



Prepared for Lederer Group

The Concept Development Application
GOSFORD ALIVE CONCEPT PLAN

To be built at
136 Donnison Street, Gosford 2250

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This report has been prepared by Efficient Living Pty Ltd on behalf of Lederer Group. At all times Efficient Living has acted with due diligence and employed all reasonable skill and care in the preparation of this report. The information contained within is based upon the documents and information, accepted in good faith as being true and accurate, provided by the client and architects.





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1. EXECUTIVE SUMMARY

Efficient Living has been engaged by Lederer Group to review the development application documents for the proposed Concept plan known as Gosford Alive, to be built on the Kibbleplex site in the Gosford City Centre. Efficient Living's role is to identify suitable sustainability initiatives for the future built form in line with;

- The planning Secretary's Environmental Assessment Requirements (SEARs) Gosford Kibblepax site re-development (SDD 9813)
- Gosford City Centre, Development Control Plan October 2018
- Medium to Large sites Clause 8.4(2) and (3) of GCC SEPP Chapter 5 Built form Section 5.2.8
- Gosford City Centre 2018 Gosford City Centre SEPP

This site is considered **State Significance Development** and is key to the renewal and revitalisation of the Gosford City Centre. The new controls specific to this site allow for greater heights and densities, whilst ensuring design excellence and a sustainability strategy that exceeds minimum planning policy.

The Masterplan Concept is the vision of BUCHAN Architects. This report identifies both mandatory Energy Efficiency Regulations that are applicable to the site and opportunities to incorporate further ESD initiatives to ensure this development enhances the amenity of the area and ensures the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.





Regulatory and Best Practice Sustainability tools

The following table outlines the regulatory and best practice ESD framework that is applicable to the built form and focused on the minimisation of mains electricity and water, indoor environmental quality, material selections and waste reductions.

Regulatory requirements	Project Initiatives
NatHERS Thermal Simulations	<ul style="list-style-type: none">All Class 2 sole occupancy units and serviced apartments (if applicable) are targeting a 10% improvement upon the mean average heating and cooling cap for NatHERS climate zone 15.
BASIX Water and Energy	<ul style="list-style-type: none">The residential component of the development will reach a 40% potable water savings as measured by the BASIX framework.The residential component of the development is aiming for a 10% increase of the BASIX energy target.
NCC Section J, Energy Efficiency 2019	<ul style="list-style-type: none">The commercial component of this building will be designed and specified to comply with NCC Section J, energy efficiency that is due to come into effect on the 1st May 2020. The NCC 2019 just had a significant increase in stringency that is estimated to generate a further 30% percent reduction in overall energy consumption of commercial buildings.
NABERS	<ul style="list-style-type: none">All commercial tenancies with a lettable area over 1000m² will be subject to a NABERS 4.5 star commitment agreement. A NABERS rating will be required at the point of sales or lease and must be maintained into the future under the building energy efficiency disclosure (BEED) Act 2010.
SEPP 65 Apartment Design Guide	<ul style="list-style-type: none">Passive Solar DesignHeating and Cooling energy conservationSolar and Daylight AccessNatural VentilationRecycling, Reuse and Waste management
Best Practice Tools	Recommended
Green Star	<ul style="list-style-type: none">The Green Building Council of Australia (GBCA) has developed the Green Star tool which provides a holistic approach to Building Sustainability. Green Star Design and As Built framework is a suitable rating scheme to ensure the future development meets the Best Practice objectives of the Gosford City Council DCP and the SEARs requirements.



Sustainable Building Principles

Sustainable Development Principles	Project Initiatives
Passive Solar Design	<ul style="list-style-type: none">• Adopt passive building design principles• High performance glazing• Thermal mass and insulation• Natural ventilation
Indoor Environment Quality	<ul style="list-style-type: none">• Daylight• Volume• Ventilation• External views• Product choice
Energy Efficiency	<ul style="list-style-type: none">• Significant increases to BASIX and 2019 NCC Section J, energy efficiency targets.• Typical Energy savings inclusions.
Water Conservation	<ul style="list-style-type: none">• Reduce water consumption through water-efficient fixtures and fittings.• Collection of rainwater and reuse for garden watering.• Native planting and water efficient irrigation to community open spaces.
Waste Management	<ul style="list-style-type: none">• Access to waste systems• Safe practices for storage, handling and collection of waste and recycling• Waste management plan
Building Materials	<ul style="list-style-type: none">• Material selection based on environmental benefits, fit-for-purpose and cost-effectiveness



2. INTRODUCTION

The Objective of the Gosford Alive Concept ESD report is to address;

The planning Secretary's Environmental Assessment Requirements (SEARs)
Gosford Kibblepax site re-development (SDD 9813)

Item 7. Ecologically Sustainable Development (ESD)

- Demonstrate how future buildings would meet or exceed minimum building sustainability and environmental performance standards.
- Detail how ESD principles (as defined in clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000) will be incorporated in the design, construction and ongoing operation phases of the development.

Clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000

(4) The principles of ecologically sustainable development are as follows:

*(a) the **precautionary principle**, namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:*

(i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and

(ii) an assessment of the risk-weighted consequences of various options,

*(b) **inter-generational equity**, namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,*

*(c) **conservation of biological diversity and ecological integrity**, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,*

*(d) **improved valuation, pricing and incentive mechanisms**, namely, that environmental factors should be included in the valuation of assets and services, such as:*

(i) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,

(ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,

*(iii) **environmental goals**, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.*



Gosford City Centre 2018 Gosford City Centre SEPP

This facilitates the renewal and revitalisation of the Gosford City Centre through a number of new controls which allow for greater heights and densities on major sites, whilst ensuring design Excellence.

DCP - Medium to Large sites Clause 5.2.8 Building Sustainability and Environmental Performance for Key sites, medium sites and large sites.

1. Measures to improve energy efficiency, water efficiency and waste minimisation should be investigated as part of the enhanced design excellence and design review process.
2. Buildings are to comply with or where possible exceed the Building Sustainability Index (BASIX) by 10% for residential development.
3. Buildings are to achieve a 4.5 star NABERS rating for commercial office buildings.
4. To minimise energy use, buildings are to be designed to:
 - a. Include high levels of insulation to reduce energy consumption and include energy efficient appliances; and
 - b. Incorporate green roof and green façade/wall elements to reduce heat loads on internal spaces.
5. Development is to reduce the need for active heating and cooling by incorporating passive design measures including design, location and thermal properties of glazing, natural ventilation and appropriate use of thermal mass and external shading, including vegetation.
6. All new water fittings and fixtures in all non-residential development, the public domain, and public and private parks are to be the highest Water Efficiency Labelling and Standards (WELS) Scheme star rating available at the time of development.
7. Rain water tanks are encouraged to be installed for all non-residential development.
8. Where possible, use building materials, fittings and finishes that;
 - a. Have been recycled;
 - b. Are made from or incorporate recycled materials; and
 - c. Have been certified as sustainable or 'environmentally friendly' by a recognised third party certification scheme.

DCP – Gosford City Centre Development Control Plan 2018



8.2 Energy Efficiency and Conservation

Residential

1. New dwellings, including multi-unit development within a mixed use building and serviced apartments intended or capable of being strata titled, are to demonstrate compliance with State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004.

Non-residential

2. Improve the control of mechanical space heating and cooling by designing heating/cooling systems to target only those spaces which require heating or cooling, not the whole building.
3. Improve the efficiency of hot water systems by: a. insulating hot water systems, and b. installing water saving devices, such as flow regulators, minimum 3 star rated shower heads, dual flush toilets and tap aerators.
4. Reduce reliance on artificial lighting and designing lighting systems to target only those spaces which require lighting at any particular 'off-peak' time, not the whole building, and installing timers or motion sensors to these areas.

8.3 Water Conservation

1. New dwellings, or developments which contain a residential component within a mixed use building or serviced apartments intended or capable of being strata titled, are to demonstrate compliance with State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004.
2. All new development shall demonstrate implementation of best practice water saving infrastructure including provision of rainwater / storm water retention tanks.



3. DEVELOPMENT DESCRIPTION

The Gosford City Centre, Development Control Plan 2018 has identified this site - Key Site 4, 136 - 148 Donnison Street (formerly Market Town). It is identified as a key site due to its size, location and address to key public spaces, including Kibble Park and Henry Parry Drive. The site also offers important urban renewal opportunities in the Civic Heart of Gosford City facing Kibble Park.

The Concept Plan Development Application is seeking approval of the demolition of the current existing structures on the site and the construction of 5 residential towers varying from 12 - 27 storeys, over a 3 - 4 story retail/commercial podium and associated parking.

This application forms the first stage of the development process. Approval for the construction of future development in accordance with the Concept Plan will be subject to a subsequent development application.



