APPENDIX D

SUSTAINABILITY STRATEGY - CRONE PARTNERS

report

Stage 1 DA ESD Report

505 – 523 George St, Sydney

crone partners pty ltd, abn 8009 598 9272
suite 12, 36 agnes street, fortitude valley, qld 4006, Australia
bris: telephone +61 7 3666 0401 facsimile +61 7 3252 1692
syd: telephone +61 2 8295 5300 facsimile +61 2 8295 5301
www.cronepartners.com
australasia. china. south east asia. middle east

C	Client advice added	KT	N.Bandounas	5/5/14
B	Final	KT	N.Bandounas	2/5/14
A	Draft for Review	KT	N.Bandounas	30/4/14
Revision	**Description**	**Author**	**Issued to**	**Date**
project	505-523 George St, Sydney	date		30th April 2014
project no.	CE.3201	qa form no.7102		
total pages	12	file no.		00_10.33

crone partners pty ltd, abn 8009 598 9272
suite 12, 36 agnes street, fortitude valley, qld 4006, Australia
bris: telephone +61 7 3666 0401 facsimile +61 7 3252 1692
syd: telephone +61 2 8295 5300 facsimile +61 2 8295 5301
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crone partners pty ltd, abn 8009 598 9272
suite 12, 36 agnes street, fortitude valley, qld 4006, Australia
bris: telephone +61 7 3666 0401 facsimile +61 7 3252 1692
syd: telephone +61 2 8295 5300 facsimile +61 2 8295 5301
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1 Executive Summary

This report outlines the ESD initiatives being investigated for the 505-523 George Street development within the Sydney CBD.

The ESD focus has been on providing a design solution that reduces the total environmental impact of the development, while also providing an enhanced level of amenity and indoor environmental quality. These objectives may be addressed and benchmarked throughout the design process using the following:

- Determination of appropriate benchmarking values and performance – BCA Section J
- Analysis of the proposed design for exceeding these benchmarks – Building modelling
- Use of a sustainable rating tool or the principles from sustainable rating tools for targeting ESD initiatives

The ESD initiatives outlined in this report, present the proposed design strategy and will be worked through in detail during the design stages.

The following minimum regulatory requirements apply to the project:

- BCA Section J
- NSW BCA Section J(A) - BASIX Energy, Water and Thermal Comfort

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syd: telephone +61 2 8295 5300 facsimile +61 2 8295 5301
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2 Introduction

This report provides information pertaining to the sustainability initiatives for the proposed development at 505-523 George St, Sydney. This report is to address the planning provisions of SLEP 2012 clause 6.21 that is applicable to this project.

The following is a summary of the requirements to be addressed as part of the DA submission.

The Sydney City Council has set in place targets that:

- Aim to be internationally recognised as a leader with outstanding environmental performance and new 'green' industries driving economic growth
- To reduce our carbon emissions, with a network of green infrastructure to reduce energy, water and waste water demands
- To plan for new housing opportunities integrated with vital transport, facilities, infrastructure and open space
- For major projects consideration of the applicable sustainability rating tools, energy efficiency measures in accordance with SEPP 65, BASIX, and BCA Section J

2.1 Project Details

Address:	**505-523 George St**
Location:	**Sydney**
Climate Zone:	**5**
Building use:	**Mixed use - Residential and retail**

2.2 Sustainability Strategy

The strategy proposed for this development is based on the methods, case studies and information available to deliver sustainable design and premium quality at an equal or lower cost than conventional design.

