



Airport Link / Northern Busway Project

Monthly Environmental Monitoring Report

June 2011

(Revised 26 July 2011)

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1.0 Report Purpose and Scope

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

The monitoring data covered in this report is for the June 2010 reporting period, from 16th May 2011 to 15th June 2011.

2.0 Monitoring Locations

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

Bowen Hills Monitoring Locations



Figure 2.1 – Bowen Hills Monitoring Locations

Legend

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

Note: locations are indicative only

Truro Street Mid Tunnel Monitoring Locations

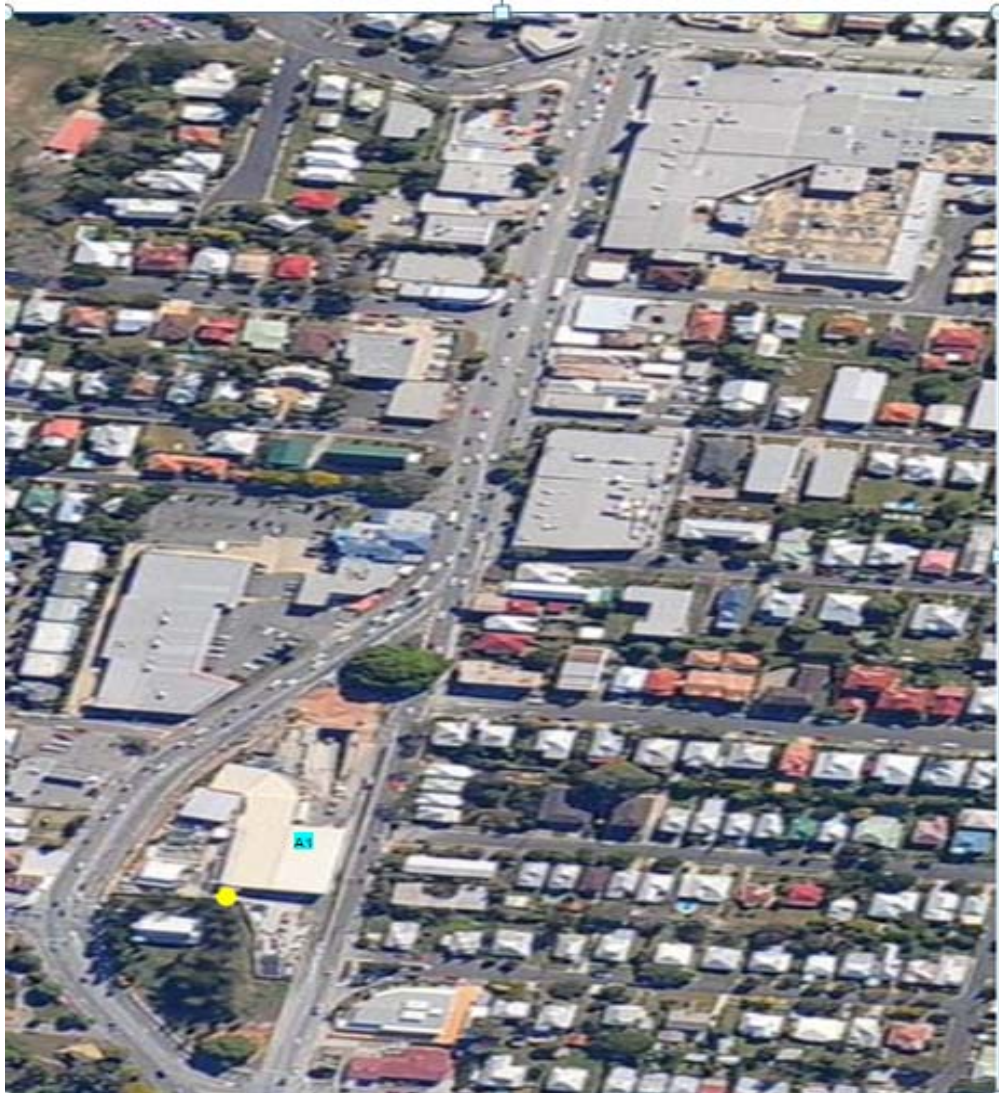






Figure 2.2 – Truro Street Mid Tunnel Monitoring Locations

Legend

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

Note: locations are indicative only

Northern Busway Monitoring Locations



Figure 2.3 – Nthn Busway Monitoring Locations

Legend

● Noise (during construction)

● Vibration

● Air (PM₁₀)

● Air (Dust Deposition)

Note: locations are indicative only

Kedron Monitoring Locations



Figure 2.4 – Kedron Monitoring Locations

Legend

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

Note: locations are indicative only

Wooloowin Monitoring Locations



Figure 2.5 – Wooloowin Monitoring Locations

Legend

- | | |
|---------------------------------|-------------------------------|
| ● Noise (during construction) | ● Air (PM ₁₀ /TSP) |
| ● Vibration | ● Air (Dust Deposition) |
| ● Air (CO and NO ₂) | |

Note: locations are indicative only

Toombul Monitoring Locations



Figure 2.6(a) – Toombul Noise and Air Monitoring Locations

Legend

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

Note: locations are indicative only

3.0 Noise Monitoring

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

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

3.1 Overview of Noise Mitigation Measures

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

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

3.2 Noise Monitoring Results

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

Table 3a: Noise Monitoring Results – Bowen Hills

Location	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Average L _{Amax} (15 min) (dBA)	CoG Goal L _{Amax} (15 min) (dBA)	Comments
59 Cartwright Street, Windsor						
Upper Floor, Study/Spare Bedroom fronting Cartwright Street	1/06/2011 5:53am – 6:08am	50.2	40	68.2	50	<p>Monitoring Type Attended. Internal. Windows open, room door closed.</p> <p>Noise Sources Non-TJH noises were: general traffic, train, crows/birds, barking dog. TJH noise sources comprised workers using TJH Cartwright St car park. The dominant noise sources were noted as originating from general traffic and birds, with little influence from TJH carpark activities.</p> <p>Discussion Both CoG Goals were exceeded, though sound readings were influenced by TJH and non-TJH sources. Making a determination of TJH influenced noise levels against the CoG Goal is not possible.</p>
Upper Floor, Study/Spare Bedroom fronting Cartwright Street	1/06/2011 6:22am – 6:37am	49.1	40/45	66.6	50/55	<p>Monitoring Type Attended. Internal. Windows open, room door closed.</p> <p>Noise Sources Non-TJH noises were: general traffic, train, birds. TJH noise sources comprised workers using TJH Cartwright St car park. The dominant noise sources were noted as originating from general traffic and birds, with little influence from TJH carpark activities.</p> <p>Discussion The monitoring period occurred during night-time and day-time construction hours (6:30am being the CoG nominated start time for daytime construction hours). Both sets of CoG Goals were exceeded, though sound readings were influenced by TJH and non-TJH sources. Making a determination of TJH influenced noise levels against the CoG Goal is not possible.</p>

107 Victoria Street, Windsor						
Upper Floor, Bedroom at rear of property	5/06/2011 11:34pm – 11:49pm	52.0	40	58.7	50	<p>Monitoring Type Attended. Internal. Windows and Doors open</p> <p>Noise Sources Non-TJH noise sources: general traffic along Lutwyche Rd (intermittent). TJH noise sources: Sucker truck operating on Lutwyche Rd in vicinity of Formule 1 Motel (for whole 15min period)</p> <p>Discussion TJH activities along Lutwyche Rd were covered by a Special Circumstances Permit as activities in the road reserve cannot be undertaken during the daytime. Both LAeq and LMax results exceed the CoG Noise Goals however these Goals do not apply to Special Circumstance activities.</p>

Table 3b: Noise Monitoring Results – Bowen Hills

Location	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Average L _{A10} (15 min) (dBA)	CoG Goal L _{A10} (15 min) (dBA)	Comments
8/40 Campbell Street, Bowen Hills						
Middle of Living Room, First Floor	21/05/2011 10:07am-10:22 am	42.0	45	42.4	55	<p>Monitoring Type Attended. Internal. Windows and Doors closed. Air-conditioner present by unit off</p> <p>Noise Sources Primary noise source: jackhammer on excavator at construction site at rear of property (non-TJH) Other non-TJH noise sources: general traffic, birds, general construction on QNP site. TJH noise sources: diesel engine hum, including reversing squarker, general construction on Campbell bridge structure and surface works</p> <p>Discussion Noise levels inside the unit did not exceed L_{A10} CoG Noise Goals</p>

2/34 Campbell Street, Bowen Hills						
Front Living Room, 2nd Floor	10/06/2011 12:13pm-12:28pm	55.9	45	56.4	55	<p>Monitoring Type Attended. Internal. Windows and Doors open. No air-conditioner.</p> <p>Noise Sources Primary noise source: non-TJH jackhammering from 32T excavator working on building site directly behind monitoring location. Other non-TJH noise sources: building work on QNP site, including reversing beeper of an elevated work platform, train and occasional noises from residents (eg phone), occasional local traffic. TJH noise sources: construction of formwork (including hammering of reo-bar) on BR114 in front of apartment, bobcat, and generator.</p> <p>Discussion The daytime internal noise goal was exceeded on this occasion as a result of a number of construction activities in the local vicinity, including TJH's Campbell St construction activities on Bridge BR114. It is most improbable that TJH's activities alone have caused this exceedance especially noting the dominant noise source was a non-TJH excavator jackhammering on an adjacent site.</p>
Front Living Room, 2nd Floor	10/06/2011 12:41pm-12:56pm	47.9	45	48.5	55	<p>Monitoring Type Attended. Internal. Windows and Doors closed. No air-conditioner</p> <p>Noise Sources Primary noise source: non-TJH jack hammering from 32T excavator working on building site directly behind monitoring location. Other non-TJH noise sources: building work on QNP site, including reversing beeper of an elevated work platform, and occasional local traffic. TJH noise sources: construction of formwork (including hammering of reo-bar) on BR114 in front of apartment, bobcat, generator, and franna</p> <p>Discussion The daytime internal noise goal was exceeded on this occasion as a result of a number of construction activities in the local vicinity, including TJH's Campbell St construction activities on Bridge BR114. It is most improbable that TJH's activities alone have caused this exceedance especially noting the dominant noise source was a non-TJH excavator jackhammering on an adjacent site.</p>

