FINAL REPORT

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Erskine Park - Site H
Air Quality Assessment

December 2008

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Erskine Park Site H

Air Quality Assessment

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Environmental Resources Management Australia Pty Ltd Quality System

December 2008

0084170RP1

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1 INTRODUCTION

This air quality assessment has been prepared to accompany the Lenore Drive Erskine Park Project Application and Concept Plan at Lenore Drive, Erskine Park. This assessment addresses development and operation of Site Area H within the Development Plan.

The overall project site has an area of approximately 60 ha, located in the former CSR Limited's land holdings adjacent to Lenore Drive. It is located within the land area addressed as 2 – 60 Lenore Drive and is a part of the Erskine Park Employment Area.

Construction work on Site Area H (98,830m^2) will include earthworks and the construction and operation of the Target Offsite Reserve which involves primarily goods receipt and dispatch, storage, offices and ancillary car parking. The building footprint on the site will cover 12,500m^2. An additional building is also to be constructed to the north of the Target facility with a building footprint of 13,775m^2. It is noted that the approved Concept Plan envisages three buildings on Site H. The site is located within the Penrith Local Government Area.

2 SITE SUMMARY

2.1 RECEPTORS

Surrounding residences are located to the north within the residential area of Erskine Park, approximately 1.2km from the proposed Offsite Reserve. The Emmaus Retirement Village residences are located approximately 900 m south of Site Area H. Further south on Bakers Lane are the Emmaus Catholic College, Trinity Catholic Primary School and Mamre Christian College. Other existing residential receptors comprise a few isolated properties located north of and fronting Lenore Drive, approximately 600 m north of the site.

2.2 BACKGROUND CONCENTRATIONS

Background air quality is a measure of the existing air quality in the absence of the project activity. In the context of this assessment, 'background air quality' is used to describe sources (natural or man made) other than the site. It is important to consider background air quality when considering cumulative impacts on sensitive receptors in the area.

A desktop review of the National Pollutant Inventory (NPI) of reported emissions from fixed and mobile sources in the vicinity of the site was undertaken to obtain an indication of existing industries in the project area. No facilities within the Erskine Park area (postcode 2759) report emissions to air under the NPI reporting scheme.

A NSW Department of Environment and Climate Change (DECC) monitoring station is located approximately 5km north of the site at St Marys. This monitoring station measures ambient concentrations of ozone (O_3), oxides of nitrogen (NO_X) and particulate matter less than 10 microns in aerodynamic diameter (PM_{10}).

For the 2006 calendar year (the latest available annual data) the maximum 1 hour concentration of NO_2 was 36.1 $\mu g.m^{-3}$. The NSW DECC criterion for 1 hour maximum concentrations of NO_2 is 246 $\mu g.m^{-3}$. As such the 1 hour maximum ambient concentrations of NO_2 in the region are 14.7% of the criterion.

Similarly, for PM_{10} the annual 24 hour average was 19.5 $\mu g.m^{-3}$ and the NSW DECC criterion is 50 $\mu g.m^{-3}$. The average ambient PM_{10} concentrations recorded in the area are 39% of the criterion.

The M7 Western Sydney Orbital road has recently been completed 2.5km east of the subject site parallel to Wallgrove Road, Eastern Creek. The M7 Motorway intersects with Old Wallgrove Road to the north-east of the site and Elizabeth Drive to the south-east.

2.3 *PREVAILING WIND CONDITIONS*

As no weather observation station is located at Erskine Park, wind observations are based on review of observation data taken from the Bureau of Meteorology Parramatta North (Mason's Drive) Observation Station. It is anticipated that the wind regime presented in this section would be broadly representative of that of Erskine Park, given the proximity of the Parramatta Observation Station (~20 km east of the Site).

From October to April the wind regime is characterized by morning onshore northwest to south-westerly winds with significant contributions from the south, which shift to established offshore north-east to south-east sea breezes during the afternoon.

Between May and September, the wind regime is characterised by significant onshore contributions (north-west to south-west) as well as contributions from the south and south-east. The strongest prevailing wind contributions are from on-shore sea-breezes, particularly during summer months. However, given that the subject site is located approximately 20 km west (inland) of the Parramatta recording station it is likely that these contributions will not be as pronounced because of the greater distance from the coast.

3 *LEGISLATION*

The primary air quality legislation of relevance to the proposed development is the Protection of the Environment Operations Act 1997 (POEO Act). The POEO Act is the major legislation governing environment protection in NSW. Standards of concentration are prescribed by the POEO (Clean Air) Act (2002) and it is an offence under the Act for emissions of air contaminants to exceed these levels.

4 POTENTIAL IMPACTS TO LOCAL AIR QUALITY FOR THE TARGET OFFSITE RESERVE

4.1 CONSTRUCTION

Emissions to the atmosphere from construction activities are primarily particulate matter. Particulate emissions (dust) from the site may occur during the construction phase from construction equipment, earthworks and unsealed exposed surfaces. Dust generating activities may include road construction, building construction and truck movements.

Potential impacts from particulate matter during short term construction activities are often nuisance related rather than health related.

