Report

ENERGY AND GREENHOUSE GAS ASSESSMENT

Kemps Creek
LOGOS Property

Revision: 2.1 - INFORMATION
Issued: 11 August 2010

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1. EXECUTIVE SUMMARY

1.1. PURPOSE

The purpose of this report is to provide preliminary estimation of the energy consumption and carbon dioxide emissions for the proposed development of LOGOS Estate, Kemps creek. The estimated figures have been based on assumptions for energy consumption or loads for each building type, with consideration to proposed energy efficiency measures. An estimation of carbon dioxide emissions associated with motor vehicles has also been carried out. This has also has been based on assumptions for trip frequency and length and on vehicle emission rates.

The energy and emissions estimates include ranges to demonstrate the variability in the consumption for such developments. Estimates are based on the information available at the time of the report.

The information provided in this report is for information purposes only. It does not provide any guarantee in terms of actual energy consumption and emissions associated with the development. This report does not provide any guarantee for the implementation of energy efficiency measures described herein.

1.2. SUMMARY

The total estimated emissions for the site are 24,400 tonnes CO2 per annum (including vehicle emissions for associated journeys).

The emissions associated with “fixed” plant and services (i.e. buildings and external lighting) is 16,456 tonnes CO_2 per annum. This represents a 46% reduction from the upper range estimation.

These consumption and emission rates can only be achieved through, good design practice, compliance with BCA Section J, implementation of energy efficiency initiatives and quality construction.

Warehouse spaces are the main contributor to site energy and emissions (47%), due to extensive area. Provision of energy efficient lighting is crucial to minimising associated energy. Incorporation of skylights for natural lighting will be considered.

The energy density for the cold storage areas is significant. It is also a major contributor to total site energy/emissions. During design development these facilities should undergo modelling to provide a more accurate level of energy estimation, to ensure the refrigeration plant and building construction can meet or exceed the stated target energy consumption.

1.3. INFORMATION SOURCES

- Concept Plan and Project Application Overview by LOGOS Property and PJEP Environmental Planning
- LOGOS Standard Building Specification
- Site Plan of the DHL Building Proposed Warehouse Facility
- Energy Benchmarking of Warehouses for Frozen Foods by Dept of Biological and Agricultural Engineering, University of California
- AIRAH Handbook
- Green Star Industrial Tool v1

1.4. REVISION HISTORY

Rev	Date Issued	Comment
1.0	29 July 2010	Draft
2.0	9 August 2010	Information
2.1	11 August 2010	Information

2. ENERGY EFFICIENCY MEASURES

Energy efficiency will be integral to the design of the facility. Compliance with Section J will be a minimum, and the design of the building and its services will seek to surpass these requirements via the implementation of a number of energy efficiency measures. These measures are outlined below, and include both active and passive initiatives.

2.1. SECTION J

Measures to be included for Section J compliance will include:

- Wall insulation
- Roof insulation
- Performance glazing
- External solar shading
- Energy efficient mechanical systems and controls
- Energy Efficient lighting

Provision in excess of the BCA Section J DTS compliance criteria will be targeted.

2.2. ADDITIONAL MEASURES

Additional initiatives proposed are:

Daylight maximization	Building orientation and architecture will seek to maximise daylight usage to improve internal environmental quality and reduce artificial lighting energy. Design will be sensitive to direct solar penetration and the associated heat gains to ensure daylighting is not provided at the expense of increased air conditioning. Skylights, sun pipes and light shelves will be considered.
Natural ventilation	Offices with narrow floor plans will be provided with opening windows in addition to air conditioning, to allow natural ventilation when ambient conditions permit. A mixed mode solution will reduce the hours of operation of air conditioning plant, and also provide more occupant control over the internal environment. Warehouses will aim to make use of natural ventilation via openings and roof mounted wind driven ventilators to remove pollutants and limit space temperatures.
Economy Cycle	Where offices cannot accommodate a natural ventilation solution, services design will look to incorporate an economy cycle into the air conditioning system so that cooler ambient conditions can be exploited via “free” cooling.
Carbon Dioxide Monitoring	Control of office ventilation rates via CO_2 monitoring will be considered. This helps to minimise the heating and cooling energy associated with conditioning outside air supply to the building, by reducing the ventilation rate when occupancy levels are low.
Solar Hot water	Solar hot water systems will be considered for all amenities (office and warehouse) to reduce electricity/gas consumption.

