



# **Airport Link / Northern Busway Project**

## **Monthly Environmental Monitoring Report**

**December 2010**

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## **1.0 Report Purpose and Scope**

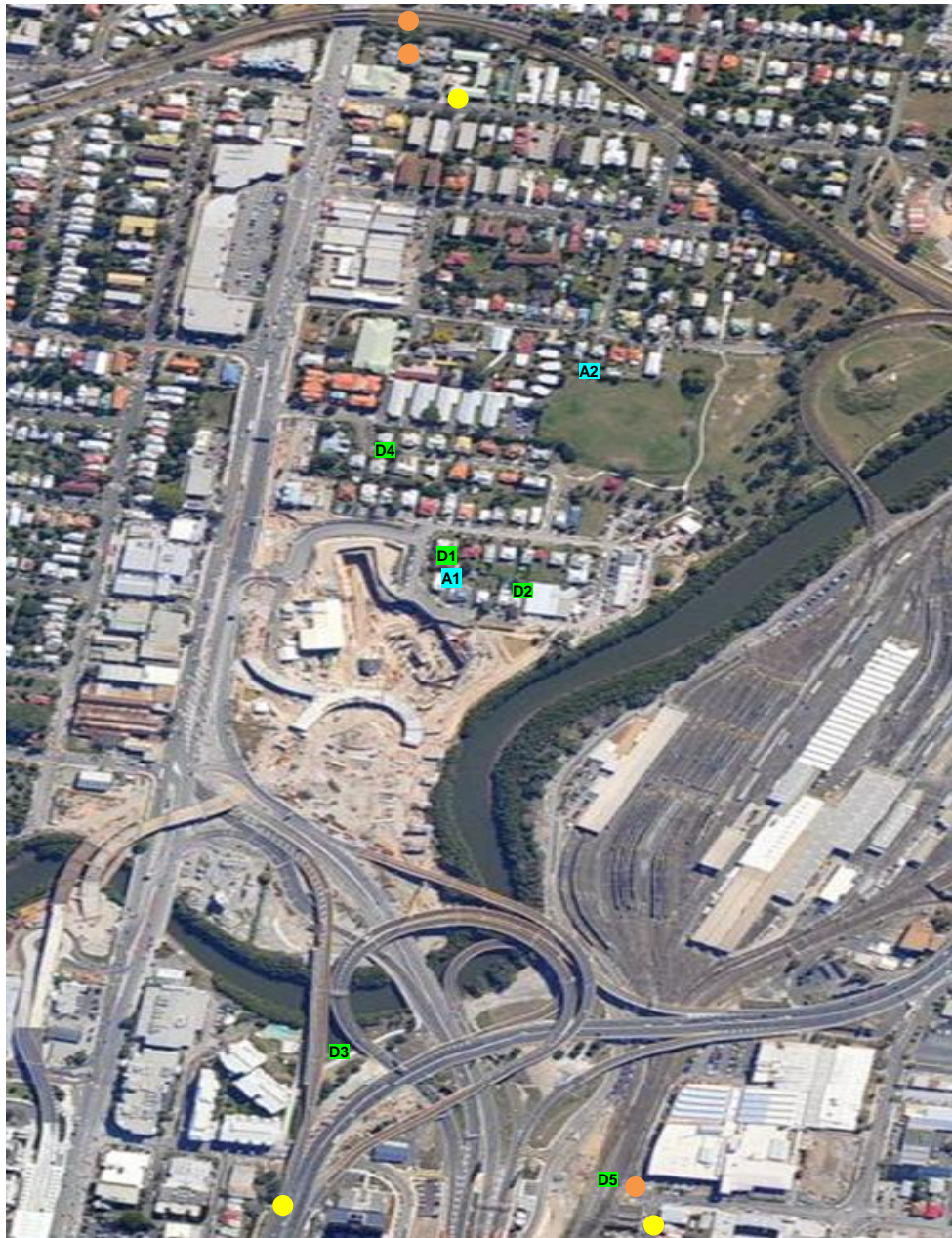
The report has been compiled to summarise the results of noise, air quality and vibration monitoring on the Airport Link and Northern Busway project. The report also compares those results with compliance thresholds for environmental harm, community nuisance and loss of amenity nominated by the Coordinator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

The monitoring data covered in this report is for the December 2010 reporting period, from 15<sup>th</sup> November 2010 to 10<sup>th</sup> December 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 December 2010, though do serve a useful purpose in relating the monitoring locations to existing structures and infrastructure.

## Bowen Hills Monitoring Locations



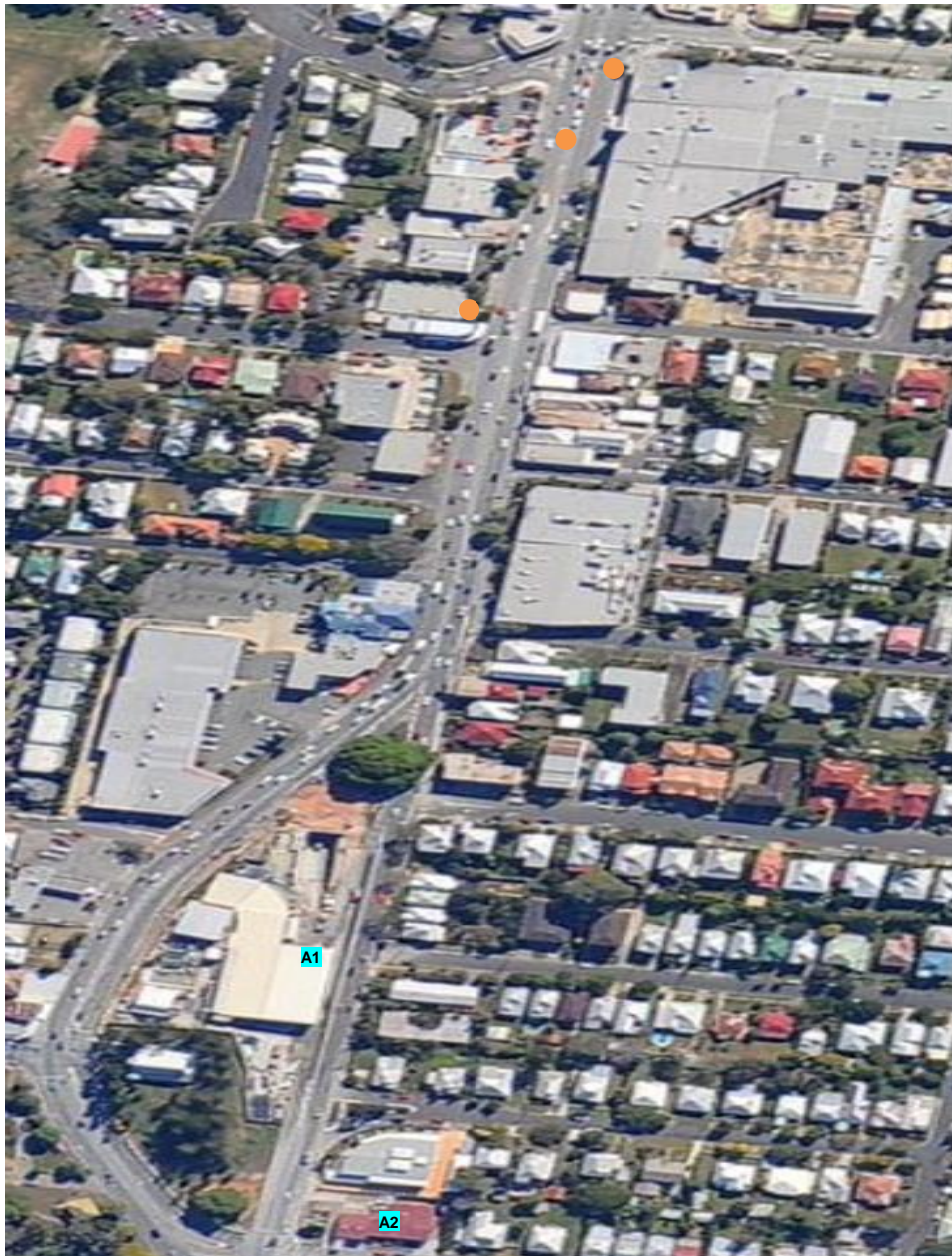
Source: NearMap 2010

Figure 2.1 – Bowen Hills Monitoring Locations  
Legend

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

Note: locations are indicative only

## Truro Street Mid Tunnel Monitoring Locations



Source: NearMap 2010

Figure 2.2 – Truro Street Mid Tunnel Monitoring Locations

**Legend**

- |  |   |
|--|---|
| <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:** locations are indicative only

## Northern Busway Monitoring Locations



Source: NearMap 2010

Figure 2.3 – Northern 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**

## Woollooin Monitoring Locations



Source: NearMap 2010

Figure 2.5 – Woollooin Monitoring Locations

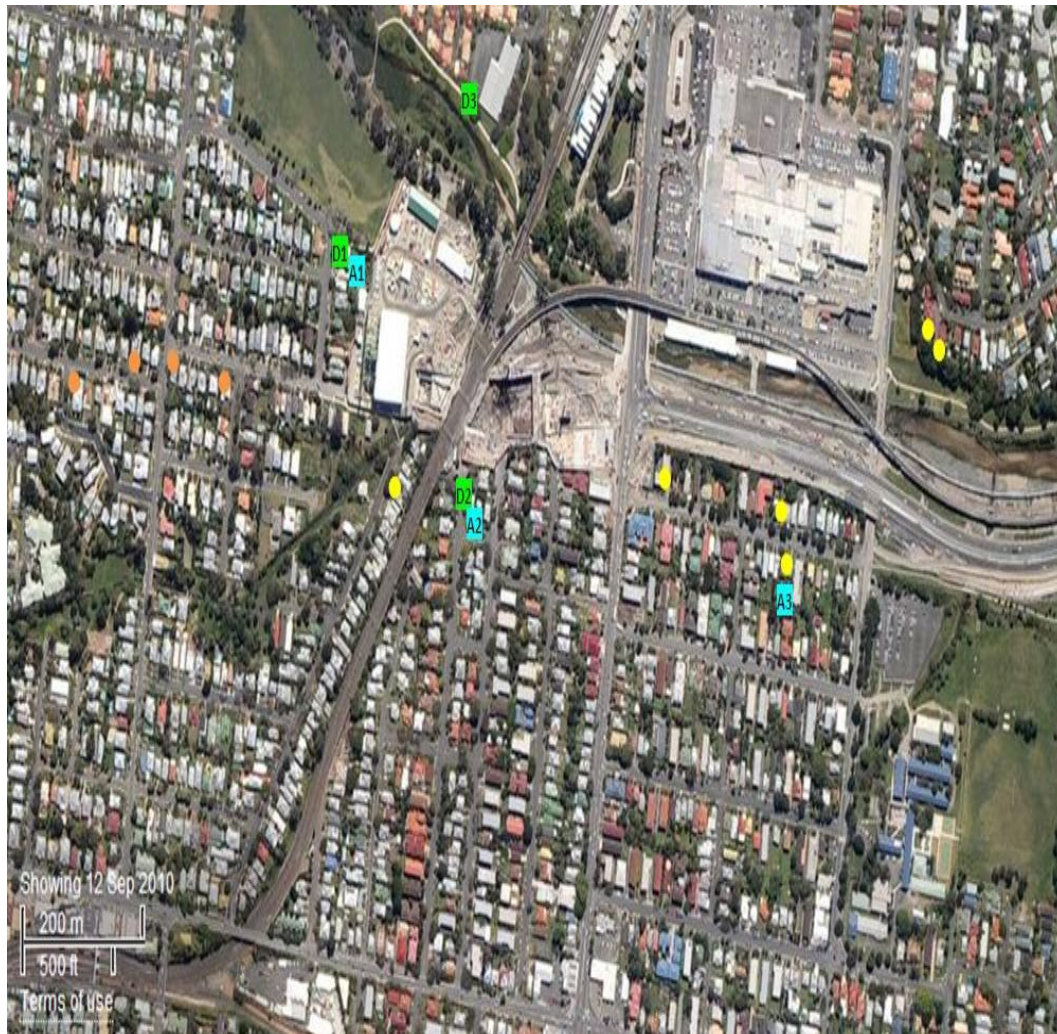
**Legend**

- Noise (during construction )
- Vibration

- Air (PM<sub>10</sub>)
- Air (Dust Deposition)
- Air (CO and NO<sub>2</sub>)

