HEGGIES
AUSTRALIA

REPORT 10-4754R2

Revision 1

Coca-Cola Amatil Industrial Development
Air Quality Assessment

PREPARED FOR

Burns Bridge Australia Pty Ltd
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Coca-Cola Amatil Industrial Development

Air Quality Assessment

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EXECUTIVE SUMMARY

Heggies Australia Pty Ltd has conducted an air quality assessment in support of a Project Application to the NSW Department of Planning (DoP) for the proposed expansion of the Coca-Cola Amatil facility at 104 - 128 Briens Road, Northmead.

The scope of the assessment included an assessment of background air quality applicable to the urban environment of the site, a construction and operational phase air quality assessment and recommendations for air quality control and mitigation where required.

The assessment determined that air quality impacts associated with the construction phase of the assessment are largely controllable through technical means and are not considered to be a significant issue given the size and nature of the development within an already developed industrial site.

Nonetheless, air quality control and mitigation measures are detailed in an Air Quality Management Plan for construction of the proposed development.

The operational assessment concluded that the increase in productive capacity of the site will result in a marginal increase in heavy vehicle movements in and around the site. Any increase in air pollutants associated with heavy vehicle movements, such as CO, NO_2, SO_2, PM_{10} and VOCs, are anticipated to be insignificant.

As such, it is not anticipated that the proposed industrial development at the CCA facility will adversely affect air quality of the local or regional environment during construction or operation provided measures detailed in the Air Quality Management Plan contained within are adhered to throughout the life of the project.

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1 INTRODUCTION

Heggies Australia Pty Ltd (Heggies) have been commissioned by Burns Bridge Pty Ltd on behalf of Coca-Cola Amatil (CCA) to prepare an Air Quality Assessment (AQA) for proposed works at the CCA facility located at 104 - 128 Briens Road, Northmead, NSW. The proposed works include the demolition of existing buildings, excavation works and construction of a new 16,000 m^2 high-rise automated storage facility.

The AQA outlines potential air quality impacts associated with construction and operation and mitigation measures that are applicable to the development. The environmental controls described in this Plan will minimise the potential air quality impacts of the development on nearby residents, businesses, schools, places of worship and other sensitive receptors.

The specific objectives of the AQA are as follows:

- To assist in ensuring that any air quality impacts during both the construction and operation phase comply with appropriate criteria for human health, nuisance and environmental protection.
- To assist in ensuring that any environmental impacts during both the construction and operation phase comply with the Department of Planning Conditions of Consent.
- To define the roles, responsibilities, and the tasks to be performed, with regard to the control and monitoring of any environmental impacts.
- To compile relevant information in a manner that will provide ongoing guidance to all parties regarding work planning and environmental control.

2 PROJECT DESCRIPTION

2.1 Site Location

The CCA facility is located on Briens Road, Northmead, within the Parramatta City Council local government area. The site is surrounded by the major road networks of Old Windsor Road, Windsor Road, and the T-Way (currently under construction), as shown in **Figure 1** and **Figure 2** below.

The project site at 104 - 128 Briens Road lies within the existing CCA boundary at 102-128 Briens Road, Northmead. The site runs adjacent to Briens Road to the north, Toongabbie Creek to the south and other CCA buildings to the east and west. Further to the east on the eastern side of Redbank Road the land is occupied by residential premises. The west of the site is bordered by Briens Road and adjacent parkland. The North-West T-way public transport route is currently under construction and will border the western side of the site when completed. **Appendix A** shows an aerial photograph of the current CCA site.

The site is surrounded by other industrial uses, Westmead Hospital, recreational areas and low density residential areas. Westmead Hospital and the Redbank Special School located directly south of the project site are considered as sensitive receptors for the proposed development.