Lighting	Where appropriate lighting will be provided via energy efficient T5 fluorescent fittings. This will significantly reduce energy compared to standard T8 fittings and reduce maintenance requirements due to longer life. This type of fitting will be used in both office and warehouse applications. Controls will also be used to allow zoning and automated operation where appropriate. Daylight sensors will also be incorporated to automatically switch off lighting in areas where natural daylight is sufficient.
Car Park Lighting	Car park lighting will utilise light sensors and scheduling for automated operation.

2.3. COLD STORAGE

Measures associated with the cold storage facility include:

Refrigerant	Ammonia and/or CO_2 are the proposed refrigerants to be utilised in the cold storage refrigeration. These are efficient natural refrigerants. Ammonia has zero OPD (ozone depleting potential) and zero GWP (global warming potential). CO_2 has zero OPD and a GWP of 1 (a fraction of synthetic refrigerants).
Frost Heave protection	As an alternative to electric heating for frost heave protection, heat recovery from the refrigeration plant heat condensers is proposed. This is an efficient use of heat that would otherwise have been rejected.
Doors	Fast acting doors with tight seals will be installed to minimise infiltration gains which can have a large impact on cooling load.

2.4. FUTURE STRATEGIES

While not planned as part of the initial development, the following initiatives are being considered for future integration to further reduce site CO_2 emissions.

Cogeneration	Cogeneration or Tri-generation will be investigated in terms of potential for reducing site CO_2 emissions though onsite power generation and use of waste heat. This could be incorporated as a central district energy system or via multiple small plants.
PV Panels	Warehouse roofing provides an opportunity for the generation of electricity via PV (photovoltaic) panels. The large roof areas provide an ideal site for such applications. The feasibility of such an installation will be investigated in the future.

3. ANALYSIS & ESTIMATION

The estimation of the energy consumption and carbon dioxide emissions has been broken down into six main areas.

- Offices
- Warehouses
- Cold Stores
- Cafe Building
- Car parking
- Transport

Each area is discussed below with descriptions of assumptions made and results detailing estimated energy consumption and associated carbon dioxide emissions.

Please note carbon dioxide emissions have been calculated on the following basis:

- 0.94 kgCO_2 per kWh of consumed electricity

3.1. OFFICES

Office energy consumption is primarily a function of air conditioning, lighting and equipment (computers, photocopiers, etc). The AIRAH handbook provides the following ranges for electricity consumption in office buildings. The figures are based on 2500 operating hours per year.

- Electricity 125 - 261 kWh/m^2 per year

The above figures assume all heating and hot water is provided via electricity.
Using the office areas provided on the 'Development Options Totals' the following ranges have been calculated.

Table 1 – Annual office energy consumption and CO_2 emissions ranges based on AIRAH Data

		Office Area (m^2)	Electricity Consumption (kWh)		CO_2 Emissions (tonnes CO_2)	
			Lower	Upper	Lower	Upper
DHL	Building 1	1,600	200,000	417,600	188	393
	Building 2	1,600	200,000	417,600	188	393
	Building 3	1,600	200,000	417,600	188	393
	Building 4	1,600	200,000	417,600	188	393
	Building 5	1,600	200,000	417,600	188	393
	Building 6	1,600	200,000	417,600	188	393
	Building 7	1,600	200,000	417,600	188	393
Metcash Office		6,470	808,750	1,688,670	760	1,587
TOTAL		**17,670**	**2,208,750**	**4,611,870**	**2,076**	**4,335**

NABERS Energy is used as a rating tool to assess the relative performance of office buildings in terms of annual energy consumption. The achieved rating is a measure of the carbon dioxide emissions per metre square of rated area.