To achieve the aim of the Sydney City Council as a leader with outstanding environmental performance it is important to address the issues of holistic sustainable design that include:

1. Lower operating costs
2. Higher return on investment
3. Greater tenant attraction
4. Productivity benefits
5. Reduced liability and risk
6. Healthier places to live and work
7. Future-proofed assets

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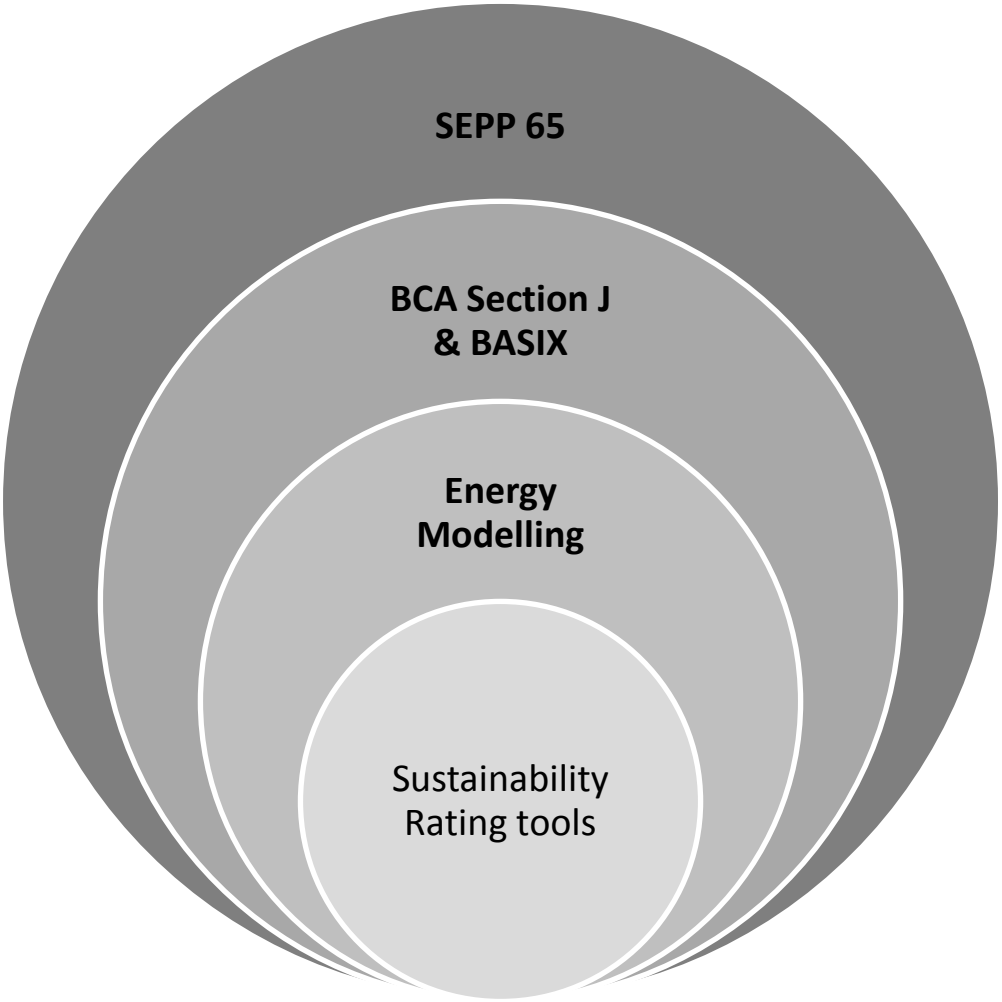
The development can address these measures using sustainable rating tools and design methodologies and analysis software to provide an outcome to the client that meets the needs of the client, the Sydney City Council and the people of Sydney.

The strategy for assessment of the project shall generally follow:



The largest circle or wider analysis are ecological design strategies at the higher level and cover the minimum requirements (compliance), right down to the detailed requirements of the inner strategies that address a wide range of sustainability measures and initiatives where the cost benefits must be considered before implementation.

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suite 12, 36 agnes street, fortitude valley, qld 4006, Australia
bris: telephone +61 7 3666 0401 facsimile +61 7 3252 1692
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3 The ESD Process

The following process is outlined for tracking of application of any ESD initiatives within the design and construction process. Each phase of the process and the appropriate level of design integration for ESD initiatives is identified.