Table 3c: Noise Monitoring Results Kedron

Location	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Average L _{A10} (15 min) (dBA)	CoG Goal L _{A10} (15 min) (dBA)	Comments
228 Gympie Road, Kedron						
Living Room (windows and door open)	31/05/2011 11:55am– 2:10pm	56.7	45	50.9	55	<p>Monitoring Type Attended. Internal</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic, a smoke detector that needed new batteries and metal clanging. Other audible noise sources included workers talking, banging, resident interference and birds</p> <p>Discussion Internal LAeq noise goals were exceeded as a result of the smoke detector that required new batteries. No noise complaints were received on this date</p> <p>Mitigation Measures None</p>
Living Room (windows and door closed)	31/05/2011 12:16pm– 2:31pm	54.8	45	43.8	55	<p>Monitoring Type Attended. Internal</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic, a smoke detector that needed new batteries and a franna. Other audible noise sources included metal chains, banging, squawkers and birds</p> <p>Discussion Internal LAeq noise goals were exceeded as a result of the smoke detector that required new batteries. No noise complaints were received on this date</p> <p>Mitigation Measures None</p>
Living Room (windows and door open)	10/06/2011 7:59am – 8:15am	59.1	45	56.0	55	<p>Monitoring Type Attended. Internal</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic, a smoke detector that required new batteries and metal cutting. Other audible noise sources included water cart, workers talking, vehicles on site, metal clanging, franna, squawkers, street sweeper and birds</p> <p>Discussion Internal LAeq and LA10 noise goals were exceeded as a result of the smoke detector that required new batteries and the metal cutting. No noise complaints were received on this date</p> <p>Mitigation Measures None.</p>

Living Room (windows and door closed)	10/06/2011 8:27am – 8:42am	54.6	45	43.8	55	<p>Monitoring Type Attended. Internal.</p> <p>Noise Sources The dominant noise sources throughout the period were Gympie Road traffic and a smoke detector that needed new batteries. Other audible noise sources included franna, metal clanging, street sweeper, excavator and birds</p> <p>Discussion Internal LAeq noise goals were exceeded as a result of the smoke detector that required new batteries. No noise complaints were received on this date</p> <p>Mitigation Measures None</p>
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Table 3d: Noise Monitoring Results – Woolloowin

Location	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Average L _{A10} (15 min) (dBA)	CoG Goal L _{A10} (15 min) (dBA)	Average L _{AMAX} (15 min) (dBA)	CoG Goal L _{AMAX} (15 min) (dBA)	Comments
71 Park Road, Woolloowin								
Single Level Brick Flat (Dining Room)	17/05/2011 8:25pm – 8:40pm	37.2	50	-	-	40.5	N/A	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Closed.</p> <p>Noise Sources Site noise included: Hum from fans and site, Other noise sources included: traffic</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring session. Monitoring indicates that day time CoG goals were met.</p> <p>Mitigation Measures An acoustic shed and noise wall is in place around Woolloowin Site. 71 Park Road is owned by DMR and is used by TJH for monitoring purposes</p>
Single Level Brick Flat (Dining Room)	18/05/2011 12:59am – 1:14am	32.6	50	-	-	37.6	N/A	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Closed</p> <p>Noise Sources Site noise included: Hum from fans and site, Other noise sources included: traffic</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring session. Monitoring indicates that day time CoG goals were met</p> <p>Mitigation Measures An acoustic shed and noise wall is in place around Woolloowin Site.</p>

Location	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Average L _{A10} (15 min) (dBA)	CoG Goal L _{A10} (15 min) (dBA)	Average L _{AMAX} (15 min) (dBA)	CoG Goal L _{AMAX} (15 min) (dBA)	Comments
								71 Park Road is owned by DMR and is used by TJH for monitoring purposes
Single Level Brick Flat (Dining Room)	14/06/2011 8:48am – 9:03am	44.34	45	46.24	55	-	-	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows open</p> <p>Noise Sources Site noise included: Hum from fans and site, Excavator from Kedron site, Shed activities and reverse squawkers. Other noise sources included: traffic, overhead aircraft, dog barking, trains, birdlife and pedestrians</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring session. Monitoring indicates that day time CoG goals were met.</p> <p>Mitigation Measures An acoustic shed and noise wall is in place around Woolloowin Site. 71 Park Road is owned by DMR and is used by TJH for monitoring purposes</p>
Single Level Brick Flat (Dining Room)	14/06/2011 9:03pm – 9:18pm	34.0	50	-	-	39.5	N/A	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Closed</p> <p>Noise Sources Site noise included: Hum from fans and site, Other noise sources included: traffic, overhead aircraft, dog barking, trains, emergency siren and pedestrians</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring session. Monitoring indicates that day time CoG goals were met</p> <p>Mitigation Measures An acoustic shed and noise wall is in place around Woolloowin Site. 71 Park Road is owned by DMR and is used by TJH for monitoring purposes</p>
Single Level Brick Flat (Dining Room)	15/06/2011 12:33am – 12:48am	37.4	50	-	-	37.8	N/A	<p>Monitoring Type Attended Noise Monitoring. Doors and Windows Closed</p> <p>Noise Sources Site noise included: Hum from fans and site, Other noise sources included: traffic, overhead aircraft, dog barking, trains, emergency siren and pedestrians</p> <p>Discussion The shed is now sealed and air is neither sucked in nor blown out. The sound from the fans was constant throughout the monitoring</p>

Location	Monitoring Period	Average L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	Average L _{A10} (15 min) (dBA)	CoG Goal L _{A10} (15 min) (dBA)	Average L _{AMAX} (15 min) (dBA)	CoG Goal L _{AMAX} (15 min) (dBA)	Comments
								session. Monitoring indicates that day time CoG goals were met Mitigation Measures An acoustic shed and noise wall is in place around Wooloowin Site. 71 Park Road is owned by DMR and is used by TJH for monitoring purposes

Table 3e: Noise Monitoring Results – Toombul

Location	Monitoring Period	L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	L _{A10} (15 min) (dBA)	CoG Goal L _{A10} (15 min) (dBA)	Comments
83 Stuckey Road, Clayfield						
Double Storey Queenslander (Living Room)	30/05/2011 9:09am – 9:23am	40.4	45	41.4	55	<p>Monitoring Type Internal attended monitoring, doors and windows closed, air-conditioning on</p> <p>Noise Sources TJH noise sources (vent fans, crane, bang/drop, hammering, engine rev, reverse beeper, grinding) plus non-TJH sources (resident/TV, train, birds, dog, plane)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers. This property has received mitigation. At the time of monitoring, the air conditioner was in use and the doors and windows were closed</p>
Double Storey Queenslander (Living Room)	30/05/2011 9:24am – 9:38am	40.3	45	40.9	55	<p>Monitoring Type Internal attended monitoring, doors and windows closed, air-conditioning on</p> <p>Noise Sources TJH noise sources (vent fans, bang/drop, crane, hammering) plus non-TJH sources (resident/TV, birds, plane, train)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers. This property has received mitigation. At the time of monitoring, the air conditioner was in use and the doors and windows were closed</p>

Double Storey Queenslander (Living Room)	30/05/2011 2:09pm – 2:23pm	39.0	45	39.1	55	<p>Monitoring Type Internal attended monitoring, doors and windows closed, air-conditioning on</p> <p>Noise Sources TJH noise sources (vent fans, crane, hammering, bang/drop) plus non-TJH sources (resident, train, dog, birds, plane)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers. This property has received mitigation. At the time of monitoring, the air conditioner was in use and the doors and windows were closed</p>
Double Storey Queenslander (Living Room)	30/05/2011 2:24pm – 2:38pm	43.2	45	42.9	55	<p>Monitoring Type Internal attended monitoring, doors and windows closed, air-conditioning on</p> <p>Noise Sources TJH noise sources (steel drag, vent fans, bang/drop, hammering, TJH horn) plus non-TJH sources (resident, birds, traffic, train)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers. This property has received mitigation. At the time of monitoring, the air conditioner was in use and the doors and windows were closed</p>

89 Jackson Street, Clayfield						
Double Storey Timber House (Front Bedroom)	09/06/2011 9:03am – 9:18am	41.4	45	39.6	55	<p>Monitoring Type Internal attended monitoring, windows and doors open</p> <p>Noise Sources TJH noise sources (conveyor, bang/drop, gantry alarm, steel scrape) plus non-TJH sources (birds, train, resident, plane)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall</p>
Double Storey Timber House (Front Bedroom)	09/06/2011 9:20am – 9:35am	36.9	45	37.5	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Noise Sources TJH noise sources (reverse beeper, hammering, conveyor, CC410 works, bang/drop, gantry alarm, grinding) plus non-TJH sources (train, birds, resident, traffic)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall</p>
Double Storey Timber House (Front Bedroom)	09/06/2011 2:57pm – 3:12pm	46.7	45	38.3	55	<p>Monitoring Type Internal attended monitoring, windows and doors open</p> <p>Noise Sources TJH noise sources (conveyor, bang/drop, grinder, gantry alarm) plus non-TJH sources (train, resident, drill, plane, dog, birds)</p> <p>Discussion Monitoring indicates elevated LAeq levels throughout session. It should be noted that the session was heavily influenced by non-TJH noise sources including trains, dogs, birds and planes. TJH specific LAeq levels could not be isolated from these external noise sources</p> <p>Mitigation Measures Include a 6m noise wall</p>
Double Storey Timber House (Front Bedroom)	09/06/2011 3:14pm – 3:29 pm	36	45	35.4	55	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Noise Sources TJH noise sources (bang/drop, conveyor, gantry alarm, steel scrape) plus non-TJH sources (train, resident, birds, plane, cat, dog)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall</p>