Figure 1 CCA Site Location

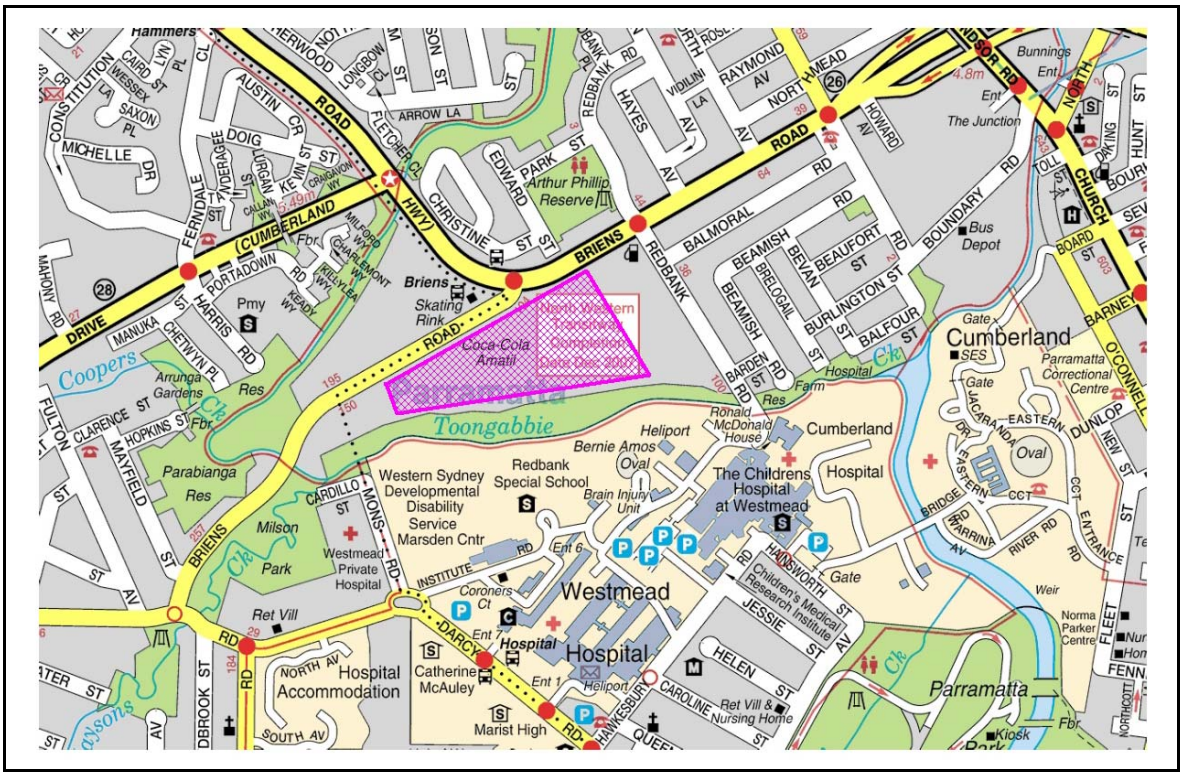


Figure 2 Proposed CCA Development Site, Northmead

2.2 Description of Works

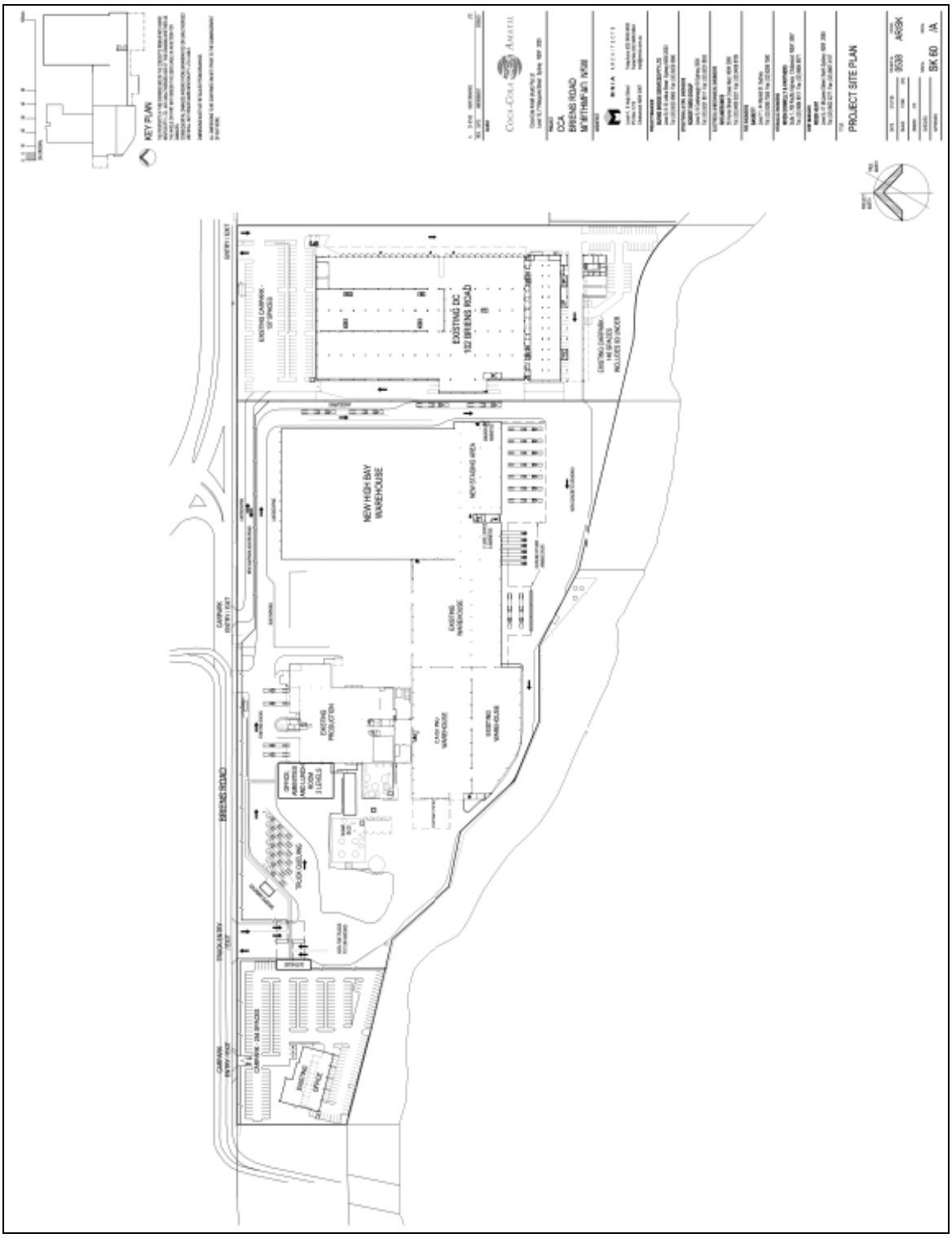
The proposed works include the demolition of existing buildings, and the excavation and construction of a new 16,000 m^2 high-rise automated storage facility. A new entrance will be constructed at 102 Briens Road to service car traffic to the adjoining site CCA site at 102 Briens Road, and a new main truck entrance will be formed at 128 Briens Road to better control entry and exit of heavy vehicles from site, creating a one-way traffic flow for all vehicles.

