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ST GEORGE PRIVATE HOSPITAL INPATIENT UNIT & SUPPORT SERVICES

CLIENT: AKALAN PROJECTS PTY LTD

**119-129 PRINCES HIGHWAY AND 2 HOGBEN STREET AND 1 SOUTH STREET,
KOGARAH**

APPLICATION NUMBER: SSD-86969958

ESD REPORT



Project Number: 224111

Prepared by:



DSA Consulting

ABN: 82 613 850 598

Suite 10, 82-86 Pacific Highway

St Leonards NSW 2065

Phone: 02 9436 3500 Fax: 02 9437 0890

Email: dsaconsulting@dsaconsulting.com.au

Website: www.dsaconsulting.com.au

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Key Contact(s)	Raph Pullin
Client(s)	Akalan Projects Pty Ltd

Prepared by

Company	DSA Consulting
Address	Suite 10, 82-86 Pacific Highway, St Leonards NSW 2065
Phone	+61 2 9436 3500
Email	david.shreeve@dsaconsulting.com.au
Website	www.dsaconsulting.com.au
Author	DS
Checked	EF
Authorised	EF

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1 INTRODUCTION

DSA Consulting have been engaged by Akalan Projects Pty Ltd to prepare an Ecologically Sustainable Design Report for the proposed St George Private Hospital Inpatient Unit and Support Services Building located at 119-129 Princes Highway and 2 Hogben Street and 1 South Street Kogarah, Sydney, NSW.

1.1 PURPOSE OF THIS REPORT

This Ecologically Sustainable Design report has been prepared on behalf of Akalan Projects Pty Ltd in support of a State Significant Development Application (SSDA) submitted to the Department of Planning, Housing and Infrastructure (DPHI) under Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act 1979).

The SSDA seeks approval for the expansion of the St George Private Hospital. Specifically, the SSDA seeks consent for two components: the first being the erection of a health services facility (hospital), and the second relating to upgrades to the main hospital campus, including a new emergency department.

For reporting purposes, the site subject to the new health services facility (hospital) is referred to herein as the 'clinical tower site' and the main hospital campus is referred to as such.

This report provides an assessment of Ecologically Sustainable Design and responds to the Secretary's Environmental Assessment Requirements (SEARs) issued by DPHI on 30 June 2025 in relation to the project.

1.2 SITE LOCATION AND CONTEXT

The sites are in the Georges River Local Government Area (LGA), within the Kogarah town centre.

The clinical tower site is adjoined to the south by an existing multi-storey health services facility, which forms part of the St George Private Hospital campus. South Street separates this facility from the main hospital campus, though a connecting sky-bridge provides pedestrian access between the buildings. Further west is the St George Public Hospital, and other surrounding development comprises a mix of commercial premises (typically at ground floor) and medium and high-density residential premises.

On the opposite (eastern) side of Princes Highway is a mix of educational premises including Moorfield Girls High School, James Cook Boys Technology High School, St George High School, and a TAFE NSW campus. Surrounding development on this side of Princes Highway primarily constitutes low density residential premises.

Kogarah Train Station is south-west of the site, approximately 500m away. There is a pedestrian bridge that extends from Hogben Street over the Princes Highway, which provides direct access to the eastern side of the highway.

The sites are approximately 1.7km from Brighton Le Sands Beach, and approximately 3.5km from Sydney Airport. Refer to Figure 1 for a site context map.