Table 3f: Night Shift Noise Monitoring Results – Toombul

Location	Monitoring Period	L _{Aeq} (15 min) (dBA)	CoG Goal L _{Aeq} (15 min) (dBA)	L _{Amax} (15 min) (dBA)	CoG Goal L _{Amax} (15 min) (dBA)	Comments
Unit 1 / 77 Stuckey Street, Clayfield						
Double Storey Brick Town House (Upper Bedroom)	24/05/2011 8:12pm – 8:27pm	45.1	40	54.9	50	<p>Monitoring Type Internal attended monitoring, windows open</p> <p>Noise Sources TJH noise sources (welders, cranes, bangs / drops, fans & generators) plus non-TJH sources (trains, wind through flora & fauna)</p> <p>Discussion Monitoring indicates elevated LAeq levels throughout the session. It should be noted that the session was influenced by non-TJH noise sources including wind carrying and amplifying both TJH and non-TJH noise. A NCR was regarding this exceedance.</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers.</p>
Double Storey Brick Town House (Upper Bedroom)	24/05/2011 8:32pm – 8:47pm	33.2	40	40.8	50.0	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Noise Sources TJH noise sources (cranes, generators, fans) plus non-TJH sources (train, phone)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers.</p>

89 Jackson Street, Clayfield						
Double Storey Timber House (Front Bedroom)	31/05/2011 9:05pm – 9:20pm	35.9	40	46.4	50	<p>Monitoring Type Internal attended monitoring, windows open</p> <p>Noise Sources TJH noise sources (cranes, bangs / drops, fans & squawkers) plus non-TJH sources (trains, planes & traffic)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers</p>
Double Storey Timber House (Front Bedroom)	31/05/2011 9:23pm – 9:38pm	33.9	40	43	50	<p>Monitoring Type Internal attended monitoring, windows and doors closed</p> <p>Noise Sources TJH noise sources (gantry, bangs, squeaks, squawker, horns) plus non-TJH sources (train, resident, internal tap & overhead plane)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers</p>
Double Storey Timber House (Front Bedroom)	02/06/2011 10:28pm – 10:43pm	34.2	40	43.1	50	<p>Monitoring Type Internal attended monitoring, door / window open</p> <p>Noise Sources TJH noise sources (bangs / drops, fans & conveyor, horns, gantry alarm) plus non-TJH sources (trains and residents)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers</p>
Double Storey Timber House (Front Bedroom)	02/06/2011 10:45pm – 11:00pm	34.9	40	40.3	50	<p>Monitoring Type Internal attended monitoring, door / window closed</p> <p>Noise Sources TJH noise sources (bangs / drops, gantry alarm, horns, conveyor) plus non-TJH sources (trains, Q/R track temping)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers</p>

99 Jackson Street, Clayfield						
Highset Weatherboard Queenslander (Bedroom)	01/06/2011 8:30pm – 8:45pm	45.6	40	61.1	50	<p>Monitoring Type Internal attended monitoring, door / window open.</p> <p>Noise Sources TJH noise sources (bangs / drops, fans, conveyor, concrete unloading, engine revs, air releases) plus non-TJH sources (trains, sirens). LAmix result of TJH induced metal on metal knock.</p> <p>Discussion Both sets of CoG Goals were exceeded, though sound readings were influenced by TJH and non-TJH sources. Making a determination of TJH influenced noise levels against the CoG Goal is not possible, however the LAmix exceedance was a result of TJH activities. A CoG Non-Conformance has been raised as a result of the LAmix exceedance.</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers.</p>
Highset Weatherboard Queenslander (Bedroom)	01/06/2011 8:46pm – 9:01pm	37.9	40	44.0	50	<p>Monitoring Type Internal attended monitoring, door / window closed</p> <p>Noise Sources TJH noise sources (bangs / drops, fans, concrete unloading, engine revs, air releases, gantry alarm) plus non-TJH sources (trains, sirens, local traffic and residents)</p> <p>Discussion Monitoring indicates that CoG goals are being met</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers.</p>
55 Lewis Street, Clayfield						
Highset Weatherboard Queenslander (Bedroom)	02/06/2011 8:35pm – 8:50pm	46.7	35	54.1	50	<p>Monitoring Type Internal attended monitoring, door / window open</p> <p>Noise Sources TJH noise sources (bangs / drops / scrapes, fans & conveyor, squawker, pump, horns, gantry alarm) plus non-TJH sources (trains and residents)</p> <p>Discussion Monitoring indicates elevated LAeq and Lamix levels throughout the session. Property has received mitigation.</p> <p>Mitigation Measures Include a 6m noise wall and double stack containers, air conditioning and window shutters</p>

Highset Weatherboard Queenslander (Bedroom)	02/06/2011 8:52pm – 9:07pm	34.9	35	40.3	50	Monitoring Type Internal attended monitoring, door / window closed Noise Sources TJH noise sources (bangs, gantry, franna, engine revs, conveyor, gantry alarm) plus non-TJH sources (operator, trains, planes and residents) Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall and double stack containers.
79 Alma Road, Clayfield						
Highset Weatherboard Queenslander (Bedroom)	06/06/2011 10:33pm – 10:48pm	32.5	40	43.6	50	Monitoring Type Internal attended monitoring, door / window closed Noise Sources TJH noise sources (engine rev, bang/drop, squawker, site hum) plus non-TJH sources (trains, resident, traffic) Discussion Monitoring indicates that CoG goals are being met Mitigation Measures Include a 6m noise wall and double stack containers. Property has received mitigation.
Highset Weatherboard Queenslander (Bedroom)	06/06/2011 10:33pm – 10:48pm	41.9	40	49.2	50	Monitoring Type Internal attended monitoring external front veranda Noise Sources TJH noise sources (engine rev, bang/drop, squawker, site hum) plus non-TJH sources (trains, resident, traffic) Discussion Concurrent monitoring undertaken on the veranda to verify noise attenuation of structure. CoG goals applied as a guide only for this monitoring session Mitigation Measures Include a 6m noise wall and double stack containers. Property has received mitigation.

Address of Monitoring Location	Date of Request	Time of Requested Monitoring	Construction Activity to be Monitored	Date Access Denied	Comments
5 Wattle Street Nundah	02/06/2011	11:00	Conveyor operation, haul road use	01/06/2011	Stakeholder declined due to work commitments
79 Alma Road Clayfield	03/06/2011	10:30	Jack box 2 push, general construction	03/06/2011	Stakeholder requested monitoring to be allocated for another time (Monday 06/06/2011)
78 Elliott Street Clayfield	14 or 15/06/2011	16:00	Jack box 1 & 2 excavation/works, general construction	09/06/2011	Stakeholder uncertain of availability.

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

- Unit 1 / 77 Stuckey Street, Clayfield
- 99 Jackson Street, Clayfield

4.0 Air Quality Monitoring

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

Monitoring involves sampling of dust deposition (monthly), and real-time respiratory dust (PM10) at a number of locations nominated by the Coordinator General. Real-time monitoring of Total Suspended Particulates (TSP) is also occurring.

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

4.1 Overview of Air Quality Mitigation Measures

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

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

4.2 Air Quality Monitoring Results – PM10/TSP

5 Morris Street, Bowen Hills PM10 Results

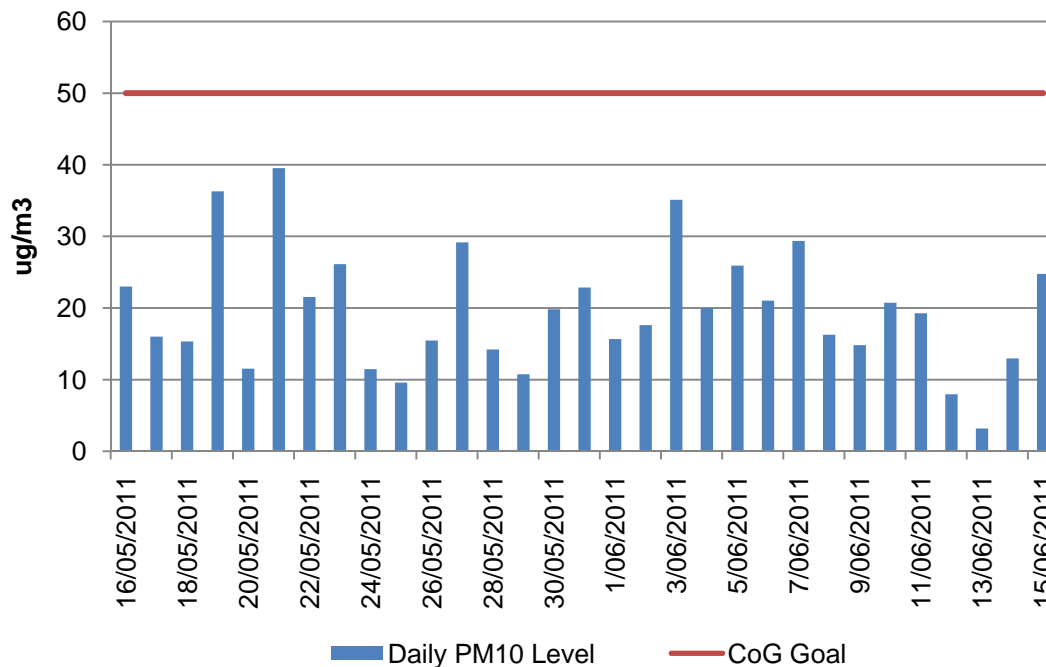


Figure 4.2.1: 5 Morris Street, Bowen Hills PM10 Results (for monitor location see figure 2.1)

