



# **Airport Link / Northern Busway Project**

## **Monthly Environmental Monitoring Report**

**August 2010**

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## **1.0 Report Purpose and Scope**

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

The monitoring data covered in this report is for the August 2010 reporting period, from 15<sup>th</sup> July 2010 to 15<sup>th</sup> August 2010.

## **2.0 Monitoring Locations**

Several monitoring locations exist within the project area as described in Figures 1-5. Note that the aerial photograph overlays used in Figures 1-5 do not accurately portray the extent of the project's progress to June 2010, though do serve a useful purpose in relating the monitoring locations to existing structures and infrastructure.

## Bowen Hills Monitoring Locations



Source: NearMap 2010

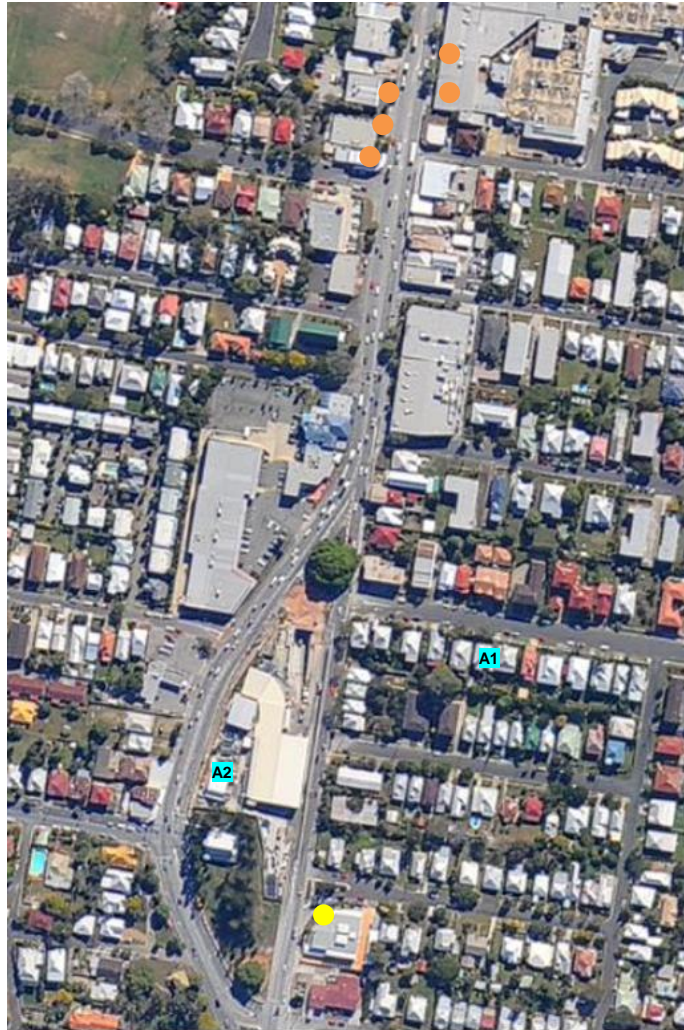
Figure 2.1 – Bowen Hills Monitoring Locations

**Legend**

- |  |   |
|--|---|
| <span style="color: yellow;">●</span> Noise (during construction ) | <span style="color: blue;">●</span> Air (PM <sub>10</sub> ) |
| <span style="color: orange;">●</span> Vibration                    | <span style="color: green;">●</span> Air (Dust Deposition)  |

Note: QNP is not shown due to map extremities – physical location 41 Campbell St Bowen Hills  
 Note: 252 Lutwyche Rd is not shown due to map extremities  
 Note: locations are indicative only

## Truro Street Mid Tunnel Monitoring Locations



Source: NearMap 2010

**Figure 2.2 – Truro Street Mid Tunnel Monitoring Locations**  
**Legend**

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

Note: locations are indicative only

### 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

## Kedron Monitoring Locations



Source: NearMap 2010

Figure 2.4 – Kedron Monitoring Locations

**Legend**

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

Note: locations are indicative only

## Woolloowin Monitoring Locations



Source: NearMap 2010

Figure 2.5 – Woolloowin Monitoring Locations

**Legend**

- Noise (during construction )
- Vibration
- Air (CO and NO<sub>2</sub>)
- Air (PM<sub>10</sub>/TSP)
- Air (Dust Deposition)

Note: locations are indicative only

## Toombul Monitoring Locations



Source: NearMap 2010

Figure 2.6 – Toombul Monitoring Locations  
Legend

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

Note: locations are indicative only

### 3.0 Noise Monitoring

TJH undertakes regular monitoring of noise levels at a variety of locations across the project to help measure impacts and assist the team plan works and appropriate mitigations if required. The type and timing of monitoring is influenced by the activities being undertaken and relevant Noise Goals (inside buildings and residents living areas where allowed at night and during the day)

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

### 3.1 Overview of Noise Mitigation Measures

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

1. Undertake noise modelling for sections of works adjacent to sensitive receptors.
2. Reasonable and practical mitigation measures that have been implemented to date include the following:
  - a. Temporary noise barriers (precast concrete barrier and plywood):
    - i. Lutwyche Road (Lutwyche, Kedron)
    - ii. Gympie Road (Kedron)
    - iii. Truro Street on all sides of works (Lutwyche)
    - iv. Federation/Morris Street (Bowen Hills)
    - v. Stafford Road (Kedron)
    - vi. Rose St (Wooloowin)
    - vii. Kalinga Park (Toombul)
    - viii. KBB Worksite (Kedron)
  - b. Temporary noise barrier (shipping container) installations:
    - i. Perry Street, (Kedron)
    - ii. Kalinga Park (Toombul)
  - c. Acoustic shed has been built around the tunnel portals / shafts at:
    - i. Truro Street
    - ii. Bowen Hills
    - iii. Wooloowin
    - iv. Kalinga Park (410 launch box)
  - d. Consultation with property owners prior to commencing works and during construction works
  - e. Installation of mitigation measures at affected residents on a case-by-case basis
  - f. Investigating the early installation of permanent noise barriers at early stages.
  - g. Acoustic shielding of various plant
  - h. Regular awareness, training and reinforcement of work behaviours of staff, subcontractors, spoil haulage drivers, and delivery drivers to prevent or minimise noise generation in work areas
  - i. Use of temporary acoustic treatment (e.g. sound curtains around onsite generators and access/ egress from sites)
  - j. Installation of directional reversing alarms (e.g. 'squawkers') on plant

(especially those working out of normal working hours)

### **3.2 Noise Monitoring Results**

The results of TJH monitoring efforts are summarised for each project area in Tables 3a

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

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)	Comments
<b>28 Gallway Street, Windsor</b>						
2 Storey Timber House (Kitchen)	22/07/2010 2:41-2:55pm	41.6	45	44.1	55	<b>Monitoring Type</b> Attended. Internal. Windows and Doors closed <b>Noise Sources</b> TJH noise sources noted were a rock hammer, concrete vibrator and a squawker in the VSO. Traffic and internal house noise were noted during the period. <b>Discussion</b> Monitoring was to assess the level of impact which was being caused to residents adjacent to the Bowen Hills site. The noise sources which were noted were all within CoG goals. <b>Mitigation</b> Mitigation was not required as results were within CoG goals.
<b>35 Gallway Street, Windsor</b>						
2 Storey Timber House (2 <sup>nd</sup> Storey Living Room)	28/07/10 8:14-8:28am	36.9	45	37.8	55	<b>Monitoring Type</b> Attended. Internal. Windows and Doors closed <b>Noise Sources</b> TJH noise sources noted were soil nailing in the VSO/ rock hammering/ a bobcat moving through the site compound/ and a grinder being used for site office compound construction. Traffic and internal house noise were also noted during the period. <b>Discussion</b> Monitoring was to assess the level of impact which was being caused to residents adjacent to the Bowen Hills site. The noise sources which were noted were all within CoG goals. <b>Mitigation</b> Mitigation was not required as results were within CoG goals.

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

Location	Monitoring Period	Average L <sub>Aeq</sub> (15 min) (dBA)	CoG Goal L <sub>Aeq</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, Bowen Hills</b>						
2 Storey Timber House (Main Bedroom)	30/07/2010 7:03-7:17pm	41.1	40	55.7	50	<p><b>Monitoring Type</b> Attended. Internal. Windows and Doors closed</p> <p><b>Noise Sources</b> The dominant noise sources throughout the period were a concrete pump and concrete vibrator in the VSO. Hand held hammers were also audible. External noise sources noted throughout the session included trains, a plane flying overhead and internal noise.</p> <p><b>Discussion</b> The results recorded were above both the L<sub>Aeq</sub> and L<sub>Amax</sub> CoG goal. The noise level recorded was a result of TJH construction activities. NCR was raised regarding this exceedance.</p> <p><b>Mitigation</b> The noise wall adjacent to the property is in the process of being re-designed to reduce potential impact to surrounding residents. Negotiations are currently underway to install double glazing in stakeholders residence.</p>

**Table 3c: Night Time Noise Monitoring Results – Bowen Hills Tunnels**

Location	Monitoring Period	Average L <sub>Aeq</sub> (15 min) (dBA)	CoG Goal L <sub>Aeq</sub> (15 min) (dBA)	Average L <sub>Amax</sub> (15 min) (dBA)	CoG Goal L <sub>Amax</sub> (15 min) (dBA)	Comments
<b>Room 116, Windsor International Motel, Bowen Hills</b>						
Ground Floor Unit (Centre of Room)	19/07/2010 7:28-7:42pm	36.3	40	41.4	50	<p><b>Monitoring Type</b> Attended. Internal. Windows and Doors closed</p> <p><b>Noise Sources</b> The dominant noise source throughout the period was internal motel noise (i.e. kitchen, restaurant noise, people talking). The roadheader cutting in ramp L was noted throughout the monitoring period. Traffic noise from Lutwyche Road was noted intermittently.</p> <p><b>Discussion</b> Monitoring was to assess the level of impact which was being caused as a result of tunnelling works in the southbound tunnel. TJH tunnelling activities were noted intermittently during the session. The results recorded were below CoG goals.</p> <p><b>Mitigation</b> Mitigation was not required as results were within CoG goals.</p>

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

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)	Comments
<b>Unit 2/37 Lamington Avenue, Lutwyche</b>						
Ground Floor Unit (Living Room)	03/08/2010 10:00- 10:14am	33.8	45	34.8	55	<p><b>Monitoring Type</b> Attended. Internal. Windows and Doors closed</p> <p><b>Noise Sources</b> The dominant noise source throughout the period was an excavator loading material from the Busway Station bulk excavation works. Other TJH noise sources included a haulage truck moving through site and a squawker. Traffic on Lutwyche Road was also noted throughout.</p> <p><b>Discussion</b> Monitoring was to assess the level of impact which was being caused to residents adjacent to the Northern Busway worksite. The noise level recorded was below CoG goals.</p> <p><b>Mitigation</b> Mitigation was not required as results were within CoG goals.</p>
<b>Unit 2/63 Lamington Avenue, Lutwyche</b>						
Ground Floor Unit (Living Room)	13/08/2010 7:37-7:51am	39.1	45	40.2	55	<p><b>Monitoring Type</b> Attended. Internal. Windows and Doors closed</p> <p><b>Noise Sources</b> The dominant noise source throughout the period was traffic on Lutwyche Road. TJH noise sources included an excavator working on the Busway Station bulk excavation, and a rock bolter and franna crane working on the CC701 site.</p> <p><b>Discussion</b> Monitoring was to assess the level of impact which was being caused to residents adjacent to the Northern Busway worksite. TJH works were audible throughout the session. The results were within CoG goals.</p> <p><b>Mitigation</b> Mitigation was not required as results were within CoG goals.</p>