**Note: locations are indicative only**

## Toombul Monitoring Locations



Source: NearMap 2010

**Figure 2.6 – Toombul Monitoring Locations**  
**Legend**

- Noise (during construction)
- Vibration

- Air (PM<sub>10</sub>)
- Air (Dust Deposition)
- Air (CO and NO<sub>2</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 to help measure impacts and assist the team plan works and appropriate mitigations if required. The type and timing of monitoring is influenced by the activities being undertaken and relevant Noise Goals (inside buildings and residents living areas where allowed at night and during the day)

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

#### 3.1 Overview of Noise Mitigation Measures

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

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

#### 3.2 Noise Monitoring Results

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

**Table 3a: 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>38 Federation Street, Windsor</b>						
2 Storey House (Main Bedroom)	16/11/2010 8:35pm - 8:50pm	34.0	40	34.3	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 internal noise. TJH noise sources included a concrete pump, site vehicle and the lighting plants in operation on the adjacent worksite</p> <p><b>Discussion</b> Monitoring was to assess the level of impact being caused to residents adjacent to the Bowen Hills worksite. TJH works were noted intermittently throughout the session. Results were within CoG goals</p> <p><b>Mitigation</b> Mitigation was not required as results were within CoG goals</p>
<b>Unit 15/16 Wren Street, Bowen Hills</b>						
3 <sup>rd</sup> Storey Unit (Main Bedroom)	06/12/2010 8:51pm - 9:05pm	34.4	40	44.2	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 a hand held jack hammer operating on the Inner City Bypass on ramp. Other noise sources noted included internal noise and traffic</p> <p><b>Discussion</b> Monitoring was to assess the level of impact being caused to residents adjacent to the works on the Inner City Bypass. TJH works were noted throughout the session. Results were within CoG goals</p> <p><b>Mitigation</b> Mitigation was not required as results were within CoG goals</p>
<b>Unit 3510/ 141 Campbell Street, Bowen Hills</b>						
3 <sup>rd</sup> Storey Unit (Main Bedroom)	06/12/2010 9:25pm - 9:49pm	35.5	40	41.2	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 a hand held jack hammer operating on the Inner City Bypass on ramp. Other noise sources noted included internal noise and traffic</p> <p><b>Discussion</b> Monitoring was to assess the level of impact being caused to residents adjacent to the works on the Inner City Bypass. TJH works were noted throughout the session. Results were within CoG goals</p> <p><b>Mitigation</b> Mitigation was not required as results were within CoG goals</p>

**Table 3b: Day 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>A10</sub> (15 min) (dBA)	CoG Goal L <sub>A10</sub> (15 min) (dBA)	Comments
<b>Room 3401 Mews Apartments, Bowen Hills</b>						
3 <sup>rd</sup> Storey Unit (Living Room)	16/11/2010 7:19am - 7:33am	37.9	45	39.1	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 the adjacent Inner City Bypass. An excavator and jack hammer operating on the Area 6 worksite were noted intermittently</p> <p><b>Discussion</b> The level recorded for Laeq was as a result of the traffic moving along the Inner City Bypass as well as the works on the Area 6 worksite. Results were within CoG goals</p> <p><b>Mitigation</b> Mitigation was not required as results were within CoG goals</p>

**Table 3c: Noise Monitoring Results – Bowen Hills 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>2/ 9 Le Geyt Street, Windsor</b>						
Ground Floor Unit (Main Bedroom)	07/12/2010 8:25pm - 8:39pm	33.9	40	51.1	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 traffic moving along Lutwyche Road. Other noise sources noted included internal noise and the train on the adjacent Ferny Grove rail line. No TJH works were noted</p> <p><b>Discussion</b> Monitoring was to assess the level of impact being caused to residents within close proximity to the tunnel alignment. No TJH tunnelling activities were noted. The value for L<sub>Amax</sub> was as a result of internal noise. 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 <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
Ground Floor Unit (Main Bedroom)	08/12/2010 1:33am - 1:47am	36.0	40	46.8	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 a rock hammer operating in the southbound tunnel. Other noise sources included traffic and internal noise</p> <p><b>Discussion</b> Monitoring was to assess the level of impact being caused to residents within close proximity to the tunnel alignment. TJH tunnelling activities were noted intermittently throughout the session. Results were within CoG goals</p> <p><b>Mitigation</b> Mitigation was not required as results were within CoG goals</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</b>								
Single level Brick Flat (Dining Room)	20/11/2010 10:28am – 10:42am	43.3	45	44.0	55	-	-	<p><b>Monitoring Type</b> Attended Noise Monitoring. Doors and Windows Closed</p> <p><b>Noise Sources</b> Site noise included: scrubber, loader, reverse beeper, loading, shed door, truck and hosing down the concrete. Other noise sources included: traffic, birds, plane and train horn</p> <p><b>Discussion</b> The dominant noise was from the scrubber and loading spoil. Monitoring indicates that day time CoG goals are being met</p> <p><b>Mitigation Measures</b> An acoustic shed and noise wall is in place around Woolloowin Site. 71 Park Road is owned by DMR and is used by TJH for monitoring purposes</p>
Single level Brick Flat (Dining Room)	24/11/2010 5:36am – 5:50am	38.7	40	-	-	46.4 (TJH)	50	<p><b>Monitoring Type</b> Attended Noise Monitoring. Doors and Windows Closed</p> <p><b>Noise Sources</b> Site noise included: scrubber, shed door and loader. Other noise sources included: birds, traffic, plane and car start</p> <p><b>Discussion</b> The ambient noise was mostly from the scrubber and birds. The</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
								L <sub>Amax</sub> was caused by the closing of the shed pedestrian door. Monitoring indicates that night time CoG goals are being met <b>Mitigation Measures</b> An acoustic shed and noise wall is in place around Woolloowin Site. 71 Park Road is owned by DMR and is used by TJH for monitoring purposes
Single level Brick Flat (Dining Room)	25/11/2010 12:10pm – 12:24pm	43.1	45	43.8	55	-	-	<b>Monitoring Type</b> Attended Noise Monitoring. Doors and Windows Closed <b>Noise Sources</b> Site noise included: scrubber, loader, loading, truck, reverse beeper, banging and the shed door. Other noise sources included: birds, traffic and plane <b>Discussion</b> Trucks were being loaded with spoil in the acoustic shed by the loader. Monitoring indicates that day time CoG goals are being met <b>Mitigation Measures</b> An acoustic shed and noise wall is in place around Woolloowin Site. 71 Park Road is owned by DMR and is used by TJH for monitoring purposes
Single level Brick Flat (Dining Room)	30/11/2010 11:47am - 12:01pm	43.0	45	43.9	55	-	-	<b>Monitoring Type</b> Attended Noise Monitoring. Doors and Windows Closed <b>Noise Sources</b> Site noise included: scrubber, loader, loading, truck movements and banging (metal on metal). Other noise sources included: birds and traffic <b>Discussion</b> Trucks were being loaded with spoil in the acoustic shed by the loader. The scrubber was constant throughout the session. Monitoring indicates that day time CoG goals are being met <b>Mitigation Measures</b> An acoustic shed and noise wall is in place around Woolloowin Site. 71 Park Road is owned by DMR and is used by TJH for monitoring purposes

**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>51 Wongara Street, Clayfield</b>						
Timber House, front Lounge Room (1 <sup>st</sup> Floor)	19/11/2010 9:20am – 9:34 am	48.7	45	47.8	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and door open</p> <p><b>Noise Sources</b> TJH noise sources (beepers, East West Arterial construction) plus non-TJH sources (internal noise, traffic, plane, dog, fauna, and train)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being exceeded. A NCR was raised regarding this noise exceedance.</p> <p><b>Mitigation Measures</b> This property has no mitigation in place. Further monitoring will be undertaken after noise wall construction has been completed</p>
Timber House, front Lounge Room (1 <sup>st</sup> Floor)	19/11/2010 9:37am – 9:51 am	35.8	45	35.9	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and door open</p> <p><b>Noise Sources</b> TJH noise sources (East West Arterial construction) plus non-TJH sources (internal, plane, fauna, traffic, train)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being met. A NCR was raised regarding this noise exceedance.</p> <p><b>Mitigation Measures</b> This property has no mitigation in place.</p>
<b>Unit 1/10 Wongara 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
Apartment Block, cavity brick, Lounge Room (1 <sup>st</sup> Floor)	29/11/2010 9:06am – 9:20 am	55.2	45	53.3	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and veranda door open</p> <p><b>Noise Sources</b> TJH noise sources (jack hammering, reverse beeping, horn, air breaks, drilling, plant noise, drops, bangs) plus non-TJH sources (plane, resident, Sandgate Road, Wongara Street, children/ crickets, air train)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being exceeded. There was heavy influence from external noise sources which could not be isolated (Sandgate Road and Wongara Street). Results were also influenced by interruptions from the resident's children</p> <p><b>Mitigation Measures</b> This property has no mitigation in place</p>
<b>89 Jackson Street, Clayfield</b>						
Queenslander, Front Bedroom	2/12/2010 9:15am – 9:29 am	42.7	45	43.2	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors open</p> <p><b>Noise Sources</b> TJH noise sources (gantry crane, plant noise, rattle gun, horn, drops, crane, franna, jack hammering, bang) plus non-TJH sources (birds, crickets, resident, traffic, 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</p>
Queenslander, Front Bedroom	2/12/2010 9:34am – 9:48 am	35.7	45	36.4	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed</p> <p><b>Noise Sources</b> TJH noise sources (plant noise, rattle gun, gantry crane, squealing, bang, horn, franna) plus non-TJH sources (birds, crickets, resident, train, 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>

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
Queenslander, Front Bedroom	2/12/2010 2:08pm – 2:22 pm	42.9	45	41.5	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors open</p> <p><b>Noise Sources</b> TJH noise sources (plant noise, crane, gantry crane, water blasting, horn) plus non-TJH sources (sewing machine, crickets, birds, resident, 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</p>
Queenslander, Front Bedroom	2/12/2010 2:25pm– 2:39 pm	39.9	45	39.3	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed</p> <p><b>Noise Sources</b> TJH noise sources (gantry crane, bang, plant noise, franna) plus non-TJH sources (sewing machine, birds, crickets, resident, traffic, dog barking, train, car)</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>83 Stuckey Road, Clayfield</b>						
Queenslander, Front Lounge Room	6/12/2010 9:12am – 9:26 am	41.7	45	41.8	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 (crane, horn, drops, jack hammering) plus non-TJH sources (resident, internal noise, train, dog barking, plane, crickets)</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 air conditioning and external blinds from TJH to further mitigate noise. At the time of monitoring, this air conditioner was in use and the windows and doors were closed</p>