Federation Street Gate, Windsor - TSP Results

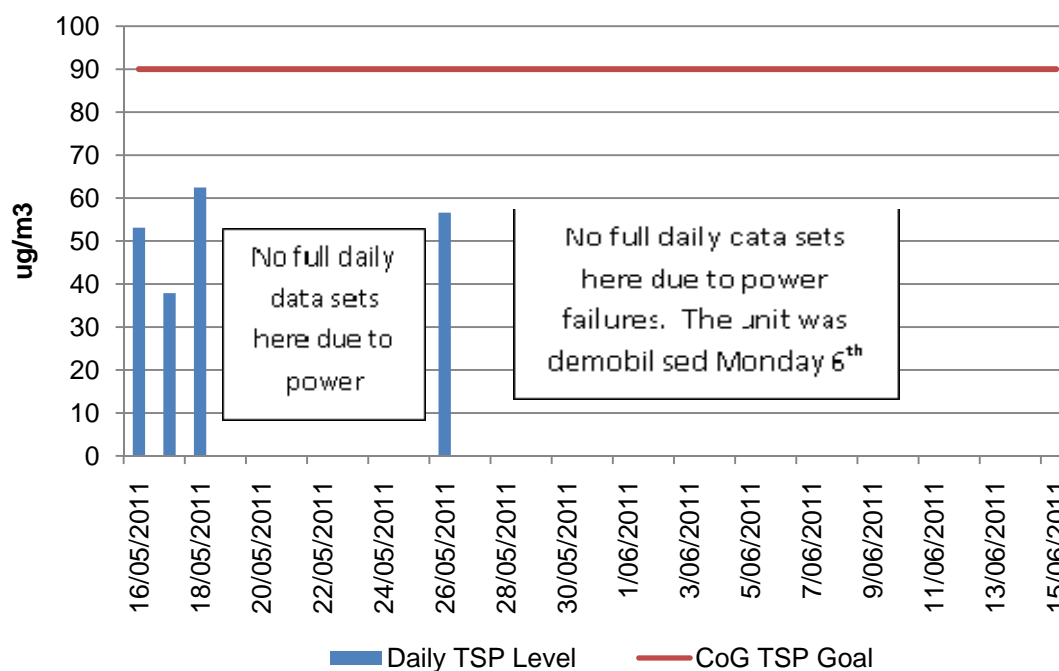


Figure 4.2.2 Federation Street Gate 4, Windsor TSP Results (for monitor location see figure 2.1)

Erskine Avenue, Kedron, PM10 Results

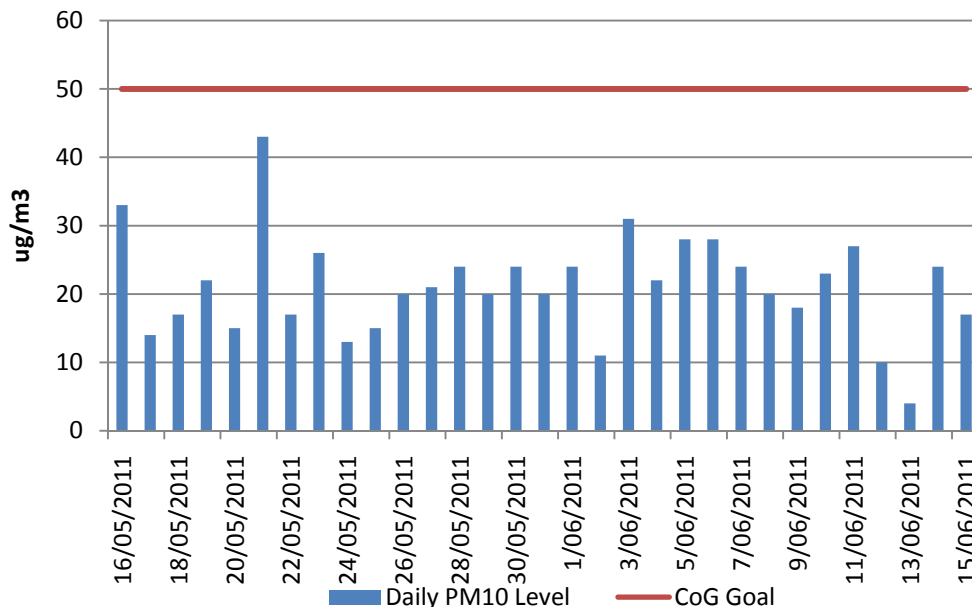


Figure 4.2.3: Erskine Avenue, Kedron PM10 Results (for monitor location see figure 2.4 – A1)

Kedron State High School, PM10 Results

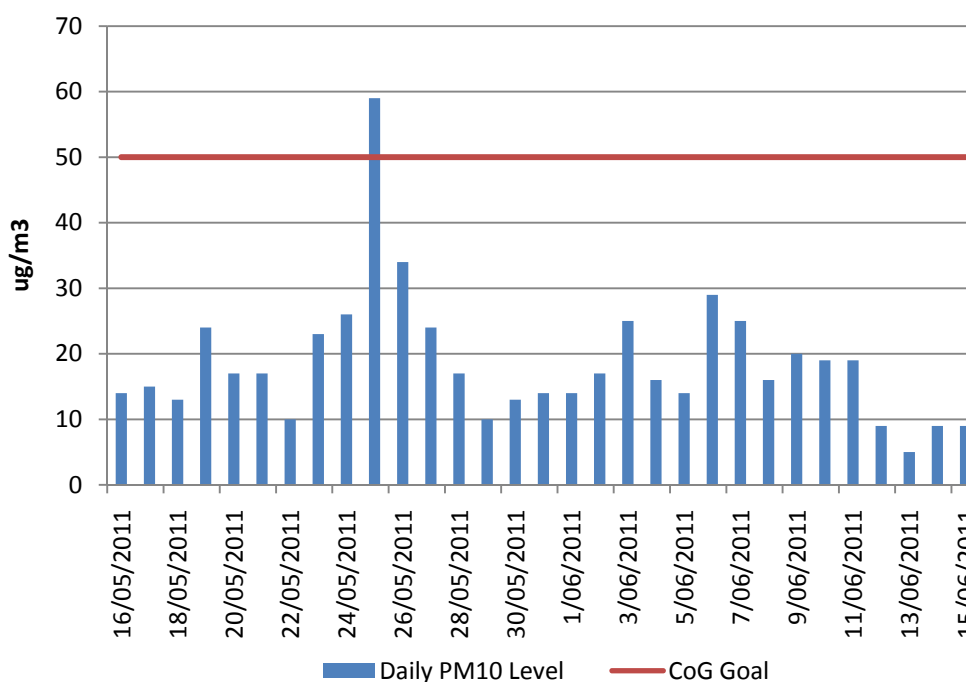


Figure 4.2.4: Kedron State High School (Adj), Kedron PM10 Results (for monitor location see figure 2.4 – A2)

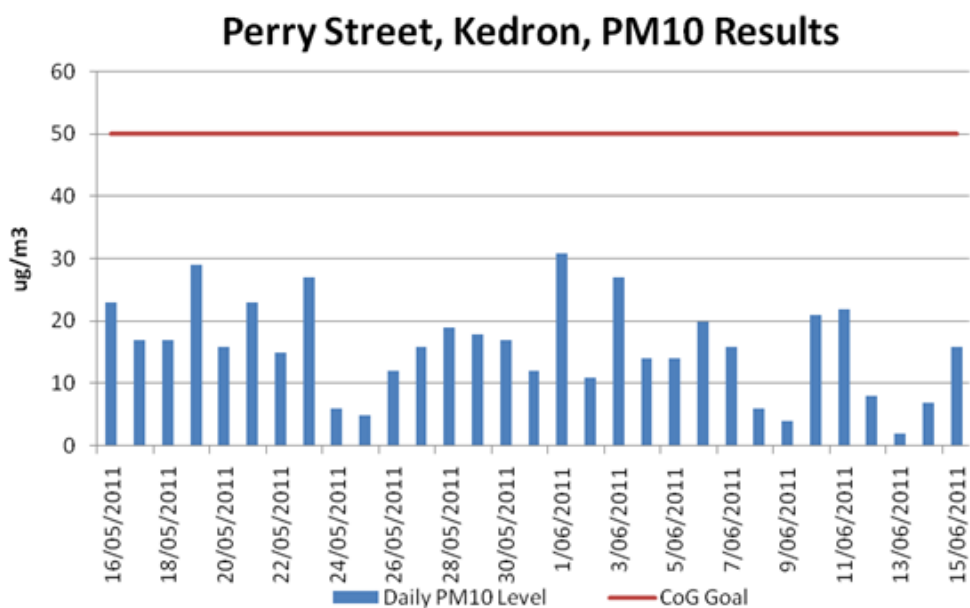


Figure 4.2.5: Perry Street, Kedron PM10 Results (for monitor location see figure 2.4 – A2)