3.1.1 Phase 1 – Planning/Concept Design/Early Schematic Design – Development Application

1. Determine baseline and target Green initiatives
2. Determine Market position and Green initiatives that will assist in providing a stronger market position
3. Document a Base level of performance measure targeted (Stage 2 DA)

3.1.2 Phase 2 – Concept Design/Schematic Design

1. Determine baseline compliance requirements (BCA section J and BASIX)
2. Analyze major systems and options for Energy and Cost saving opportunities
3. Provide cost effective sustainability performance measures for improved building performance above baseline compliance
4. Confirm performance measures – build into design

3.1.3 Phase 3 – Developed Design

1. Monitor performance measures and track design development changes for impact on ESD initiatives and costs
2. Confirm performance targets have been achieved
3. Review tender documentation for incorporation of ESD targets

3.1.4 Phase 4 Construction Documentation

1. Review contractor information for inclusion of all targeted ESD initiatives
2. Develop operational sustainability plans

3.1.5 Phase 5 – Construction Services

1. Review commissioning data for consistency with performance measures and targeted ESD initiatives
2. Engage with the facilities management team and occupants to educated on maintaining sustainability performance

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syd: telephone +61 2 8295 5300 facsimile +61 2 8295 5301
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4 Minimum Compliance

4.1 SEPP 65

A SEPP 65 compliance assessment has been completed for the project with the outcomes included in the SEPP 65 analysis as part of the planning proposal documents.

The overall outcome from the analysis indicated the best design approach to achieve the SEPP 65 compliance is the taller thinner tower, which provides the best access to sunlight in the wintertime and the best access to potential natural ventilation.

These aspects of the design reduce the need for energy used for lighting and mechanical ventilation in the building.

Further analysis and modeling of these design requirements can optimize the building performance while providing cost benefits during construction.

4.2 National Construction Code – BCA Section J & BASIX

The proposed building DA will provide for retail, commercial offices and residential apartments. The building consist of a mix of BCA class 2 permanent residential apartments, BCA class 6 Retail and Class 5 offices.
Due to the three building classes that define the usage of the building, each class has a different method of BCA compliance as described below:

- Class 2: Multi-unit residential apartments – In NSW class 2 buildings are assessed under NSW BCA Section J(A) which refers to compliance with the BASIX online sustainability assessment tool, which ensure that there passive design principles in terms of fabric, glazing and shading are included in the design as well as minimum energy and water performance.
  Compliance is determined by the use of a thermal modelling software program, Accurate, and an online calculation to determine the level of energy and water improvements. The energy and water requirements cover appliances, fixtures and fittings, air conditioning, lighting, common areas, pools and any renewable energy systems.

- Class 5: A commercial office building must meet – The BCA Section J minimum deemed-to-satisfy (DTS) performance requirements for building fabric insulation, glazing, mechanical services, lighting as well as maintenance of these items. Should the DTS requirements not be met an alternative verification (JV3) model may be developed.

- Class 6: Retail – has the same performance requirements Class 5.

For the class 2 residential scheme, it is proposed that the development complies with the more stringent NSW BCA Section J(A) which includes the BASIX requirements.

This means that the more onerous energy, water and comfort requirements that apply to Class 2 residential buildings from the BASIX ratings will be applied.