Combustion emissions of carbon monoxide, carbon dioxide, particulate matter and nitrogen oxides will also occur from construction vehicle exhaust emissions onsite.

ERM understand that the major earthworks associated with the construction of this Offsite Reserve are complete. As such, potential impacts to air quality associated with minor earthworks for building foundations and construction of access ways are anticipated to be minor.

4.2 OPERATION

This site will contain an Offsite Reserve and office space and amenities. It is anticipated that there will be only one shift of approximately 50 employees on site per day (7.30am – 5.30pm), except in peak periods where a second shift may be required. The Offsite Reserve will be used for the storage of apparel, homewares and toys.

There are no point source emissions to atmosphere from the Offsite Reserve. Sources of emissions are anticipated to be limited to vehicles entering and exiting the site and the use of forklifts within the Offsite Reserve to move stock. Under normal operation it is expected that there will be approximately 45 truck movements per day. The emissions from these sources are anticipated to be negligible and have not been assessed further as part of this assessment.

5 POTENTIAL IMPACTS TO LOCAL AIR QUALITY FOR THE NORTHERN SPECULATIVE WAREHOUSE

5.1 CONSTRUCTION

Emissions to the atmosphere from construction activities are primarily particulate matter. Particulate emissions (dust) from the site may occur during the construction phase from construction equipment, earthworks and unsealed exposed surfaces. Dust generating activities may include road construction, building construction and truck movements.

Potential impacts from particulate matter during short term construction activities are often nuisance related rather than health related.

Combustion emissions of carbon monoxide, carbon dioxide, particulate matter and nitrogen oxides will also occur from construction vehicle exhaust emissions onsite.

ERM understand that the major earthworks associated with the construction are complete. As such, potential impacts to air quality associated with minor earthworks for building foundations and remaining building construction are anticipated to be minor.

5.2 OPERATION

ERM were unable to undertake a detailed air quality assessment as the proposed operations at the speculative warehouse to be located to the north of the Target Offsite Reserve on Site H have not yet been defined. This is because this warehouse being proposed as a speculative warehouse does not have a confirmed tenant at this stage. Concept planning approval for this site indicates that this facility will be used for light manufacturing/warehousing activities.

It is expected that light manufacturing/warehousing activities are unlikely to have a significant impacts to local air quality for the following reasons:

- the nearest sensitive receptors to the development are approximately 600 metres north of Site H in an area zoned as industrial land use. The main residential area is located approximately 1.2km north of Site H;
- the existing background concentrations of particulate matter and nitrogen dioxide are well below the NSW DECC criteria; and
- the majority of the earthworks associated with construction have been completed.
-

6 GREENHOUSE GAS EMISSIONS FROM TARGET OFFSITE RESERVE

Energy consumption at the site is in the form of electricity. Based on existing facilities electricity consumption for the Offsite Reserve is anticipated to be between 25 – 50kWh/m^2/annum, i.e. between 312.5 – 625 MWh/annum.

6.1 DIRECT AND INDIRECT EMISSIONS

Emissions of greenhouse gases from the facility can be categorised as 'direct' and 'indirect emissions.

The *AGO National Greenhouse Accounts (NGA) Factors* adopts the emissions categories of the international reporting framework of *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (WRI/WBCSD)*. These emission categories are as follows:

- **Scope 1** covers direct emissions from sources within the boundary of an organisation such as fuel combustion and manufacturing processes.
- **Scope 2** covers indirect emissions from the consumption of purchased electricity, steam or heat produced by another organisation. Scope 2 emissions result from the combustion of fuel to generate the electricity, steam or heat and do not include emissions associated with the production of fuel. Scopes 1 and 2 are carefully defined to ensure that two or more organisations do not report the same emissions in the same scope.
- **Scope 3** includes all other indirect emissions that are a consequence of an organisation's activities but are not from sources owned, or controlled, by the organisation.

Equipment used on site will include:

- A battery (electric) powered scissor lift (Scope 2);
- Battery (electric) forklifts (Scope 2); and
- A battery (electric) goods hoist (Scope 2);

The majority of energy consumed, and the significant majority of emissions of greenhouses gases resulting from the operation of the facility arise from the consumption of electricity on site.

An estimate of Scope 2 greenhouse gases can be made using the electricity emission factors for end users provided in *AGO National Greenhouse Accounts (NGA) Factors* (January 2008). The most recent emission factor for electricity consumed in NSW is for the year financial year 2008, the emission factor is 0.89 kg CO_2-e/kWh.

Using this emission factor, and on the basis of electricity consumption at existing Offsites', the range of greenhouse gas emissions is presented in *Table 6.1* below.

Greenhouse Gas emission estmates

	Electricity Consumption (MWh)	**Greenhouse Gas Emissions (tCO_2-e)**
Lower Estimate	312.5	278.1
Upper Estimate	625	556.3

7 *SUMMARY*

Proposed activity at the Target site is not anticipated represent a significant impact to local air quality. ERM were unable to undertake a detailed air quality assessment of the Shed to be located north of the Target Offsite Reserve as the proposed operations have not yet been defined.

The principal emissions of greenhouse gases from the Offsite Reserve result from the indirect emissions associated with the generation of electricity (Scope 2 emissions).