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
Queenslander, Front Lounge Room	6/12/2010 9:29am – 9:43 am	40.2	45	39.9	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 (crane, water blasting, jack hammering, drilling, drops, bang) plus non-TJH sources (traffic, plane, resident, train, crickets, internal noise)</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 air conditioning and external blinds from TJH to further mitigate noise. At the time of monitoring, this air conditioner was in use and the windows and doors were closed</p>
Queenslander, Front Lounge Room	7/12/2010 2:28pm – 2:42 pm	45.3	45	41.4	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 (crane, drops, hammering, jack hammer, squawker, water blasting, operator interference, horn, truck) plus non-TJH sources (internal noise, resident, crickets, plane, train, traffic).</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being exceeded. This was due to internal noise sources which could not be isolated from TJH noise sources. The major internal noise sources included a pet canary and the resident moving continuously in and out to the back deck.</p> <p><b>Mitigation Measures</b> Include a 6m noise wall and double stack containers. This property has received air conditioning and external blinds from TJH to further mitigate noise. At the time of monitoring, this air conditioner was in use and the windows and doors were closed.</p>
Queenslander, Front Lounge Room	7/12/2010 2:44pm – 2:58 pm	44.7	45	40.3	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 (crane, drop, hammering, reverse beeper, bang) plus non-TJH sources (resident, internal noise, traffic, train, plane, cricket)</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 air conditioning and external blinds from TJH to further mitigate noise. At the time of monitoring, this air conditioner was in use and the windows and doors were closed</p>
<b>34 Wongara 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 Weatherboard. Kitchen/Dining Room	8/12/2010 9:35am – 9:49 am	46.9	45	46.8	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors open</p> <p><b>Noise Sources</b> TJH noise sources (plant noise, bangs, hammering, yelling, squawker, kicking bucket, loud plant noise, excavator) plus non-TJH sources (East West Arterial traffic, Widdop Street traffic, resident, train, dog barking, crickets, birds)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being exceeded. Exceedance was due to external noise sources from traffic along EWA and Sandgate road which could not be isolated from TJH noise sources.</p> <p><b>Mitigation Measures</b> This property has no mitigation measures in place. Monitoring will be undertaken after noise wall construction is completed.</p>
Brick Weatherboard. Kitchen/Dining Room	8/12/2010 9:57am – 10:11 am	44.7	45	43.8	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed</p> <p><b>Noise Sources</b> TJH noise sources (plant, drops, drilling) plus non-TJH sources (birds, East West Arterial Traffic, Widdop Street traffic – including reverse beeping, crickets, train)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being met. Resident on the phone interrupted a majority of the noise monitoring session</p> <p><b>Mitigation Measures</b> This property has no mitigation measures in place. Ongoing consultation with stakeholder after noise wall construction is complete</p>
Brick Weatherboard. Kitchen/Dining Room	8/12/2010 15:03pm – 15:19 pm	47.6	45	48.5	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors open</p> <p><b>Noise Sources</b> TJH noise sources (franna, bobcat bucket, hammering, bobcat, grinder, squawker, and machine hum) plus non-TJH sources (birds, East West Arterial traffic and Widdop Street traffic, resident, train and dog)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being exceeded. Exceedance was due to external noise sources from traffic along EWA and Sandgate road which could not be isolated from TJH noise sources.</p> <p><b>Mitigation Measures</b> This property has no mitigation measures in place. Monitoring will be undertaken after noise wall construction is completed.</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
Brick Weatherboard. Kitchen/Dining Room	8/12/2010 15:24pm – 15:39 pm	37.95	45	38.4	55	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed</p> <p><b>Noise Sources</b> TJH noise sources (franna, bobcat, bobcat bucket, birds, grinder, hammering, squawker, and machine hum) plus non-TJH sources (birds, resident, East West Arterial traffic and Widdop Street traffic, dog, and train)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being met. Significant non-TJH noise sources including birds, traffic and resident were experienced throughout the monitoring period</p> <p><b>Mitigation Measures</b> This property has no mitigation measures in place. Ongoing consultation with stakeholder after noise wall construction is complete</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>2/23 Walkers Way, Nundah</b>						
Brick Apartment Block, Bedroom	23/11/2010 19:35pm – 19:50 pm	48.93	35	56.5	50	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors open</p> <p><b>Noise Sources</b> TJH noise sources (bang, crane, horn, jack hammering and alarm) plus non-TJH sources (birds, resident, traffic and train)</p> <p><b>Discussion</b> Monitoring indicates that CoG goals are being exceeded. A NCR was raised regarding the noise exceedance at 7/23 on the same day from conveyor operation at this apartment block</p> <p><b>Mitigation Measures</b> TJH will supplement the electrical costs for running the stakeholders account</p>
Brick Apartment Block, Bedroom	23/11/2010 19:55pm – 20:10 pm	37.83	35	59.3	50	<p><b>Monitoring Type</b> Internal attended monitoring, windows and doors closed</p> <p><b>Noise Sources</b> TJH noise sources (crane, gantry alarm, bang, franna, horn drops and reverse beeping) plus non-TJH sources (birds, traffic, resident and train). A NCR was raised regarding the noise exceedance at 7/23 on the same day from conveyor operation at this apartment block</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>Amax</sub> (15 min) (dBA)	Comments
						<b>Discussion</b> Monitoring indicates that CoG goals are being exceeded <b>Mitigation Measures</b> TJH will supplement the electrical costs for running the stakeholders account
<b>7/23 Walkers Way, Nundah</b>						
Brick Apartment Block, Bedroom	23/11/2010 20:23pm – 20:38 pm	43.04	35	45.8	50	<b>Monitoring Type</b> Internal attended monitoring, doors open <b>Noise Sources</b> TJH noise sources (conveyer, air breaks, horn, reverse squawker and franna) plus non-TJH sources (traffic, bird, truck, train, resident, wind and crickets) <b>Discussion</b> Monitoring indicates that CoG goals are being exceeded. With all external noise data excluded the CoG goals were exceeded – 47.6 dB. A NCR was raised regarding this noise exceedance. <b>Mitigation Measures</b> This property has received double glazing and air conditioning in the master bedroom
Brick Apartment Block, Bedroom	23/11/2010 20:40pm – 20:55 pm	32.5	35	55.3	50	<b>Monitoring Type</b> Internal attended monitoring, doors closed <b>Noise Sources</b> TJH noise sources (conveyer, reverse beeping and franna) plus non-TJH sources (bird, traffic, resident, train and fridge) <b>Discussion</b> Monitoring indicates that CoG goals are being met. Lmax exceedance was due to plane. <b>Mitigation Measures</b> This property has received double glazing and air conditioning in the master bedroom

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> (dBA)	CoG Goal L <sub>AMax</sub> (15 min) (dBA)	Comments
<b>60 Gorman Street</b>						
Main Bedroom (Windows and doors closed)	08/12/2010 08:25 pm – 08: 40pm	25.7	40	26.5	50	<p><b>Monitoring Type</b> Attended. Internal.</p> <p><b>Noise Sources</b> Audible TJH noises during monitoring session were moxy movement and tower crane movement</p> <p><b>Discussion</b> Internal noise goals were not exceeded. No noise complaints were received on this date.</p> <p><b>Mitigation Measures</b> N/A</p>
Main Bedroom (Windows and doors open)	15/12/2011 08:42pm – 08:57pm	44.3	40	44.9	50	<p><b>Monitoring Type</b> Attended. Internal.</p> <p><b>Noise Sources</b> Audible TJH noises during monitoring session were metal on metal, squawker, moxy movement, spoil shed, truck and dog, excavator and hammering. Non TJH noises included overhead aircraft, traffic and resident movement.</p> <p><b>Discussion</b> L<sub>Aeq</sub> noise goals were exceeded as a result of overhead aircraft, traffic and resident movement. No noise complaints were received on this date.</p> <p><b>Mitigation Measures</b> N/A</p>
Main Bedroom (Windows and doors closed)	15/12/2011 09:01pm – 09:16pm	27.9	40	29.2	50	<p><b>Monitoring Type</b> Attended. Internal.</p> <p><b>Noise Sources</b> Audible TJH noises during monitoring session were moxy movement and spoil shed activity. Non TJH noise sources included noise from next door premises.</p> <p><b>Discussion</b> Internal noise goals were not exceeded. No noise complaints were received on this date.</p> <p><b>Mitigation Measures</b> N/A</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:

- 51, Wongara Street, Clayfield
- Apartment blocks 2-7/23 Walkers Way, Nundah

### **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) and Total Suspended Particulates (TSP) at a number of locations nominated by the Coordinator General. Real monitoring of PM2.5 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

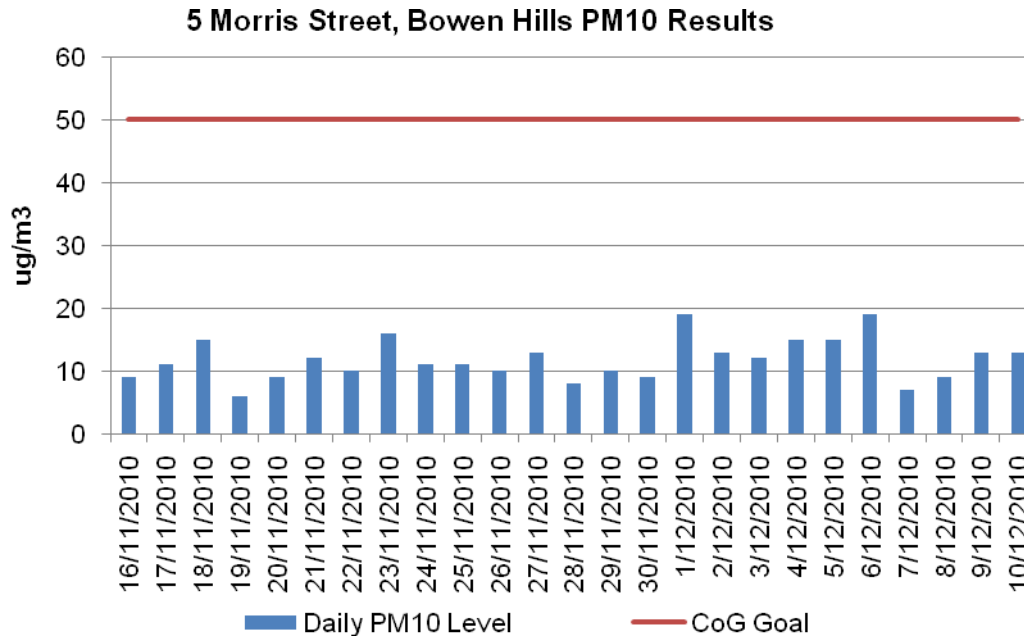


Figure 4.2.1 5 Morris Street, Bowen Hills PM10 Results (for monitor location see figure 2.1 – A1)