**Table 3e: Noise Monitoring Results – Truro St Mid Tunnel**

Location	Monitoring Period	Average L <sub>Aeq</sub> (15 min) (dBA)	CoG Goal L <sub>Aeq</sub> (15 min) (dBA)	Average L <sub>AMax</sub> (15 min) (dBA)	CoG Goal L <sub>AMax</sub> (15 min) (dBA)	Comments
<b>Unit 15 17 Truro Street, Windsor</b>						
Ground Floor Studio (Centre of room)	19/07/10 9:58-10:12am	42.9	45	43.5	55	<p><b>Monitoring Type</b> Attended. Internal. Windows and Doors closed</p> <p><b>Noise Sources</b> The dominant noise source throughout the period was traffic moving along Truro Street. Other noise sources included haulage trucks leaving the Truro St site, dogs barking and a reverse beeper (non TJH).</p> <p><b>Discussion</b> Monitoring was to assess the level of impact which was being caused to residents adjacent to the Truro St worksite. The majority of noise resulted from the traffic moving along Truro St. The results were within CoG goals.</p> <p><b>Mitigation</b> Mitigation was not required as results were within CoG goals.</p>

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

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>Aeq</sub> (15 min) (dBA)	Comments
<b>234 Bald Hills Road, Bald Hills</b>						
Single Storey Brick House (Lounge Room)	21/07/2010 5:00pm – 5:15pm	36.5	45	37.1	55	<p><b>Monitoring Type</b> Internal attended monitoring, doors and windows closed</p> <p><b>Noise Source</b> No TJH noises were noticed throughout the session. Non-TJH noise sources included traffic from Gympie Road, local fauna (birds) and internal noises.</p> <p><b>Discussion</b> This monitoring session was undertaken to assess potential impacts from the pre-cast factory at Bald Hills. Monitoring indicates compliance in both LAeq and LA10 goals as set by the CoG.</p> <p><b>Mitigation Measures</b> Monitoring will continue to occur in this area if necessary to ascertain the extent of any TJH construction noise. No mitigation measures are proposed at this time.</p>
<b>6 Perry Street, Lutwyche</b>						
Single Storey Timber House (Lounge Room)	5/08/2010 3:33pm – 3:37pm	62.9	45	62.3	55	<p><b>Monitoring Type</b> Internal attended monitoring, doors and windows open</p> <p><b>Noise Sources</b></p>

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>Aeq</sub> (15 min) (dBA)	Comments
						<p>The dominate noise sources were piling rigs operating and sheet pile removal on the Kedron VE200/CC214 work site. Humming plant and general construction activities were also audible intermittently.</p> <p><b>Discussion</b> The levels recorded were a result of the piling rigs operating and sheet pile removal. The sheet pile removal has now ceased on site. NCR was raised regarding this noise exceedance</p> <p><b>Mitigation Measures</b> A 4m noise wall and double stacked shipping containers border the VE200/CC214 work site. Monitoring will continue to occur in these premises to ascertain the noise level after the sheet pile removal has ceased. Mitigation has already been applied to this premise in the form of air conditioning.</p>
Single Storey Timber House (Lounge Room)	5/08/2010 3:40pm – 3:55pm	53.2	45	54.8	55	<p><b>Monitoring Type</b> Internal attended monitoring, doors and windows closed</p> <p><b>Noise Sources</b> The dominate noise sources were piling rigs operating and sheet pile removal on the Kedron VE200/CC214 work site. Humming plant and general construction activities were also audible intermittently.</p> <p><b>Discussion</b> The levels recorded were a result of the piling rigs operating and sheet pile removal. The sheet pile removal has now ceased on site. The doors and windows of the unit were closed during this monitoring session. NCR was raised regarding this noise exceedance</p> <p><b>Mitigation Measures</b> A 4m noise wall and double stacked shipping containers border the VE200/CC214 work site. Monitoring will continue to occur in these premises to ascertain the noise level after the sheet pile removal has ceased. Mitigation has already been applied to this premise in the form of air conditioning.</p>
<b>Unit 1, 15 Windsor Ave, Lutwyche</b>						
Brick townhouse complex (Bottom floor, Lounge Room)	13/08/2010 7:13am -7:28 am	49.1	45	49.4	55	<p><b>Monitoring Type</b> Internal attended monitoring, doors and windows open</p> <p><b>Noise Sources</b> The dominate noise sources were piling rigs and a tower crane operating at the Kedron VE200/TW930 work sites and non-TJH noise sources include a humming fridge and movement within the unit.</p> <p><b>Discussion</b> The levels recorded were as a result of TJH (piling rigs and tower crane operating) and</p>

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>Aeq</sub> (15 min) (dBA)	Comments
						non-TJH (humming fridge). The most dominate noise source was humming sound from fridge and movement within the unit. Non-TJH noise couldn't be isolated. The doors and windows of the unit were open during this monitoring session. <b>Mitigation Measures</b> A 4m noise wall borders the work site. Monitoring will continue to occur in these premises to as required.
Brick townhouse complex (Bottom floor, Lounge Room)	13/08/2010 7:31am -7:46 am	39.6	45	39.8	55	<b>Monitoring Type</b> Internal attended monitoring, doors and windows open <b>Noise Sources</b> The dominate noise sources were piling rigs and a tower crane operating at the Kedron VE200/TW930 work sites. Non-TJH noise sources include movement within the unit. <b>Discussion</b> The levels recorded were a result of the piling rigs and tower crane operating. The movement within the property was the most dominate non-TJH noise source. No exceedance was recorded in this window and doors closed session. <b>Mitigation Measures</b> A 4m noise wall and borders the work site. Monitoring will continue to occur in these premises as required.

**Table 3g: 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)	16/07/2010 2:42 – 2:56pm	38.7	45		38.955	N/A	N/A	<b>Monitoring Type</b> Attended Noise Monitoring. Doors and Windows Closed <b>Noise Sources</b> Site noise included: scrubber, diesel engines, banging, revving (loader). Other noises were, Traffic, birds, plane and a dog barking. <b>Discussion</b> Monitoring indicates that CoG day time goals were

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
								met. <b>Mitigation Measures</b> An acoustic shed and noise wall is in place around Wooloowin Site. 71 Park Road is owned by DMR and is used by TJH for monitoring purposes.
<b>19 Rose Street, Wooloowin</b>								
Highset Wooden Queenslander (front bedroom)	24/07/2010 8:08 – 8:22pm (Session 1)	39.3	40	N/A	N/A	35.5 (TJH) 62.8 (non-TJH)	50	<b>Monitoring Type</b> Attended Noise Monitoring. Doors and Windows Closed <b>Noise Sources</b> There was no specific noise from site, just a low hum that was barely audible. (It could also have been traffic noise from Gympie Road). Other noises were traffic, siren, occupants (wooden floor, talking, noisy water pipes, young child giggling), plane and dog barking. <b>Discussion</b> Monitoring indicates that night CoG goals are being met. <b>Mitigation Measures</b> An acoustic shed and noise wall is in place around Rose Street Site.
Highset Wooden Queenslander (front bedroom)	24/07/2010 8:	35.8	40	N/A	N/A	35.7 (TJH) 66.3 (non-TJH)	50	<b>Monitoring Type</b> Attended Noise Monitoring. Doors and Windows Closed <b>Noise Sources</b> There was no specific noise from site, just a low hum that was barely audible. (It could also have been traffic noise from Gympie Road). Other noises were traffic, siren, occupants (talking, wooden floors, moving about, squeaky door, water running), plane, dog barking. <b>Discussion</b> Monitoring indicates that night CoG goals are being met.

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>Mitigation Measures</b> An acoustic shed and noise wall is in place around Rose Street Site.

**Table 3h: 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>5 Wattle Street, Nundah</b>						
Front Lounge Room, 1 <sup>st</sup> Floor	22/07/2010 10:06 – 10:21 am	45.6	45	46.6	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows open.</p> <p><b>Noise Sources</b> TJH noise sources (engines, drilling, hammering, squawker and trucks) plus non-TJH sources (birds, East West Arterial Road traffic, inside noise, plane and train).</p> <p><b>Discussion</b> Monitoring indicates CoG goals are being exceeded. With all external noise sources excluded the CoG goals were met - 44.68 dB.</p> <p><b>Mitigation Measures</b> This property has no mitigation installed.</p>
Front Lounge Room, 1 <sup>st</sup> Floor	22/07/2010 10:24 – 10:38 am	39.9	45	40.5	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows closed.</p> <p><b>Noise Sources</b> TJH noise sources (engines and trucks) plus non-TJH sources (train, inside noise, plane, birds and dog barking).</p> <p><b>Discussion</b> Monitoring indicates CoG goals are being met.</p> <p><b>Mitigation Measures</b> This property has no mitigation installed.</p>

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>83 Stuckey Road, Clayfield</b>						
Front Lounge Room, 1 <sup>st</sup> Floor	26/07/2010 9:09 – 9:23 am	42.3	45	43.1	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed, air-conditioning on.</p> <p><b>Noise Sources</b> TJH noise sources (concrete cutting, jack hammering, steel dropping, reverse beeping and TJH traffic) plus non-TJH sources (inside noise and 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 double stack containers. This property has received mitigation. At the time of monitoring, this air conditioner was in use and the windows and doors were closed.</p>
Front Lounge Room, 1 <sup>st</sup> Floor	26/07/2010 9:26 – 9:40 am	38.9	45	39.3	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed, air-conditioning on.</p> <p><b>Noise Sources</b> TJH noise sources (concrete cutting, jet blasting, gate, jack hammering and banging) plus non-TJH sources (inside noise, train and 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 and double stack containers. This property has received mitigation. At the time of monitoring, this air conditioner was in use and the windows and doors were closed.</p>
Front Lounge Room, 1 <sup>st</sup> Floor	26/07/2010 1:14 – 1:28 pm	37.3	45	38.0	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed, air-conditioning on.</p> <p><b>Noise Sources</b> TJH noise sources (engines, jack hammering, squawker, gate, banging, horn, steel dropping and reverse beeping) plus non-TJH sources (inside noise, dog barking, plane and 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 double stack containers. This property has received mitigation. At the time of monitoring, this air conditioner was in use and the windows and doors were closed.</p>

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
Front Lounge Room, 1 <sup>st</sup> Floor	26/07/2010 1:31 – 1:45 pm	37.0	45	37.6	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed, air-conditioning on.</p> <p><b>Noise Sources</b> TJH noise sources (engines, steel dropping and banging) plus non-TJH sources (inside noise, birds, and 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 double stack containers. This property has received mitigation. At the time of monitoring, this air conditioner was in use and the windows and doors were closed.</p>
<b>7/36 Wongarra Street, Clayfield</b>						
Brick Unit Block,	4/08/2010 10:11 – 10:25 am	40.8	45	43.6	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors open.</p> <p><b>Noise Sources</b> TJH noise sources (squawker, horn, piling, hammer and loud bang) plus non-TJH sources (resident, traffic, baby, wheelie bin, plane, truck on road and phone).</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>
Brick Unit Block,	4/08/2010 10:29 – 10:43 am	43.1	45	44.8	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed.</p> <p><b>Noise Sources</b> TJH noise sources (horn, excavator, bang, hammer, piling and grinder) plus non-TJH sources (resident, traffic, phone, truck, neighbour and bird).</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>5/24 Wongarra Street, Clayfield</b>						