Given the stringent requirement of BCA Section J 2010 a target rating of 4.5 Star NABERS Office Energy (Whole Building) has been assumed. This will be achieved via compliance with BCA Section J as a minimum and the use of energy efficient air conditioning and lighting. The use of natural ventilation will be investigated where appropriate.

For 4.5 Stars, based on reverse calculation using the NABERS Office Energy Calculator [1] (for whole building), the maximum office emission rate is 179 kg CO_2/m^2. This has then been converted to electricity consumption assuming that electricity accounts for 100% of the total energy consumed (i.e. no natural gas). The table below shows the energy estimation for each proposed office.

Table 2 – Annual office energy and CO_2 emissions based on NABERS 4.5 Star Office

		Office Area (m^2)	Electricity Consumption (kWh)	CO_2 Emissions (tonnes CO_2)
DHL	Building 1	1,600	304,681	286
	Building 2	1,600	304,681	286
	Building 3	1,600	304,681	286
	Building 4	1,600	304,681	286
	Building 5	1,600	304,681	286
	Building 6	1,600	304,681	286
	Building 7	1,600	304,681	286
Metcash Office		6,470	1,232,053	1,158
TOTAL		**17,670**	**3,364,819**	**3,163**

Meeting the target value will be achieved via compliance with BCA Section J as a minimum and the use of energy efficient air conditioning and lighting. Refer to section 2 for details of proposed measures.

3.2. WAREHOUSES

Energy consumption associated with warehouses has been estimated by calculating maximum demand and then applying an assumed profile for a year.

It has been assumed that the warehouse areas are not conditioned (i.e. no heating or cooling), but have mechanical ventilation. Therefore, all energy consumption associated with the warehouses is electricity.

Australian/NZ Standard AS/NZS 3000:2007 (Electrical Installations) provides the following guidance on estimating maximum demand for warehouses.

- Light & Power Range: 5 - 15 VA/m^2 Average: 10 VA/m^2
- Ventilation Range: 5 VA/m^2 Average: 5 VA/m^2

The profiles shown in Appendix A were then applied to generate a year's energy consumption.

[1] Calculation for building located in NSW 2759, rated area 1,600m^2, 50 hours operation per week.

The profiles have been based on those detailed in the Green Star Industrial Tool v1 Gas Emissions Calculator Guide. Profiles have been assumed for normal working weekdays and weekends/public holidays.

Note - The Metcash NSW Design Brief states a warehouse shift of 5am to 6pm

It has been assumed that there are 252 working weekdays per year, with the balance being weekends/public holidays.

Using the warehouse areas provided on the following ranges have been calculated.

Table 3 – Annual warehouse energy consumption and CO2 emissions ranges

		Warehouse Area (m^2)	Lighting & Power Electricity Consumption (kWh)		Ventilation Electricity Consumption (kWh)	Total Electricity Consumption (kWh)		CO_2 Emissions (tonnes CO_2)	
			Lower	Upper		Lower	Upper	Lower	Upper
DHL	Building 1	18,800	307,343	922,030	243,152	550,495	1,472,525	517	1,384
	Building 2	18,800	307,343	922,030	243,152	550,495	1,472,525	517	1,384
	Building 3	18,800	307,343	922,030	243,152	550,495	1,472,525	517	1,384
	Building 4	18,800	307,343	922,030	243,152	550,495	1,472,525	517	1,384
	Building 5	19,800	323,691	971,074	256,085	579,777	1,550,851	545	1,458
	Building 6	32,400	529,677	1,589,030	419,049	948,725	2,537,756	892	2,385
	Building 7	19,800	323,691	971,074	256,085	579,777	1,550,851	545	1,458
Metcash Warehouse		55,685	910,341	2,731,023	720,208	1,630,549	4,361,572	1,533	4,100
Metcash W/h Expansion		12,500	204,351	613,052	161,670	366,021	979,073	344	920
SITE TOTAL		**215,385**	**3,521,125**	**10,563,374**	**2,785,703**	**6,306,828**	**16,870,202**	**5,928**	**15,858**

Estimation of energy and emissions for this site has also been carried out assuming lighting and equipment power on the average demand (10 VA/m^2) and with ventilation at 5 VA/m^2 for the Metcash warehouse (DHL warehouses are assumed to have natural ventilation). Table 4 below shows our estimation on the basis of a total maximum demand of 15 VA/m^2.