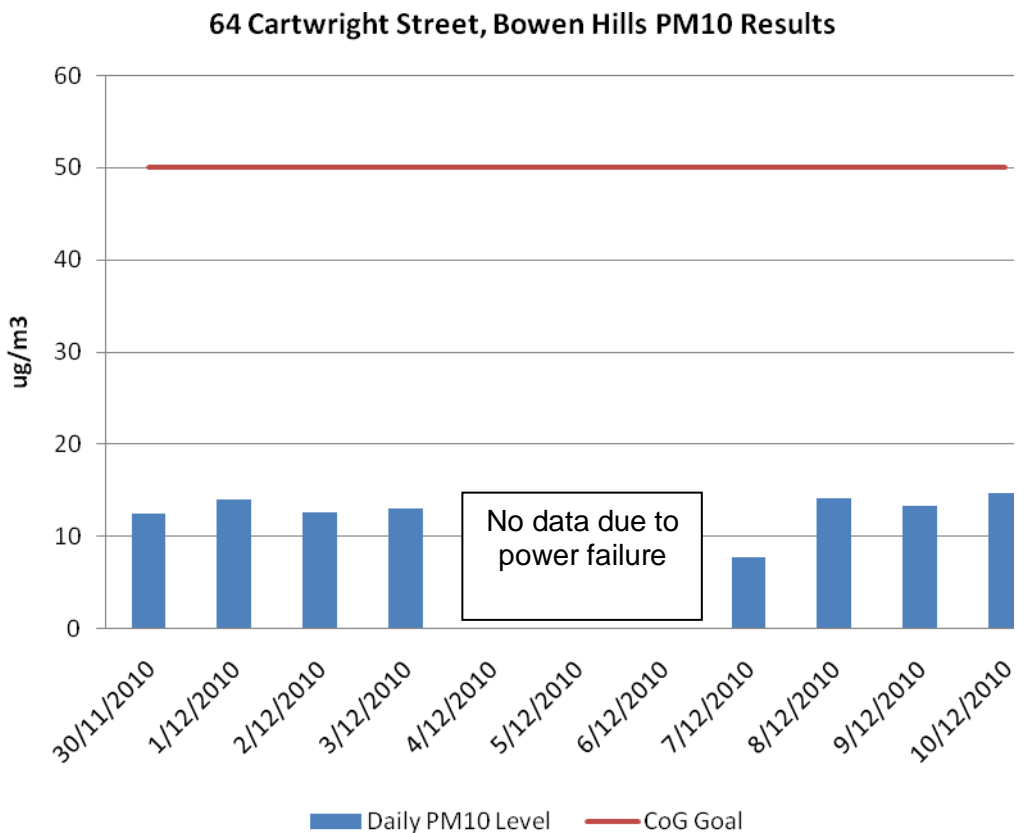


Figure 4.2.2 64 Cartwright Street, Bowen Hills PM10 Results (for monitor location see figure 2.1 – A2)

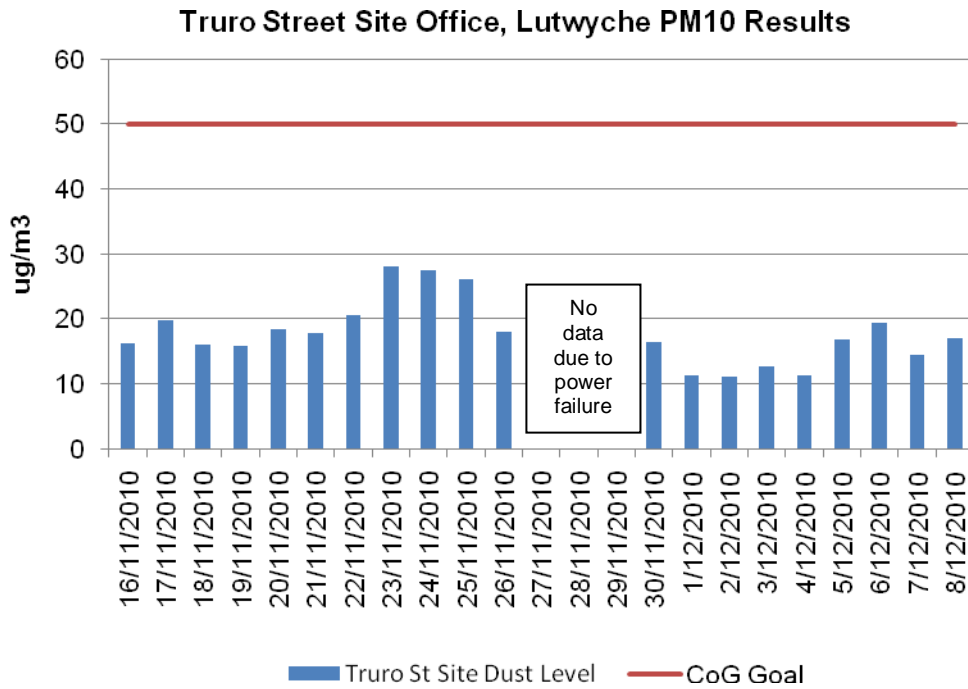


Figure 4.2.3 Truro Street Site Office, Windsor PM10 Results (for location see figure 2.2 – A1)

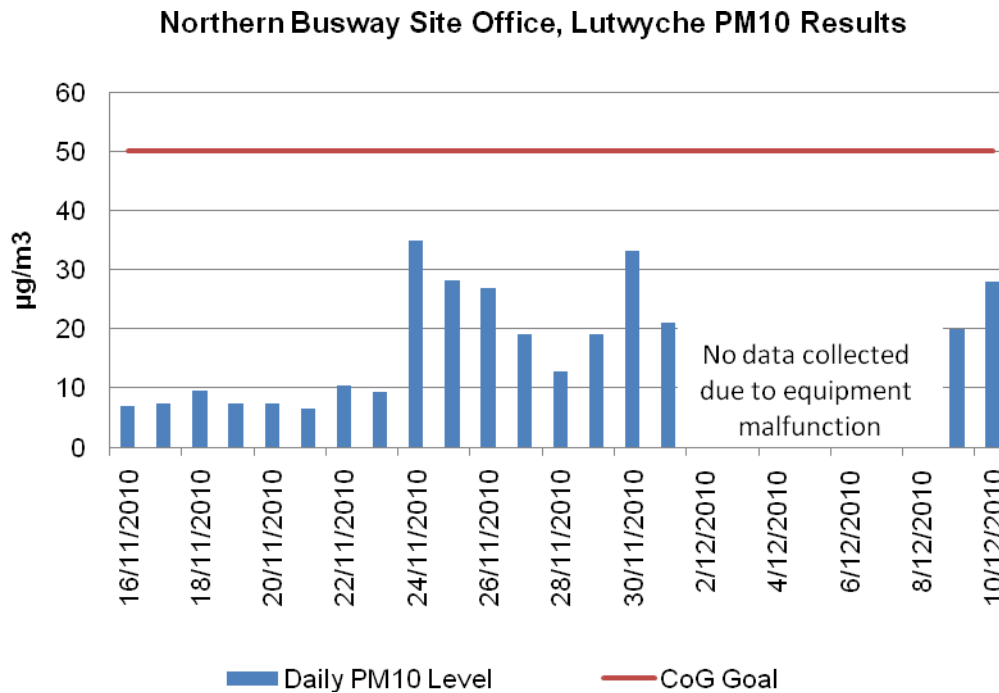


Figure 4.2.4 Northern Busway Site Office, Lutwyche PM10 Results (for location see figure 2.3 – A1)

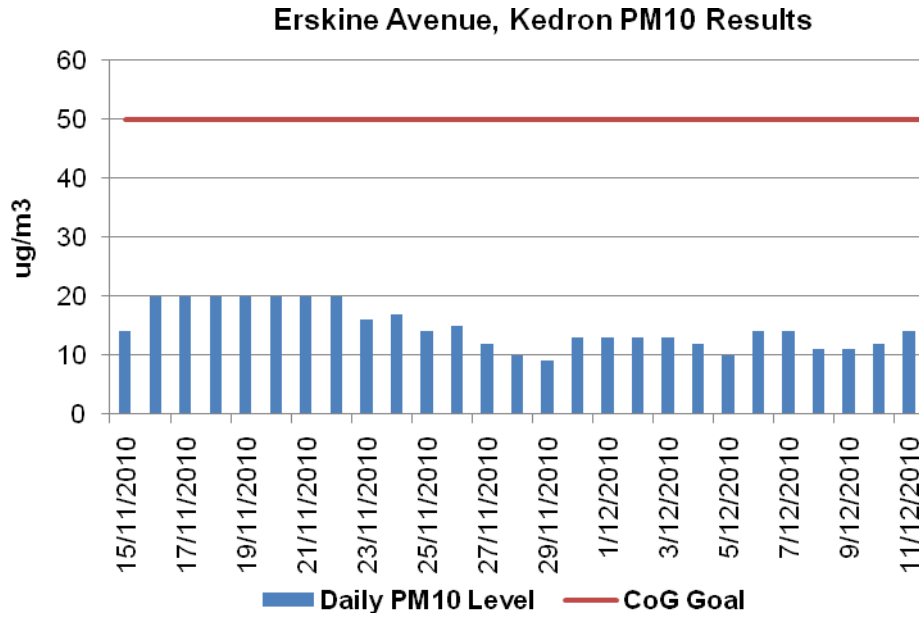


Figure 4.2.5 Erskine Avenue, Kedron PM10 Results (for monitor location see figure 2.4 – A1)

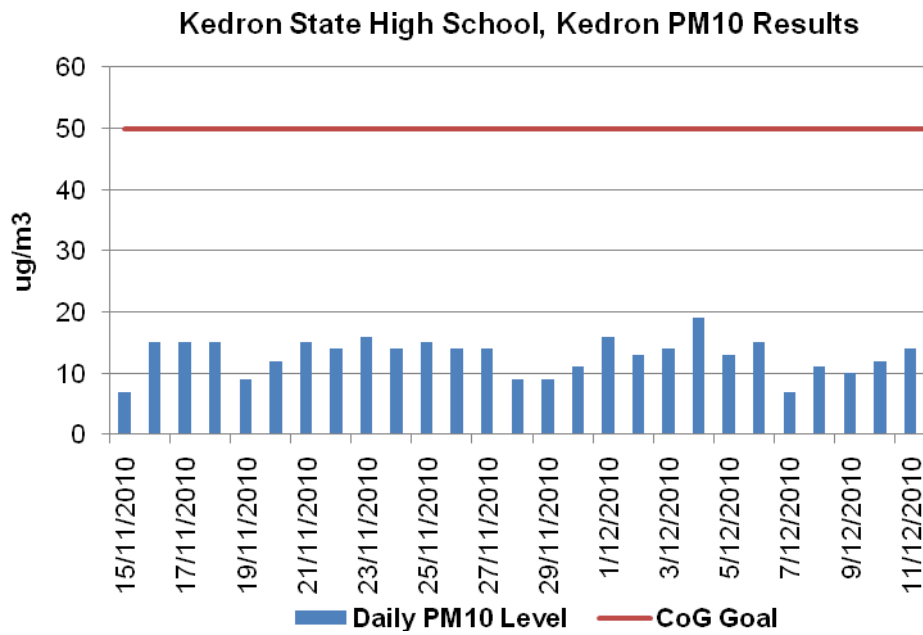


Figure 4.2.6 Kedron State High School (Adj), Kedron PM10 Results (for monitor location see figure 2.4 – A2)