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
Brick Unit Block, 2 <sup>nd</sup> Floor	4/08/2010 11:02 – 11:16 am	46.0	45	45.2	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors open.</p> <p><b>Noise Sources</b> TJH noise sources (squawker, engine, piling and bang) plus non-TJH sources (inside noise, traffic and plane).</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being exceeded. With all external noise sources excluded the CoG goals were met - 43.5 dB.</p> <p><b>Mitigation Measures</b> Include a 6m noise wall.</p>
Brick Unit Block, 2 <sup>nd</sup> Floor	4/08/2010 11:20 – 11:34 am	54.1	45	35.1	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed.</p> <p><b>Noise Sources</b> TJH noise sources (squawker, engine, piling, bang, scraping and horn) plus non-TJH sources (inside noise, traffic, plane and birds).</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being exceeded. With all external noise sources excluded the CoG goals were met - 33.0 dB.</p> <p><b>Mitigation Measures</b> Include a 6m noise wall.</p>
<b>89 Jackson Street, Clayfield</b>						
Two Storey Timber House (Front Bedroom)	13/08/2010 9:08 – 9:22 am	42.0	45	41.3	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors open.</p> <p><b>Noise Sources</b> TJH noise sources (testing of overland conveyor, jack hammering and engine noise) plus non-TJH sources (train, bird, wind, traffic, and 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>
Two Storey Timber House (Front Bedroom)	13/08/2010 9:26 – 9:40 am	38.2	45	38.2	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed.</p> <p><b>Noise Sources</b> TJH noise sources (testing of overland conveyor, engine noise, franna and jack hammering) plus non-TJH sources (resident, train, traffic, dog barking and wind).</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>

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
Two Storey Timber House (Front Bedroom)	13/08/2010 1:05 – 1:19 pm	38.0	45	37.1	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors open.</p> <p><b>Noise Sources</b> TJH noise sources (testing of overland conveyor, engine noise, franna and bang) plus non-TJH sources (dog barking, train, traffic and bird).</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>
Two Storey Timber House (Front Bedroom)	13/08/2010 1:22 – 1:36 pm	35.1	45	34.1	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors open.</p> <p><b>Noise Sources</b> TJH noise sources (testing of overland conveyor, engine noise, bang and horn) plus non-TJH sources (plane, traffic, train, bird and 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>

### **3.3 Compliance with Noise Goals**

Exceedances of the Coordinator General's Noise Goals as a result of TJH construction activities (or a combination of external and TJH construction activities) have been found during this monitoring period at a number of locations, these include:

- 30 Federation Street, Bowen Hills
- 6 Perry Street, Lutwyche

### **4.0 Air Quality Monitoring**

TJH undertakes regular monitoring of air quality levels at a variety of locations across the project to help measure impacts and assist the team to plan works and appropriate mitigations if required.

Monitoring involves sampling of dust deposition (monthly), and real-time respiratory dust (PM10) at a number of locations nominated by the Coordinator General. Real-time monitoring of Total Suspended Particulates (TSP) and CO/NO<sub>2</sub> is also occurring at a location in the vicinity of the Woolloowin Worksite.

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

#### **4.1 Overview of Air Quality Mitigation Measures**

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

1. Continual use of water carts
2. Covering of haul vehicles
3. Stabilisation of cleared areas with hardstand materials such as concrete and crushed rock
4. Hydro-mulching and laying geofab to batters
5. Reduction of cleared / exposed soils with concrete paving and geo-fabric installation
6. Road sweepers

## 4.2 Air Quality Monitoring Results – PM10/TSP

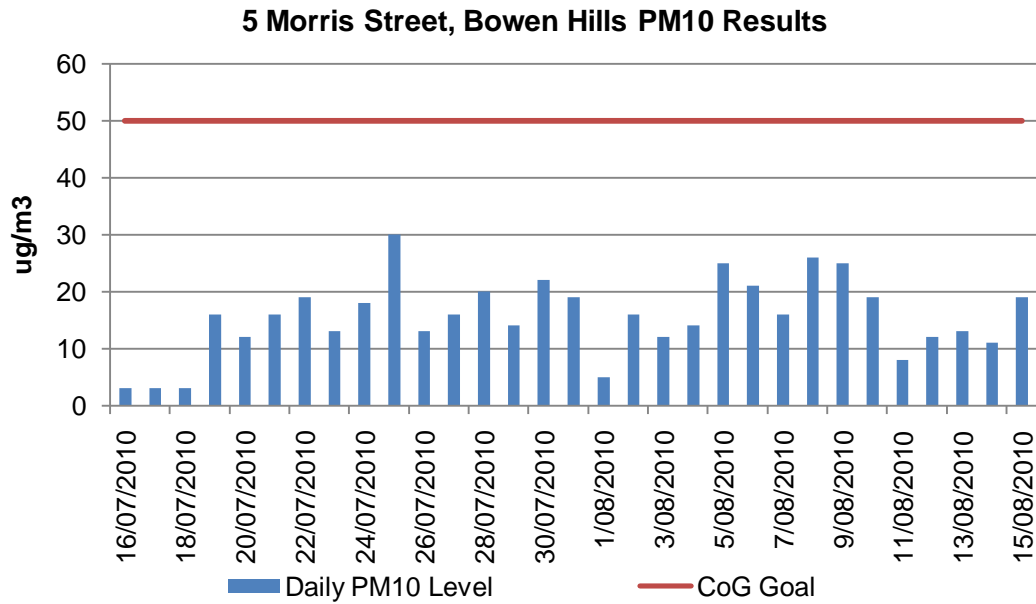


Figure 4.2.1 28 Federation St, Bowen Hills PM10 Results (for monitor location see figure 2.1 – A1)

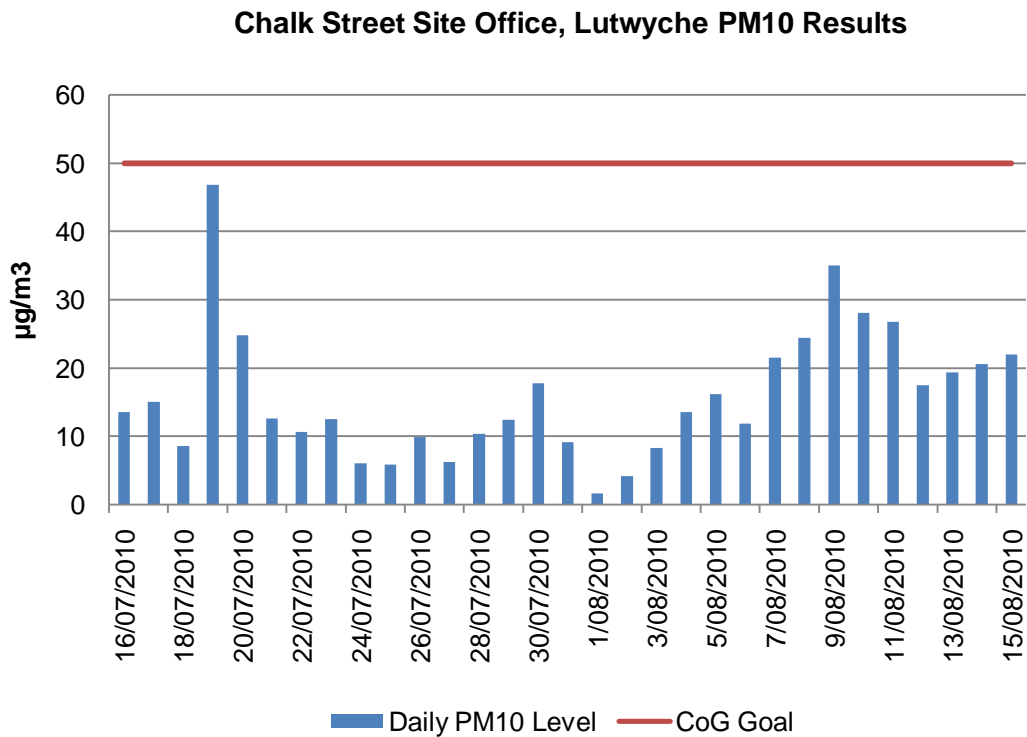


Figure 4.2.2 Northern Busway Site Office, Lutwyche PM10 Results (for monitor location see figure 2.3 – A1)

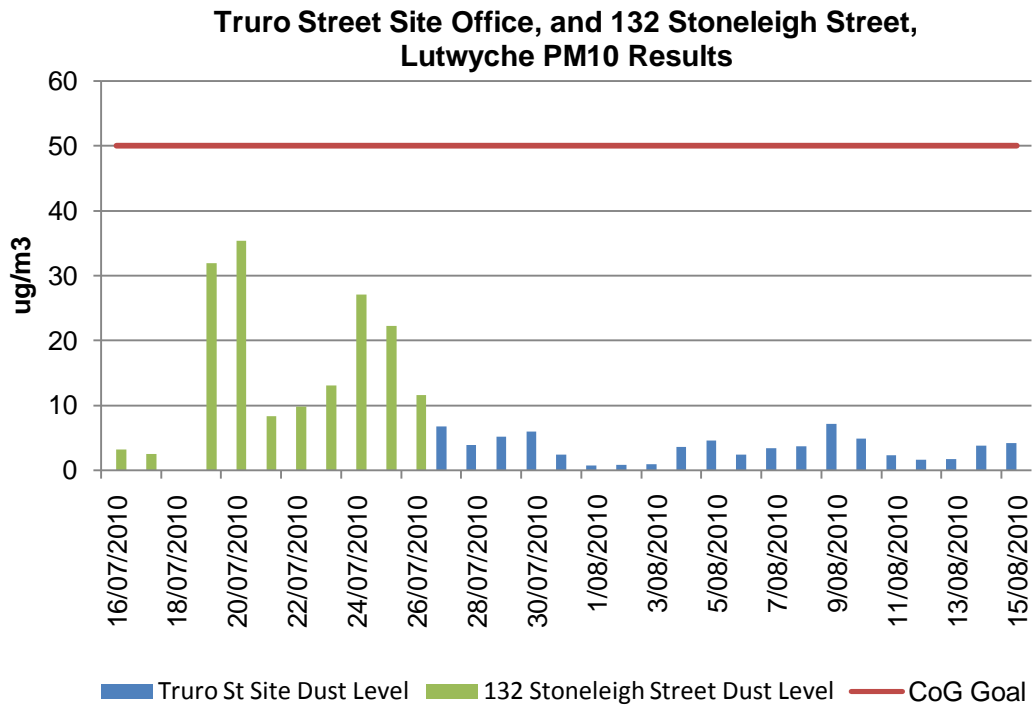


Figure 4.2.3 Truro Street Site Office, Windsor PM10 Results (for location see figure 2.2 – A2 and for 132 Stoneleigh Street, Windsor Monitor location see figure 2.2 – A1)

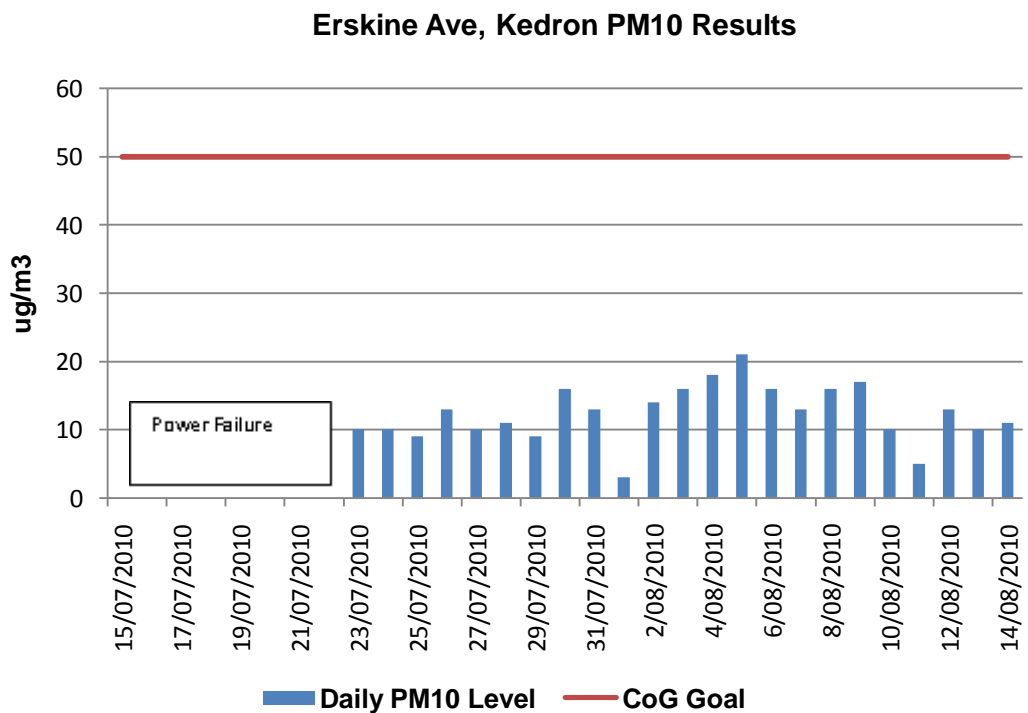


Figure 4.2.4 Erskine Avenue, Lutwyche PM10 Results (for monitor location see figure 2.4 – A1)