4. REGULATORY REQUIREMENTS

4.1. NatHERS Thermal Simulations

The National House Energy Rating Scheme (NatHERS) rates the potential heating and cooling energy of a residential development, based on its design. NatHERS helps to make Australian dwellings more comfortable for their inhabitants and also assists residents to save on energy bills through smarter design choices.

In NSW the BASIX framework sets out a heating and cooling energy target. The Gosford Alive project has made a commitment to improve upon the mean average heating and cooling cap by 10%. This 10% savings is approximately equal to half a NatHERS Star of energy improvement which aligns with the Green Star objectives for 4 star - Best Practice Design and As Built performance ratings.

	Maximum average load of all units	Gosford Alive targets with a 10% improvement
Heating Energy Allowance	61.5	55.4
Cooling Energy Allowance	36.4	32.8

4.2. BASIX Water and Energy

An integrated part of the planning system, BASIX is implemented under the Environmental Planning and Assessment Act. The Building Sustainability Index (BASIX) aims to deliver equitable, effective water and greenhouse gas reductions across NSW.

The Gosford City Council DCP – Medium to Large sites clause 5.2.8 requires buildings comply with or where possible exceed the Building Sustainability index (BASIX) by 10% for residential development.

BASIX has limited opportunities to measure water savings. The required 40% potable water savings target will be delivered through water efficient fittings and fixtures. The rainwater catchment area of this site will be suitable for harvesting and reuse on the gardens. There will however be insufficient rainwater collection for reuse in the residential units. Instead, it is proposed a more holistic approach is taken to water efficiency across the site and the Green star tool is used to deliver further water savings with-in the commercial area. The project will explore a 10% increased energy target but again reserves the right to offset commercial and residential energy efficiency, if required to ensure the most appropriate solutions for the site.

	Minimum required savings compared to Pre-BASIX buildings	Gosford Alive targets
Water Savings Target	40% savings	40% savings
Energy Savings Target	Buildings over 6 stories high 25% savings	10% increase on BASIX target 35% savings



4.3. NCC Section J, 2019 - Energy Efficiency

The National Construction Code (NCC) provides the minimum necessary requirements for safety, health, amenity and sustainability in the design and construction of new buildings throughout Australia.

The NCC is a performance-based code. This allows flexibility around compliance with the code and encourages innovation. The NCC includes Deemed to Satisfy Provisions (DTS solutions) and Performance Solutions.

Volume 1, Section J outlines the Energy Efficiency provisions. The new Section J of the 2019 edition of the NCC has been significantly re-written. These changes represent a substantial overhaul to the energy efficiency provisions for commercial buildings and will result in significant reductions in mains gas and electricity consumption. A 12 month transition period has been granted to allow the industry to prepare for the changes that will come into effect on the 1st May 2020.

Gosford Alive development will be designed and documented to comply with the new performance requirements. This will result in optimised façade design, HVAC, lighting, lifts and metering equipment and the result will be a significant reduction in Green House Gas Emissions.

4.4. NABERS

The National Australian Benchmarking Energy Rating Scheme (NABERS) is a national rating system that measures the environmental performance of Australian buildings. NABERS measures the energy efficiency, water usage, waste management and indoor environment quality of a building or tenancy and its impact on the environment.

Gosford City Centre, Development Control Plan 2018, issued by the NSW Government sets out a minimum requirement of 4 star performance under the Australian Building Greenhouse Rating Scheme (ABGRS). ABGRS is also known as NABERS Office Energy.

NABERS ratings are legally required for commercial building owners/managers for office tenancies of 1000m² or more (mandatory disclosure of NABERS Energy Rating at point of sale or lease): Under the Building Energy Efficiency Disclosure (BEED) Act 2010.

Gosford Alive development will be designed and documented to achieve a 4 star NABERS rating for all office spaces over 1000m².





4.5. SEPP 65

Design Quality of Residential Flat Development & Apartment Design Guide

The Apartment Design Guide provides consistent planning and design standards for apartments across the State. It provides design criteria and general guidance about how development proposals can achieve the nine design quality principles identified in SEPP 65 (State Environmental Planning Policy No 65 - Design Quality of Residential Apartment Development).