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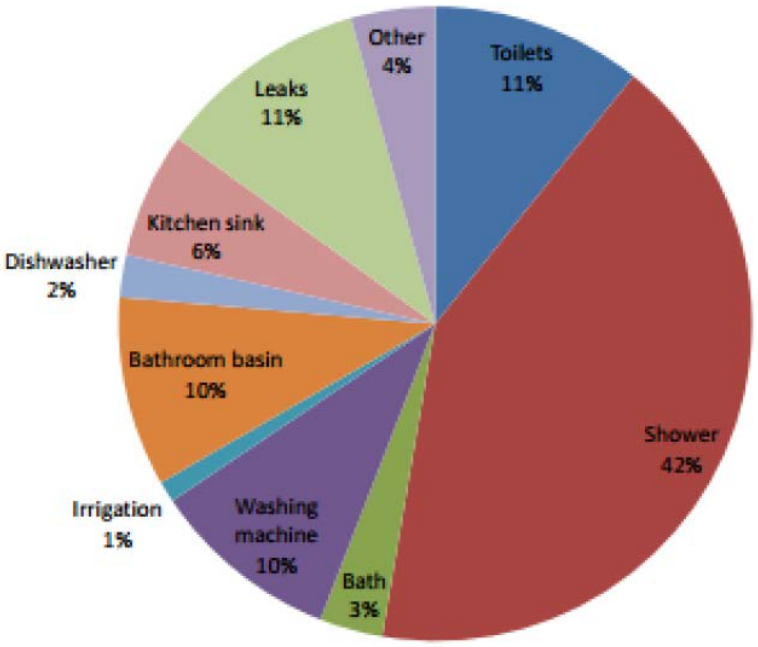
5 Water Management Plan

The Water Management Plan (WMP) for 505 George Street, shall incorporate ecologically sustainable design principles to reduce water consumption and re-use water where possible.
The water services available to the site are identified below:

- Potable Water – provided by Sydney Water
- Waste water (sewer) – provided by Sydney Water
- Recycled water (rainwater and re-use)
- Stormwater

5.1 Potable Water Conservation

The first step in any resource management plan is identifying major water sources and demand reduction possibilities. The following diagram provides a breakdown of water consumption within a multi-unit residential apartment as determined by the HiRise Pilot Program, conducted by Sydney Water.



In addition to water uses identified within the apartments, the 505 George Street development includes a commercial and retail area fire systems which will contribute towards the water demand, and possibly cooling towers.

The following water efficiency appliances are targeted in the design.

System	***Benchmark***	***Flow rates***
3 Star Showerheads	15 L/min	7.5 – 9 L/min
4 Star Toilets	3 – 6 L/flush	3 – 4.5 L/flush
5 Star Bathroom & kitchen taps	9 L/min	6 L/min
4 Star Washing Machines	105 L/wash	70 – 80L/min

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In addition, to efficient appliances, water demand may be reduced by:

- Utilizing air-cooled HVAC systems
- Façade system rainwater capture

5.2 Waste Water Minimization

The above water efficiency measure will minimize the output to the sewerage system through reduced flow. Grey water and black water systems have been considered to further reduce the sewerage load of the development, but due to their high-energy consumption and maintenance requirements, along with the provision of access to the local authority waste water system, the use of grey water and black water recycling systems are not considered appropriate for this development.

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6 Additional Assessment Tools

The following is for information only and for consideration in the application of sustainability principles to this project.

6.1 Sustainable Rating Tools

The principles of sustainable rating tools may be applied to the development for achieving sustainable outcomes. There are many different rating tools globally and principles from different tools may be applied in conjunction to provide the optimum sustainable outcomes for a premium development.

The benefit of application of principles and from different rating tools is the opportunity for greater flexibility during the design process and a wider application of sustainable principles for the development.

6.2 Life Cycle Assessment

Life cycle assessment is a more holistic approach to the application of sustainability principles. The potential of life cycle assessment is a reduction of total ecological impact of the development and the associated cost savings and resulting cost savings.

By revealing the big picture, a life cycle approach ensures that a company does not create improvement in one area at the expense of another. Rather than looking at specific indicators in isolation. (e.g. recycling rate, recycled content, construction methods, material content, etc)

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7 Project Consideration

Further investigation and consideration of the design inclusions for this project should look at innovations and measures to improve cost efficiencies and environmental performance.

7.1 Building innovations

The following innovative strategies may be considered for this project.

Biological Waste reuse
Collection and localised reuse of biological waste from occupants may be considered in the design process.

Façade rainwater collection systems
Integrated rainwater collection systems that form part of the façade can greatly increase the amount of rainwater collected while reducing the stormwater impacts around the site.

Smart metering and management of energy and water
Apartment metering and management systems may be installed to allow occupants to remotely control and monitor the energy using systems within their apartments.