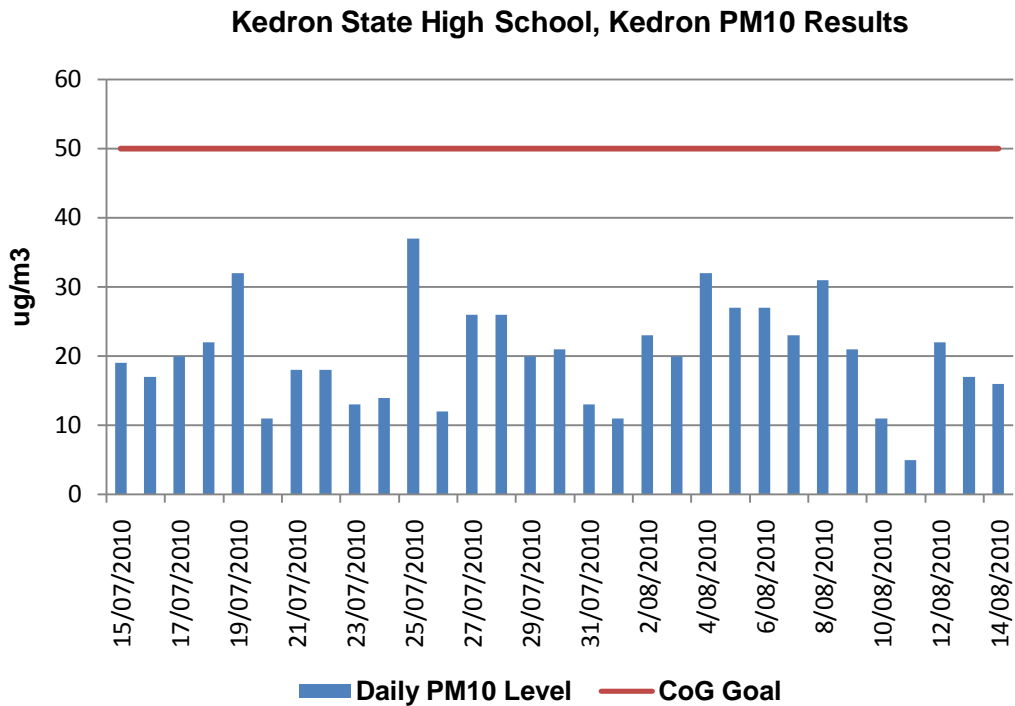


Figure 4.2.5 Kedron State High School (Adj), Kedron PM10 Results (for monitor location see figure 2.4 – A2)

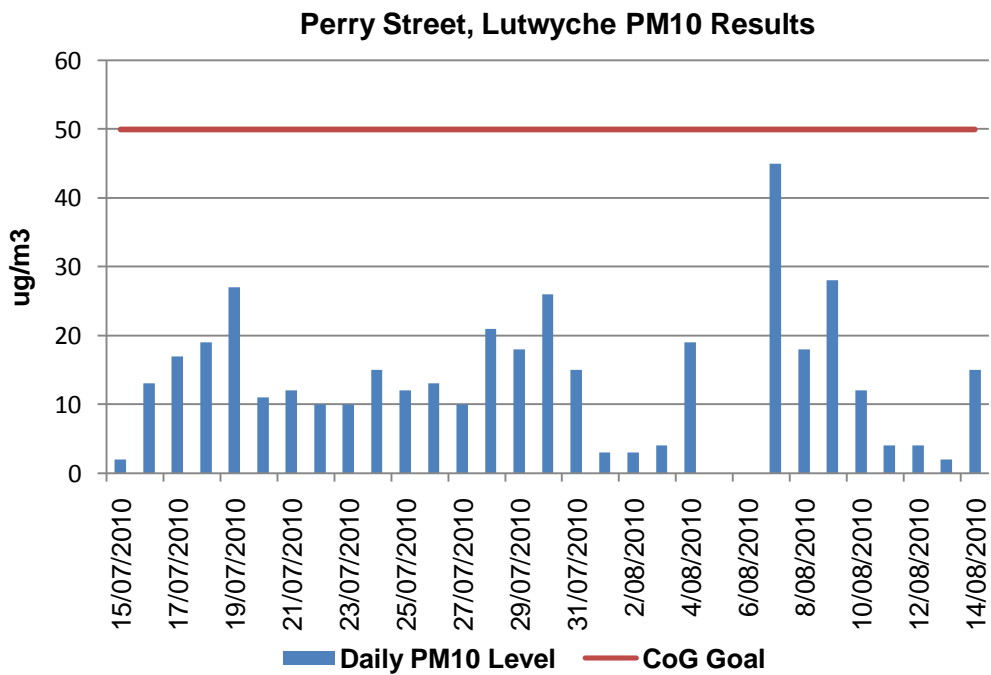


Figure 4.2.6 Perry Street, Lutwyche PM10 Results (for monitor location see figure 2.4 – A3)

### Woolloowin State School, Woolloowin PM10 Results

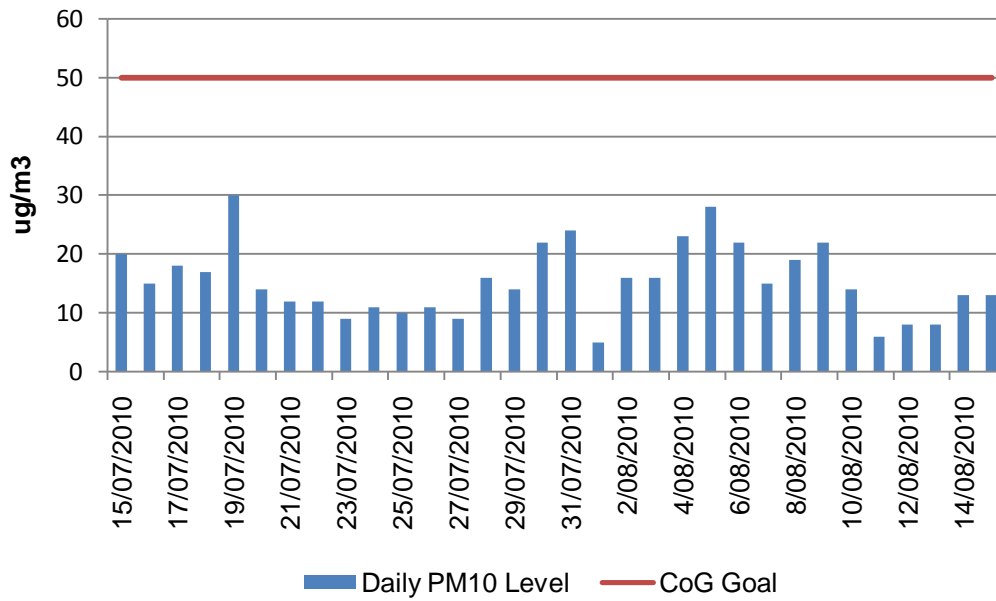


Figure 4.2.7 Woolloowin State School, Lutwyche PM10 Results (for monitor location see figure 2.4 – A4)

### 71 Park Rd Woolloowin - Daily PM10 Level

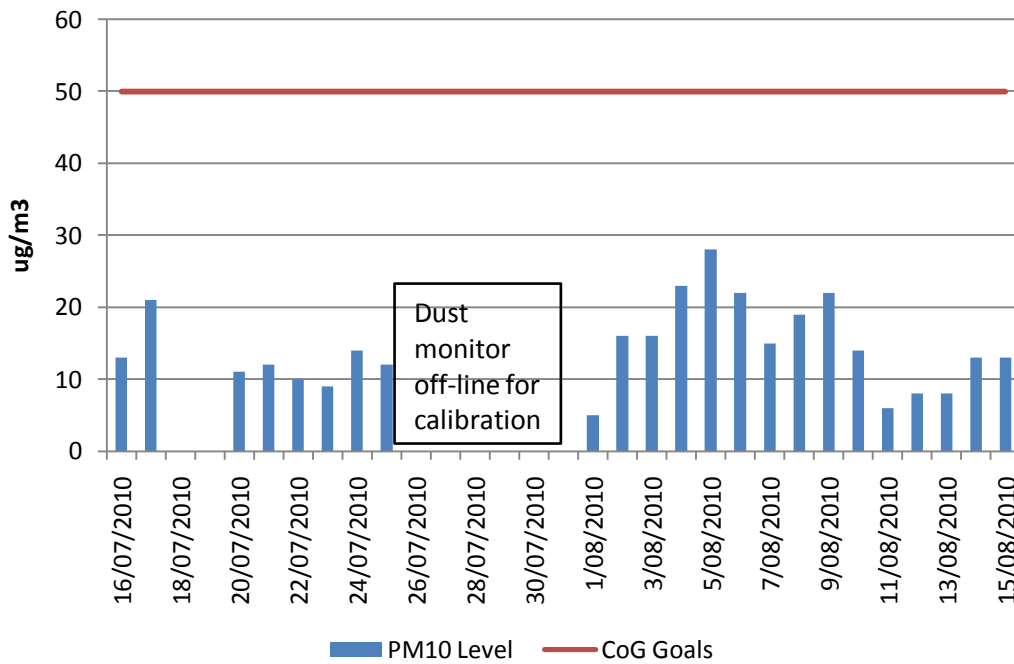


Figure 4.2.8 71 Park Road Woolloowin. PM10 Results

### 56 Kalinga Street, Clayfield PM10 Results

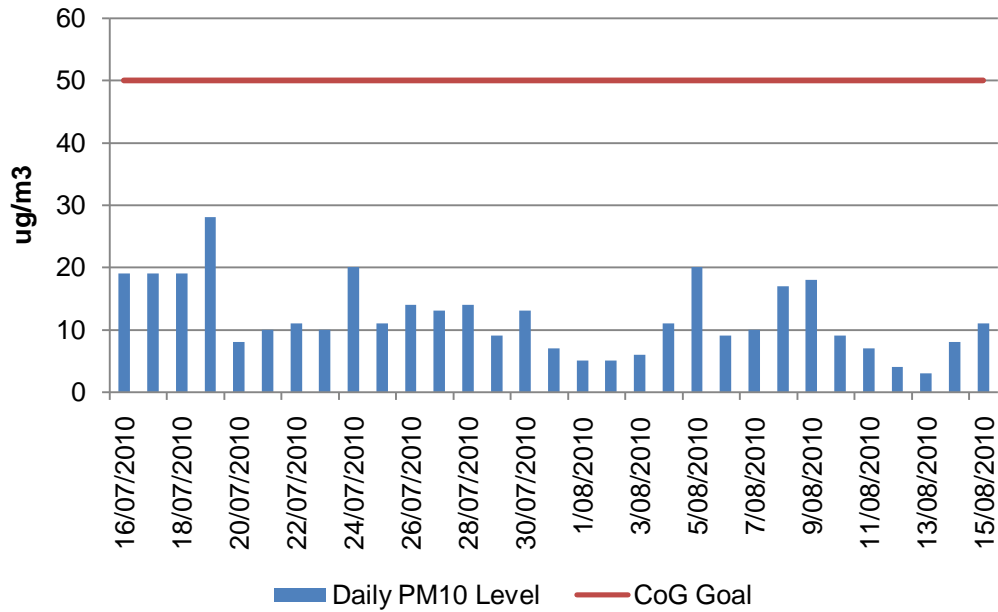


Figure 4.2.9 56 Kalinga Street, Toombul PM10 Results (for monitor location see figure 2.6 – A1)