The proposed works will comprise of the following:

- Demolition;
- Site preparation works, including excavation and bulk earthworks;
- Construction and use of a new 32 metre high and automated high-bay warehouse and associated conventional height staging area;
- Adaptation of an existing warehouse to accommodate three new production lines and manufacturing services including boiler, refrigeration plant and compressor;
- Construction and use of a new building to house a canteen, offices and training facilities;
- Construction of a new gatehouse and driver amenities;
- Upgrading of the on-site stormwater drainage system;
- Implementation of access and traffic circulation improvements, including parking and new entrances; and
- Site landscaping.

Details of the proposed scheme are shown on the plans which accompany the Project Application to NSW Department of Planning (DoP). A site plan of the proposed facility is shown in **Figure 3**.

Figure 3 Proposed CCA Project Site Plan



2.3 Proposed Hours of Operation

The proposed facility will operate on a 24 hours a day, seven days a week basis.

2.4 Project Specific Air Quality Emissions

2.4.1 Construction Phase

During dry conditions, on-site construction activities have the potential to generate dust. The following activities are those identified as a specific potential source of air pollutant and dust generation as a result of the above scope of works:

- Demolition of existing buildings;
- Site preparation works comprising earthmoving activities and excavation, including movement of rubble and waste, vegetation clearing, construction of batters and stabilisation of earthworks;
- Movement of vehicles and construction machinery, both within and off the construction site;
- Stockpiling of materials; and
- Build-up of material around erosion and sedimentation controls.

Mitigation and control measures to minimise the generation and impact of any potential dust sources are addressed in **Section 7** of this plan.

2.4.2 Operational Phase

Air quality emissions associated with the operational phase of the proposed development are mostly associated with vehicular movements into and around the site. Vehicle movements at the current and proposed CCA facility comprise the following:

- Movement of heavy vehicles for the transport, delivery and movement off-site of product.
- Movement of light vehicles such as forklifts around the site for the transfer of products to storage and loading.
- Light traffic movement associated with staff and visitor vehicles.

A traffic study for the current and proposed operations at the CCA facility has been conducted by Colston Budd Hunt and Kafes Pty Ltd, and will be discussed in more detail in **Section 6**.

3 AIR QUALITY CRITERIA

3.1 Health Impacts of Fugitive Emissions

The principal emission from on-site activities will be that of particulate matter. The term *"particulate matter"* refers to a category of airborne particles typically less than 50 microns (µm) in diameter and ranging down to 0.1 µm in size. Particles less than 10 µm and 2.5 µm are referred to in this report as PM_{10} and $PM_{2.5}$ respectively.

Emissions of PM_{10} and $PM_{2.5}$ are considered important pollutants in terms of impact due to their ability to penetrate into the respiratory system. In the case of the $PM_{2.5}$ category, recent health research has shown that this penetration can occur deep into the lungs. Potential adverse health impacts associated with exposure to PM_{10} and $PM_{2.5}$ include increased mortality from cardiovascular and respiratory diseases, chronic obstructive pulmonary disease and heart disease, reduced lung capacity in asthmatic children, etc.

One of the difficulties in dealing with air quality criteria governing fine particles is that the medical community has not been able to establish a threshold value (for either PM_{10} or $PM_{2.5}$) *below which* there is *no* adverse health impacts.

The NSW Department of Environment and Conservation (DEC) PM_{10} impact assessment criteria, as expressed in their document *"Approved Methods for Modelling and Assessment of Air Pollutants in New South Wales"* 2005, (hereafter referred to as "the Approved Methods") is:

- A 24-hour maximum of 50 µg/m^3.
- An annual average of 30 µg/m^3.

The 24-hour PM_{10} reporting standard of 50 µg/m^3 is numerically identical to the equivalent National Environment Protection Measure (or NEPM) reporting standard except that the NEPM reporting standard allows for five exceedances per year.

In July 2003, a variation to the Ambient Air Quality NEPM was made to extend its coverage to $PM_{2.5}$. This document references the following goals for $PM_{2.5}$:

- A 24-hour maximum of 25 µg/m^3.
- An annual average of 8 µg/m^3.

3.2 Nuisance Impacts of Fugitive Emissions

Because of the locality of adjacent sensitive receivers to the construction works, it is important that dust deposition is monitored to ensure receivers are not impacted.

In NSW, accepted practice regarding the nuisance impact of dust is that:

- Dust related nuisance can be expected to impact on residential areas when annual average dust deposition levels exceed 4 g/m^2/month.

Table 1 presents the DEC impact assessment criteria for dust fallout, showing the allowable increase in dust deposition level over the ambient (background) level which would be acceptable so that dust nuisance could be avoided.

Table 1 DEC Criteria for Allowable Dust Deposition

Averaging Period	Maximum Increase in Deposited Dust Level[1,2]	Maximum Total Deposited Dust Level[1, 2]
Annual	2 g/m^2/month	4 g/m^2/month

Note 1: Source: NSW DEC "Approved Methods for the Modelling and Assessment of Air Pollutants in NSW", 2005.
Note 2: Dust is assessed as Insoluble Solids as defined by AS 3580.10.1-1991.