The 9 Design Quality Principles are;

- Context and Neighbourhood Character
- Built Form and Scale
- Density
- Sustainability
- Landscape
- Amenity
- Safety
- Housing Diversity and Social Interaction
- Aesthetics

5. BEST PRACTICE TOOLS

5.1. Green Star for the Residential towers

A key Objective in the Gosford City Centre Development Control plan 2018 states;

4 To promote best practice and quality environmental outcomes.

There are requirements across all the planning controls related to this site that require a holistic approach to sustainability to ensure it;

- Meets or exceeds minimum sustainability targets
- Adopts Passive Solar Design
- Minimises Energy and Water consumption
- Reduces overshadowing
- Maximises Solar Access and Ventilation
- Uses Recycled materials and Reduces waste

These savings measures are required throughout design, construction and ongoing operation phases of the development in accordance with the SEARs report.

Given the new controls specific to this site allow for greater heights and densities, whilst ensuring sustainability strategy that exceeds minimum planning policy, it is appropriate that policy is put in place to ensure ESD objectives of the site are delivered.

Green Star Design & As Built is widely accepted as the current best practice rating tool for new developments. Green Star is developed by the Green Building Council of Australia (GBCA) and aims to transform the built environment by;

1. Reduce the impact of climate change
2. Enhance our health and quality of life, and create sustainable outcomes
3. Restore and protect our planets biodiversity and eco systems
4. Ensure ongoing optimum operational performance
5. Contribute to market transformation and a sustainable economy

An objective of this report was to determine how Clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 was going to be met.



Green Star is the best method of ensuring 'The principles of ecologically sustainable development' are met.



The Gosford City Centre DCP calls for Best Practice Waste Management and the language in the rest of the planning documents would indicate that a 4 Star - Best Practice - Green Star Design & As Built Rating would ensure this development meets and exceeds this sustainability objective.

Green Star Target for the Residential Towers

	4 Star Green Star
Best Practice	Target 45 points



6. SUSTAINABLE DEVELOPMENT PRINCIPLES

6.1. Passive Solar Design

Aim of the principle:

To ensure the habitable spaces are capable of maintaining comfortable temperatures for the vast majority of the day and year without the need for mechanical heating and cooling.

Project initiatives:

- Typical construction methods for developments of this type include high thermal mass materials which are very effective in averaging out peak temperatures.
- Solid walls, floors and spandrel areas that form part of the conditioned envelope will include high levels of insulation.
- The glazing will all be high performance glass throughout to help control the heat gains and losses.
- External shading will be designed where required to minimise direct solar radiation.
- The buildings floor plates will be designed so the rooms with the greatest occupancy sit on the perimeter of the building, allowing these rooms the best access to direct sun, views and ventilation. Solar access and ventilation studies will be completed during design development to ensure compliance with SEPP 65.
- The carpark is positioned in the core of the building floor plate allowing a higher percentage of unit's access to the external façade.
- The project will explore green roofs and green wall elements as encouraged by DCP - Medium to Large sites Clause 5.2.8.

6.2. Indoor Environment Quality

Aim of the principle:

To ensure a high level of indoor environment quality in order to enhance a healthy, safe and ideal lifestyle experience of occupants.

Project initiatives:

Daylight: Natural light is an important component of psychological comfort in any apartment. Reduced window sizes deliver more cost effective methods of complying with NatHERS targets, however this development will instead maintain generous window sizes and address the dwellings heat gains and losses through high performing glass selections and facade optimisation.

Volume: As apartments become smaller a sense of space is created through the height of the room. Investment in windows that extend to the ceiling line and provide recessed ceiling channels for curtain mounting. This further increases the feeling of volume and luxury.



Ventilation: Natural ventilation is an important component in reducing reliance on air conditioning. This sites location boasts coastal breezes. The benefits of natural ventilation increase as units become higher with accelerated wind speeds and the capture and channelling of air as it flows up the façade of the building.

External Views: Research shows that dwellings with a high level of natural light, and views of natural surrounds, provide beneficial social and psychological effects including:

- Reduced stress
- Better emotional health
- Improved communication
- A sense of belonging to a community or place

Product choice: Paints, glues and sealants are the major cause of poor indoor air quality in a newly constructed building. They often contain ingredients that can lead to fatigue, headaches and more serious conditions such as Multiple Chemical Sensitivity. These issues can be drastically reduced by selecting products that are low in volatile organic compounds (VOCs).

6.3. Energy Efficiency

Project initiatives:

This development will comply with NCC, Section J 2019 which has increased energy efficiency stringency to; All external fabric including glazing and levels of insulation, lighting, lifts, swimming pools, HVAC ad metering equipment.