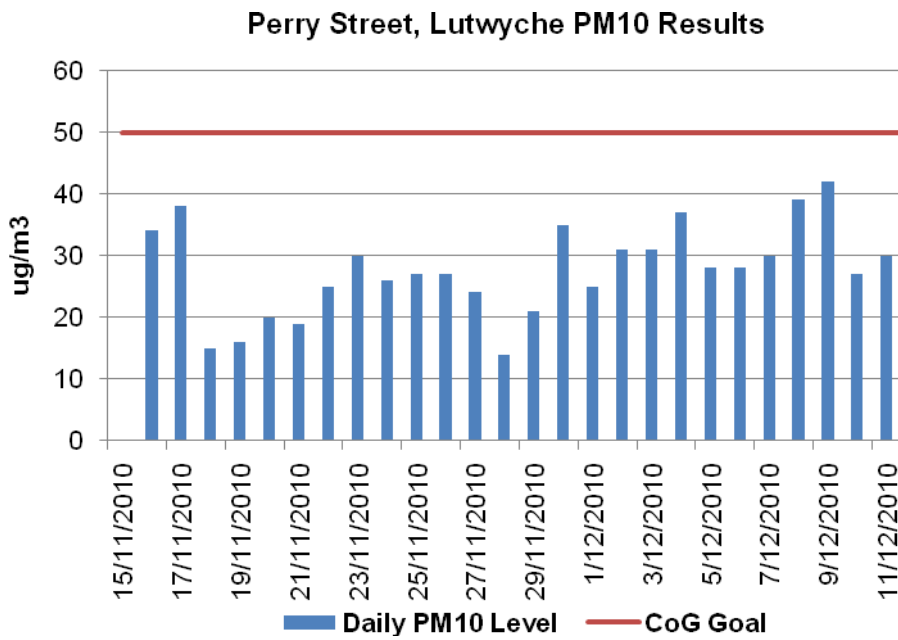


Figure 4.2.7 Perry Street, Lutwyche PM10 Results (for monitor location see figure 2.4 – A3)

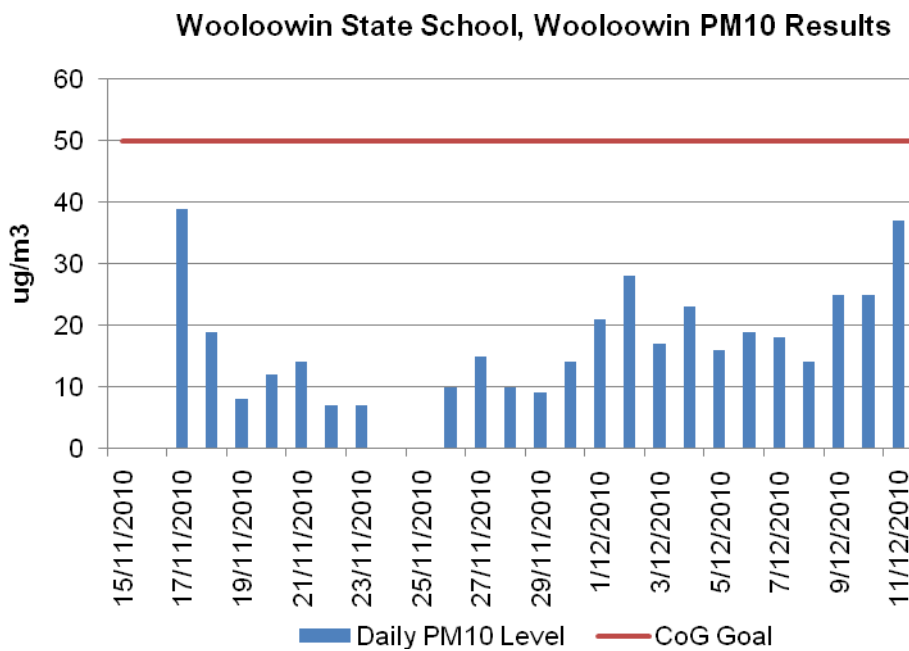


Figure 4.2.8 Woolloowin State School, Lutwyche PM10 Results (for monitor location see figure 2.4 – A4)

### 71 Park Road, Woolloowin PM10 Results

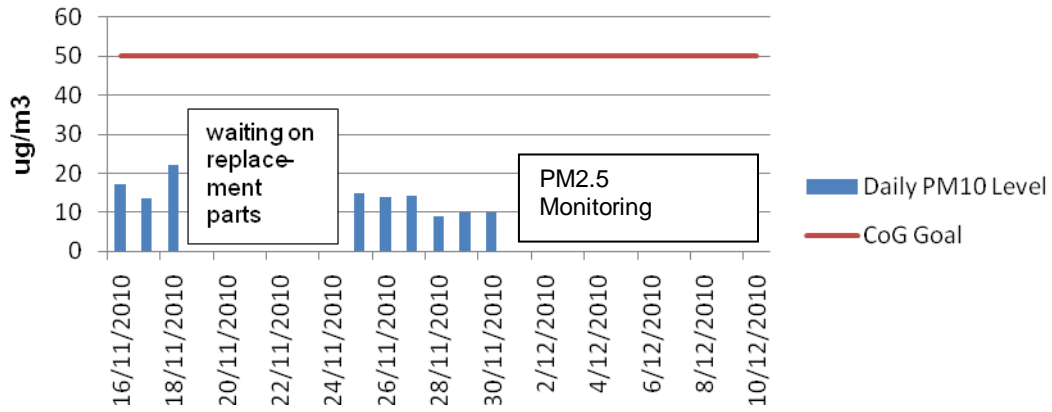


Figure 4.2.9 71 Park Road, Woolloowin PM10 Results (for monitor location see figure 2.1 – A1)

### 71 Park Road, Woolloowin PM2.5 Results

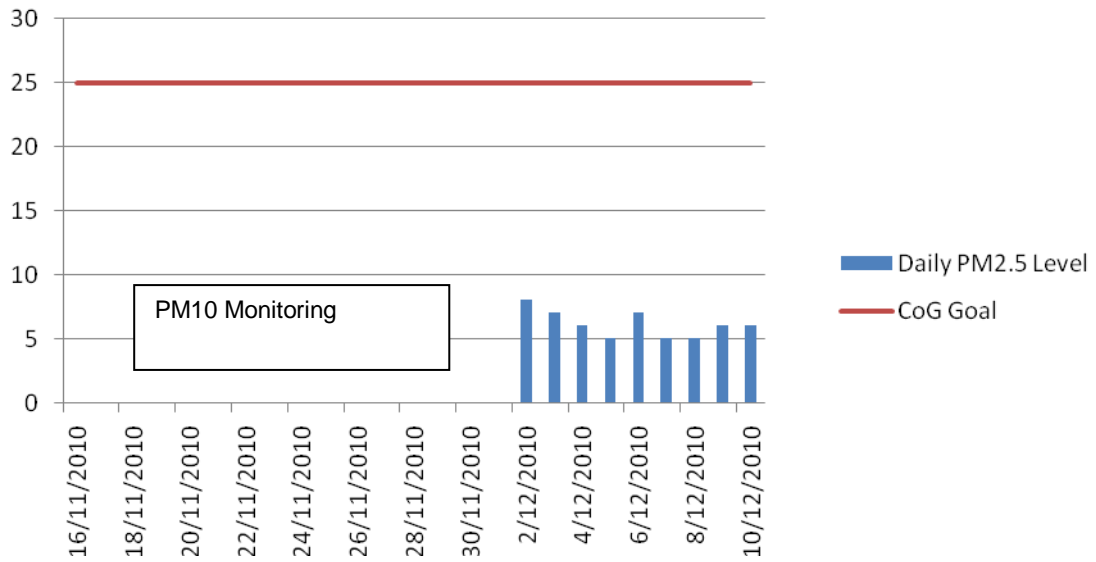


Figure 4.2.10 71 Park Road, Woolloowin PM2.5 Results (for monitor location see figure 2.1 – A1)

### 56 Kalinga Street, Clayfield PM10 Results

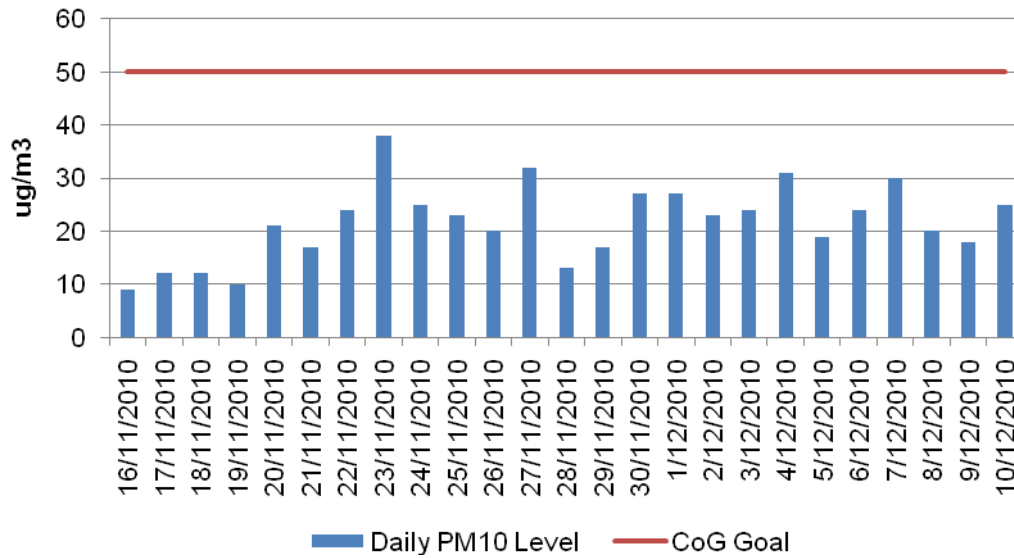


Figure 4.2.11 56 Kalinga Street, Toombul PM10 Results (for monitor location see figure 2.6 – A1)

### 5 Mabel Street, Clayfield PM10 Results

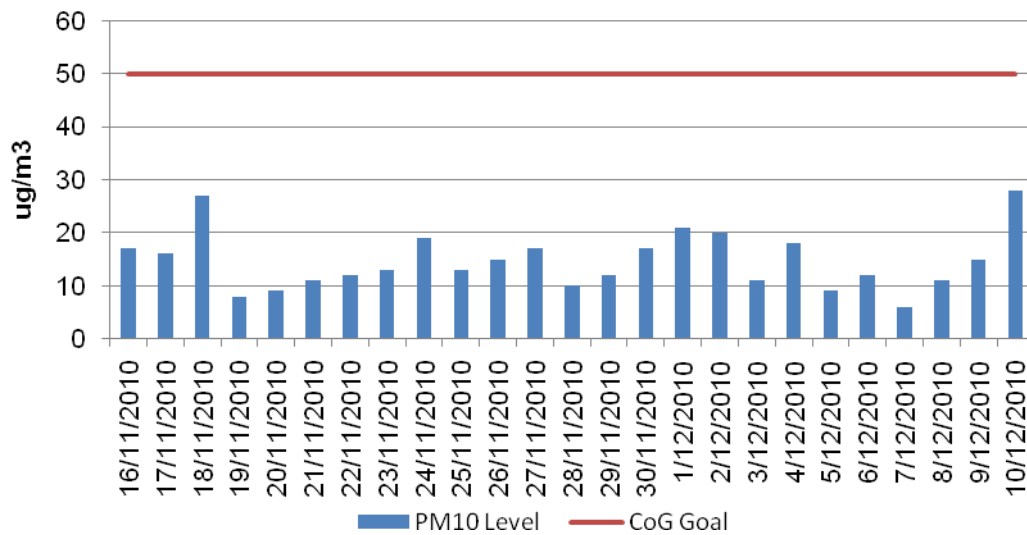


Figure 4.2.12 5 Mabel Street, Clayfield, Toombul PM10 Results (for monitor location see figure 2.6- A2)