3.3 Criteria Applicable to Other Pollutants

The NSW DEC sets criteria applicable to other criteria pollutants such as Sulphur dioxide (SO_2), Nitrogen dioxide (NO_2), Carbon monoxide (CO) and Volatile Organic Compounds (VOCs) in their document the Approved Methods. The criteria for these pollutants as applies to the proposed development are set out in **Table 2**.

Table 2 NSW DEC Criteria for Urban Pollutants

Pollutant	Averaging Period	Criteria
Sulphur dioxide	1 hour	20 pphm (570 µg/m^3)
	1 day	8 pphm (228 µg/m^3)
	Annual	2 pphm (60 µg/m^3)
Nitrogen dioxide	1 hour	12 pphm (246 µg/m^3)
	Annual	3 pphm (62 µg/m^3)
Carbon Monoxide	8 hours	900 pphm (10,000 µg/m^3)
Benzene (as marker for VOCs)	1 hour	9 pphm (29 µg/m^3)

4 EXISTING AIR QUALITY ENVIRONMENT

4.1 NSW DEC Ambient Air Monitoring

The existing air quality environment in the vicinity of the development is primarily characterised by vehicle emissions from Briens Road, Old Windsor Road and surrounding streets. Local air quality is also influenced by construction works associated with major roadways and residential developments. The construction of the T-Way to the west and north of the project site (as indicated in **Appendix A**) will influence dust generation within the vicinity of the project site.

The ambient air quality surrounding the project work site is that associated with an urban environment. The closest (DEC) air quality monitoring station to the site is located in the grounds of the CSIRO Division of Radio Physics, Lindfield. The monitoring station at Lindfield is located at an elevation of 60 metres in a residential area approximately 17 km east northeast of the project site. The site is situated within the DEC's East Sydney Region. The Lindfield site was commissioned in October 1992. It is noted that there is also a monitoring station in St Mary's, approximately 20 km to the west of the project site. This monitoring station is located within the DEC's northwest Sydney region which may be more applicable in terms of geographical boundaries, but is located in a semi-rural environment and is not deemed appropriate for an urban development.

The following air pollutants are currently measured at Lindfield:

- Ozone (O_3).
- Sulphur Dioxide (SO_2).
- Oxides of Nitrogen (NO, NO_2 & NO_x).
- Fine particles (PM_{10} using a Tapered Element Oscillating Microbalance).
- Wind speed, wind direction and sigma theta.
- Ambient temperature.
- Relative humidity.

The most recent full calendar year dataset available from the Lindfield monitoring site was recorded in 2004. **Table 3**, **Table 4** and **Table 5** outline monthly background average concentrations of SO_2, NO_2 and PM_{10} typical of an urban environment in Sydney's northwest.

Table 3 Monthly Background Concentrations of Sulphur Dioxide, Lindfield 2004.

SO_2 (pphm)	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Ann**
Average (al hours)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Daily one hour max (average)	0.5	0.3	0.3	0.3	0.5	0.6	0.6	0.5	0.6	0.3	0.3	0.4	0.4
% Data recovery	95	93	90	88	91	96	68	92	61	79	83	94	85.8

The annual average SO_2 concentration recorded in 2004 was 0.1 pphm, with a daily maximum one hour average of 0.4 pphm. Daily maximum one hour averages range from 0.3 pphm to 0.6 pphm.

The one hour criteria for SO_2 is 20 pphm (refer **Section 3.3**), indicating that average urban concentrations are 0.5% of the criteria, and average maximum concentrations at their highest are 2% of the one hour criteria for SO_2.

Table 4 Monthly Background Concentrations of Nitrogen Dioxide, Lindfield 2004

NO_2 (pphm)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Average (al hours)	0.7	0.7	0.9	1.1	1.4	1.2	1.4	1.2	1.2	0.9	0.8	0.5	1.0
Daily one hour max (average)	1.6	1.6	1.7	2	2.4	2.2	2.5	2.2	2.2	2	1.9	1.3	2.0
% Data recovery	78	92	82	82	66	93	88	91	62	82	72	77	80.4

The annual average NO_2 concentration recorded in 2004 was 1.0 pphm, with a daily maximum one hour average of 2.0 pphm. Daily maximum one hour averages range from 1.3 pphm to 2.5 pphm.

The one hour criteria for NO_2 is 12 pphm (refer **Section 3.3**), indicating that average urban concentrations are 8.3% of the criteria, and average maximum concentrations at their highest are 20.8% of the one hour criteria for NO_2.

Table 5 Monthly Background Concentrations of Particulate Matter (PM_{10}), Lindfield 2004

PM_{10} ($\mu g/m^3$)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Average (al hours)	20	18	16	17	13	10	13	12	12	14	15	18	14.8
Highest Value	26	27	24	24	22	18	29	27	23	28	33	36	26.4
% Data recovery	100	100	100	100	100	100	62	99	64	42	92	96	87.9

Note: January to June figures were recorded using a High Volume Air Sampler, where as samples from July to December were recorded using a Tapered Element Oscillating Microbalance.