BASIX significantly increased Thermal Comfort and Energy targets for residential buildings in 2017. There has also been ongoing changes to assessment protocols and modelling software that are further generating energy savings and improved thermal comfort outcomes for new residences.

Further to this Gosford Alive will explore an increased thermal comfort and energy target of 10%. A limitation to the increased energy target will be consideration if solar or roof top gardens, allowing community open space is most appropriate for the project. A site wide holistic approach may be suitable to achieve the energy savings goal.

Targeted Energy Efficiency inclusions:

- Passive Solar Design
- Good ventilation and solar access
- Consideration of green roof tops and wall elements.
- High performance glazing and high levels of wall and roof insulation.
- Selection of energy efficient and quality appliances.
- Energy efficient LED light fittings throughout.
- Automated lighting controls including; daylight sensors, zone switching and motion sensors.
- Variable Speed Drives to carpark ventilation.
- Destination control and regenerative drives to lifts.
- High levels of insulation to hot water ring mains.
- Building Monitoring and Control Systems (BMCS) to optimise energy efficiency.
- Only air-condition spaces which require heating or cooling, not the whole building.
- Use of efficient HVAC equipment with high coefficient's of performance (COP).

6.4 Water Conservation

Project initiatives:

The project is targeting a 40% reduction of residential water consumption measured with the BASIX benchmarking tool.

High efficiency-rating water fixtures and appliances to be installed throughout. Recommendations;

	WELS Water Rating
Tapware (Excluding the bath taps)	5 Stars
Toilets	4 Stars
Dishwashers	4 Stars
Showers	6.0 - 7.5L per minute

Rainwater will be harvested from the residential roof tops for irrigation of the landscaped areas. The landscape design and plant selection will feature a high percentage of low water and native plants. Automated and water efficient site wide irrigations systems will be installed, monitored and controlled by building managers and green keepers.

6.5. Waste Management

Construction Phase;

A demolition and construction-phase resource recovery plan will be documented in accordance with the Gosford City Centre 2018. It will focus on occupational health & safety (OHS) risk minimisation, waste materials stream and reuse strategies, effective cooperation between trades and external contractors.

The Waste Management Plan will follow the guidelines for best-practices in waste and recycling management, as well as ensure:

- Waste minimization and resource recovery –
 - To avoid waste through design and ordering correct material quantities;
 - To encourage improved environmental outcomes through increased source separation of materials.
- More efficient management of waste and recyclable materials.

The Concept Plan keeps excavation to a minimum with a significant portion of the car park being positioned with-in the core of the podium levels. This will reduce the need for trucks and relocation of the site soils.

Occupancy Phase;

Durability and Longevity; The average life span of a strata building far exceeds that of a single residential home and this longevity delivers significant environmental outcomes. The construction methods and building inclusions selected should be high quality, durable and low maintenance.

Reduced Consumerism; The environmental footprint of people living in a unit over a suburban home is significantly reduced, due to; lower heating and cooling energy loads, greater reliance on public transport, smaller spaces to furnish and less room to store clothes and goods. This often leads to the occupant buying less and investing in better quality.

Waste sorting and storage facilities; The waste sorting rooms on each level and basement storage facilities will support the separation of general waste from recyclable material. It will be designed to ensure that sufficient space is reserved to accommodate the quantity of waste, recycling and organics likely to be generated between collections. Waste storage rooms for commercial and residential areas of the building will be kept separate.

Building Manager; The building management team will be responsible for the creation and ongoing evolution of recycling and reuse programs.



6.6. Building Materials

In accordance with DCP - Medium to Large sites Clause 5.2.8 Building Sustainability and Environmental Performance for Key sites;

Where possible, use building materials, fittings and finishes that;

- d. Have been recycled;
- e. Are made from or incorporate recycled materials; and
- f. Have been certified as sustainable or 'environmental friendly' by a recognized third party certification scheme.

This needs to be considered during design and specification stages. Sources of information and suggestions include;

- Consider use of wood labelled with certified sustainable forest management (FSC or AFS);
- Reuse and retaining existing materials, such as saving materials from demolition;
- Integration of sustainable products, including options locally manufactured, or containing recycled materials. Global Green tag certification is a good source of information.
- Identification of some potentially harmful chemical compounds commonly found in building materials (i.e., PFCs, phthalates, NIPUs and UF) aligned with strategical planning to either minimise or fully avoid their usage.
- The Supply Chain Sustainability School is a great source of information targeted at Australian developers to support product choices that consider modern slavery and sustainable procurement.