Table 4 – Annual warehouse energy consumption and CO_2 emissions

		Warehouse Area (m^2)	Lighting & Power Electricity Consumption (kWh)	CO_2 Emissions (tonnes CO_2)
DHL	Building 1	18,800	614,687	578
	Building 2	18,800	614,687	578
	Building 3	18,800	614,687	578
	Building 4	18,800	614,687	578
	Building 5	19,800	647,383	609
	Building 6	32,400	1,059,354	996
	Building 7	19,800	647,383	609
Metcash Warehouse		55,685	2,731,023	2,567
Metcash W/h Expansion		12,500	613,052	576
SITE TOTAL		**215,385**	**8,156,941**	**7,668**

It should be noted that the above estimations are on the basis of warehouses being used for general storage purposes. The installation of special equipment (including air conditioning and heating) will increase these figures.

Refer to section 2 for details of proposed energy efficiency measures.

3.3. COLD STORES

There is no prescribed Minimum Energy Performance Standards (MEPS) for industrial cold storage applications in Australia. Theoretical estimation is possible but requires detailed information on the services and building operation that is not available at this stage.

The total facility energy consumption is made up of refrigeration load, electric lighting and other equipment. The refrigeration load depends on a number of factors, including transmission heat gains via the envelope (which is a function of building construction, insulation and U-value), product heat load, infiltration (through opening of doors), and internal heat loads (from equipment).

Estimating the energy consumption by benchmarking from surveyed data will give a reasonable estimate of the annual energy consumption. Studies of the Specific Electricity Consumption (SEC) of refrigerated warehouses have been conducted in Europe, New Zealand and US[2]. The graph below summarises the surveys. It can be seen that there is a large variation on the data. Even facilities in the same region are operating at very different SEC's.

[2] Derived from *Energy Benchmarking of Warehouses for Frozen food (*July 2008), prepared by Department of Biological and Agricultural engineering University of California for California Energy Commission

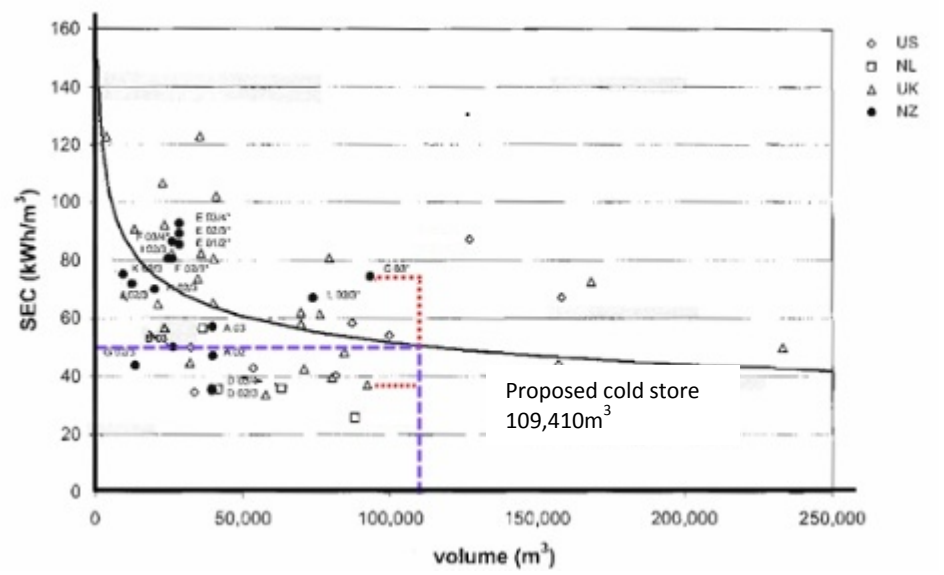


Figure 1 - Benchmarking of refrigerated warehouses using SEC

The cold store area nominated on the area schedule is 12,025m^2, with an expansion area of 6,210m^2. This equates to a total area of 18,235m^2. Based on a store height of 6m the volume is 109,410m^3. The range of SEC on the above chart (figure 1) is approximated to 37 to 74kWh/m^3.