The annual average PM_{10} concentration recorded in 2004 was 14.8 $\mu g/m^3$, with the average of the highest values being 26.4 $\mu g/m^3$. Highest 24 hour values range from 18 $\mu g/m^3$ to 36 $\mu g/m^3$.

The 24 hour criteria for PM_{10} is 50ug/m^3 (refer **Section 3.1**), indicating that average urban concentrations are 29.6% of the criteria, and maximum concentrations at their highest are 72% of the 24 hour criteria for PM_{10}.

4.2 Site Specific Background Depositional Dust Monitoring

In the absence of background depositional dust levels, background dust deposition monitoring has been undertaken at three locations within the boundaries of the proposed site. Dust Deposition Gauge (DDG) monitoring locations are shown in **Appendix A**. Three monitoring locations were chosen to reflect potential impacts on sensitive receptors identified at the adjacent hospital and surrounding residences.

Monthly DDG monitoring is ongoing and monitoring results obtained to date are presented in **Table 6**.

Table 6 Background Dust Deposition Data, CCA Northmead, Mean Average Monthly Fallout

Site Location	Monitoring Period	Total Insoluble Solids (Non filtrable Residue) g/m^2/month	Total Combustible Solids (Organic material) g/m^2/month	Non Combustible Material g/m^2/month
DG1:	25/05/06 – 23/06/06	0.3	0	0.3
Toongabbie Creek	24/06/06 – 27/07/06	0.3	0.1	0.2
	27/07/06 – 27/08/06	To be updated		
	Average	**0.3**	**0.1**	**0.3**
DG2:	25/05/06 – 23/06/06	1.5	0.5	1.0
Briens Rd	24/06/06 – 27/07/06	2.3	0.8	1.5
	27/07/06 – 27/08/06	To be updated		
	Average	**1.9**	**0.7**	**1.3**
DG3:	25/05/06 – 23/06/06	1.3	0.3	1.0
Main Gate	24/06/06 – 27/07/06	1.5	0.3	1.2
	27/07/06 – 27/08/06	To be updated		
	Average	**1.4**	**0.3**	**1.1**

Note: Results to be updated. Monitoring results for July are pending. Monitoring for August is currently ongoing.

Based on monitoring results obtained to date, the average background dust deposition recorded at monitoring locations surrounding the project site range from 0.3 to 1.5 g/m^2/month (reported as Total Insoluble Solids).

5 CONSTRUCTION PHASE ASSESSMENT

Project specific air quality emissions likely to arise during the construction phase of the proposed development are discussed in **Section 2.4.1**, and concern dust generating activities and vehicle emissions.

A construction program has not as yet been developed, however air quality impacts associated with the construction phase of the proposed development are anticipated to be largely controllable through good site management and technical dust mitigation measures.

Recommendations regarding mitigation measures for potential air quality impacts during the construction phase are detailed in **Table 9** (refer **Section 7.1**).

It is recommended that the Air Quality Management Plan detailed in **Section 7** be adhered to throughout the duration of demolition, excavation and construction activities.

6 OPERATIONAL PHASE ASSESSMENT

As discussed in **Section 2.4.2**, air quality impacts associated with the operational phase of the proposed development would result primarily from and increase in vehicle emissions in and around the CCA facility.

6.1 Heavy Vehicle Exhaust Emissions

The construction of a new fully automated high bay bulk distribution centre, co-located on site with manufacturing operations, will result in the avoidance of much of the current double handling of product, eliminates product transfer between CCA warehouse locations by consolidating operations, and avoids additional transfer requirements. (Colston, Budd, Hunt and Kafes Pty Ltd 2006).

Concurrently, production capacity of the site will increase, resulting in a small net increase in heavy vehicle movements at the CCA site.

Current and proposed heavy vehicle movements for the site are summarised in **Table 7**.

Table 7 Average Daily Movements

	104-128 Briens Road	**102 Briens Road**	**Total**
Existing	405	65	470
2008	420	30	450
2015	460	40	500

Source: Colston, Budd, Hunt and Kafes Pty Ltd, 2006

As indicated in **Table 7**, truck movements accessing the site will only marginally increase with the growth in production. Air pollutants associated with heavy vehicle movements such as CO, NO_2, SO_2, PM_{10} and VOCs are anticipated to increase accordingly within the local air shed.

Background air quality concentrations detailed in **Table 3**, **Table 4** and **Table 5** (refer **Section 4.1**) indicate that there is significant capacity within the local airshed to assimilate this slight increase in air pollutants associated with the proposed development.

Furthermore, future increase in productive capacity and subsequent heavy vehicle movements are anticipated to be offset by improved fuel quality standards, improved environmental controls and updated vehicle fleets.

6.2 Forklift Movements

Under current operations, forklifts are used extensively to ferry product from manufacture to storage, and to load and unload product from storage into heavy vehicles. Currently, it is estimated that forklifts are used for approximately 41,000 hours per annum within the CCA facility.

The development of the automated warehouse will result in a significant decrease in forklift use for ferrying of product and loading. It is estimated that forklift use will drop to approximately 4,000 hours per annum (CCA 2006), resulting in a reduction of 37,000 forklift hours per annum.

Total emissions to the local airshed contributed by forklift use at the CCA facility are calculated in **Table 8**. Calculations are based on a typical LPG fuelled Forklift with an engine power of 119 kW.

Table 8 Total Forklift Emissions to Airshed - Current and Proposed (kg/annum).