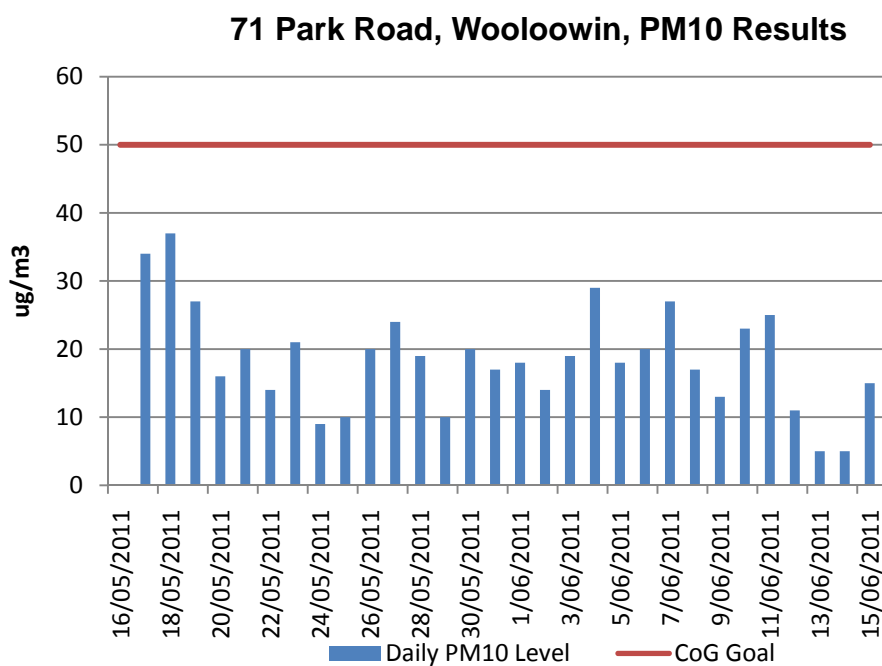


Figure 4.2.6: 71 Park Road, Woolloowin PM10 Results (for monitor location see figure 2.1 – A1)

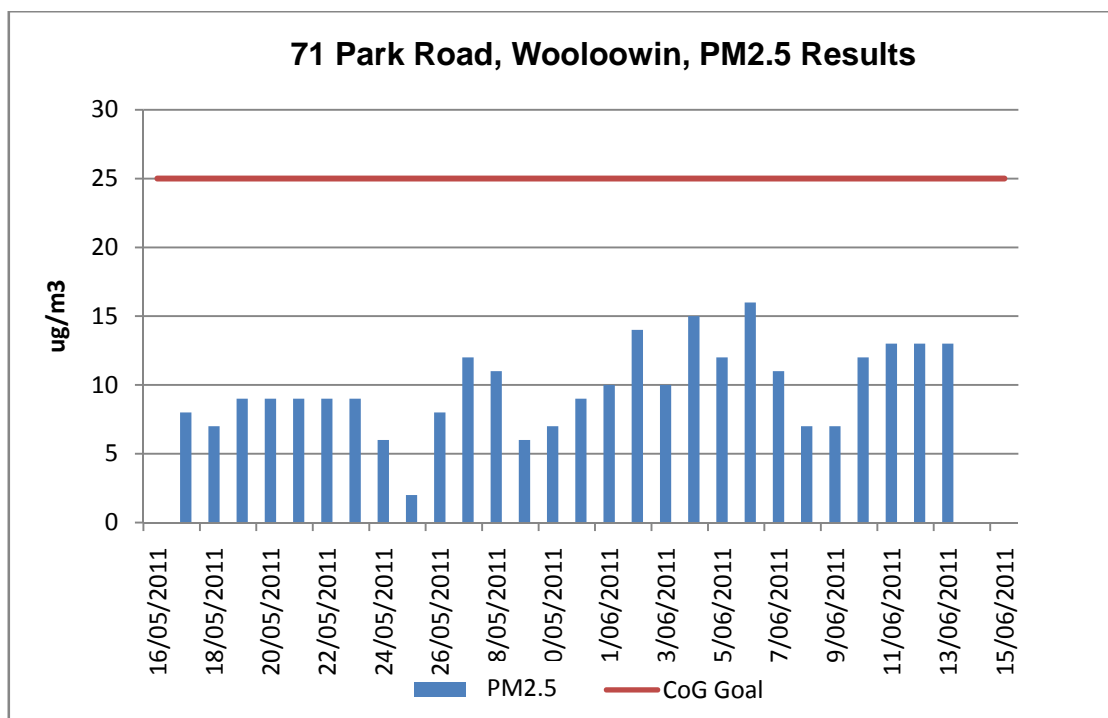


Figure 4.2.7: 71 Park Road, Woolloowin PM2.5 Results (for monitor location see figure 2.1 – A1)

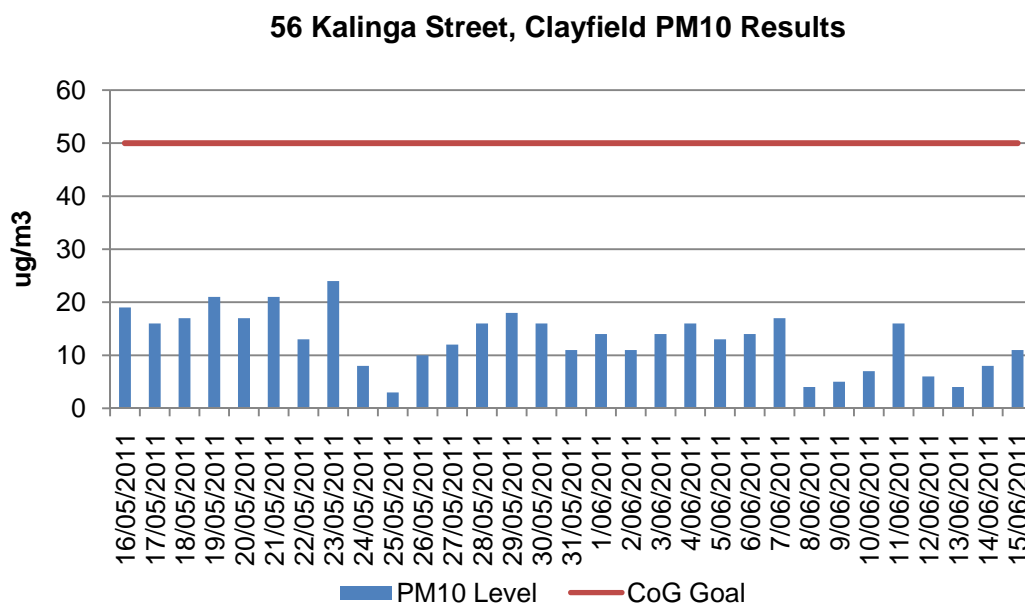


Figure 4.2.8: 56 Kalinga Street, Toombul PM10 Results (for monitor location see Figure 2.6 – A1)

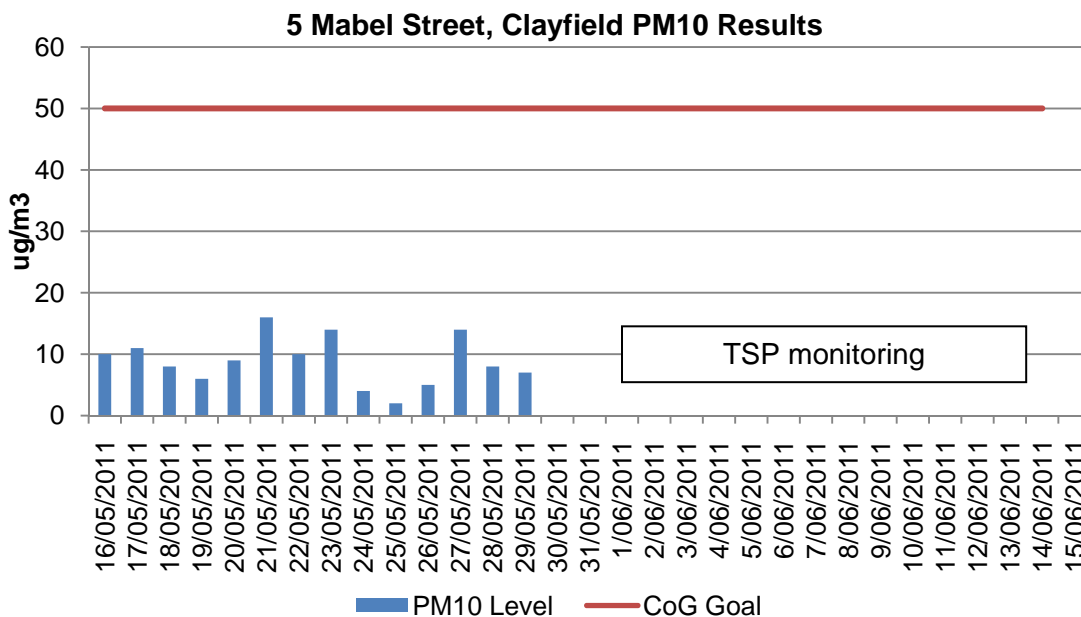


Figure 4.2.9: 5 Mabel Street, Clayfield PM10 Results (for monitor location see Figure 2.6- A2)