### Franklin Street, Hendra PM10 Results

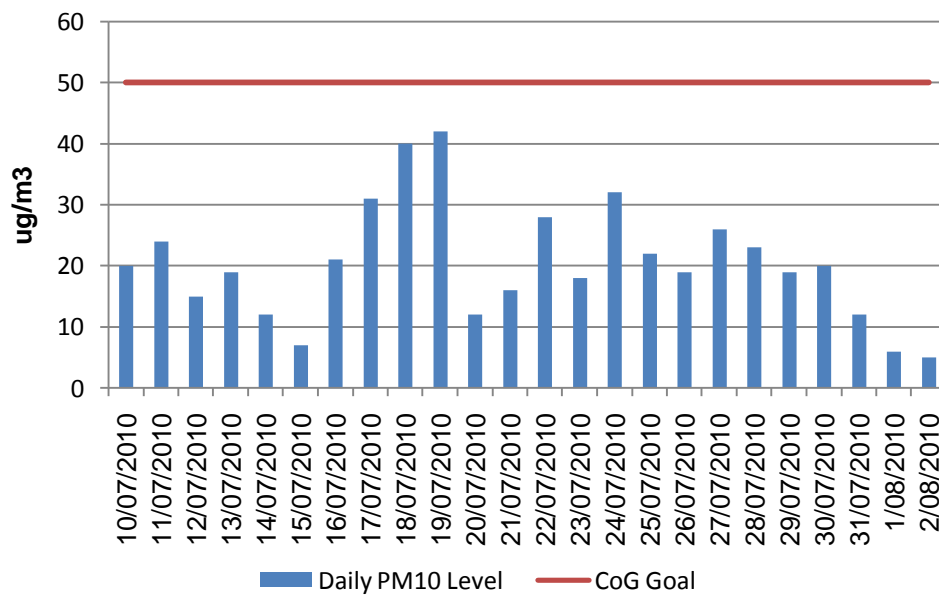


Figure 4.2.10 Corner of Franklin Street, Hendra PM10 Results (for monitor location see figure 2.6- A3)

### 5 Mabel Street, Clayfield PM10 Results

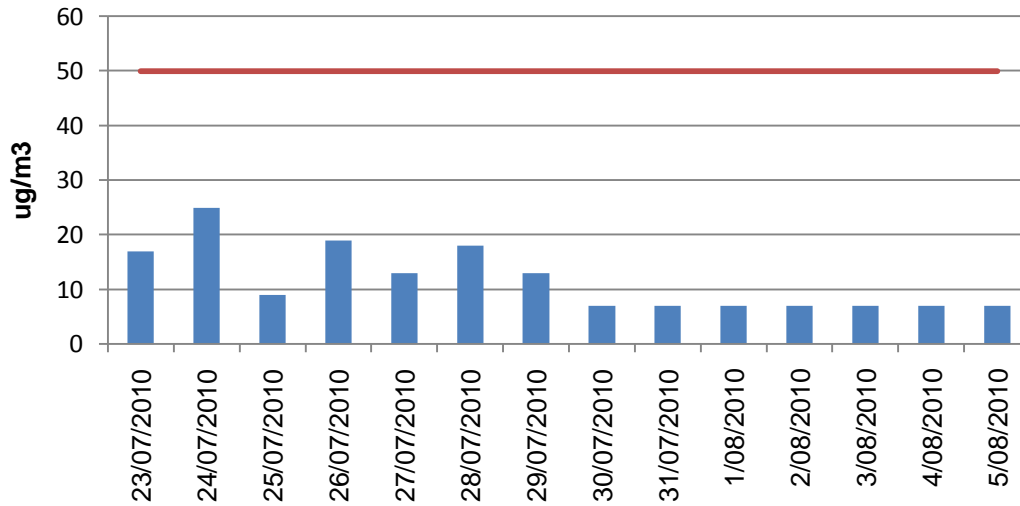


Figure 4.2.11 Kalinga Park Adj Alma Road, Toombul PM10 Results (for monitor location see figure 2.6- A2)

### 74 Alma Road, Clayfield PM10 Results

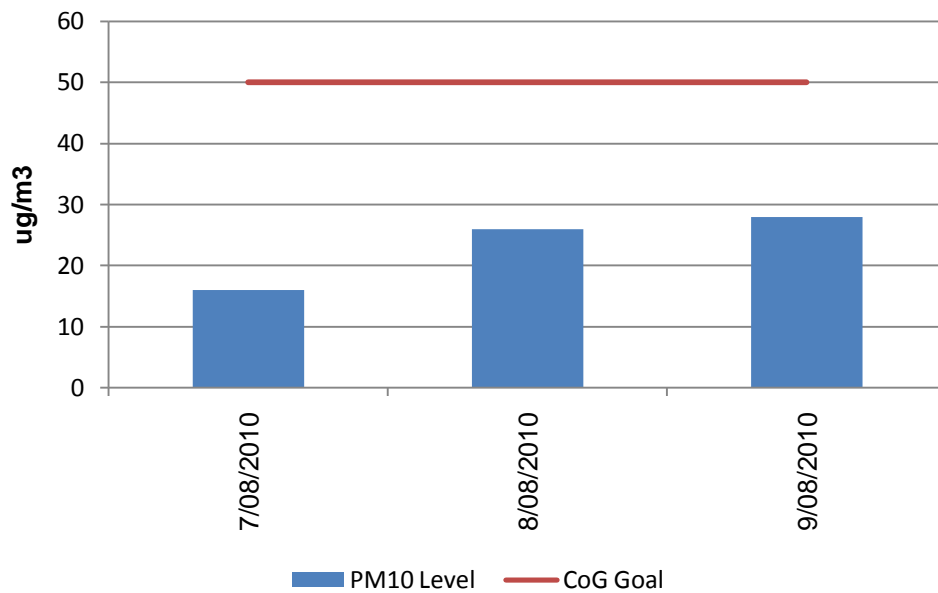


Figure 4.2.12 74 Alma Road, Clayfield, PM10 Results

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

Dust deposition monitoring is undertaken on a monthly basis using a bottle and funnel placed 2m ± 0.2m above ground level in accordance with Australian Standard AS 3580.10.1: 2003. It should be noted that in most locations the placement of the deposition gauges does not meet the standard due to location and security issues. Note: due to lab processing times and field placement some results are not available at time of report writing thus will be included in next month's report.

#### 5 Morris Street, Bowen Hills Dust Fallout March - August 2010

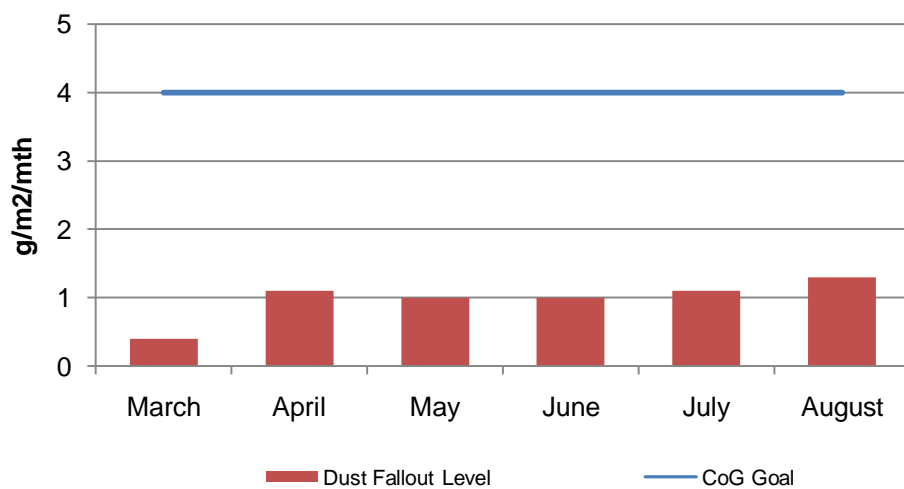


Figure 4.3.1 5 Morris St, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1 – D1)

#### Site Office, Bowen Hills Dust Fallout March 2010- August 2010

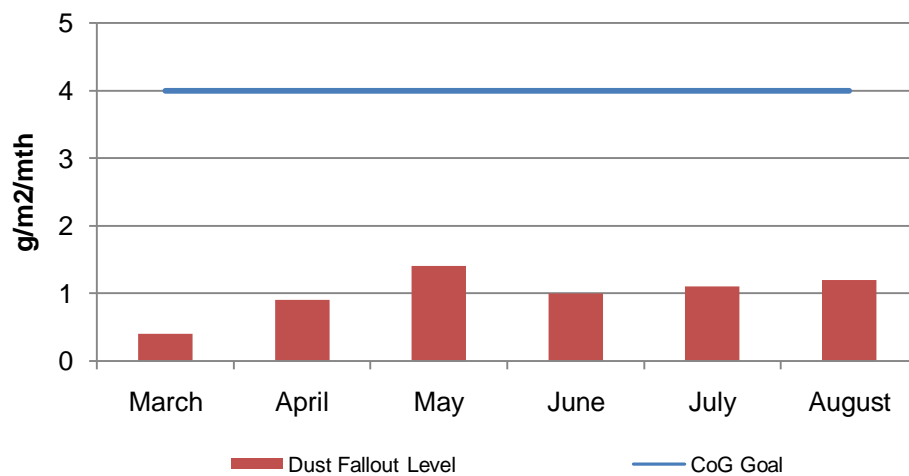


Figure 4.3.2 Site Office, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1- D2)

### Mews Apartments, Bowen Hills Dust Fallout July- August 2010

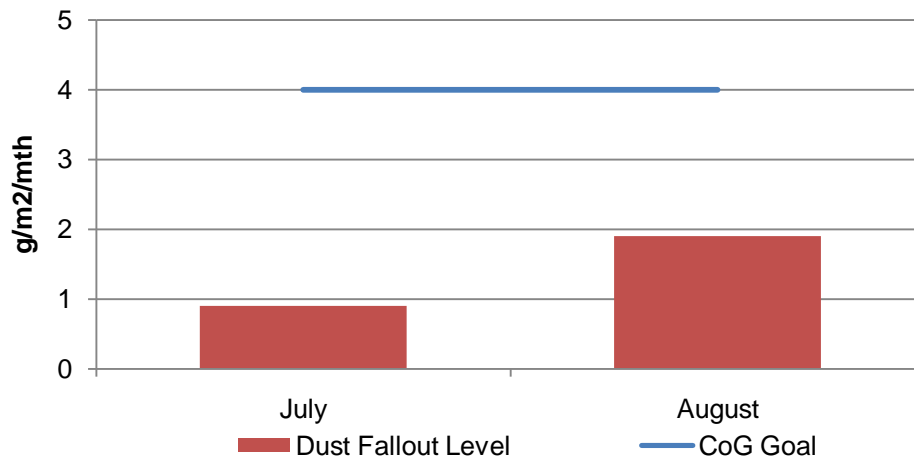


Figure 4.3.3 Mews Apartments, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1- D3)

### 11 Bryden Street, Bowen Hills Dust Fallout July- August 2010

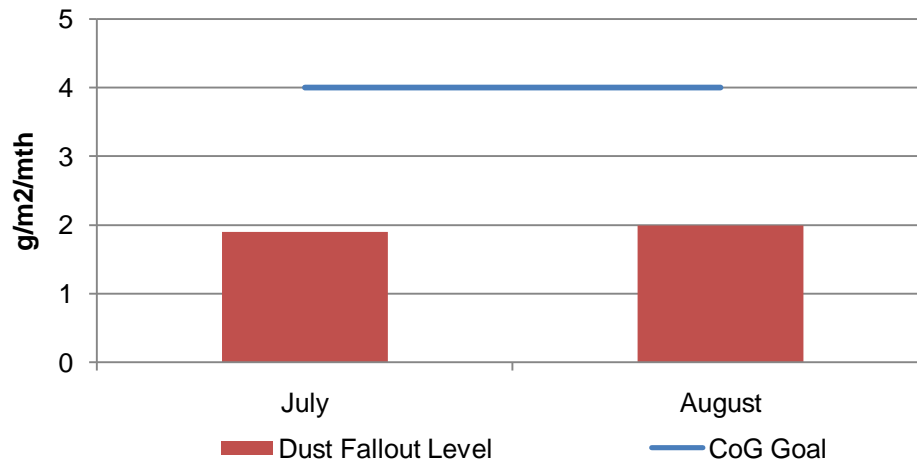


Figure 4.3.4 11 Bryden Street, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1- D4)