Pollutant	Emission Factor[1] (kg/kWh)	Total Current Emissions to Airshed (kg/annum)	Total Proposed Emissions to Airshed (kg/annum)	Total Reduction in Emissions (kg/annum)
CO	0.296	288,837	28,179	260,658
NOx	0.00431	4,206	410	3,795
VOCs	0.00929	9,065	884	8,181
PM10	Negligible	Negligible	Negligible	Negligible
SO2				

Note 1: All Emission Factors from NPI Document *Emission Estimation Technique Manual for Combustion Engines Version 2.3*.

As indicated in **Table 8**, significant reductions in pollutants currently emitted to the local airshed will be achieved through a reduction in forklift movements.

6.3 Light Vehicle Traffic

The traffic report conducted by Colston Budd Hunt and Kafes Pty Ltd (2006) predicted a conservative increase of 15% with respect to light vehicle traffic associated with increased employee numbers, and increased visitor and service traffic.

The increase in light vehicle traffic is not considered significant, given the demonstrated capacity of the local airshed to assimilate a marginal increase in regional air pollutant concentrations.

6.4 Greenhouse Gas Assessment

A full greenhouse assessment has been conducted for the proposed development based on current operations and operations under the proposed development for 2008, 2015 and 2020. The assessment covers emissions from road transport of product, internal handling of product, and electricity consumption. This assessment has been conducted by Heggies separately to the Air Quality Assessment (reference document 10-4754R3).

7 AIR QUALITY MANAGEMENT PLAN (AQMP)

7.1 Emission Mitigation Measures

The specific controls and approaches to minimise impacts from demolition and construction works, wind erosion, spoil stockpiles and vehicle emissions are detailed in **Table 9**.

Table 9 Air Quality Emission Mitigation Measures.

Action	Mitigation Measure
Demolition Works and Excavation	Expected weather conditions and their effect on dust generation will be considered and demolition plans / timing will be altered if necessary. Meteorological conditions to be considered include prevailing wind direction and velocity.
	All access routes to be visually assessed daily for dust generation and water spraying employed as required.
	Water to be used in conjunction with dust generating excavation activities.
Wind Erosion	Watering of exposed surfaces/application of a crusting agent will be carried out during dry weather, if necessary.
	Progressive rehabilitation of exposed sites on completion of different work stages to be undertaken where practical.
	Minimising of spoil stockpiling on site.
	Stockpiles to be temporarily covered, stabilised (if long term) or sprayed with water/crusting agent to keep dust to a minimum.
Vehicles	All vehicles on site will be confined to designated roads and stabilised access areas.
	Access roads into and out of the sites will be sealed or wetted down for dust suppression.
	Spoil trucks will be immediately covered after being loaded and tailgates will be effectively sealed prior to leaving site.
	Heavy vehicle trip distances shall be minimised where possible, using DMR designated roads where practical.
	Vehicles with smokey exhausts (more than 10 seconds) shall be stood down for maintenance.
	Exhaust systems of construction plant vehicles and machinery will be properly maintained in accordance with manufactures specifications. The Site Manager (SM) shall ensure compliance with this requirement and has the authority to order non-compliant equipment to stop work until it is rectified and removed.
General	Sites and surrounding public roads to be cleaned, as required, with street sweepers.
	Establish a protocol for handling dust complaints that includes recording, reporting and acting on complaints and advising complainants of actions taken.
	Ensure that there is no open burning or incineration, with normal wastes removed from site by a licensed contractor for appropriate disposal.
	Workshop and administration access roads and standing areas will be sealed or surfaced with a material with low dust generating potential.
	Silt and other materials will be removed from around erosion control structures following any significant rain event (>10mm in a 24 hour period) to ensure deposits do not become a dust source. The SM shall be responsible for ensuring this task is undertaken.
	Water spraying to be conducted during the loading of trucks, as required.
	Visual monitoring would be undertaken by the SM to assess the impacts of dust generation upon air quality. If the dust generated as a result of construction work proves to be a nuisance and cannot be controlled through water spraying, works would be reviewed considering dust monitoring results undertaken in accordance with **Section 7.3** of this plan.

7.2 Management of Airborne Asbestos

It is understood that geotechnical and hazardous materials surveys have been undertaken at the site. Asbestos gutters were noted on the exterior of the warehouse and maintenance centre, and the potential for asbestos (bonded) contamination in soils has been established (Douglas Partners, *Coca-Cola Amatil Preliminary Environmental Site Assessment: 102-128 Briens Road Northmead*, February 2006).

It is anticipated that a comprehensive Waste Management Plan for Demolition, Excavation and Construction will be prepared for the project site, detailing hazardous materials management and disposal. It is also anticipated that a Hazardous Materials Management Plan be developed. The Air Quality Management Plan (AQMP) is to be read in conjunction with these management plans, and appropriate measures to mitigate the generation of airborne asbestos fibres, where present, will be implemented.

7.3 Air Quality Monitoring

7.3.1 Dust Deposition Monitoring

Dust Deposition Gauges (DDGs) are to be used to assess deposited matter on a continuous basis for the entire construction period to assess any nuisance impact on surrounding residences.