4.3 Air Quality Monitoring Results – Dust Deposition Results

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

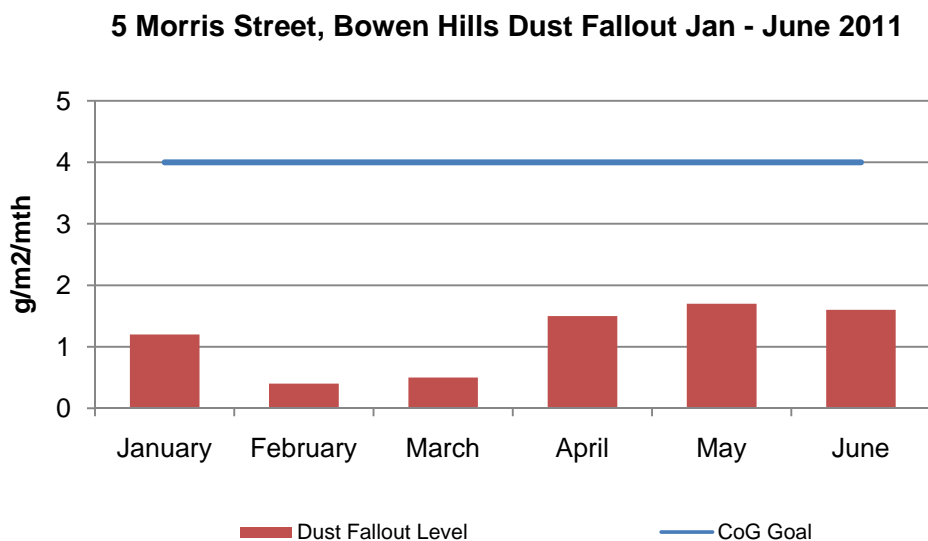


Figure 4.3.1: 5 Morris St Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

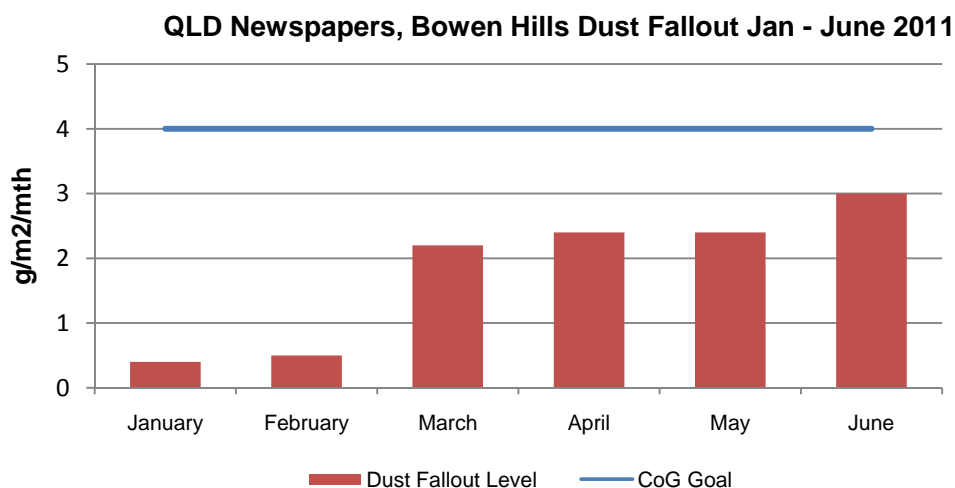


Figure 4.3.2: Queensland Newspapers, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

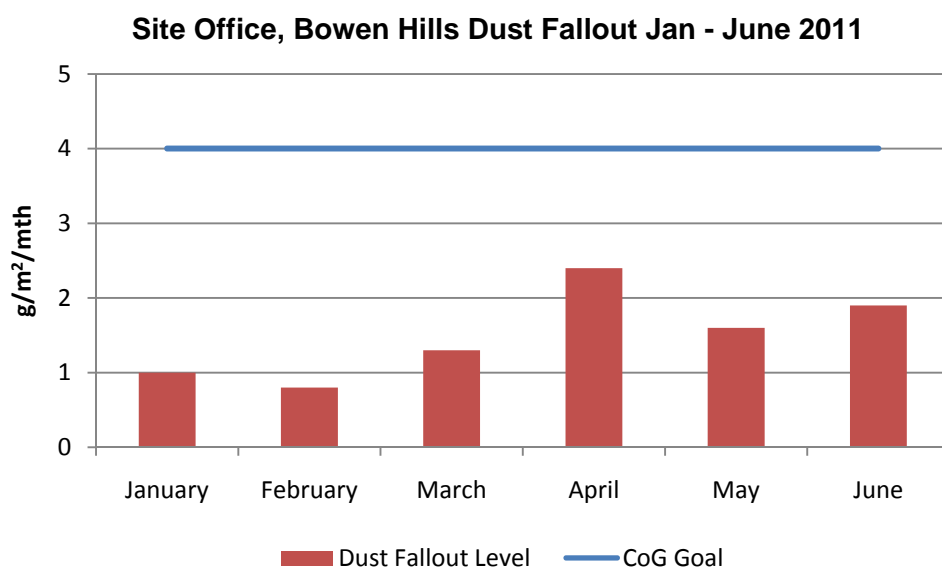


Figure 4.3.3: Site Office, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

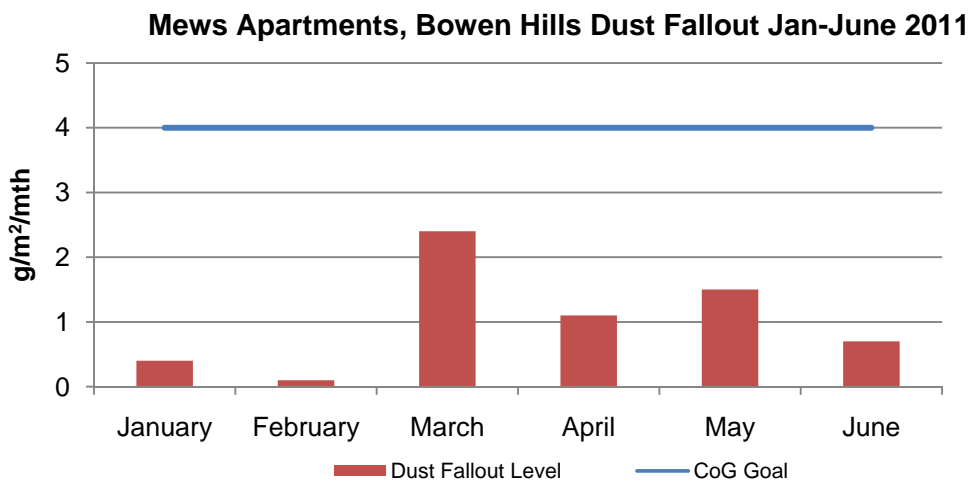


Figure 4.3.4: Mews Apartments, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

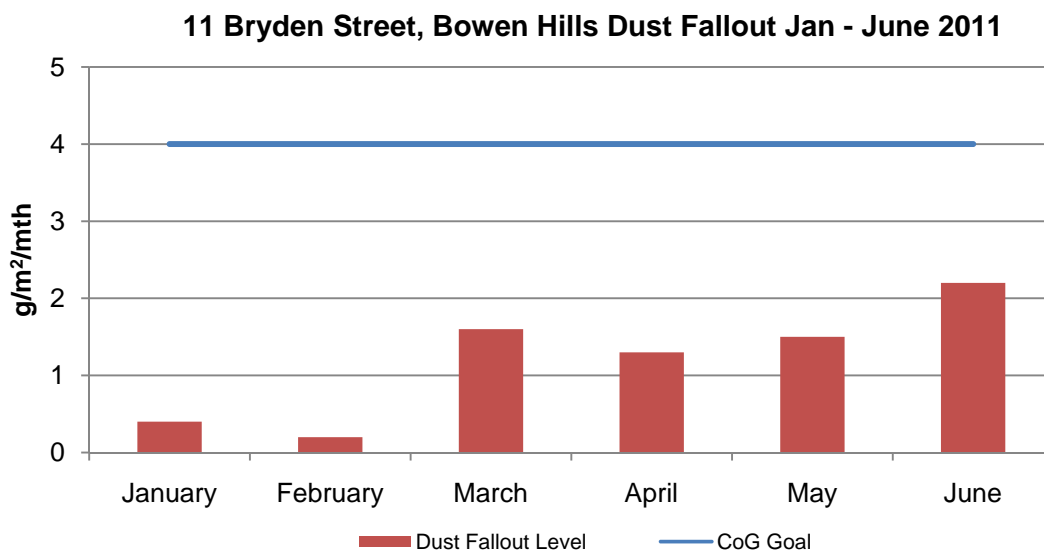


Figure 4.3.5: 11 Bryden Street, Bowen Hills Dust Deposition Results (for monitor location refer to figure 2.1)

Dust Fallout, Erskine Avenue Kedron, January - June 2011

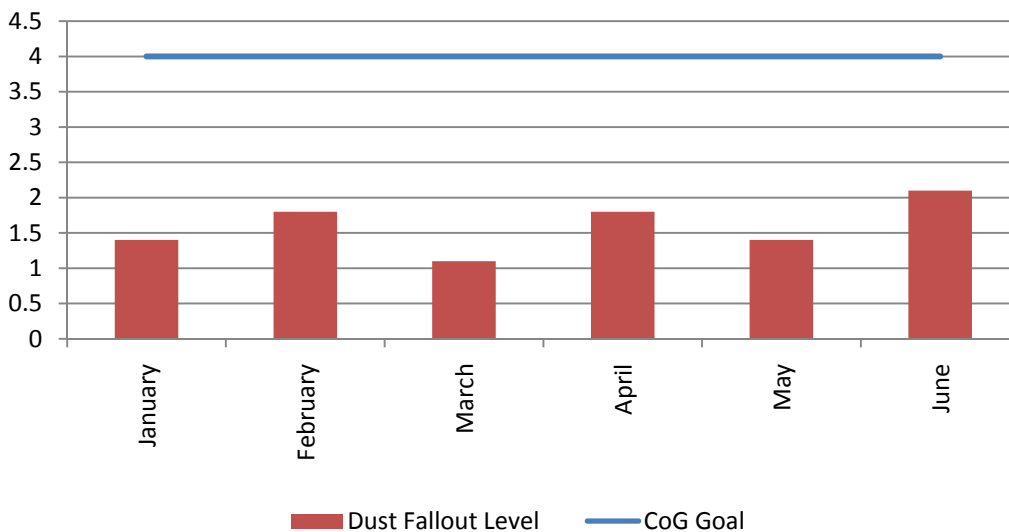


Figure 4.3.6: Erskine Avenue, Kedron Dust Fallout January – June 2011 (for monitor location see figure 2.4 – A1)