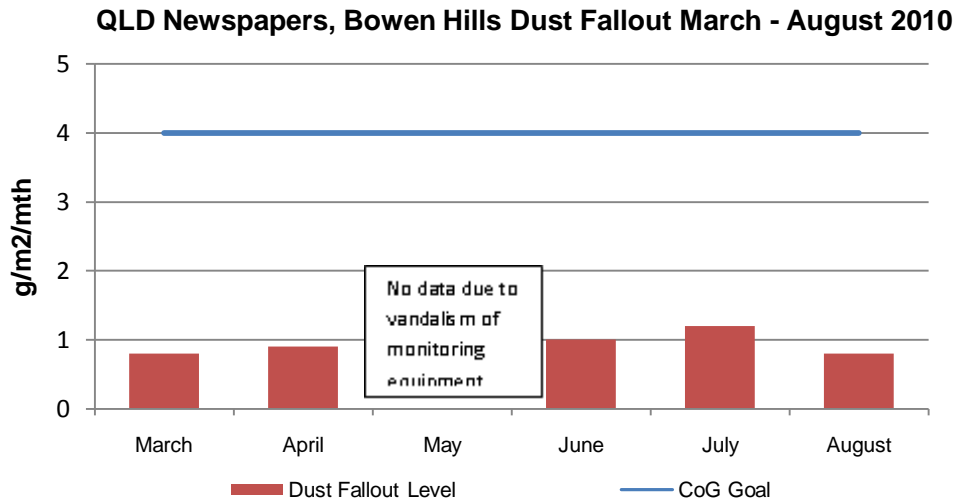


Figure 4.3.5 Queensland Newspapers, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1- D5)

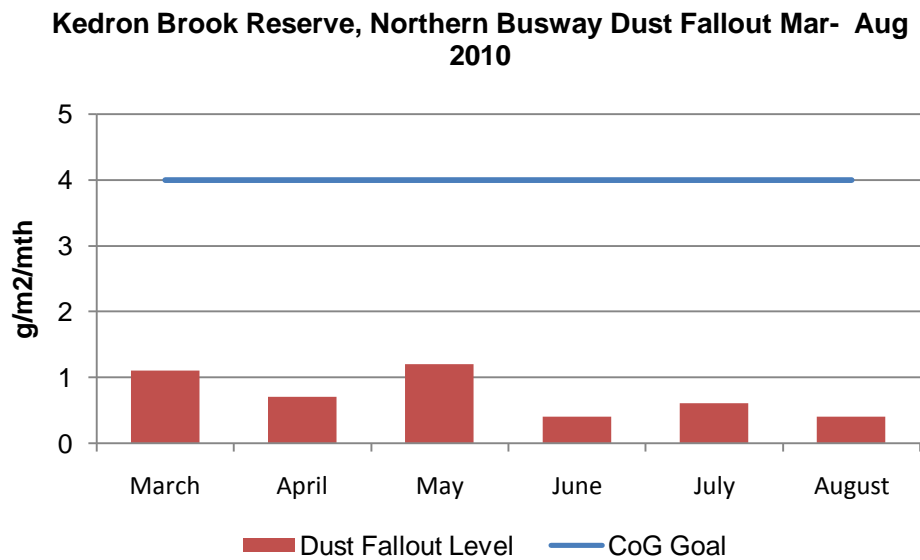


Figure 4.3.6 Cnr of Thistle & Lucas Street, Lutwyche Dust Fallout Results (location refer to figure 2.3 – D2)

### Kedron Brook Reserve, Northern Busway Dust Fallout March-August 2010

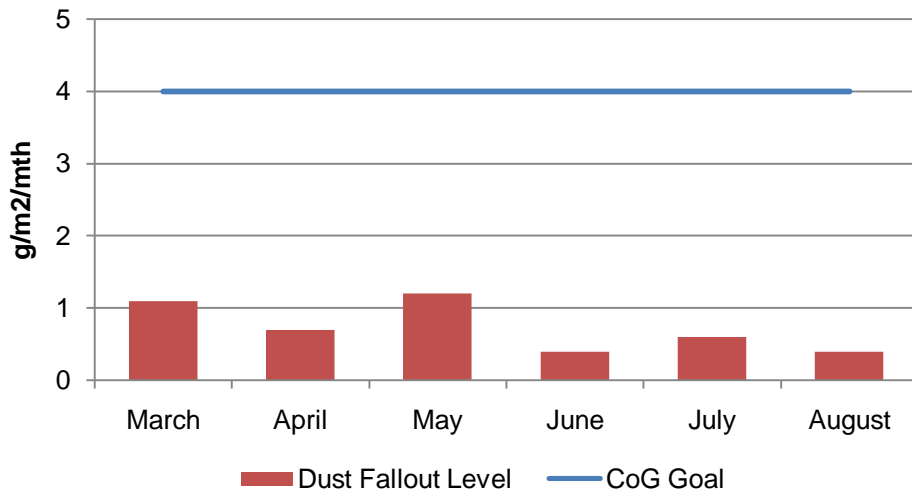


Figure 4.3.7 Kedron Brook Reserve, Northern Busway Dust Fallout Results (location refer to figure 2.3 – D1)

### Dust Fallout, Erskine Avenue Kedron, February - July 2010

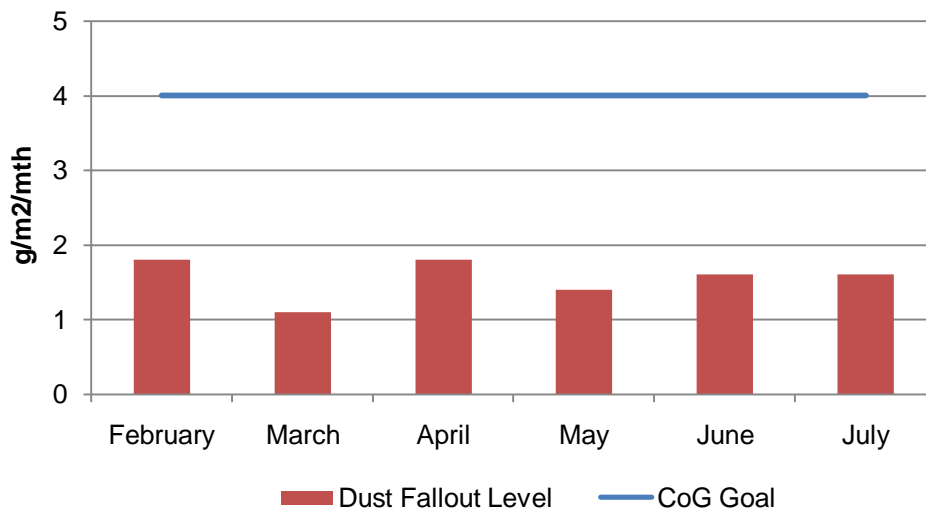


Figure 4.3.8 Perry Street, Lutwyche Dust Fallout Results (location refer to figure 2.4 – D1)

### Dust Fallout Kedron State High School Kedron, February 2010- July 2010

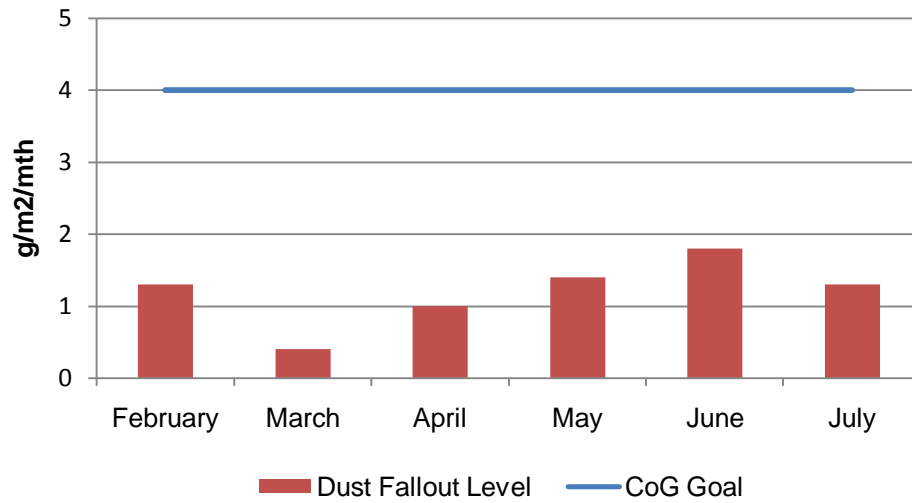


Figure 4.3.9 Kedron State High School, Kedron Dust Fallout (location refer to figure 2.4 – D3)

### Dust Fallout Perry Street Lutwyche, February 2010- July 2010

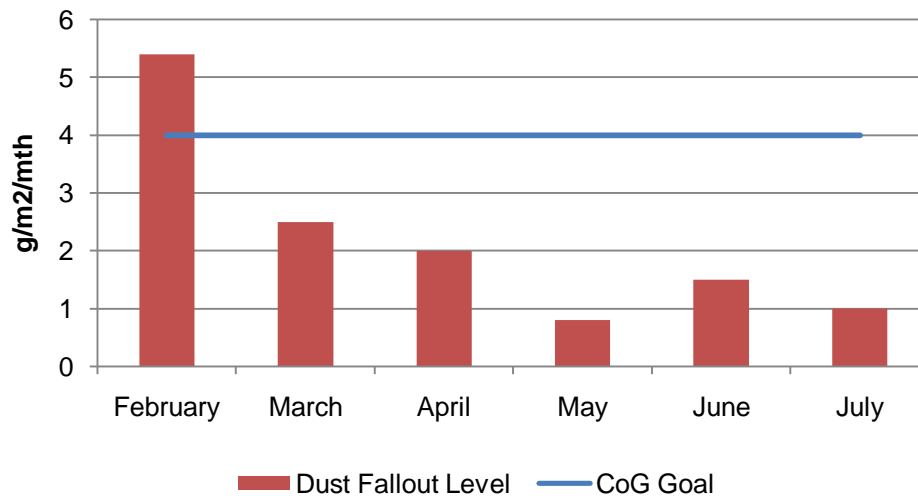


Figure 4.3.10 Perry Street, Lutwyche Dust Fallout (location refer to figure 2.4 – D4)