To gain representative data of the immediate air quality environment, the following is recommended:

- A maximum of three DDGs shall be located and installed following discussion and agreement with CCA. It is recommended that DDGs be located in similar sites as background monitoring locations for comparison purposes (refer **Appendix A**). Gauges will be exposed for 30 days (+/-2 days) and will be analysed for Insoluble Solids, Ash Residue and Combustible Matter.
- Equipment and methods will comply with AS 3580.10.1-1991 *Determination of particulates - Deposited Matter - Gravimetric method*. Locations shall be determined following consideration of AS 2922-1987 *Guide for Siting of Sampling Units.*
- Results will be reported within 15 days of collection to the Project Manager so that dust control and operational procedures can be reviewed and modified, if required. Reports are to be internally retained as part of the Environmental Log for the project site.

7.3.2 Supplementary Air Quality Monitoring

During dusty conditions or in the event of a complaint or exceedance, continuous real time monitoring of PM_{10} concentrations using a TSI DustTrak monitor may be undertaken onsite or near residential receivers by a qualified air quality consultant. The DustTrak is a portable instrument which is suitable for monitoring on construction sites to assist in the management of dust generating activities and provide real-time information to allow modification of site activities as appropriate.

Recorded levels of PM_{10} shall be reported against background averages available from the NSW DEC air monitoring stations at Lindfield or St Mary's.

Daily monitoring data is also available from the DEC for comparison with site-specific monitoring results. This information is relevant, allowing for the determination of external air quality impacts. The use of monitoring data from the St Mary's site as a comparison is recommended in the event of a project related exeedance.

The results of any supplementary air monitoring undertaken are to be reported in comparison to the criteria presented in **Section 3**.

7.4 Structure and Process

7.4.1 On Site Structure and Responsibility

The purpose of this structure is to ensure the following:

- The environmental procedures are effectively implemented and have the intended outcome; that is, no off-site nuisance or other effects.
- Non-compliance with any of the desired environmental outcomes will be reported promptly and corrective action will be taken to mitigate any impacts.

The building contractor will implement an organisational structure for the management of environmental control and reporting procedures. The Site Manager (SM) will oversee the environmental management of the project, liaise, as necessary, with other on-site personnel and report directly to the Project Manager (PM).

Many of the air quality procedures will be implemented as required and compliance checked by daily visual inspection. All site personnel and subcontractors will undergo appropriate induction training courses and individual responsibilities for ensuring that procedures are adhered to will be clearly defined.

The management and reporting of air quality aspects of construction activities will be the responsibility of the SM, with specific tasks delegated to on-site personnel. Simple daily visual checks will be made by on-site personnel for most parameters. Any non-conformances shall be reported immediately to the PM.

7.4.2 Non-conformance Procedure

Where monitoring identifies non-compliance with the relevant criteria, the Project Manager or Contractor will plan and carry out timely corrective action.

The corrective action may involve supplementary monitoring to identify the source of the non-conformance, and may involve modification of construction techniques or programmes to avoid any recurrence and/or minimise its adverse effects.

Details of non-conformance incidents will be reported in an Environmental Log to be maintained by the SM. The performance objective regarding corrective action of a non-conformance is for the issue to be resolved in such a manner that there is no further non-conformance for the same reason.

If monitoring indicates that the environmental objectives are being significantly exceeded on multiple occasions the Project Manager will:

- Identify the activities that were occurring at the time of the exceedance.
- Determine the activities that were most likely contributing to the exceedance.
- Review construction processes and environmental controls in place for this activity.
- Implement an agreed alternative to more adequately control impacts.

7.4.3 External Complaint Management

The Contractor will adopt a protocol for handling complaints. This protocol is to ensure that issues are addressed and that appropriate corrective action is identified and implemented as necessary. The performance objective regarding corrective action of a non conformance is for the complaint to be resolved in such a manner that there is no further non-conformance for the same reason.

8 CONCLUSION

Heggies Australia Pty Ltd has conducted an air quality assessment in support of a Project Application submission to NSW Department of Planning for the proposed expansion of the Coca-Cola Amatil facility at Briens Road, Northmead.

The scope of the assessment included an assessment of background air quality applicable to the urban environment of the site, a construction and operational phase air quality assessment and recommendations for air quality control and mitigation where required.

The assessment determined that air quality impacts associated with the construction phase of the assessment are largely controllable through technical means and not considered to be a significant issue given the size and nature of the development within an already developed industrial site.

The operational assessment determined a marginal net increase in emissions associated with heavy vehicle movements for the site. The net increase is the result of increase productive capacity of the site associated with the proposed changes, and incorporates predicted reductions in truck movements due to the automated storage facility on site. Despite the marginal net increase in heavy vehicle movements, it is concluded that there is significant capacity within the regional airshed to assimilate any additional air pollutant emissions associated with the proposed development.

As such, it is not anticipated that the proposed industrial development at the CCA facility will adversely affect air quality of the local or regional environment during construction or operation provided measures detailed in the Air Quality Management Plan contained within are adhered to throughout the life of the project.

9 RECOMMENDATIONS

It is recommended that an Air Quality Management Plan (AQMP) for construction should be detailed and implemented in conjunction with a Waste Management Plan and Hazardous Materials Management Plan.

Mitigation and control measures to minimise the generation and impact of any potential dust sources should be addressed in the AQMP.

Monitoring for dust deposition is recommended for the demolition, excavation and construction phases of the project.

Where dust deposition monitoring identifies non-compliance with the relevant criteria, the Project Manager or Contractor will plan and carry out timely corrective action and adopt a protocol for handling complaints.