Table 5 - Annual cold store energy consumption and CO_2 emissions ranges

	Area (m2)	Volume (m3)	Annual Energy Consumption (kWh/year)		CO_2 Emissions	
			Lower	Upper	Lower	Upper
			37 kWh/m^3	74 kWh/m^3	Tons CO_2	Tons CO_2
Cold store	12,025	72,150	2,669,550	5,339,100	2,509	5,019
Expansion	6,210	37,260	1,378,620	2,757,240	1,296	2,592
TOTAL	**18,235**	**109,410**	**4,048,170**	**8,096,340**	**3,805**	**7,611**

Reading from the trend line in figure 1, the proposed cold store volume corresponds to an SEC of 50kWh/m^3. This figure has been used as the basis for the estimation of energy and emissions, and will form the basis of a maximum energy/emissions target. The table below details the results.

Table 6 – Annual cold store energy consumption and CO_2 emissions estimation

	Area (m^2)	Volume (m^3)	Annual Energy Consumption (kWh)	CO_2 Emissions (Tonnes CO_2)
Cold store	12,025	72,150	3,607,500	3,391
Expansion	6,210	37,260	1,863,000	1,751
TOTAL	18,235	109,410	5,470,500	5,142

It can be seen that the cold stores are major energy consumers. It is recommended that during design development these facilities should undergo detailed modelling to provide a more accurate level of energy estimation. This will incorporate the details of the operation, including refrigeration plant and building construction.

There are no MEPS (minimum energy performance standards) requirements in Australia for cold storage refrigeration plant. During design and specification, other appropriate internationally used standards could be adopted as benchmarks for plant efficiencies.

3.4. CAFE BUILDING

According to Section J of the BCA (2006) the energy allowance for a Class 6 Cafe (Sydney City) when carrying out a JV2 calculation is 1130 MJ/m^2(314 kWh/m^2). The JV2 Method has now been removed from the BCA, however, the energy allowance is considered an accurate means of estimating annual energy.

The estimated energy consumption associated with the cafe for this site is 283kWh/m^2 per annum (a 10% reduction on the above figure from BCA). This allows for improvement in building performance due to the more onerous BCA Section J requirements in the current regulations, while recognising the energy intensive nature of cafe operation.

The area of the cafe is scheduled as 300m^2.

On this basis, the energy consumption and CO_2 emissions are:

- Energy 84,780 kWh per annum
- CO2 Emissions 80 Tonnes CO_2 per annum

Opening of doors/shop fronts for prolonged periods during extreme ambient conditions can be a major contributor in cafe energy consumption. Careful design and appropriate operational strategy are required to prevent excessive air conditioning energy consumption from high levels of infiltration.

3.5. CAR PARKING

It is assumed that all car parking areas are provided with lighting.
Australian/NZ Standard AS/NZS 3000:2007 (Electrical Installations) provides the following guidance on estimating maximum demand for car parks.

- Open Air Range: 0 - 10 VA/m^2; Average: 5 VNm^2

It has been assumed that car parking areas are provided with lighting for 8 hours per day, 252 days per year.

Using the car parking areas provided on the schedule of areas (appendix B), the following ranges have been calculated.

Table 7 – Annual car parking energy consumption and CO_2 emissions ranges

	Car Park Area (m^2)	Energy Consumption (kWh)		CO_2 Emissions (tonnes CO_2)	
		Lower	Upper	Lower	Upper
Building 1	4,000	0	80,640	0	76
Building 2	4,160	0	83,866	0	79
Building 3	4,320	0	87,091	0	82
Building 4	4,320	0	87,091	0	82
Building 5	4,480	0	90,317	0	85
Building 6	4,800	0	96,768	0	91
Building 7	4,680	0	94,349	0	89
Cafe	911	0	18,366	0	17
Metcash	15,280	0	338,849	0	319
TOTAL	46,951	0	977,337	0	919

The estimation for this development is based on an average maximum demand of 5 VA/m^2. The table below shows the energy consumption and emissions on this basis.

Table 8 – Estimated annual car parking energy consumption and CO_2 emissions

	Car Park Area (m^2)	Energy Consumption (kWh)	CO_2 Emissions (tonnes CO_2)
Building 1	4,000	34,272	32
Building 2	4,160	35,643	34
Building 3	4,320	37,014	35
Building 4	4,320	37,014	35
Building 5	4,480	38,385	36
Building 6	4,800	41,126	39
Building 7	4,680	40,098	38
Cafe	911	7,805	7
Metcash	15,280	157,103	148
TOTAL	**46,951**	**428,460**	**403**

Scheduling of lighting and use of solar sensors is crucial to minimise unnecessary operation of external lighting.

3.6. TRANSPORT

The transport element has been split into two sections:

- Staff vehicles
- Delivery vehicles

Emissions from these vehicles has been based on assumed frequency and trip distance, plus vehicle emission rates.

3.6.1. Staff Vehicles

The 'Development Options Totals' provide details of the total number of parking spaces.
The following assumptions have been made:

- 90% of the parking spaces are used by staff (10% spare for visitors).
- Each occupied space represents a car doing a round trip of 20km.
- The average vehicle emission rate is 180 g $C0_2$/km.

Based on these assumptions the following emissions have been calculated.

Table 9 – Annual CO_2 emissions associated with staff vehicles

	No. Parking Spaces	CO_2 Emissions (tonnes CO_2)
Building 1	125	91
Building 2	130	94
Building 3	135	98
Building 4	135	98
Building 5	140	102
Building 6	150	109
Building 7	145	105
Cafe	23	17
Metcash	530	385
TOTAL	**1,456**	**1,057**

3.6.2. Delivery Vehicles

The following assumptions have been made:

- 1 delivery/pickup per day per 500m^2 of warehouse area.
- Average distance travelled by each delivery vehicle is 100km.
- The average vehicle emission rate is 500 g $C0_2$/km.

Based on these assumptions the following emissions have been calculated.

Table 10 – Annual CO_2 emissions associated with delivery vehicles

	Warehouse Area (m^2)	No. deliveries/ pick-ups per day	CO_2 Emissions (tonnes CO_2)
Building 1	18,800	38	474
Building 2	18,800	38	474
Building 3	18,800	38	474
Building 4	18,800	38	474
Building 5	19,800	40	499
Building 6	32,400	65	816
Building 7	19,800	40	499
Metcash Warehouse	55,685	111	1,403
Metcash W/h Expansion	12,500	25	315
Cold Store	12,025	24	303
Cold Store Expansion	6,210	12	156
TOTAL	**233,620**	**467**	**5,887**

4. TOTAL ENERGY CONSUMPTION & EMISSIONS

A summation of the site energy consumption and emissions is given below.

4.1. BUILDINGS / CAR PARKING ENERGY & EMISSIONS

Table 11 below shows the energy consumption and emissions associated with the offices, warehouses and car parking only (transport is excluded). This shows lower and upper values plus the estimate for this development.

Table 11 – Annual energy consumption and emissions for offices, warehouses and car parking

	Energy Consumption (kWh)			CO_2 Emissions (tonnes CO_2)		
	Lower	Upper	Estimate/ Target	Lower	Upper	Estimate/ Target
Office	2,208,750	4,611,870	3,364,819	2,076	4,335	3,163
Warehouse	6,306,828	16,870,202	8,156,941	5,928	15,858	7,668
Cold Stores	4,048,170	8,096,340	5,470,500	3,805	7,611	5,142
Café Building	84,780	84,780	84,780	80	80	80
Car Parking	0	977,337	428,460	0	919	403
TOTAL	**12,648,528**	**30,640,529**	**17,505,500**	**11,889**	**28,803**	**16,456**

Table 12 below shows the percentage of energy used in each area type. Areas are also shown with specific energy consumption (in kWh/m^2) to demonstrate energy "density".

Table 12 – Breakdown of energy consumption based on estimate/target figures

	Area (m^2)	Annual Energy Consumption (kWh)	Percentage of Total	Annual Energy Density (kWh/m^2)
Office	17,670	3,364,819	19%	190
Warehouse	215,385	8,156,941	47%	38
Cold Stores	18,235	5,470,500	31%	300
Café Building	300	84,780	<1%	283
Car Parking	46,951	428,460	2%	9
TOTAL	**298,541**	**17,505,500**	**100%**	**-**

4.2. TRANSPORT EMISSIONS

The total emissions associated with transport are estimated at **6,944 tonnes CO_2 per annum**.

4.3. OVERALL SITE EMISSIONS

The overall total emissions for the site, including associated transport are estimated at **23,400 tonnes CO_2 per annum**.

APPENDIX A – WAREHOUSE PROFILES

Table A-1 – Warehouse light & power profiles for weekdays & weekends/public holidays

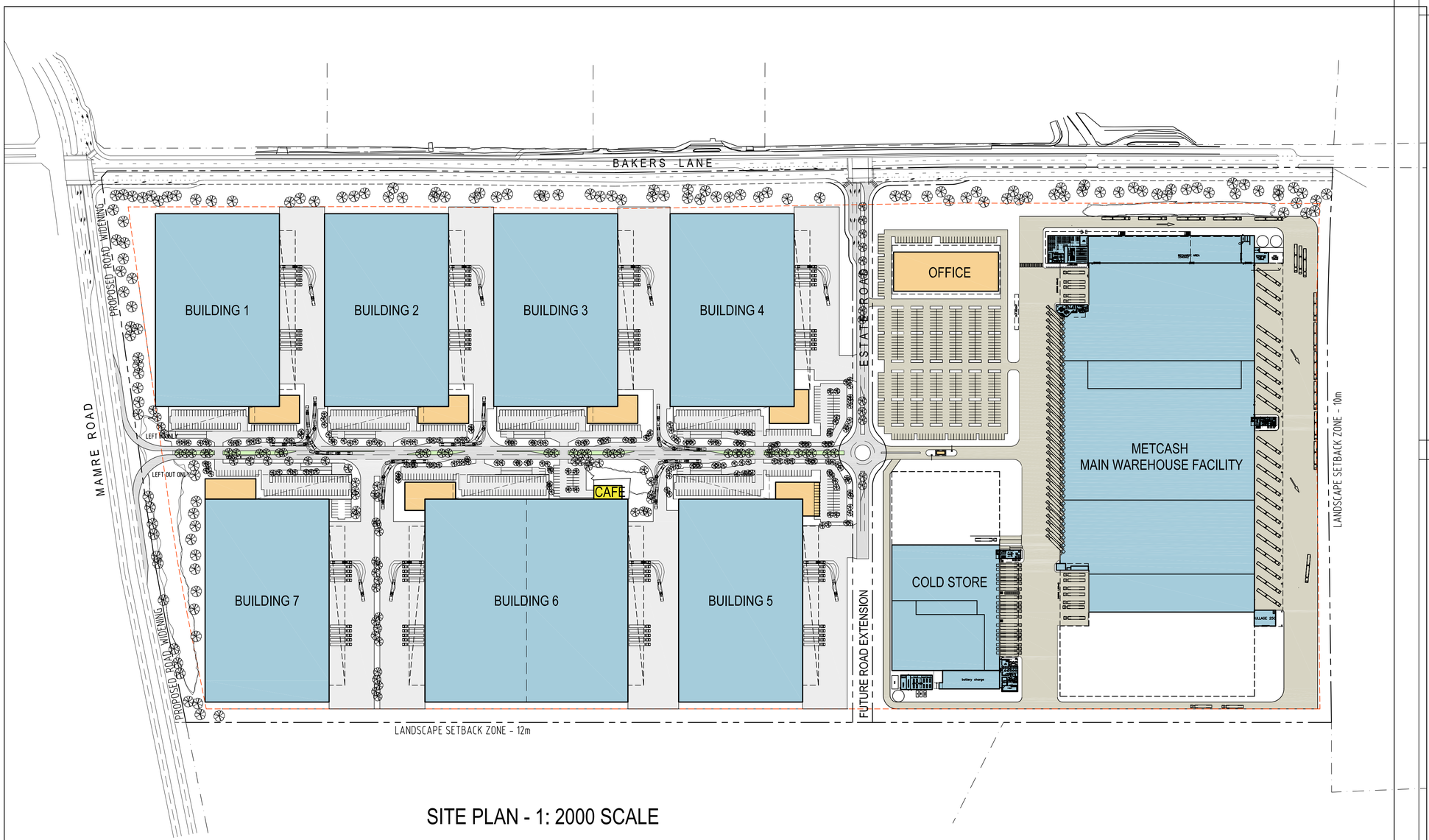
Time	Light and Power load as a percentage of maximum demand	
	Working Weekdays	Weekends and Public Holidays
0000 – 0700	15%	15%
0700 – 0800	65%	15%
0800 – 0900	90%	15%
0900 – 1700	100%	15%
1700 – 1800	80%	15%
1800 – 1900	65%	15%
1900 – 2000	60%	15%
2000 – 2100	55%	15%
2100 – 2400	15%	15%

Table A-2 – Warehouse ventilation profiles for weekdays & weekends/public holidays

Time	Ventilation load as a percentage of maximum demand	
	Working Weekdays	Weekends and Public Holidays
0000 – 0500	0%	10%
0700 – 1800	100%	10%
1800 – 2400	0%	10%

APPENDIX B – MASTERPLAN

Drawing A 001 Rev C on following page shows the site plan an schedule of areas.



SITE PLAN - 1: 2000 SCALE

SCHEDULE OF AREAS

SITE AREA - LOT AREA INCLUDING SETBACKS	517,175 sqm

DHL SITE DATA

SITE AREA - LOT AREA INCLUDING SETBACKS	300,010 sqm
SITE AREA - LOT AREA EXCLUDING SETBACKS	271,153 sqm
BUILDING 1 - 18,800 warehouse + 1,600 office -2 storey	20,400 sqm
BUILDING 2 - 18,800 warehouse + 1,600 office -2 storey	20,400 sqm
BUILDING 3 - 18,800 warehouse + 1,600 office -2 storey	20,400 sqm
BUILDING 4 - 18,800 warehouse + 1,600 office -2 storey	20,400 sqm
BUILDING 5 - 19,800 warehouse + 1,600 office -2 storey	21,400 sqm
BUILDING 6 - 32,400 warehouse + 1,600 office -2 storey	17,600 sqm
BUILDING 7 - 19,800 warehouse + 1,600 office -2 storey	21,400 sqm
CAFE BUILDING - 300 building	565 sqm
TOTAL BUILDING AREA	159,900 sqm
TOTAL SITE COVERAGE - (lot area excluding setbacks)	58%
TOTAL AWNING AREAS	15,800 sqm
TOTAL HEAVY DUTY PAVEMENT	00 sqm

METCASH SITE DATA

SITE AREA - LOT AREA INCLUDING SETBACKS	193,870 sqm
SITE AREA - LOT AREA EXCLUDING SETBACKS	176,665 sqm
MAIN WAREHOUSE BUILDING	55,685 sqm
COLD STORE 1	12,025 sqm
OFFICE BUILDING - 2 storey building	6,470 sqm
OUT BUILDINGS - (plant & gatehouse)	525 sqm
TOTAL BUILDING AREA	97,860 sqm
TOTAL SITE COVERAGE - (lot area excluding setbacks)	55%
MAIN WAREHOUSE BUILDING EXPANSION	12,500 sqm
COLD STORE 1	6,210 sqm
TOTAL AWNING AREAS	10,580 sqm
TOTAL HEAVY DUTY PAVEMENT	00 sqm

DHL CAMPUS - ERSKINE PARK BUSINESS CENTRE
MAMRE ROAD & BAKERS LANE, ERSKINE PARK

PROPOSED WAREHOUSE FACILITY
DHL BUILDING

AXIS architectural
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e + david@axisarchitects.com.au
nominated architect - David McDonald NSW ARB No. 7997

ESTATE LAYOUT PLAN
OPTION 8

Date : March 2010
1:2000 scale

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