### Dust Fallout Woolloowin State School Woolloowin, February - July 2010

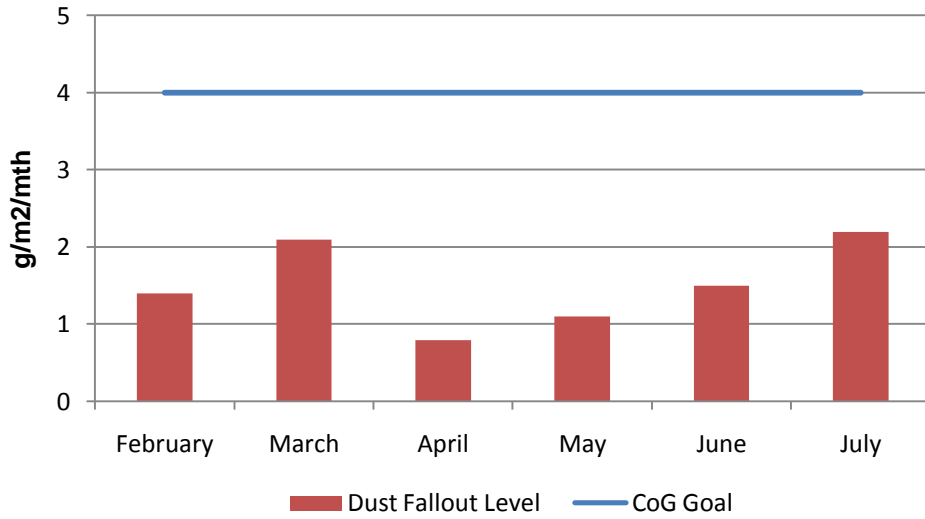
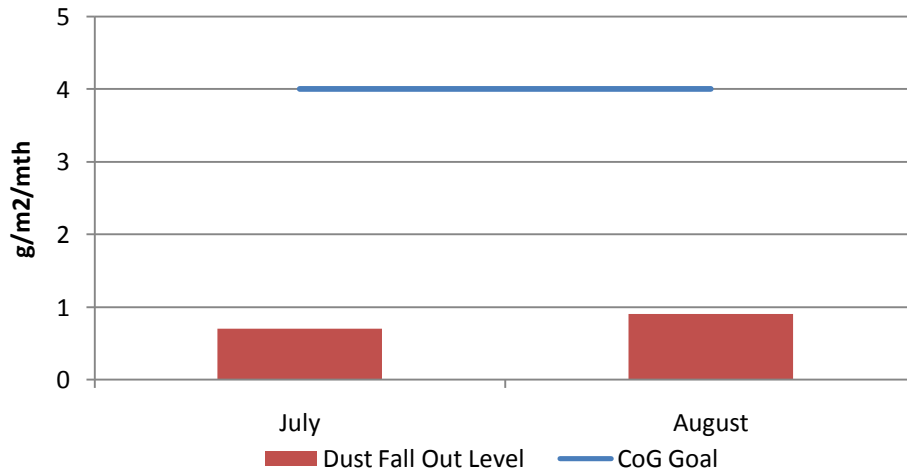


Figure 4.3.11 Woolloowin State School, Woolloowin Dust Fallout (location refer to figure 2.4 – D4)

### 64 Park Road, Woolloowin Dust Fall Out July - August 2010



Figurer 4.3.12 64 Park Road Woolloowin, Dust Fallout (Figrue 2.6 D2)

### 68 Park Road, Woolloowin Dust Fall Out August 2010

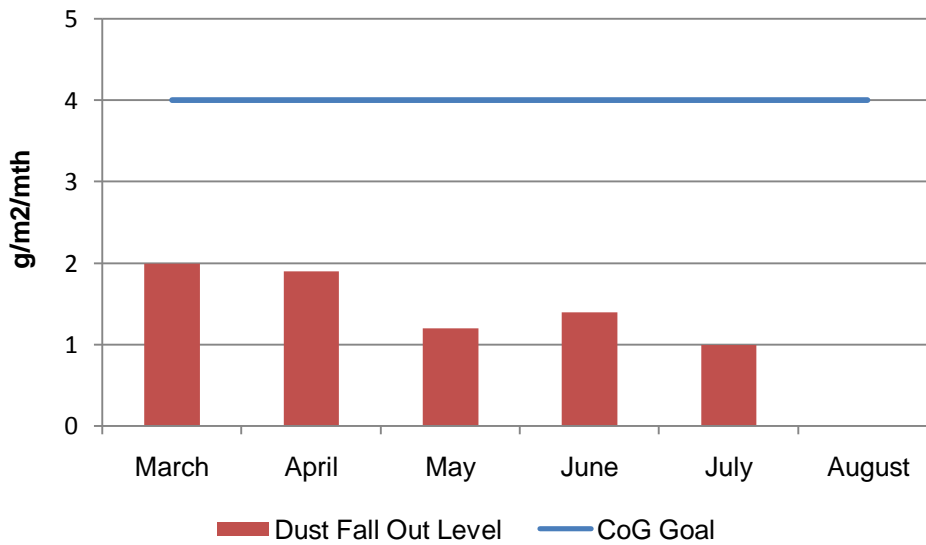


Figure 4.3.13 56 Kalinga Street Toombul, Dust Fallout (location refer to figure 2.6 – D1)

### Kalinga Street, Toombul Dust Fallout February - August 2010

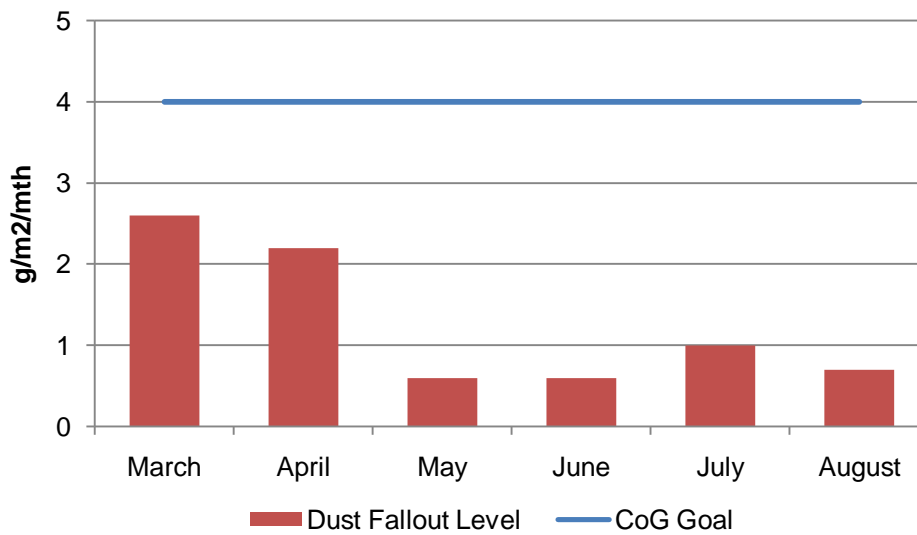


Figure 4.3.14 56 Kalinga Street Toombul, Dust Fallout (location refer to figure 2.6 – D1)

### Mabel Street, Toombul Dust Fallout Level April - August 2010

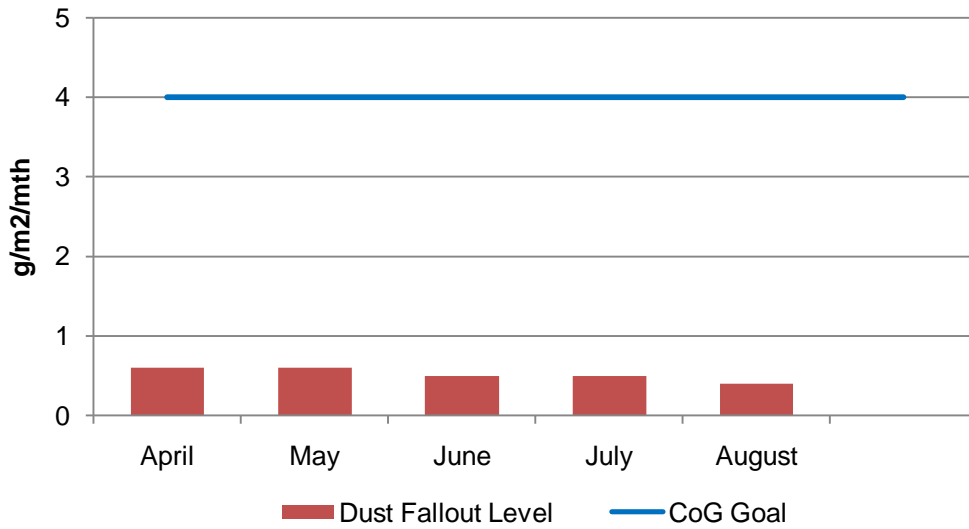


Figure 4.3.15 Mabel Street Toombul, Dust Fallout (location refer to fig 2.6 – D2)

### Bage Street, Toombul Dust Fallout Level March - August 2010

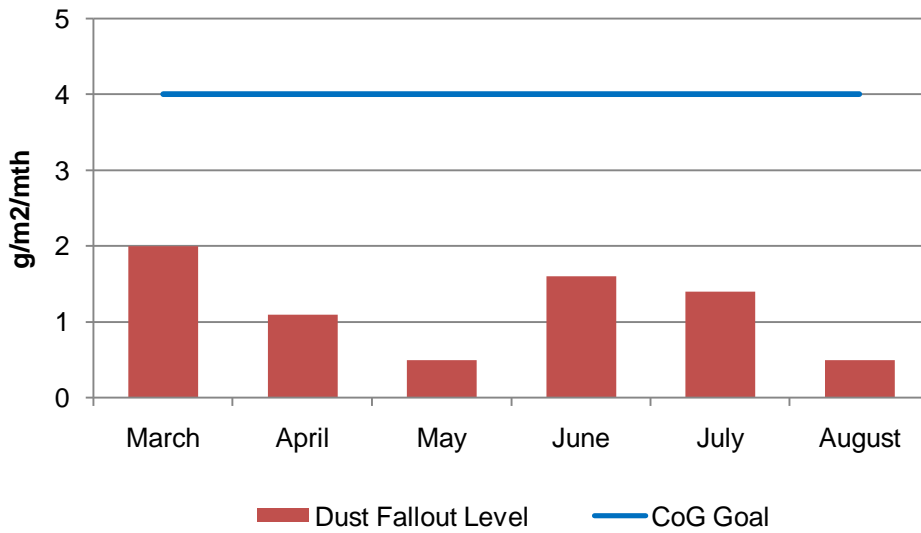


Figure 4.3.16 Bage Street Toombul, Dust Fallout (location refer to fig 2.6 – D3)

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

TJH undertakes regular monitoring of CO/NO<sub>2</sub> 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 - Wooloowin

Gas Monitor at 71 Park Road, Wooloowin					
Date	Peak Date and Time	CO (mg/m <sup>3</sup> ) Peak	CoG CO Limit (mg/m <sup>3</sup> )	NO <sub>2</sub> (µg/m <sup>3</sup> ) Peak	CoG NO <sub>2</sub> Limit (µg/m <sup>3</sup> )
16/06/2010 to 15/07/2010	16/07/2010 20:00 pm	1.20	11	-	-
	15/08/2010 08:10 am	-	-	75.08	250

Note:

For Carbon monoxide (CO) an 8 hour averaging period is used.

For Nitrogen dioxide (NO<sub>2</sub>) a 1 hour averaging period is used.

There have been no exceedances of CoG gas limits.

#### 4.5 Compliance with Air Quality Goals

There were no exceedances of the Coordinator Generals Air Quality Conditions this reporting period.

## 5.0 Vibration Monitoring

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

Results of monitoring are compared to Vibration Goals adopted as listed by the Coordinator General (Change Report June 2008 & Woolloowin Worksite Change Report October 2009) for the Airport Link and Northern Busway projects.