Dust Fallout Kedron State High School Kedron, January - June 2011

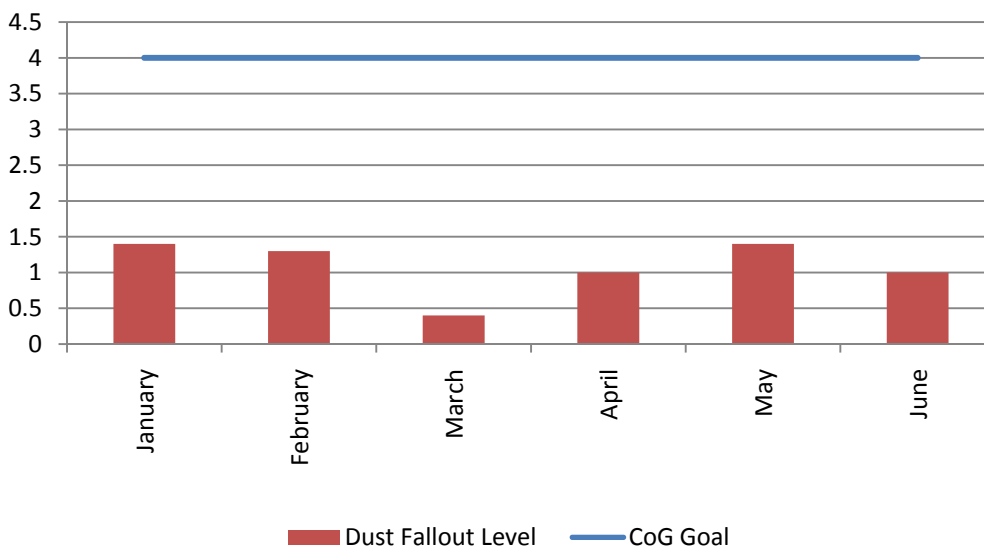


Figure 4.3.7: Kedron State High School, Dust Fallout January – June 2011 (for monitor location see figure 2.4 A2)

Dust Fallout Perry Street Lutwyche, January - June 2011

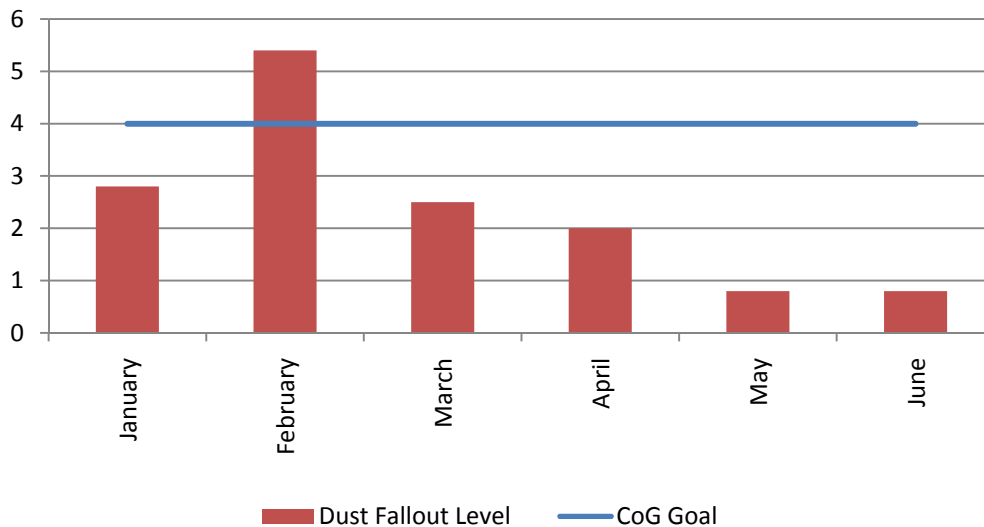


Figure 4.3.8: Perry Street, Lutwyche Dust Fallout January – June 2011 (for monitor location see figure 2.4 – A3)

Dust Fallout Woolloowin State School Wolloowin, January - June 2011

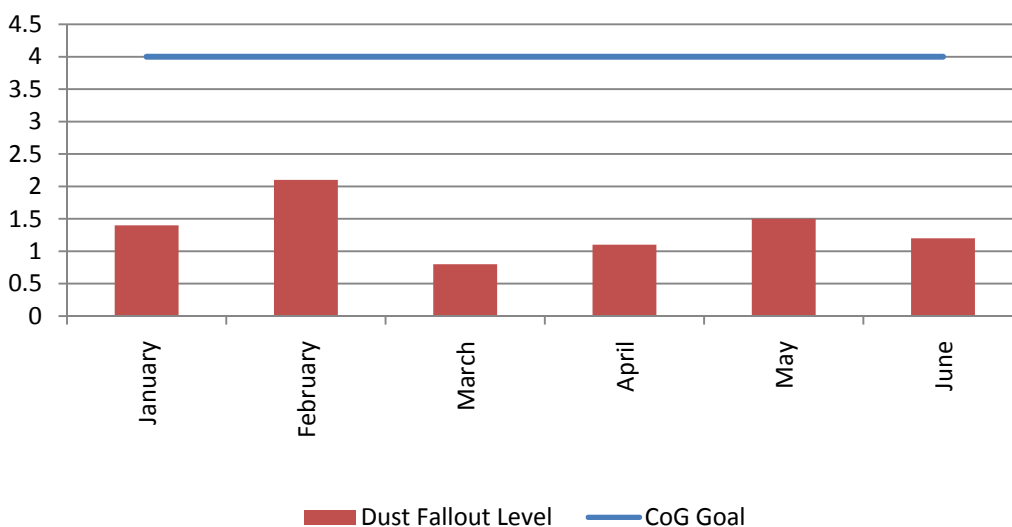


Figure 4.3.9: Woolloowin State School, Dust Fallout January - June 2011 (for monitor location see figure 2.4 – A4)

Dust Fallout, 228 Gympie Road Kedron, January - June 2011

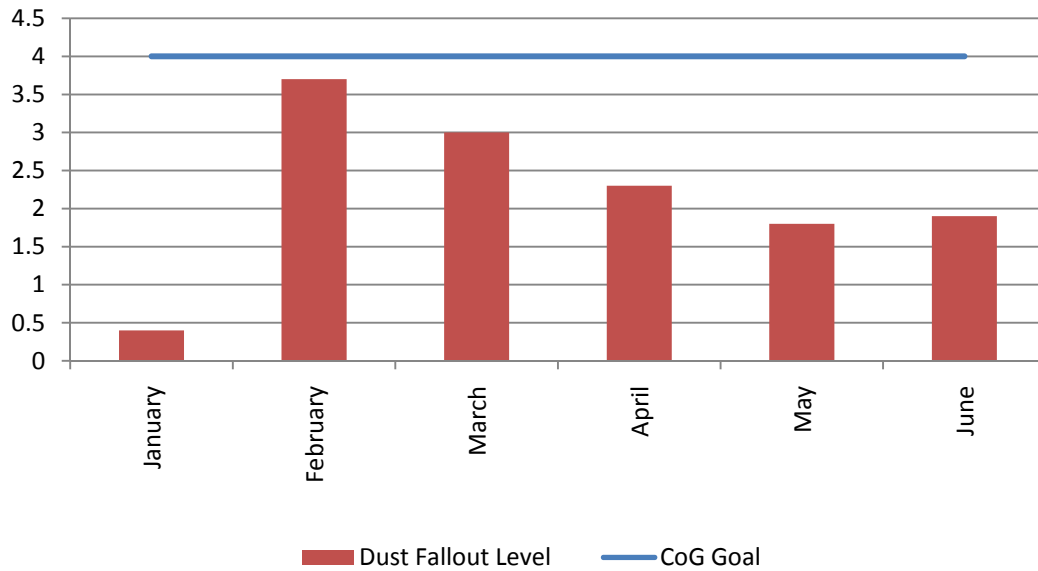


Figure 4.3.10: 228 Gympie Road, Kedron Dust Fallout January – June 2011 (for monitor location see figure 2.4)

68 Park Road, Woolloowin Dust Fallout January 2011 to June 2011

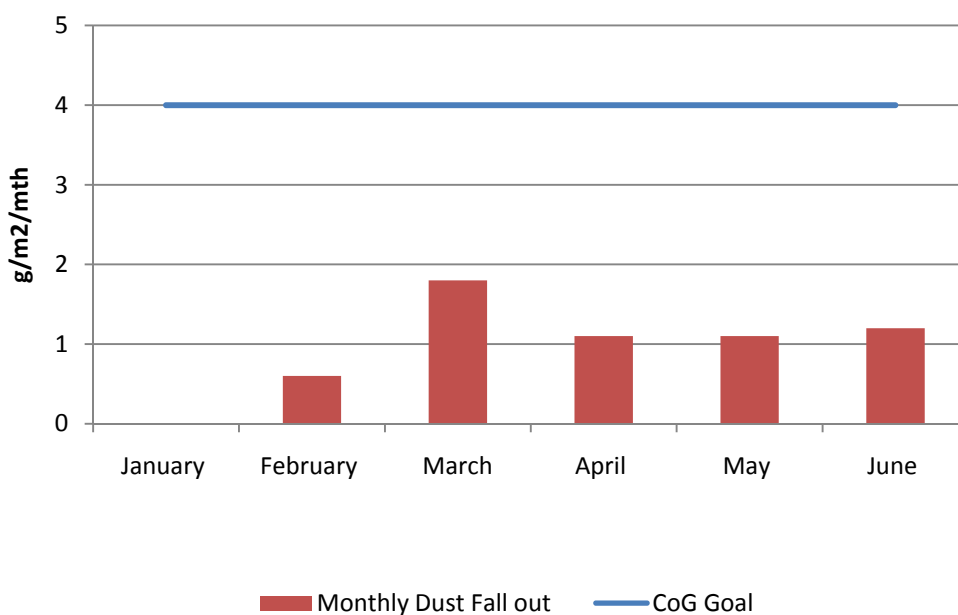


Figure 4.3.11: 68 Park Road, Woolloowin Dust Deposition Results (for monitor location refer to figure 2.1)