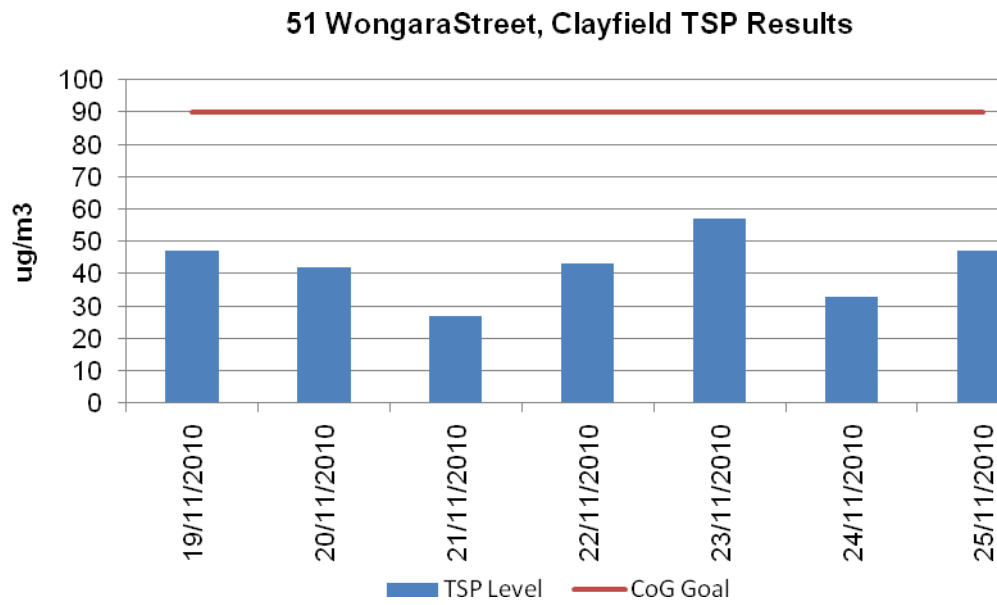
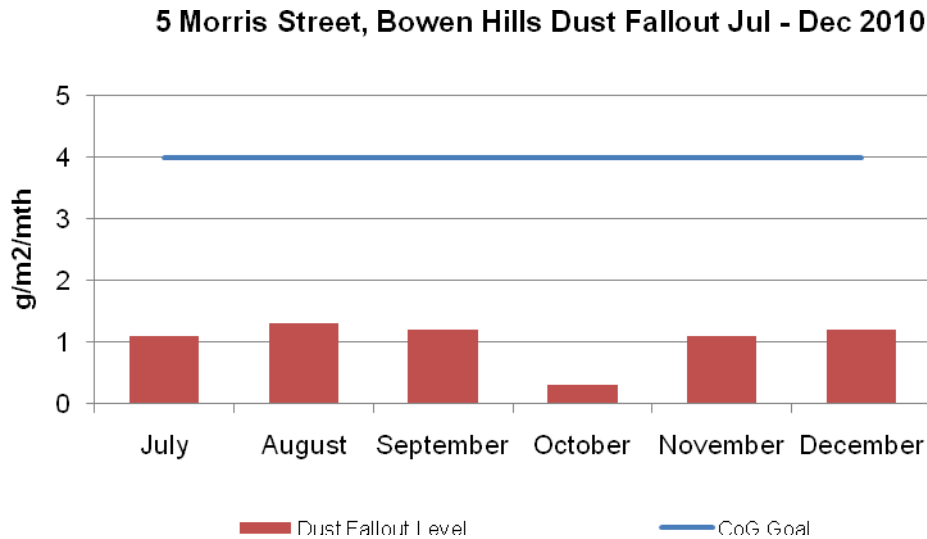


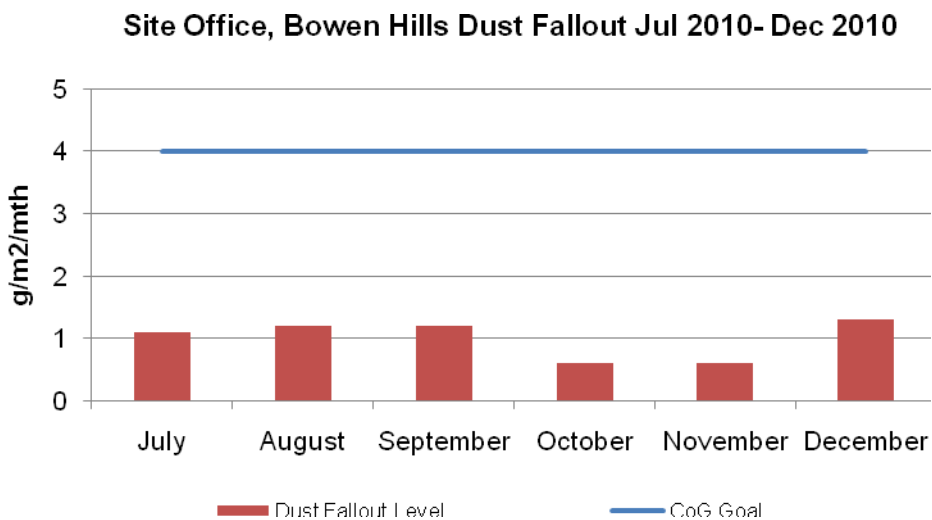
Figure 4.2.13 51 Wongara Street, Clayfield TSP Results (for monitor location see figure 2.6- A3)

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

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



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



**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 Jul- Dec 2010

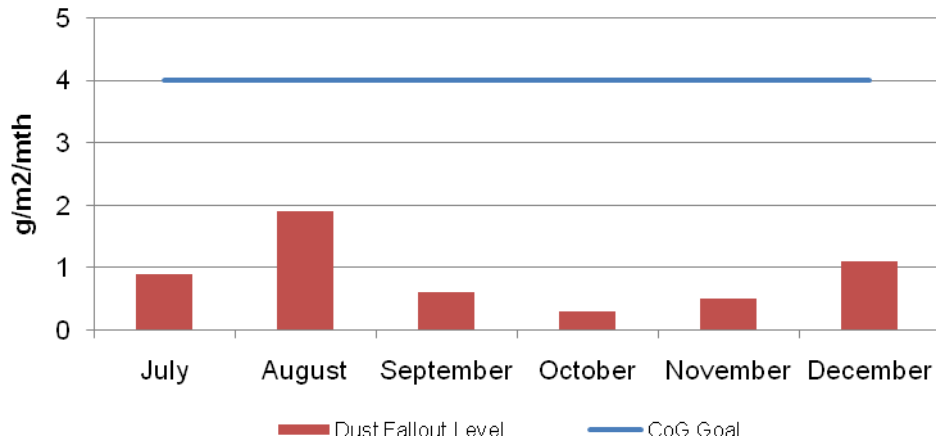


Figure 4.3.3 Mews Apartments, Bowen Hills Dust Deposition Results  
(for monitor location refer to figure 2.1- D3)

### 11 Bryden Street, Bowen Hills Dust Fallout Jul- Dec 2010

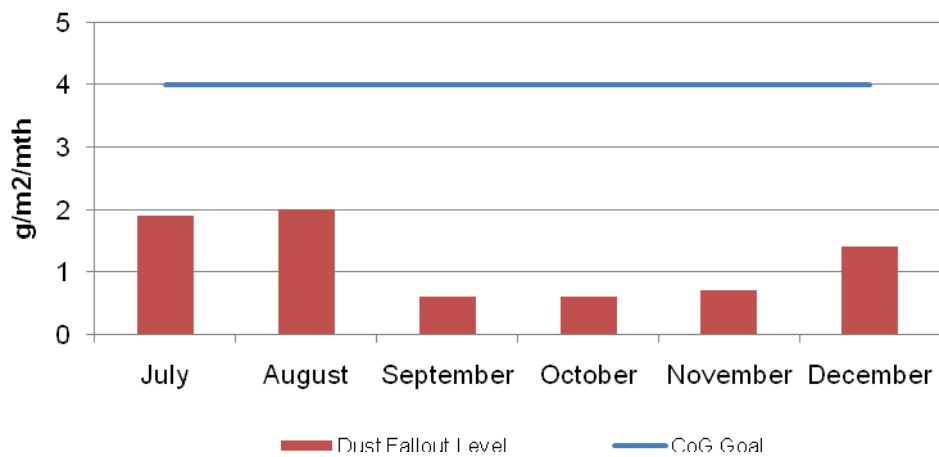


Figure 4.3.4 11 Bryden Street, Bowen Hills Dust Deposition Results  
(for monitor location refer to figure 2.1- D4)

### QLD Newspapers, Bowen Hills Dust Fallout Jul 2010 - Dec 2010

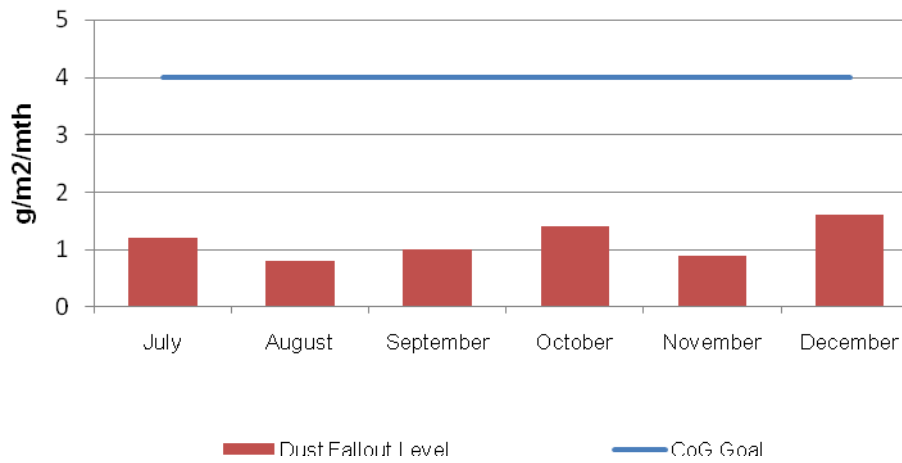


Figure 4.3.5 Queensland Newspapers, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1- D5)