### 5.1 Overview of Vibration Mitigation Measures

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

1. Predictive modelling of anticipated risks and impacts.
2. Building condition surveys of properties which are likely to experience vibration levels in excess of the levels for minimal risk of cosmetic damage outlined in the CoG Report.
3. Selection of alternative construction equipment / methodology where possible
4. Review of monitoring data for the activities undertaken

### 5.2 Vibration Monitoring Results

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

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

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
11 Bryden Street	16/07/10-26/07/10	1.15	5	Results are within CoG goals
Skilmorlie House	16/07/10-15/08/10	1.02	2	Results are within CoG goals
Arthritis Qld (Rosemount complex)	16/07/10-15/08/10	1.90	2	Results are within CoG goals

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

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
Queensland Newspapers	16/07/10-15/08/10	0.254	5	Results are within CoG goals

**Table 5c: Vibration Monitoring Results Summary – Northern Busway**

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
Lutwyche Centro (Nth End of Building)	16/07/10-15/08/10	1.65	5	Results are within CoG goals

**Table 5d: Blast Monitoring Results Summary – Bowen Hills Tunnels (XP3 and XP4)**

Location	Monitoring Period	Peak Particle Velocity (mm/s)	Vibration Goal (mm/s)	Comments
<b>16<sup>th</sup> July (Cross Passage 3)</b>				
Skilmorlie House	60 seconds	4.83	25	Results are within CoG goals
11 Bryden Street	60 seconds	4.57	25	Results are within CoG goals
15 Bryden Street	60 seconds	12.7	25	Results are within CoG goals
<b>17<sup>th</sup> July (Cross Passage 3)</b>				
Skilmorlie House	60 seconds	9.78	25	Results are within CoG goals
11 Bryden Street	60 seconds	8.64	25	Results are within CoG goals
15 Bryden Street	60 seconds	22.4	25	Results are within CoG goals
<b>19<sup>th</sup> July- First Blast (Cross Passage 3)</b>				
Skilmorlie House	60 seconds	7.62	25	Results are within CoG goals
11 Bryden Street	60 seconds	8.89	25	Results are within CoG goals
15 Bryden Street	60 seconds	17.9	25	Results are within CoG goals
<b>19<sup>th</sup> July- Second Blast (Cross Passage 3)</b>				
11 Bryden Street	60 seconds	4.70	25	Results are within CoG goals
15 Bryden Street	60 seconds	9.52	25	Results are within CoG goals
<b>21<sup>st</sup> July (Cross Passage 4)</b>				
Rosemount (Arthritis Qld)	60 seconds	11.4	25	Results are within CoG goals

Location	Monitoring Period	Peak Particle Velocity (mm/s)	Vibration Goal (mm/s)	Comments
Rosemount Hospital	60 seconds	9.02	25	Results are within CoG goals
Rosemount (QSMA)	60 seconds	9.78	25	Results are within CoG goals
<b>23<sup>rd</sup> July (Cross Passage 4)</b>				
Rosemount (Arthritis Qld)	60 seconds	15.6	25	Results are within CoG goals
Rosemount Hospital	60 seconds	9.27	25	Results are within CoG goals
Rosemount (QSMA)	60 seconds	14.0	25	Results are within CoG goals
<b>26<sup>th</sup> July- First Blast (Cross Passage 4)</b>				
Rosemount (Arthritis Qld)	60 seconds	18.2	25	Results are within CoG goals
Rosemount Hospital	60 seconds	7.62	25	Results are within CoG goals
Rosemount (QSMA)	60 seconds	15.9	25	Results are within CoG goals
<b>26<sup>th</sup> July- Second Blast (Cross Passage 4)</b>				
Rosemount (Arthritis Qld)	60 seconds	15.9	25	Results are within CoG goals
Rosemount Hospital	60 seconds	7.49	25	Results are within CoG goals
Rosemount (QSMA)	60 seconds	16.0	25	Results are within CoG goals
<b>27<sup>th</sup> July- First Blast (Cross Passage 4)</b>				
Rosemount (Arthritis Qld)	60 seconds	11.0	25	Results are within CoG goals
Rosemount Hospital	60 seconds	4.44	25	Results are within CoG goals
Rosemount (QSMA)	60 seconds	13.1	25	Results are within CoG goals
<b>27<sup>th</sup> July- Second Blast (Cross Passage 4)</b>				
Rosemount (Arthritis Qld)	60 seconds	8.51	25	Results are within CoG goals
Rosemount Hospital	60 seconds	6.22	25	Results are within CoG goals
Rosemount (QSMA)	60 seconds	10.5	25	Results are within CoG goals
<b>30<sup>th</sup> July (Cross Passage 4)</b>				
Rosemount (Arthritis Qld)	60 seconds	<2.5	25	The trigger level on the vibration monitor was set at 2.5mm/s. The blast did not trigger the monitor. Results are within CoG goals
Rosemount Hospital	60 seconds	2.54	25	Results are within CoG goals
Rosemount (QSMA)	60 seconds	3.68	25	Results are within CoG goals

**Table 5e: Blast Monitoring Summary – Truro Street Tunnel (B2, K1 and K2 tunnel)**

Location	Monitoring Period	Peak Particle Velocity (mm/s)	Vibration Goal (mm/s)	Comments
<b>22<sup>nd</sup> July- First Blast (B2 Tunnel)</b>				
265 Lutwyche Road	30 seconds	<2.5	25	The trigger level on the vibration monitor was set at 2.5mm/s. The blast did not trigger the monitor. Results are within CoG goals
269 Lutwyche Road	30 seconds	4.32	25	Results are within CoG goals
9 Roblane Street	30 seconds	<2.5	25	The trigger level on the vibration monitor was set at 2.5mm/s. The blast did not trigger the monitor. Results are within CoG goals
<b>22<sup>nd</sup> July- Second Blast (B2 Tunnel)</b>				
265 Lutwyche Road	30 seconds	5.84	25	Results are within CoG goals
269 Lutwyche Road	30 seconds	4.57	25	Results are within CoG goals
9 Roblane Street	30 seconds	3.56	25	Results are within CoG goals
<b>29<sup>th</sup> July- First Blast (B2 Tunnel)</b>				
265 Lutwyche Road	30 seconds	4.57	25	Results are within CoG goals
269 Lutwyche Road	30 seconds	4.44	25	Results are within CoG goals
9 Roblane Street	30 seconds	5.84	25	Results are within CoG goals
<b>29<sup>th</sup> July- Second Blast (K2 Tunnel)</b>				
Lutwyche Centro (Lower Level Carpark)	30 seconds	<2.5	25	The trigger level on the vibration monitor was set at 2.5mm/s. The blast did not trigger the monitor. Results are within CoG goals
Lutwyche Centro (Outside Airport Link Information Centre)	30 seconds	<2.5	25	The trigger level on the vibration monitor was set at 2.5mm/s. The blast did not trigger the monitor. Results are within CoG goals
Lutwyche Centro (Outside dentist, Sth end of Building)	30 seconds	<2.5	25	The trigger level on the vibration monitor was set at 2.5mm/s. The blast did not trigger the monitor. Results are within CoG goals
<b>12<sup>th</sup> August- First Blast (K1 Tunnel)</b>				
504 Lutwyche Road	60 Seconds	3.94	25	Results are within CoG goals
<b>12<sup>th</sup> August- Second Blast (K1 Tunnel)</b>				
498 Lutwyche Road	60 Seconds	10.8	25	Results are within CoG goals

**Table 5f: Vibration Monitoring Results Summary - Kedron**

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
20 Windsor Avenue, Lutwyche	23/07/2010-26/07/2010	1.4	10	Monitoring sheet pile removal and earthworks. Results within goals.
6 Perry St, Lutwyche	06/08/2010-10/08/2010	1.78	10	Monitoring sheet pile removal and earthworks. Results within goals.
Substation 8	15/07/2010-15/08/2010	0.60	2	Monitoring road header tunnelling Results within Goals for heritage building

**Table 5g: Blast Monitoring Results Summary - Kedron Tunnels Blasting**

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal Day time (mm/s)	Comments
17/07/2010				
128 Kedron Park Road	17/07/2010 10 seconds	>0.51	10	Results are within adopted goals
673 Lutwyche Rd - Driveway	17/07/2010 10 seconds	2.41	10	Results are within adopted goals
Kedron Park Hotel	17/07/2010 10 seconds	0.76	10	Results are within adopted goals
Wooloowin State School (WSS) – Northern Boundary	17/07/2010 10 seconds	4.7	25	Results are within adopted goals
Kedron Park Hotel	17/07/2010 10 seconds	Less than 0.51	25	Results are within adopted goals
27/07/2010				
WSS – Air Quality Unit	27/07/2010 10 seconds	7.37 mm/s	25	Results are within adopted goals
WSS South Boundary	27/07/2010 10 seconds	6.86 mm/s	25	Results are within adopted goals
WSS Eastern Boundary	27/07/2010 10 seconds	2.92 mm/s	25	Results are within adopted goals

673 Lutwyche Rd – Anglican Church	27/07/2010 10 seconds	4.19 mm/s	10	Results are within adopted goals
WSS Office	27/07/2010 10 seconds	9.14	25	Results are within adopted goals
673 Lutwyche Rd – Anglican Church (driveway)	27/07/2010 10 seconds	2.41	10	Results are within adopted goals
673 Lutwyche Rd – Anglican Church east boundary	27/07/2010 10 seconds	4.57	10	Results are within adopted goals

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal Day time (mm/s)	Comments
14/08/2010				
Wooloowin State School (WSS) – Air Quality Unit	27/07/2010 10 seconds	6.48	25	Results are within adopted goals
WSS South boundary	27/07/2010 10 seconds	7.62	25	Results are within adopted goals
673 Lutwyche Rd – Anglican Church	27/07/2010 10 seconds	7.75	10	Results are within adopted goals

**Table 5f: Vibration Monitoring Results Summary - Wooloowin**

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
71 Park Road, Wooloowin	11:09am 27/07/2010 to 1:05pm 9/08/2010	3.17	5	Results are within CoG goals. PPV occurred on 12:29pm 4/08/2010 for this monitoring period.

**Table 5g: Vibration Monitoring Results Summary – Toombul**

Location	Monitoring Period	Peak Particle Velocity* (mm/s)	Adopted Goal (mm/s)	Comments
70 Kalinga Street, Clayfield	21/07/2010 – 27/07/2010	1.38	5	Results are within adopted goals
	27/07/2010 – 03/08/2010	0.81	5	Results are within adopted goals
	03/08/2010 – 09/08/2010	0.79	5	Results are within adopted goals
	09/08/2010 – 12/08/2010	1.12	5	Results are within adopted goals
72 Kalinga Street, Clayfield	21/07/2010 – 27/07/2010	0.89	5	Results are within adopted goals
	27/07/2010 – 03/08/2010	0.57	5	Results are within adopted goals
	03/08/2010 – 09/08/2010	1.42	5	Results are within adopted goals
	09/08/2010 – 17/08/2010	1.96	5	Results are within adopted goals
44 Lewis Street, Clayfield	21/07/2010 – 27/07/2010	0.16	5	Results are within adopted goals
	27/07/2010 – 03/08/2010	0.16	5	Results are within adopted goals
	03/08/2010 – 09/08/2010	0.20	5	Results are within adopted goals
	09/08/2010 – 17/08/2010	0.43	5	Results are within adopted goals
34 Lewis Street, Clayfield	12/08/2010 – 17/08/2010	0.90	5	Monitor installed 12/08/2010 – monitoring will be ongoing

### 5.3 Compliance with Vibration Goals

As a result of vibration monitoring across the project there were no exceedances recorded for the monitoring period.

## 6.0 Community Enquiries and Complaints

A total of 260 community complaints were reported to the project between 16 July and 15 August 2010. Issues raised are outlined in the table below. For further details on how we are managing community issues, please refer to the [Community Enquiries and Complaints](#) page of the project website which is updated each month.

Complaints Raised – 16 July to 15 August 2010		
Issues	No.	No. of stakeholders
Site noise out-of-hours	43	31
Parking	37	21
Worker Behaviour	20	15
Construction vehicle movements	19	13
Driver Behaviour	19	12
Site noise	18	14
Mitigation	18	16
Site lighting	15	9
Site dust	15	12
PUPs noise out-of-hours	13	12
Traffic Management	11	10
Pedestrian/Cyclists	11	9
Spoil haulage routes and queuing	11	8
Site out-of-hours	9	5
Monitoring	9	8
Roadheader noise	7	7
PUPs reinstatement	7	6
Roadheader out-of-hours	6	6
General Construction	6	5
Truck noise	6	6
Vehicle Damage	6	6
Property Impacts	5	5
Other	5	5
Road condition	5	5
Site vibration	5	4
Other	53	51
<b>Total complaints</b>	<b>260</b>	<b>157</b>

### 6.1 Top 10 Issues Raised:

