Frasers Property Australia Pty Limited
A member of the Frasers Centrepoint Group

Ecologically Sustainable Development Report

Proposed Warehouse and Logistics Hub
Mamre Road & Bakers Lane,
Kemps Creek

10/05/2019

TABLE OF CONTENTS

TABLES

FIGURES

DOCUMENT CONTROL

Version	Date	Comment	Prepared By
Draft	14/08/18	Greenhouse Gas Efficiency Performance & Ecologically Sustainable Development Report	Andrew Thai
Issue	20/08/18	Greenhouse Gas Efficiency Performance & Ecologically Sustainable Development Report	Andrew Thai
Rev1	05/09/2018	Ecologically Sustainable Development Report	Andrew Thai
Rev 2	6/03/2019	Report revised with comments to align with EIS requirements	Andrew Thai
Rev 3	10/5/2019	Updated Table 1 and Figure 1 for revised areas and drawings for SSDA drawings Revision I	Andrew Thai

1 Introduction

This Ecologically Sustainable Development Report has been prepared by Frasers Property on behalf of a joint venture between Frasers Property Australia (Frasers Property) and Altis Property Partners (Altis). The Proposed Development seeks the construction and operation of a Warehouse, Logistics and Industrial Facilities Hub as well as subdivision on the Site. The Site is described as 657-769 Mamre Road, Kemps Creek Lot 34 DP 1118173, Lot X DP 421633, Lot 1 DP 1018318, Lot Y DP 421633 & Lot 22 DP 258414.

Section 2 of the report addresses, in general, the key issue of Ecologically Sustainable Development (ESD). It is noted that within the Secretary's Environment Assessment Requirements (SEARs) – no specific requirements on ESD is required as a part of the Environmental Impact Assessment. **Section 3** and **Section 4** energy efficiency and greenhouse gas emissions, detailing what the expected energy demand maybe and lists potential efficiency measures. **Section 5** outlines the possible potable water demand and measures to reduce water demand.

1.1 Development Overview

The Proposed Development covers an area of approximately 118 hectares. This SSD Application seeks approval for subdivision to create 33 allotments, internal Estate roads, along with bulk earthworks across the entire site. The warehouse and industrial facilities areas are detailed in Table 1 and Figure 1

Table 1: Proposed State Significant Development (Stage 1)

Lot Number	Warehouse	Warehouse Designation and areas
Lot 1	1A and 1B	Warehouse 1A (11,375 m^2) Office 1A (550 m^2) Warehouse 1B (11,375 m^2) Office 2B (550 m^2)
Lot 2	2	Warehouse (21,995 m^2) Office (1,150 m^2)
Lot 3	3	Warehouse 3A (9,020 m^2) Office 3A (550 m^2) Warehouse 3B (9,020 m^2) Office 3B (550 m^2)
Lot 4	4	Warehouse (18,840 m^2) Office (840 m^2) Dock Office (50 m^2)
Lot 5	5	Warehouse 5A (13,020 m^2) Office 5A (710 m^2) Dock Office 5A (50 m^2) Warehouse 5B (12,785 m^2) Office 5B (710 m^2) Dock Office 5B (50 m^2)
Lot 6	6	Warehouse 6 (48,341 m^2) Office 6A (1,200 m^2) Dock Office 6A (50 m^2) Office 6B (1,200 m^2) Dock Office 6B (50 m^2)

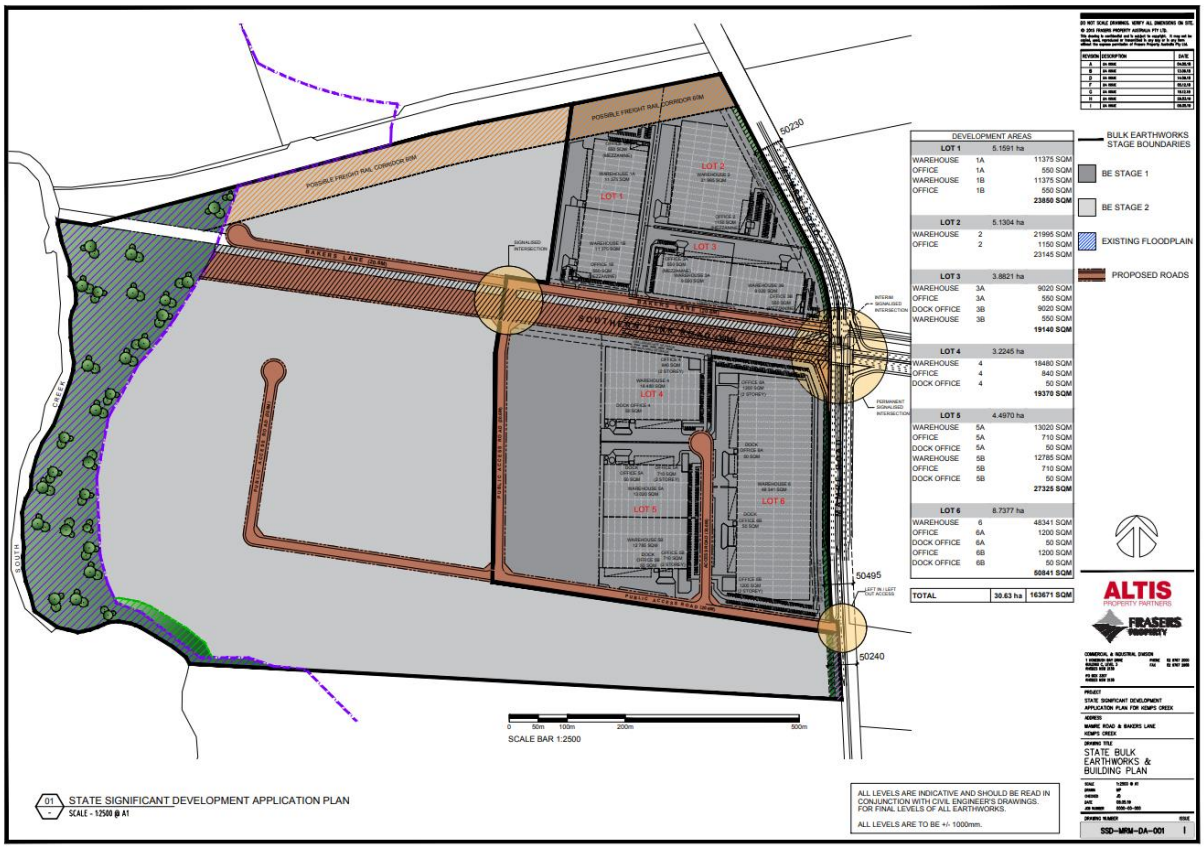

Figure 1: Proposed State Significant Development (Stage 1) – Proposed Warehouse, Logistics and Industrial Facilities Hub

(Source: Frasers Property & Altis Property Partners, 2018)

2 Sustainable Design Strategies

This section addresses, in general, the key issues of Ecologically Sustainable Development as it relates to the Proposed Development. These are opportunities to achieve ESD with areas for consideration and recommendations identified in Table 2.

Table 2: Summary of Sustainable Design Strategies

Theme	Recommendations
Transport	To reduce the reliance on private vehicles and relieve any traffic pressures on nearby roads and local communities, the following approaches should be investigated: - Secure bicycle parking facilities. - Extension of existing bus routes or the provision of a regular bus service from the Project to nearby public transport facilities. - Promote car-pooling/car-sharing initiatives.

Theme	Recommendations
Materials	Endeavour to use material with minimal carbon dioxide equivalent (CO_2e) emissions and embodied energy during the construction and operation of the Project.
	All timber products used at the site should be procured from certified sustainably harvested resources. No timber should be specified from rainforest or old growth forest.
	Use insulation and refrigerants with zero ozone depleting potential.
	Use of all paints, carpets, adhesives and sealants that have low volatile organic compounds (VOCs) during the construction and operation phase.
	Use low emission Formaldehyde composite wood products during the development of the Project.
	Promote the use of regional or local manufacturers.
Water	Develop a stormwater management plan that incorporates water sensitive urban design (WSUD) such as: - Infiltration trenches and bio retention basins. - Bioswales. - Rain gardens. - Gross pollutant traps. - Rainwater tanks. These initiatives reduce the quantity and quality of storm water runoff, protect waterways and ecosystems, minimise drainage infrastructure costs and enhance liveability.
	Implement rainwater harvesting techniques to minimise potable water use by using rainwater collected from warehouse and/or office roofs for non-potable uses such as toilet flushing and irrigation. If implemented during the construction stage, rainwater harvesting could be used to mitigate dust generation.
	Adopt a landscaping plan that promotes the use of plants that are drought resistant and have low water requirements.
	Use water efficient fixtures with high WELS rating.
	Timely maintenance of fixtures and fittings.
Management	Adopt an independent consultant to provide tuning and maintenance for fire, mechanical, electric and hydraulic services to ensure all aspects are running to their design specification as efficient as possible.
	These strategies are recommended to be implemented via a Site Management Plan or equivalent.

Theme	Recommendations

Indoor Environment Quality	Consider a design to optimise occupant satisfaction in accessibility, usability, air quality and public space utility by adopting a high level of indoor environmental quality. This can be achieved by:
	- Optimising natural light in work environment through clear roof sheeting in the warehouse.
	- Optimising fresh air ventilation by increase outdoor air into conditioned spaces
	- Optimising thermal comfort through passive solar design such as insulation, air conditioning, glazing, curtains, external louvers/eves, high performance glass and a reflective roof or 'cool roof'.
	- Minimising internal noise transferencee between warehouse tenants by:
	  ○ Using noise absorbent fillers to reduce any reverberation.
	  ○ Installing walls with a high acoustic transmission loss value.
	  ○ Using door seals.
	- Installing eco-certified workstations within the office space.

Noise	Consider a warehouse wall and roofing design that limits internal noise transmission to nearby neighbourhood residences. This can be accomplished by using: - Concrete walls. - Double sheeted zincalume roofing with insulation. - Door seals.
Energy Efficiency	Investigate the possible viability of the following energy sources to reduce bought electricity: - Solar water heating with gas boost. - Solar panels (photovoltaics) or future proofing building for future installation.
	Adopt the use of the air conditioning design features to minimise the associated bought electricity.
	Adopt the use of energy efficient appliances and equipment used within the office and warehouse space.
Waste	Ensure the bulk earthworks on-site balance cut and fill where possible.
	Construction contractor develops and implements a Waste Management Plan.
Land Use and Ecology Impact	Use indigenous planting appropriate to the area.
	Design external lighting to avoid releasing light into the night sky or beyond the site boundary.
	Adopt the use of water sensitive urban design (WSUD) described above.
	Employ specialist advice to develop an independent ecological report to identify any protected local flora and fauna.

2.1 Green Star

The Proposed Development is committed in delivering 'Australian Excellence' in sustainable buildings, as defined by the Green Building Council of Australia. Every proposed warehouse, logistics and industrial facility will aim to be certified 5 Star Green Star Design and As-Built certification.

Green Star is a voluntary sustainability rating system for buildings in Australia. It was launched in 2003 by the Green Building Council of Australia.

The Green Star rating system assesses the sustainability of projects at all stages of the built environment life cycle. Ratings can be achieved at the planning phase for communities, during the design, construction or fit out phase of buildings, or during the ongoing operational phase.

The system considers assesses and rates buildings, fit-outs and communities against a range of environmental impact categories, and aims to encourage leadership in environmentally sustainable design and construction, showcase innovation in sustainable building practices, and consider occupant health, productivity and operational cost savings.

Green Star certification is a formal process in which an independent assessment panel reviews documentary evidence that a project meets Green Star benchmarks within each credit. The assessment panel awards points, with a Green Star rating determined by comparing the overall score with the rating scale:

Table 3: Green Star Rating Scheme

Score	Rating	Category
10-19	One Star	Minimum Practice
20-29	Two Star	Average Practice
30-44	Three Star	Good Practice
45-59	Four Star	Best Practice
60-56	Five Star	Australian Excellence
75+	Six Star	World Leadership

Green Star rating tools for building, fit-out and community design and construction reward projects that achieve best practice or above, which means ratings of 1, 2 or 3 are not awarded. Ongoing performance of a building can be rated at any of the 6 star ratings.

2.2 Impacts of a Changing Climate

The Office of Environment and Heritage has recommended that NSW and ACT Governments Regional Climate Modelling (NARCliM) climate change projections be used to inform the building design and asset life.

In 2016, a climate change risk assessment was undertaken for Horsley Park, one suburb away from Kemps Creek The risk assessment was undertaken using NARCliM as one of the datasets. A summary of risks identified from the assessment on the Proposed Development is detailed in Table 4.

Table 4: Summary of Climate Change Risk at the Proposed Development Site

CLIMATE VARIABLE NO.	RISK
Higher Mean Temperatures	
T5	An increase in soil dryness could affect the building structure and integrity.
Higher Maximum Temperature Extreme	
T8	An increase in the number of extreme heat days could lead to heat stress, solar exposure and reduced thermal comfort of staff and contractors, resulting in increased sickness (and absence of staff).
T10	An increase in the number of extreme heat days could lead to higher exposure (and heating) of transport and utility infrastructure servicing assets resulting in loss of power and service provision to water and wastewater assets and, an increase in the number of environmental and safety/health related incidents.
T11	An increase in the number of extreme heat days could lead to power supply disruptions from programmed load shedding and heat damage to network infrastructure (increases in black outs and brown outs) causing tenant inconvenience and business interruption.
T12	An increase in the number of extreme heat days could lead to higher summer cooling loads on buildings resulting in increased water and energy demand/costs.
T14	An increase in the number of extreme heat days could lead to heat stress and solar exposure of the tenants/ building occupants, resulting in increased illness, dehydration related illness and/or morbidity.
T15	An increase in extreme heat days would reduce thermal comfort in buildings. Existing HVAC systems and thermal comfort may not be adequate.
T16	An increase in the number of extreme heat days could lead to heat stress and solar exposure of the tenants/ building occupants resulting in decrease in comfort levels, pressure on social services and reduced productivity.
Decrease in mean precipitation	
P2	Short-duration droughts could lead to increased dehydration of vegetation and other green spaces and the degradation of natural and landscaped areas resulting in increased maintenance costs for landscaping.
Increase in Frequency of High Precipitation Extreme	
P7	An increase in intense rainfall, runoff, wind and hail events (in combination or isolation) could result in higher costs of property maintenance and clean up.
P8	An increase in intense rainfall and hail events could result in damage to properties, causing displacement and disruption of the tenants business and other activities while clean up and recovery occurs.
P9	An increase in rainfall and runoff could lead to localised flooding causing damage to structures resulting in increased insurance premiums for assets.

CLIMATE VARIABLE NO.	RISK
P10	An increase in rainfall has the potential to cause flash flooding from overflow of stormwater drainage creating hazardous conditions and health & safety risks for the tenants/ building occupants.
P11	An increase in extreme rainfall will increase localised flooding, limiting access and egress, causing business interruption and tenant/ building occupant inconvenience.
P14	An increase in frequency of storms could lead to impacts on the ICT networks – in turn this may affect communication, emergency response management and other ICT based applications.
Increase in Severity of Precipitation Extremes	
C1	Short-duration droughts could lead to higher pressure on urban water resources resulting in increased need for alternative water supplies such as wastewater recycling.
Increase Storm Severity	
P3	An increase in the frequency and severity of storms could lead to greater disruption to transport resulting in a larger number of absences or reduced punctuality of staff.
C5	An increase in frequency and severity of extreme storms and high winds could lead to higher exposure of built assets and property resulting in more damage to assets with associated costs and losses of service.
C6	An increase in extreme winds could lead to a higher exposure of built assets and property to strong winds resulting in a higher frequency of falling trees and branches onto assets.

Source: Ramboll Environ (2016), Climate Adaptation Plan Horsley Drive Business Park NSW, North Sydney, Australia.

3 Energy Efficiency

3.1 Sources of Energy use

The main sources of energy use in a typical distribution warehouse include

- Mechanical ventilation of warehouse and storage areas;
- Air conditioning of office area;
- Internal and external lighting; and
- Office and warehouse equipment

3.2 Measures to Improve Energy Efficiency

To improve energy efficiency, Table 5 outlines initiatives that will be considered for every warehouse in the Proposed Development. The impact of these initiates are illustrated in Figure 2.

Table 5: Summary of Energy Efficiency Measures

Project Aspect	Recommendations
Ventilation	Use natural ventilation in warehouse and mezzanine storage level to reduce mechanical ventilation costs.
Solar Design	Incorporate passive solar design principles that reduce the air conditioning of office space and mechanical ventilation of warehouse space. This can be accomplished by using: - Limited glass on east and west facing office walls. - Enhanced glazing. - High solar performance tinted glass. - Block-out curtains on the interior of office windows. - External louvers/eves on east and west facing office windows. - Plant deciduous trees on east and west facing office walls to disperse direct sunlight during summer and promote sunlight in winter. - Use a highly reflective roof or 'cool roof' to decrease internal thermal fluctuations. - Wall insulation for office space.
Energy Sources	Investigate the viability of the following energy sources to reduce bought electricity: - Solar water heating with gas boost. - Solar panels (photovoltaics) or future proofing building for future installation.
Air Conditioning Design	Adopt the use of the following air conditioning design features to minimise the associated bought electricity. This can be achieved through implementing: - Mixed mode air conditioning to any office space with openable windows where sensors determine if windows are open. - Energy sub metering that is linked to tracking and monitoring systems to allow for self- assessment, problem solving and ongoing improvements during operations. - Independent units being installed in board rooms and server rooms to deal with differing loads and operating hours within the office building.

Project Aspect	Recommendations
	- Separate operating systems for separate areas with different occupancy periods. - Ensure temperature sensors are located in areas that avoid direct solar gain or heat transfer through walls. - Adequately insulated pipework and ductwork to avoid further loads on air conditioning. - Regular tuning and maintenance of the system to allow the system to function as per its original energy efficient intent.
Lighting	Use LED lighting strategies with advanced controls systems to dim or turn off lights when not in use.
	Optimise natural light in warehouse by using clear roof sheeting to reduce lighting costs.
Appliances and Equipment	Adopt the use of energy efficient appliances and equipment used within the office and warehouse space.

An analysis of integrating these initiatives into a dual tenancy distribution warehouse are illustrated in Figure 2. The warehouse assumed is 13,050m² warehouse area and 760m² office area. The analysis finds that the example warehouse has a potential to reduce energy demand by 81% when compared to a BCA 2016 warehouse (**Cundall Johnson and Partners, 2016**).

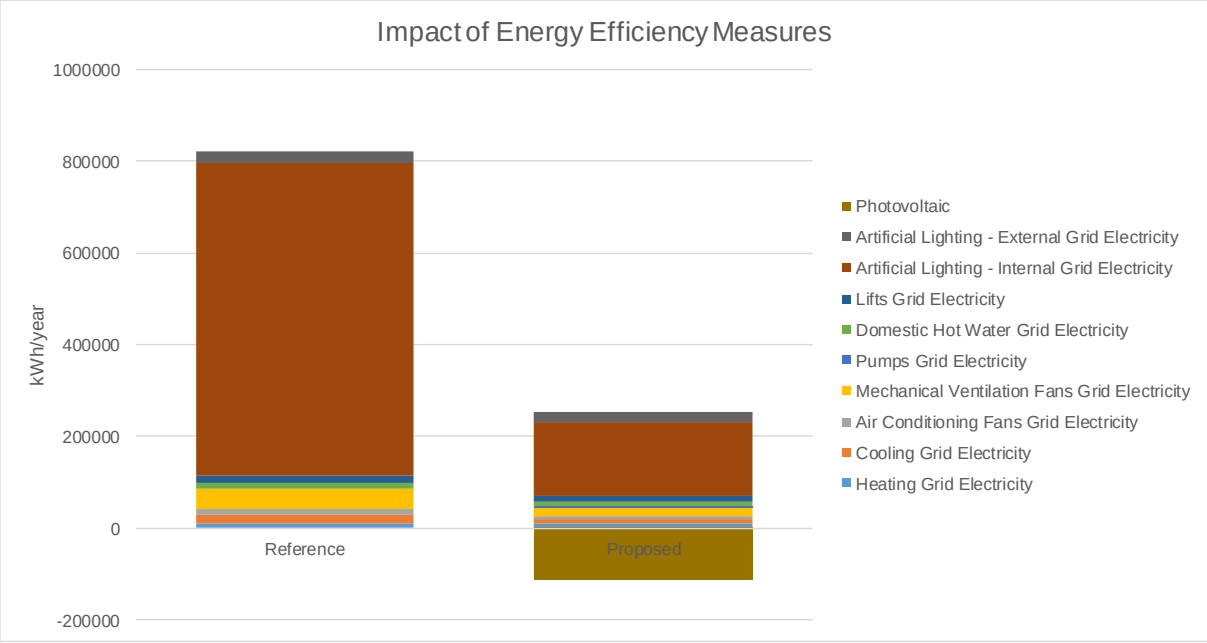

Figure 2: Impact of Energy Efficiency Measures

4 Greenhouse Gas Emissions

4.1 Relevant Legislation and Standards

4.1.1 NATIONAL GREENHOUSE AND ENERGY REPORTING FRAMEWORK

The *National Greenhouse and Energy Reporting Act 2007 (Cth) (the NGER Act)* establishes a mandatory obligation on corporations which exceed defined thresholds to report Greenhouse Gas Emissions (GHG), energy consumption, energy production and other related information.

Corporate and facility reporting thresholds for GHG emissions and energy consumption or energy production are provided in Table 6.Emissions are measured in terms of tonnes of CO2-e. Emissions are normalised to their equivalent Global Warming Potential (GWP) of CO2.

Table 6: NGER reporting thresholds

Corporate Threshold		Facility Threshold	
GHG Emissions (Scope 1&2) **(t CO2-e)**	**Energy Usage (TJ)**	**GHG Emissions (Scope 1&2)** **(t CO2-e)**	**Energy Usage (TJ)**
50,000	200	25,000	100

Source: DCCEE, 2007

If a corporation has operational control over facilities whose GHG emissions or energy use in a given reporting year:

- individually exceed the relevant facilities threshold; or
- when combined with other facilities under the corporation's operational control, exceed the relevant corporate thresholds, that corporation must report its GHG emissions or energy use (as the case may be) for that year under the NGER Act.

This may include the Project's lessee-company, construction or other contractors.

It is anticipated that during construction, there will be multiple parties with operational control over different aspects of the site development. For this reason, while it is anticipated that there may be some reporting requirement under the NGER scheme, this is likely to be apportioned across the NGER reporting corresponding to several corporations. Once operational, the Project could have combined Scope 1 and Scope 2 emissions greater than 25,000 tonnes CO_2-e in a financial year. If this is the case, the reporting of emissions is expected to be required under the NGER scheme.

4.1.2 NATIONAL CARBON OFFSET STANDARD

The National Carbon Offset Standard ('NCOS') is a voluntary standard to manage GHG and to achieve carbon neutrality. It provides best-practice guidance on how to measure, reduce, offset, report and audit emissions for organisations, products & services, events, precincts and buildings.

The Standard can be used in a number of ways. Organisations can use the Standard to better understand and manage their carbon emissions, to credibly claim carbon neutrality and to seek carbon neutral certification.

As of 2017, Frasers Property is a certified carbon neutral organisation, certified annually under the NCOS. As a part of the certification, Frasers Property has voluntarily opted to offset the greenhouse gas emissions of their operations. Construction activities undertaken directly by Frasers Property will

be carbon neutral. This negates the greenhouse gas emissions from the construction of the Proposed Development, that Frasers Property have direct control over. In February 2019, only 46 organisation in Australia held carbon neutral certification.

In addition to carbon neutral certification for organisation, the NCOS program allows building to be certified. At present, only 3 buildings are certified carbon neutral. Frasers Property holds two of these certifications and aims to continue in offsetting greenhouse gas emissions promotion carbon neutral operation for buildings. One of these carbon neutral certification is a distribution warehouse in NSW.

4.2 Sources for Greenhouse Gas Emissions

The Greenhouse Gas Protocol (**WRI & WBCSD, 2004**) establishes an international standard for accounting and reporting of greenhouse gas emissions. The Greenhouse Gas Protocol has been adopted by the International Organization for Standardization, endorsed by greenhouse gas initiatives (such as the Carbon Disclosure Project) and is compatible with existing greenhouse gas trading schemes.

Under this protocol, three "scopes" of emissions (scope 1, scope 2 and scope 3) are defined for greenhouse gas accounting and reporting purposes. This terminology has been adopted in Australian greenhouse gas reporting and measurement methods and has been employed in this assessment. The definitions for scope 1, scope 2 and scope 3 emissions are provided in the following sections, with a visual representation provided in Figure 3.

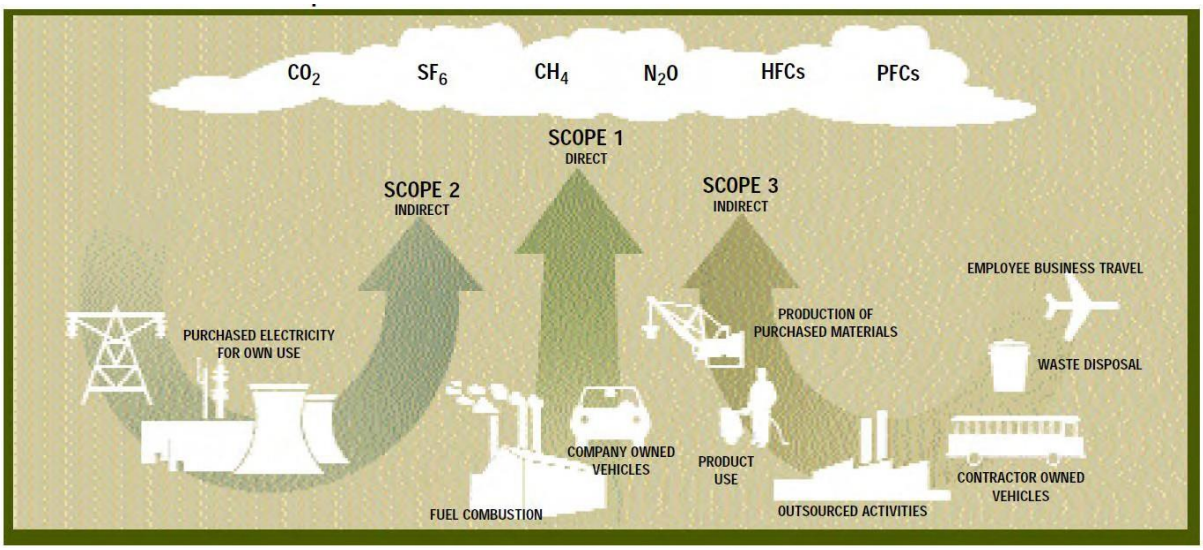

Figure 3: Overview of Scopes and Emissions across a Reporting Entity

Source: WRI & WBCSD 2004

4.2.1 SCOPE 1: DIRECT EMISSIONS

Direct greenhouse gas emissions are defined as emissions that occur from sources owned or controlled by the reporting entity. For the Project, direct greenhouse gas emissions primarily result from sources below.

- Contractor-owned vehicles used during the construction of the Project
- Tenant-owned vehicles used during the operation of the Project.
- Operator-owned vehicles used during the operation of the Project

- Carbon sequestered within cleared vegetation.
- Project facilities (not including electricity).
- Back-up power generators (if relevant).

In addition, it is noted that although the vehicles used throughout construction are not owned or operated by the Project's owner, as they can be considered under the owner's control and are significant in value, they have been incorporated.

4.2.2 SCOPE 2: INDIRECT EMISSIONS

Scope 2 emissions are indirect greenhouse gas emissions from the generation of purchased energy by the Project. Scope 2 in relation to the Project covers purchased electricity, defined as electricity that is purchased or otherwise brought into the organisational boundary of the entity. Scope 2 emissions physically occur at the facility that generates the electricity, rather than the facility that uses the electricity. This is why they are often referred to as indirect greenhouse gas emissions.

4.2.3 SCOPE 3: OTHER INDIRECT EMISSIONS

Scope 3 emissions are defined as those emissions that are a consequence of the activities of an entity, but which arise from sources not owned or controlled by that entity. For the Project, other indirect greenhouse gas emissions primarily result from sources below.

- Privately owned vehicles travelling to and from the Project site during the construction and operational phase.
- Tenants' employee business travel.
- Taxis to and from the Project.
- Public transport serving the Project.
- Off-site waste disposal.

The Greenhouse Gas Protocol allows optional reporting of scope 3 emissions. If an organisation believes that scope 3 emissions are a significant component of the total emissions inventory, these can be reported along with scope 1 and scope 2 emissions. However, the Greenhouse Gas Protocol notes that reporting scope 3 emissions can result in double counting of emissions and can also make comparisons between organisations and/or products difficult (because reporting is voluntary). Double counting needs to be avoided when compiling national (country) inventories under international agreements such as the Kyoto Protocol. The Greenhouse Gas Protocol also recognises that compliance regimes are more likely to focus on the "point of release" of emissions (i.e., direct emissions) and/or indirect emissions from the purchase of electricity.

In this regard, it is noted that the National Greenhouse and Energy Reporting scheme applies only to scope 1 and scope 2 emissions (**DCCEE, 2007**).

4.3 Measures to Reduce Greenhouse Gas Emissions

To reduce Greenhouse Gas Emissions, the following approach will be applied to the Proposed Development:

1. Design for reduced emissions which includes the selection of lower greenhouse gas intensive building materials;
2. Design for improved energy efficiency (refer to Section 3) to minimise greenhouse gas emissions through operations; and
3. Purchase certified carbon offsets.

Table 7 outlines measures, based on scope of emission, which will be considered for every warehouse in the Proposed Development to reduce Greenhouse Gas Emissions. The impact of these initiates are illustrated in Figure 4Table 4, based on the example introduced in Section 3.

Table 7: Summary of Greenhouse Gas Mitigation Measures

Scope	Recommendations
1	Support the education of contractor owned vehicle drivers in techniques to conserve fuel during the construction phase e.g. implement a no-idling policy.
	Support alternatively fuelled and 'modernised' tenant owned equipment and vehicles used during the operational phase – including compressed natural gas, hydrogen, electric, compressed air and hybrid vehicles.
	Support tenant management procedures that consider the reduction of fuel use as far as practical during the operation phase.
	Make use of renewable energy sources where practical for the generation, use or purchase of electricity, heating and cooling.
	Install tenant energy sub-metering systems.
2	Design energy efficient buildings to meet national / international benchmarking schemes (e.g. 5-star Green Star ratings).
3	Consider the use of high capacity public transport to and from the proposed Project.
	Support the use of the low emission vehicles to and from the proposed Project, including the provision of recharging stations priority queuing and parking.
	Develop an integrated solid waste management plan to implement waste saving initiatives such as composting and recycling.

Taking the example first introduced in Section 3, the emissions reduction associated with energy efficient design is illustrated in Figure 4. In NSW, the carbon coefficient of electricity is 1.05kgCO2-e/kWh. Through implementing energy efficiency measures, it can be demonstrated that the Proposed Development can achieve at least 80% reduction in Greenhouse Gas Emissions for each development during operation.

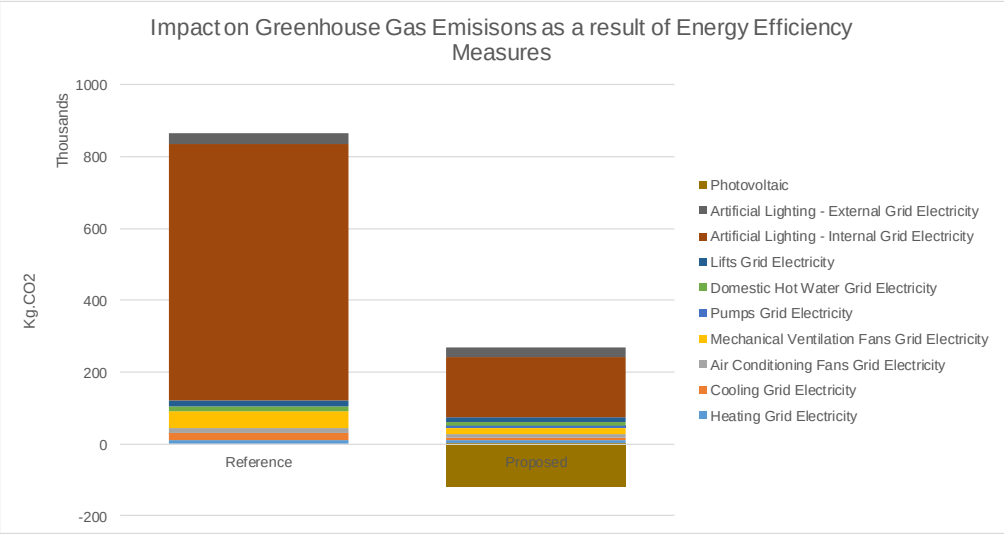

Figure 4: Impact on Greenhouse Gas Emissions as a Result of Energy Efficiency Measures

5 Water

5.1 Potable Water Demand

The water demand was assessed based on the "Average Daily Water Use by Property Type", a Sydney Water publication (**Sydney Water, 2015**). This document provides guidance on potable water demand based on floor areas that are generated from a development. This document is supported by studies that Sydney Water has undertaken to determine a realistic assessment of the average water demand.

The values presented in Table 8 show how an average daily water demand of 39 kL/day for the site was derived. The floor area is based on the example provided in Section 3.

Table 8: Potable Water Demand

Space type	Average daily demand L/m²/day	Floor area m²	Average daily demand kL/day
Industrial – Warehousing	2.82	13,050	36.8
Commercial – Office	2.27	952	2.2
Total			**39**

5.2 Measures to Reduce Potable Water Demand

As presented in the sustainable design strategies (refer to Table 2), rainwater harvesting techniques will be implemented to minimise potable water use by using rainwater collected from warehouse and/or office roofs for non-potable uses such as toilet flushing and irrigation. The design plans show water tanks for rain water harvesting at the suggested locations. However, there are no final designs yet for the sizes of these tanks, since the final use of the warehouses is not known at this stage.

Indoor/Domestic Water

- Install high-efficiency dishwashing equipment and run only when full; and
- Fit restrooms with water-saving fixtures. Water efficient urinals, dual-flush toilets, and motion-detecting faucets can all reduce water usage. Motion detectors on restroom lights, and high-efficiency hand dryers, also contribute toward savings. As a minimum the WELS star ratings for the fittings would be:
    - 4 Star WC
    - 6 Star urinals
    - 6 Star tapware
    - 3 Star showers.

Outdoor Water Use

- Use a weather-based irrigation control or soil moisture sensor for automatic irrigation system control;
- Choose native, drought-resistant plants for landscaping; and
- Audit and optimize irrigation systems to achieve maximum distribution uniformity of water.

6 Conclusion

This report has addressed the ESD requirements to support the EIS. Principles to reduce energy demand, lower greenhouse gas emissions and minimise water consumption have been present as an overarching strategy for the Proposed Development. As each individual warehouse or industrial facility design develops, the approach outlined in this report will be applied to ensure the Proposed Development is resilient.

7 References

Ramboll Environ (2016), Climate Adaptation Plan Horsley Drive Business Park NSW, North Sydney, Australia.

Cundall Johnson and Partners (2016). Green Star Submission GHG Emission Calculator Survitec and Spec, Milson Point, Australia

WRI & WBCSD. (2004). The Greenhouse Gas Protocol, World Resource Industry & World Business Council for Sustainable Development, March 2004. Accessed on the 05/03/2019 from http://pdf.wri.org/ghg_protocol_2004.pdf.

DCCEE (2007) National Greenhouse and Energy Reporting Act 2007 (the NGER Act) as amended Dec 2014, Department of Climate Change and Energy Efficiency, Commonwealth of Australia, 2007.

Accessed on the 05/03/2019 from https://www.comlaw.gov.au/Details/C2014C00813

Sydney Water (2015). Average Daily Water Use by Property Type. Accessed on 17 February 2015 from https://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq2/~edisp/dd_046262.pdf