### Cnr of Thistle & Lucas Street, Lutwyche Dust Fallout Jul - Dec 2010

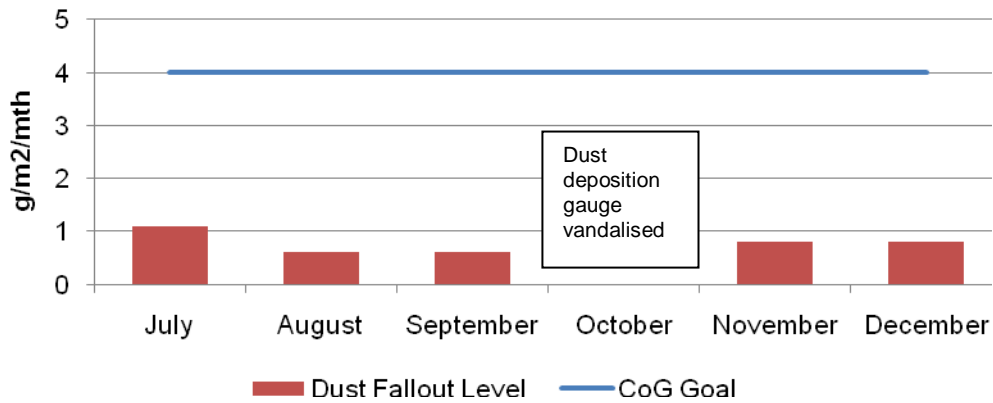


Figure 4.3.6 Cnr of Thistle & Lucas Street, Lutwyche Dust Fallout Results (location refer to figure 2.3 – D2)

### Kedron Brook Reserve, Northern Busway Dust Fallout Jul- Dec 2010

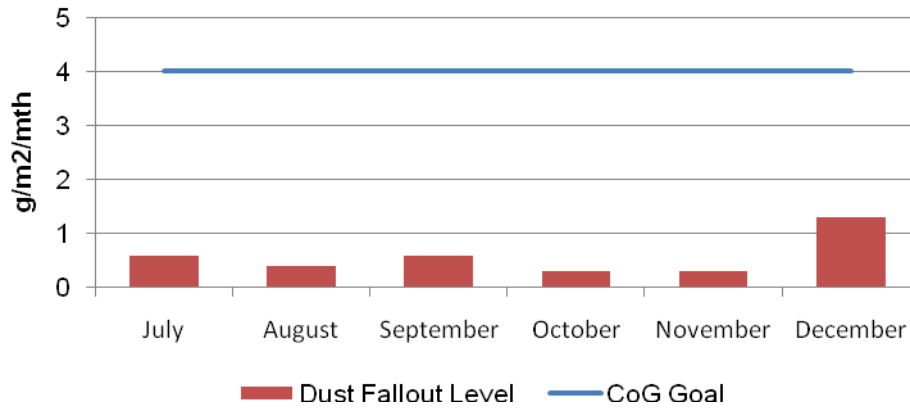


Figure 4.3.7 Kedron Brook Reserve, Northern Busway Dust Fallout Results (location refer to figure 2.3 – D1)

### 68 Park Road, Woolloowin Dust Fallout July to December 2010

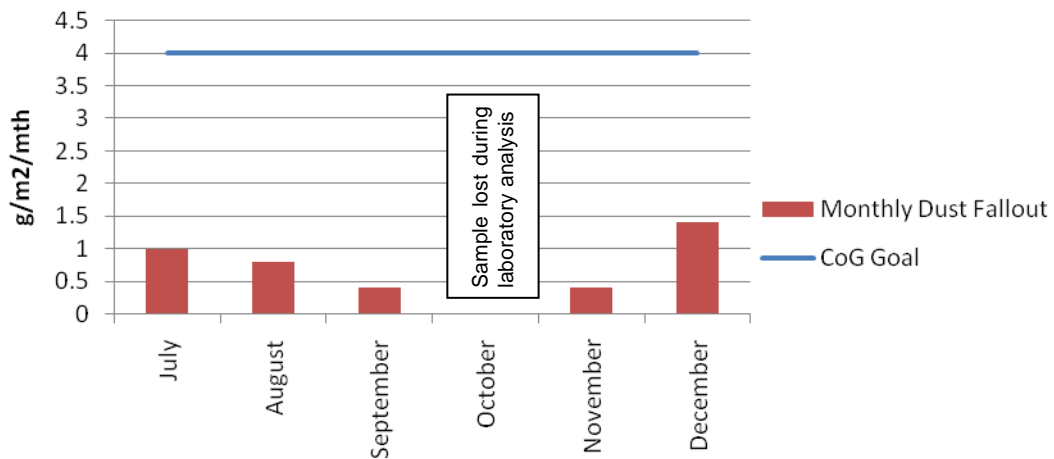


Figure 4.3.8 68 Park Road, Woolloowin Dust Fallout (location refer to fig 2.5)

### 104 Kent Road, Woolloowin Dust Fallout November and December 2010

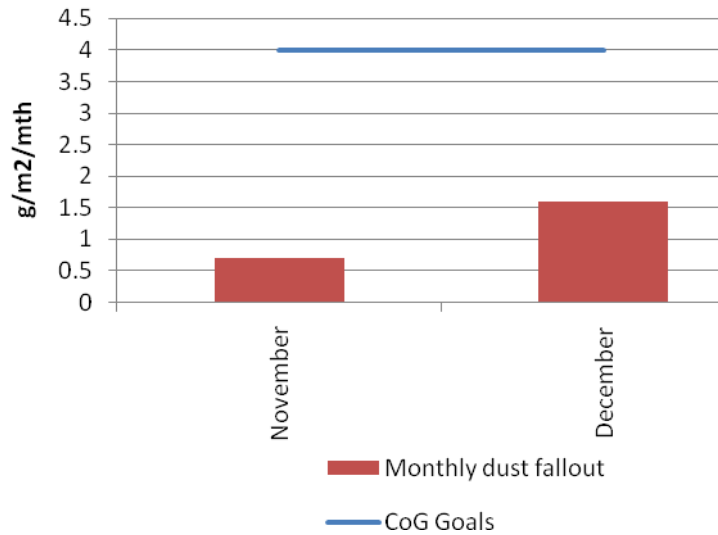


Figure 4.3.9 - 104 Kent Road, Woolloowin Dust Fallout (location refer to fig 2.5 )

### Kalinga Street, Toombul Dust Fallout June - November 2010

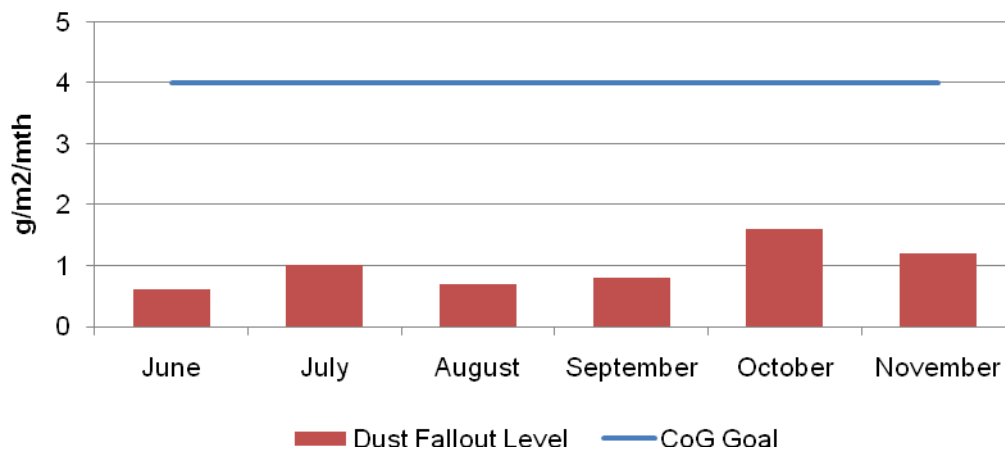


Figure 4.3.10 56 Kalinga Street Toombul, Dust Fallout (location refer to figure 2.6 – D1)

### Mabel Street, Toombul Dust Fallout Level June - November 2010

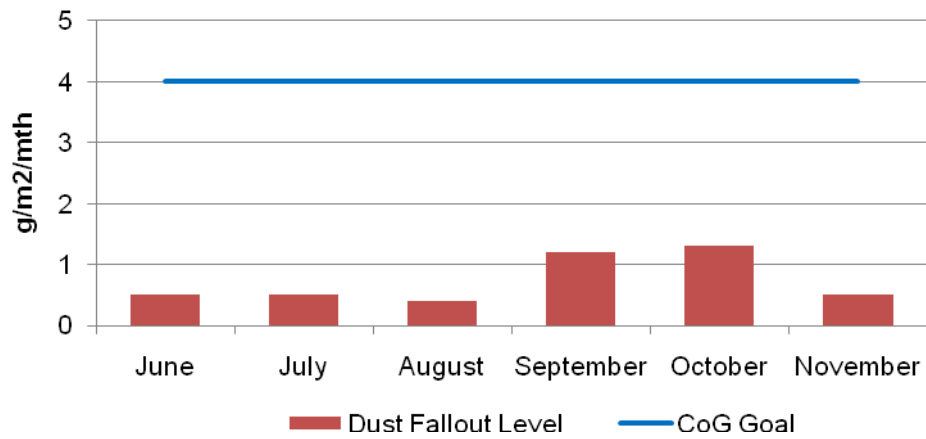


Figure 4.3.11 Mabel Street Toombul, Dust Fallout (location refer to fig 2.6 – D2)

### Bage Street, Toombul Dust Fallout Level June - November 2010

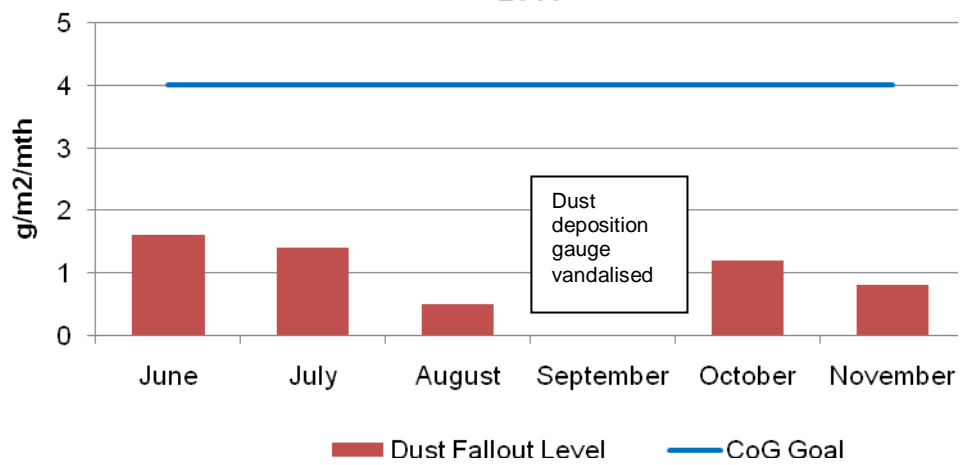


Figure 4.3.12 Mabel Street Toombul, Dust Fallout (location refer to fig 2.6 – D3)

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

TJH undertakes regular monitoring of CO/NO<sub>2</sub> in the vicinity of the Woolloowin Worksite. Monitoring involves real-time sampling and results of monitoring are compared to Air Quality Goals nominated by the Coordinator General in the Woolloowin Worksite Modification Change Report - October 2009.