Kalinga Street Toombul Dust Fallout Level January - June 2011

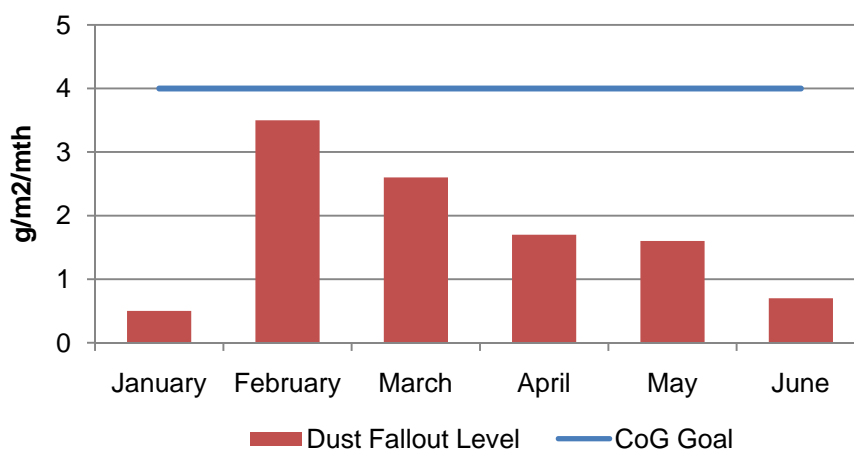


Figure 4.3.12: 56 Kalinga Street Toombul, Dust Fallout (location refer to figure 2.6 – D1)

Mabel Street Toombul Dust Fallout Level January - June 2011

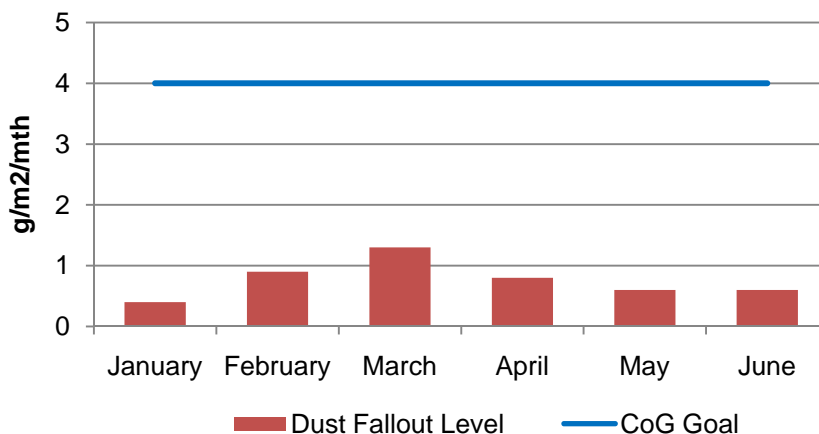


Figure 4.3.13: Mabel Street Toombul, Dust Fallout (location refer to figure 2.6 – D2)

Bage Street Toombul Dust Fallout Level January - June 2011

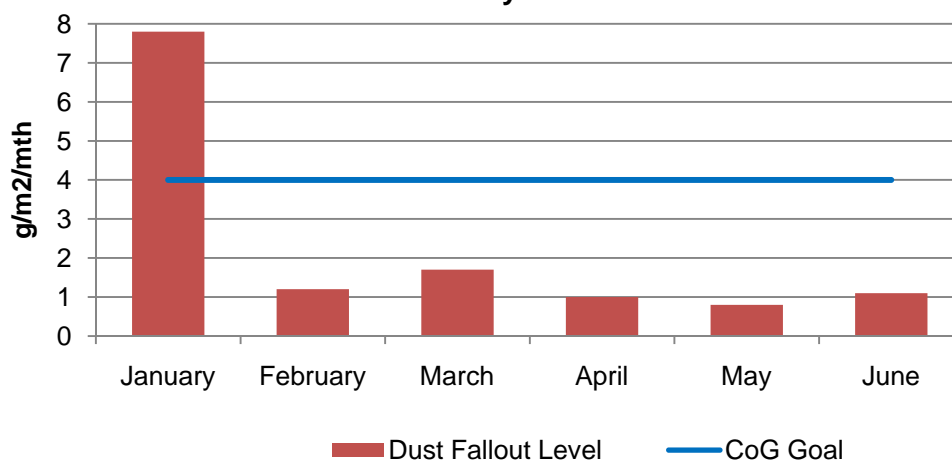


Figure 4.3.14: Bage Street Toombul, Dust Fallout (location refer to figure 2.6 – D3)

4.4 CO/NO₂ Monitoring – Woolloowin Worksite

TJH undertakes regular monitoring of CO/NO₂ 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 monitoring results

Gas Monitor at 71 Park Road, Woolloowin					
Date	Peak Date and Time	CO (mg/m ³) Peak	CoG CO Limit (mg/m ³)	NO ₂ (µg/m ³) Peak	CoG NO ₂ Limit (µg/mi ³)
16/04/2011 to 15/05/2011	15/05/2011 04:45	0.94	11		
	10/05/2011 17:00			70	250

Gas Monitor at 71 Park Road, Woolloowin					
Date	Peak Date and Time	CO (mg/m ³) Peak	CoG CO Limit (mg/m ³)	NO ₂ (µg/m ³) Peak	CoG NO ₂ Limit (µg/mi ³)
16/05/2011 to 15/06/2011	11/06/2011 00:45	1.38	11		
	27/05/2011 18:00			73	250

Note:

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

For Nitrogen dioxide (NO₂) a 1 hour averaging period is used

4.5 Compliance with Air Quality Goals

On one occasion this month the daily average recorded by the EBAM for PM10 at the Kedron State High school was above the CoG goal. This goal is adopted from the Environmental Protection (*Air Policy 2008*). This policy states that the limit of 50ug/m³ should not be exceeded more than 5 times per year. An onsite investigation was completed to determine the cause of the exceedance and mitigations reviewed and implemented to prevent recurrence.

Equipment breakdowns have resulted in no valid data for Total Suspended Solids at the Woolloowin State School for this monitoring 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) 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.

Table 5a: Vibration Monitoring Results Summary – Queensland Newspaper Complex, Bowen Hills

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)	Comments
	27/05/11	0.87	10	Results are within CoG goals
	28/05/11	2.43	10	Results are within CoG goals
	29/05/11	0.10	10	Results are within CoG goals
	30/05/11	2.70	10	Results are within CoG goals
	31/05/11	1.78	10	Results are within CoG goals

Table 5b: Blast Monitoring Results Summary – Busways

Location	Monitoring Period	Peak Particle Velocity (mm/s)	Vibration Goal (mm/s)	Comments
55 Lamington St	25/05/11 – 27/05/11	1.59	10	Results are within CoG goals

Table 5c: Vibration Monitoring Results Summary – Kedron 09/03/2011

Location	Property Type	Monitoring Period	Monitoring Type	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)
134 Kedron Park Road, BCC Substation	Heritage listed	16/05/2011-15/06/2011	Continuous	9.03	2

Table 5d: Kedron North Civils Works

Location	Property Type	Monitoring Period	Monitoring Type	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)
97 Gympie Road	Commercial	01/06/2011 – 02/06/2011	Event Based	1.52	25

Table 5e Blast Monitoring Results Summary - Kedron CC210 Blasting

Location	Property Type	Monitoring Period	Monitoring Type	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)
15 Park Terrace	Residential	16/05/2011 – 15/06/2011	Event Based	8.51	25

Table 5f: Blast Monitoring Results Summary – VE 100 Blasting 04/05/2011

Location	Property Type	Monitoring Period	Monitoring Type	Peak Particle Velocity (mm/s)	CoG Vibration Goal (mm/s)
Gympie Road Bridge	Structure	04/06/2011	Event Based	3.81	25
15 Park Terrace	Residential	04/06/2011	Event Based	3.81	25
Highgrove Bath and Tile	Commercial	04/06/2011	Event Based	0.638	25
Kedron Park Hotel	Commercial	04/06/2011	Event Based	2.41	25

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	17/05/2011 to 25/05/2011	0.9	5	Results are within CoG goals

Table 5h: Vibration Monitoring Results Summary – Toombul

Location	Monitoring Period	Peak Particle Velocity (mm/s)	CoG Goal (Continuous) (mm/s)	Comments
11 Park Road Wooloowin	16/05/2011 – 17/05/2011	0.32	5	Monitoring indicates that CoG goals are being met
104 Kedron Park Road Wooloowin	16/05/2011 – 30/05/2011	0.48	5	Monitoring indicates that CoG goals are being met
Anglican Church 673 Lutwyche Road Wooloowin	16/05/2011 – 09/06/2011	0.46	2*	Monitoring indicates that CoG goals are being met
Wooloowin State School 663 Lutwyche Road Wooloowin	20/05/2011 – 15/06/2011	0.32	2*	Monitoring indicates that CoG goals are being met
9 Norman Avenue Kedron	31/05/2011 – 15/06/2011	0.7	5	Monitoring indicates that CoG goals are being met
9 Isedale Street Lutwyche	10/06/2011 – 15/06/2011	0.29	5	Monitoring indicates that CoG goals are being met

* Denotes Heritage Listed (Local and State) Structure

5.3 Compliance with Vibration Goals

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

6.0 Community enquiries and complaints

A total of 236 community complaints were reported to the project between 16 May and 15 June 2011. 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.

6.1 Top 10 issues raised