In the event of non-compliance or complaints, further real-time monitoring may be required to assist in the management of dust generating site activities.

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GLOSSARY

AQA	Air Quality Assessment
AQMP	Air Quality Management Plan
AS	Australian Standard
AWS	Automatic Weather Station
BoM	Bureau of Meteorology
CCA	Coca-Cola Amatil
CO	Carbon monoxide
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEC	NSW Department of the Environment and Conservation
DoP	NSW Department of Planning
Heggies	Heggies Australia Pty Ltd
$mg/m^2/month$	Milligram ($g \times 10^{-3}$) per metre squared per month
$\mu g/m^3$	Microgram ($g \times 10^{-6}$) per metre cubed
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NO_2	Nitrogen dioxide
PM	Project Manager
PM_{10}	Particulate matter less than 10 microns in aerodynamic diameter
$PM_{2.5}$	Particulate matter less than 2.5 microns in aerodynamic diameter
pphm	Parts per hundred million (volumetric concentration)
ppm	Parts per million (volumetric concentration)
SM	Site Manager
SO_2	Sulphur dioxide
TEOM	Tapered Element Oscillating Microbalance
TSP	Total Suspended Particulate
VOCs	Volatile Organic Compounds

CCA SITE SHOWING DUST MONITORING LOCATIONS

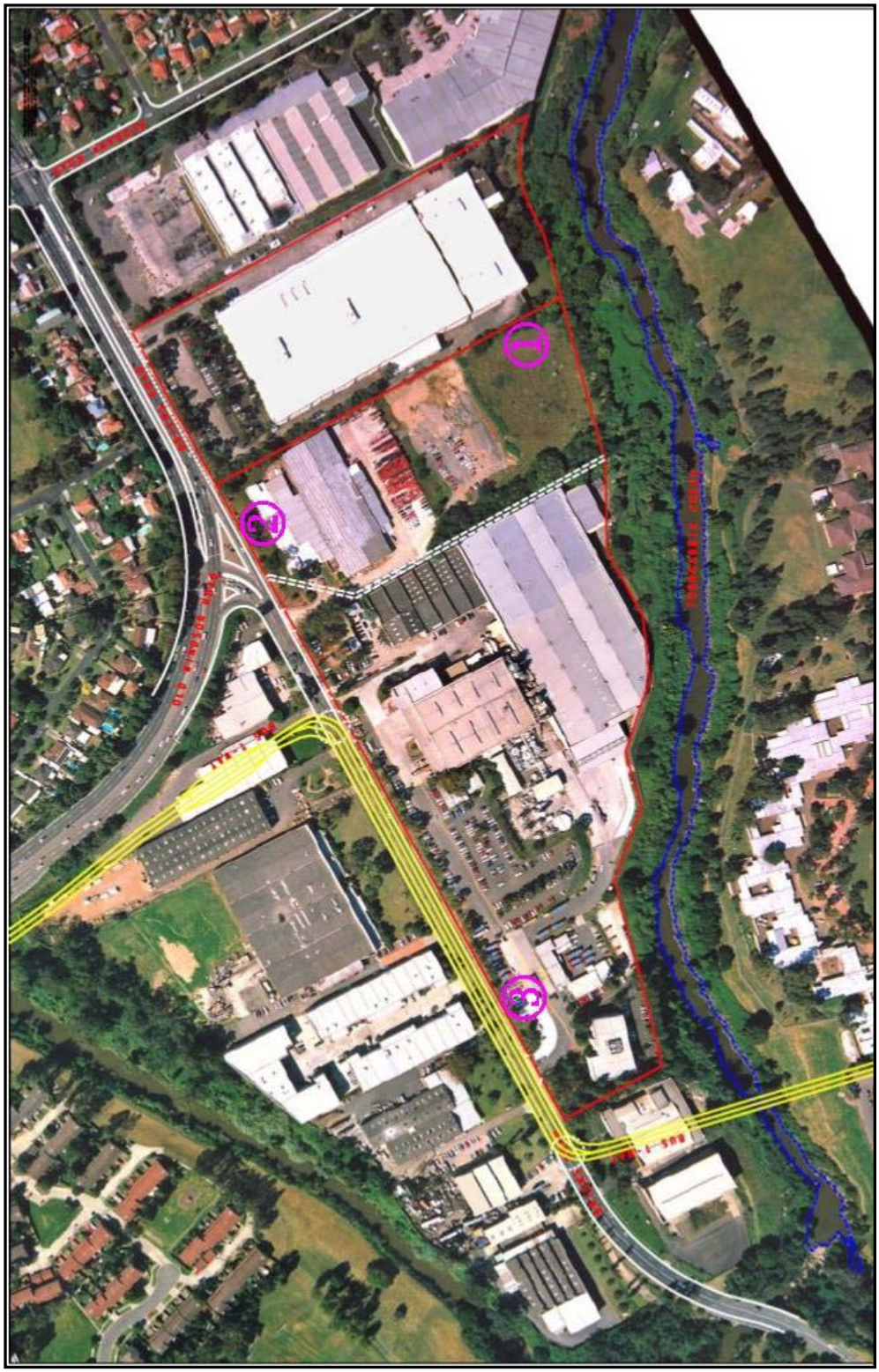

Image Source: CCA / Bovis Lend Lease (2005).