Gas Monitor at 71 Park Road, Woolloowin					
Date	Peak Date and Time	CO (mg/m <sup>3</sup> ) Peak	CoG CO Limit (mg/m <sup>3</sup> )	NO <sub>2</sub> (mg/m <sup>3</sup> ) Peak	CoG NO <sub>2</sub> Limit (mg/mi <sup>3</sup> )
15/11/2010 - 10/12/2010	8:05pm 18/11/2010	0.54	11	-	-
	12noon 18/11/2010	-	-	50.06	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

#### 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**

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
Queensland Newspapers	16/11/10-10/12/10	3.04	10	Results are within CoG goals

**Table 5b: Blast Monitoring Summary – Truro Street K1 and B2 Tunnels**

Location	Monitoring Period	Peak Particle Velocity (mm/s)	Vibration Goal (mm/s)	Comments
<b>20<sup>th</sup> November (K1 Tunnel)</b>				
Lutwyche Centro (NW Cnr Lower Level Carpark)	30 seconds	<2.50	25	Trigger level set at 2.5mm/s. The blast did not trigger the monitor. Results are within CoG goals
508 Lutwyche Road (Ray White)	30 seconds	4.19	25	Results are within CoG goals
<b>27<sup>th</sup> November (B2 Tunnel)</b>				
235 Lutwyche Road	30 seconds	<2.50	25	Trigger level set at 2.5mm/s. The blast did not trigger the monitor. Results are within CoG goals

Location	Monitoring Period	Peak Particle Velocity (mm/s)	Vibration Goal (mm/s)	Comments
239 Lutwyche Road	30 seconds	<2.50	25	Trigger level set at 2.5mm/s. The blast did not trigger the monitor. Results are within CoG goals
Footpath adjacent to Ferny Grove Rail Line	30 seconds	<2.50	25	Trigger level set at 2.5mm/s. The blast did not trigger the monitor. Results are within CoG goals
<b>7<sup>th</sup> December (K1 Tunnel)</b>				
Lutwyche Centro (NW Cnr Lower Level Carpark)	30 seconds	<2.50	25	Trigger level set at 2.5mm/s. The blast did not trigger the monitor. Results are within CoG goals
508 Lutwyche Road (Ray White)	30 seconds	<2.50	25	Trigger level set at 2.5mm/s. The blast did not trigger the monitor. Results are within CoG goals
<b>7<sup>th</sup> December (K1 Tunnel)</b>				
Lutwyche Centro (NW Cnr Lower Level Carpark)	30 seconds	<2.50	25	Trigger level set at 2.5mm/s. The blast did not trigger the monitor. Results are within CoG goals
508 Lutwyche Road (Ray White)	30 seconds	<2.50	25	Trigger level set at 2.5mm/s. The blast did not trigger the monitor. Results are within CoG goals

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

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
BCC Substation 8 134 Kedron Park Road	15/11/2010 - 12/12/2010		2	Monitoring road header tunnelling and extraction of blasted rock. Results within Goals for heritage building

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

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal Day time (mm/s)	Comments
16/11/2010				
Kedron State High School, 34 Park Road	16/11/2010 20 seconds	10.5	25	Results are within adopted goals
37 Park Road	16/11/2010 20 seconds	3.81	25	Results are within adopted goals
48 Park Road	16/11/2010 20 seconds	2.92	25	Results are within adopted goals

86 Kent Road	16/11/2010 20 seconds	Less than 0.5	25	Results are within adopted goals
19/11/2010				
Kedron Park Hotel 693 Lutwyche Road	19/11/2010 20 seconds	4.95	25	Results are within adopted goals
BCC Substation 134 Kedron Park Road	19/11/2010 20 seconds	1.02	25	Results are within adopted goals
Anglican Church 671 Lutwyche Road	19/11/2010 20 seconds	0.508	25	Results are within adopted goals
124 Kedron Park Road	19/11/2010 20 seconds	1.52	25	Results are within adopted goals
24/11/2010				
Kedron State High School 34 Park Road	24/11/2010 20 seconds	4.5	25	Results are within adopted goals
26/11/2010				
Kedron Park Hotel 693 Lutwyche Road	26/11/2010 20 seconds	9.14	25	Results are within adopted goals
BCC Substation 134 Kedron Park Road	26/11/2010 20 seconds	3.05	25	Results are within adopted goals
Anglican Church 671 Lutwyche Road	26/11/2010 20 seconds	4.06	25	Results are within adopted goals
124 Kedron Park Road	26/11/2010 20 seconds	0.635	25	Results are within adopted goals
30/11/2010				
57 Park Road	30/11/2010 20 seconds	10.2	25	Results are within adopted goals
49 Park Road	30/11/2010 20 seconds	10	25	Results are within adopted goals
86 Kent Road	30/11/2010 20 seconds	3.56	25	Results are within adopted goals

2/12/2010				
Kedron Park Hotel 693 Lutwyche Road	2/12/2010 20 seconds	6.48	25	Results are within adopted goals
BCC Substation 134 Kedron Park Road	2/12/2010 20 seconds	1.4	25	Results are within adopted goals
Anglican Church 671 Lutwyche Road	2/12/2010 20 seconds	0.889	25	Results are within adopted goals
9/12/2010				
Kedron Park Hotel 693 Lutwyche Road	9/12/2010 20 seconds	3.17	25	Results are within adopted goals
BCC Substation 134 Kedron Park Road	9/12/2010 20 seconds	4.32	25	Results are within adopted goals
Anglican Church 671 Lutwyche Road	9/12/2010 20 seconds	3.81	25	Results are within adopted goals

**Table 5e: Blast Monitoring Results Summary - Kedron Civils Blasting**

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal Day time (mm/s)	Comments
15/11/2010				
12 Park Terrace	15/11/2010 20 seconds	2.29	25	Results are within adopted goals
15 Park Terrace	15/11/2010 20 seconds	3.05	25	Results are within adopted goals
16/11/2010				
12 Park Terrace	16/11/2010 20 seconds	2.29	25	Results are within adopted goals
15 Park Terrace	16/11/2010 20 seconds	2.41	25	Results are within adopted goals
17/11/2010				
12 Park Terrace	17/11/2010 20 seconds	1.52	25	Results are within adopted goals
18/11/2010				
12 Park Terrace	18/11/2010 20 seconds	1.78	25	Results are within adopted goals
19/11/2010				
12 Park Terrace	19/11/2010 20 seconds	1.9	25	Results are within adopted goals
20/11/2010				

12 Park Terrace	20/11/2010 20 seconds	2.16	25	Results are within adopted goals
15 Park Terrace	20/11/2010 20 seconds	3.81	25	Results are within adopted goals
22/11/2010				
12 Park Terrace	22/11/2010 20 seconds	1.65	25	Results are within adopted goals
15 Park Terrace	22/22/2010 20 seconds	2.79	25	Results are within adopted goals
23/12/2010				
12 Park Terrace	23/12/2010 20 seconds	2.03	25	Results are within adopted goals
15 Park Terrace	23/12/2010 20 seconds	3.43	25	Results are within adopted goals
24/11/2010				
12 Park Terrace	24/11/2010 20 seconds	1.78	25	Results are within adopted goals
15 Park Terrace	24/11/2010 20 seconds	3.68	25	Results are within adopted goals
25/11/2010				
12 Park Terrace	25/11/2010 20 seconds	Less than 0.51	25	Results are within adopted goals
15 Park Terrace	25/11/2010 20 seconds	3.94	25	Results are within adopted goals
26/11/2010				
12 Park Terrace	26/11/2010 20 seconds	2.92	25	Results are within adopted goals
15 Park Terrace	26/11/2010 20 seconds	4.32	25	Results are within adopted goals
27/11/2010				
15 Park Terrace	27/11/2010 20 seconds	3.56	25	Results are within adopted goals

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

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Goal (Continuous) (mm/s)	Comments
15 Lewis Street, Clayfield	16/11/2010 – 27/11/2010	0.45	5	Monitoring indicates that CoG goals are being met
1 Lewis Street, Clayfield	16/11/2010 – 10/12/2010	6.78	5	Elevated levels were due to water intrusion into connection between geophone and Minimate
5 Lodge Road, Clayfield	16/11/2010 – 10/12/2010	1.77	5	Monitoring indicates that CoG goals are being met
26 Stewart Street, Clayfield	1/12/2010 – 10/12/2010	2.80	5	Monitoring indicates that CoG goals are being met

29/11/2010				
12 Park Tce	29/11/2010 20 seconds	1.14	25	Results are within adopted goals
15 Park Tce	29/11/2010 20 seconds	2.67	25	Results are within adopted goals
30/11/2010				
12 Park Tce	30/11/2010 20 seconds	1.14	25	Results are within adopted goals
15 Park Tce	30/11/2010 20 seconds	2.54	25	Results are within adopted goals
1/12/2010				
12 Park Tce	1/12/2010 20 seconds	1.65	25	Results are within adopted goals
15 Park Tce	1/12/2010 20 seconds	1.9	25	Results are within adopted goals
2/12/2010				
12 Park Tce	2/12/2010 20 seconds	0.889	25	Results are within adopted goals
15 Park Tce	2/12/2010 20 seconds	1.9	25	Results are within adopted goals
3/12/2010				
12 Park Tce	3/12/2010 20 seconds	2.16	25	Results are within adopted goals
15 Park Tce	3/12/2010 20 seconds	2.29	25	Results are within adopted goals
4/12/2010				
12 Park Tce	4/12/2010 20 seconds	1.14	25	Results are within adopted goals
15 Park Tce	4/12/2010 20 seconds	1.52	25	Results are within adopted goals
6/12/2010				
12 Park Tce	6/12/2010 20 seconds	1.02	25	Results are within adopted goals
15 Park Tce	6/12/2010 20 seconds	1.52	25	Results are within adopted goals
7/12/2010				
12 Park Tce	12/11/2010 20 seconds		25	Results are within adopted goals
15 Park Tce	12/11/2010 20 seconds		25	Results are within adopted goals
8/12/2010				
12 Park Tce	8/12/2010 20 seconds		25	Results are within adopted goals
15 Park Tce	8/12/2010 20 seconds		25	Results are within adopted goals
9/12/2010				
12 Park Tce	9/12/2010 20 seconds		25	Results are within adopted goals
15 Park Tce	9/12/2010 20 seconds		25	Results are within adopted goals
10/12/2010				
12 Park Tce	10/12/2010 20 seconds		25	Results are within adopted goals

15 Park Tce	10/12/2010 20 seconds		25	Results are within adopted goals
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11/12/2010				
12 Park Tce	11/12/2010 20 seconds		25	Results are within adopted goals
15 Park Tce	11/12/2010 20 seconds		25	Results are within adopted goals

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

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
71 Park Road, Woolloowin	19/11/2010 – 23/11/2010	3.43	5	Results are within CoG goals
71 Park Road, Woolloowin	24/11/2010 – 29/11/2010	2.29	5	Results are within CoG goals

### 5.3 Compliance with Vibration Goals

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

### 6.0 Community enquiries and complaints

A total of 297 community complaints were reported to the project between 16 November and 15 December 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 November to 15 December 2010		
Issues	No.	No. of stakeholders
Site noise out-of-hours	49	39
Construction vehicle movements	31	27
Parking	20	17
Traffic Management	20	19
PUPs service outage	18	16
Driver Behaviour	18	14
PUPs noise out-of-hours	18	13
Site dust	16	13
Site noise	16	16
Tunnelling	14	12
Site un-notified work	12	12
Truck noise	11	11
Site out-of-hours	10	9
Road condition	10	9

Complaints Raised: 16 November to 15 December 2010		
Issues	No.	No. of stakeholders
Worker Behaviour	9	9
General Construction	9	7
Spoil haulage driver behaviour	8	8
Pedestrian/Cyclists	6	6
Vehicle Damage	6	6
Mitigation	6	5
Other	106	99
<b>Total complaints</b>	<b>297</b>	<b>215</b>

### 6.1 Top 10 Issues Raised:

