.3.18: Bage Street Toombul, Dust Fallout (location refer to figure 2.6 – D3)

#### 4.4 CO/NO<sub>2</sub> Monitoring – Woolloowin Worksite

No CO/NO<sub>2</sub> Monitoring was undertaken during this period as construction phase was completed

#### 4.5 Compliance with Air Quality Goals

There were no exceedences of the Coordinator Generals Air Quality Conditions this reporting period for dust deposition or PM10.

### 5.0 Vibration Monitoring

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

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

#### 5.1 Overview of Vibration Mitigation Measures

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

1. Predictive modelling of anticipated risks and impacts
2. Building condition surveys of properties which are likely to experience vibration levels in excess of the levels for minimal risk of cosmetic damage outlined in the CoG Report

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

## 5.2 Vibration Monitoring Results

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

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

Location	Monitoring Period	Event Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
30 Federation Street, Windsor	15/09/11-19/09/11	0.46	5	Results are within CoG goals
	20/09/11-26/09/11	1.62	5	Results are within CoG goals.
	27/10/11-07/10/11	0.333	5	Results are within CoG goals
Location	Monitoring Period	Event Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
QNP	16/09/11-22/09/11	2.88	5	Results are within CoG goals
	23/09/11-30/09/11	3.03	5	Results are within CoG goals
	01/10/11-07/10/11	0.22	5	Results are within CoG goals
	08/10/11-15/10/11	0.89	5	Results are within CoG goals

**Table 5b: Blast Monitoring Results Summary – Kedron CC216/CC211 Blasting**

Monitoring Location	Property Type	Monitoring Type	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)
<b>Date</b>	<b>16/09/2011</b>			
<b>Blast time</b>	<b>11:16</b>			
<b>B/Field Site Office</b>	Commercial	Event Based	1.22	25
<b>35 Homebush Road</b>	Residential	Event Based	<0.5	25
<b>41 Jack Street</b>	Residential	Event Based	<1	25
<b>Kedron Medical Centre</b>	Sensitive Commercial/Medical	Event Based	<1	10
<b>Date</b>	<b>17/09/2011</b>			
<b>Blast time</b>	<b>7:33</b>			
<b>B/Field Site Office</b>	Commercial	Event Based	1.73	25
<b>Energex</b>	Commercial	Event Based	3.05	25
<b>35 Homebush Road</b>	Residential	Event Based	<0.5	25
<b>41 Jack Street</b>	Residential	Event Based	<1	25
<b>Kedron Medical Centre</b>	Sensitive Commercial/Medical	Event Based	<1	10

<b>Date</b>	<b>17/09/2011</b>			
<b>Blast time</b>	<b>16:05</b>			
<b>B/Field Site Office</b>	Commercial	Event Based	1.40	25
<b>35 Homebush Road</b>	Residential	Event Based	<0.5	25
<b>41 Jack Street</b>	Residential	Event Based	<1	25
<b>Kedron Medical Centre</b>	Sensitive Commercial/Medical	Event Based	1.98	10
<b>Date</b>	<b>19/09/2011</b>			
<b>Blast time</b>	<b>12:53</b>			
<b>B/Field Site Office</b>	Commercial	Event Based	<1	25
<b>Energex</b>	Commercial	Event Based	<0.5	25
<b>41 Jack Street</b>	Residential	Event Based	<1	25
<b>Kedron Medical Centre</b>	Sensitive Commercial/Medical	Event Based	<1	10
<b>Date</b>	<b>20/09/2011</b>			
<b>Blast time</b>	<b>12:53</b>			
<b>B/Field Site Office</b>	Commercial	Event Based	1.27	25
<b>Energex</b>	Commercial	Event Based	2.67	25
<b>41 Jack Street</b>	Residential	Event Based	<1	25
<b>Kedron Medical Centre</b>	Sensitive Commercial/Medical	Event Based	<1	10
<b>Date</b>	<b>21/09/2011</b>			
<b>Blast time</b>	<b>14:26</b>			
<b>B/Field Site Office</b>	Commercial	Event Based	<1	25
<b>Energex</b>	Commercial	Event Based	<0.5	25
<b>35 Homebush Road</b>	Residential	Event Based	<0.5	25
<b>41 Jack Street</b>	Residential	Event Based	<1	25
<b>Kedron Medical Centre</b>	Sensitive Commercial/Medical	Event Based	<1	10
<b>Date</b>	<b>23/09/2011</b>			
<b>Blast time</b>	<b>16:20</b>			
<b>B/Field Site Office</b>	Commercial	Event Based	1.21	25
<b>Energex</b>	Commercial	Event Based	2.67	25
<b>35 Homebush Road</b>	Residential	Event Based	<0.5	25
<b>41 Jack Street</b>	Residential	Event Based	<1	25
<b>Date</b>	<b>24/09/2011</b>			
<b>Blast time</b>	<b>12:30</b>			
<b>B/Field Site Office</b>	Commercial	Event Based	<1	25
<b>Energex</b>	Commercial	Event Based	<0.5	25
<b>35 Homebush Road</b>	Residential	Event Based	<0.5	25
<b>41 Jack Street</b>	Residential	Event Based	<1	25

### 5.3 Compliance with Vibration Goals

There were no exceedences of the Coordinator Generals conditions this reporting period for vibration.

## 6.0 Community enquiries and complaints

A total of 231 community complaints were reported to the project between 16 September and 15 October 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