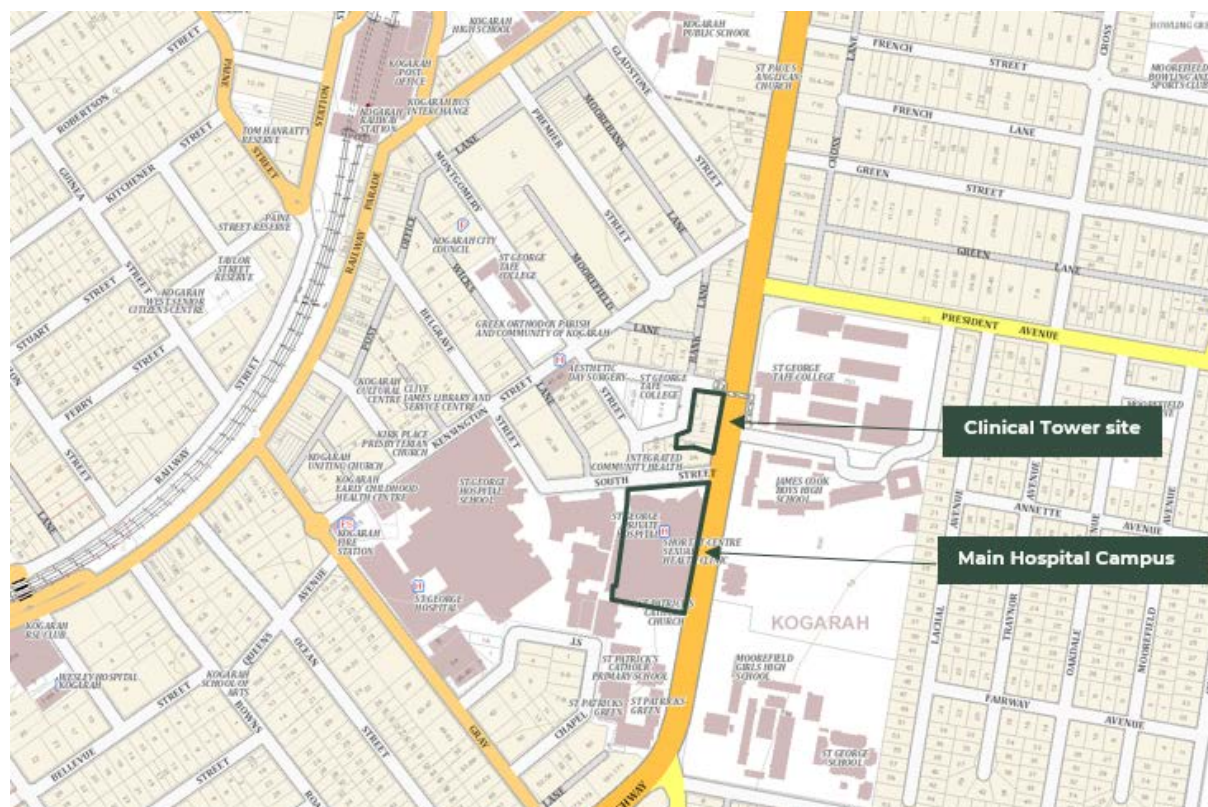


Figure 1

1.3 SITE DESCRIPTION

Clinical Tower Site

The proposed new health services facility (hospital) will be located on land that is bound by three road frontages, being Princes Highway to the east (a classified road), Hogben Street to the north, and Bank Lane to the west. This site comprises eight adjoining allotments of land, known as 119 – 129 Princes Highway, Kogarah, and 2 Hogben Street, Kogarah.

The site currently accommodates a hard-stand parking lot, providing approximately 76 car parking spaces and a two-storey commercial premises (subject to separate demolition), which is attached to the existing multi-storey health services facility at 2 South Street, Kogarah.

Refer to Figure 2 for a site aerial excerpt.



Figure 2 Aerial Extract - Source: Metro Map, modified by Patch

Main Hospital Campus

The existing hospital is located at 1 South Street, Kogarah which is also known as 1A South Street, Kogarah. This site is bound by two road frontages, being South Street to the north and Princes Highway (a classified road) to the east.

The site accommodates the St George Private Hospital's main campus, with vehicular access provided off South Street. Refer to Figure 2 for a site aerial excerpt.

1.4 OVERVIEW OF THE PROPOSED DEVELOPMENT

The SSDA seeks approval for the expansion of the St George Private Hospital. Specifically, the SSDA seeks consent for two components: the first being the erection of a health services facility (hospital), and the second relating to upgrades to the main hospital campus, including a new emergency department.

In summary, approval for the following is sought for the clinical tower site:

- Site preparation works and bulk earthworks, including tree clearing;
- Construction of a seven (7) storey health services facility (hospital) equating to a total GFA of 9,952 sqm;
- Construction of a five (5) level basement carpark including a radiation oncology unit, providing a total of 241 parking spaces;
- Ancillary office, amenities, and loading dock provisions;
- Basement storage and a substation; and
- Landscaping works.

In addition, approval for the following is sought for the main hospital campus:

- Construction of an emergency department at the northern end of the existing hospital, to be operated 24 hours a day, seven days a week;

- Alterations to the South Street frontage, to facilitate ambulance bays and access requirements; and
- Associated internal re-configurations.

1.5 SEARS RELEVANT TO THIS REPORT

This Ecologically Sustainable Design report has been prepared to respond to the SEARs issued for the St George Private Hospital Expansion project. The SEARs that are relevant to this Ecologically Sustainable Design assessment, and where they are addressed within this report, are detailed below.

Requirement	Section of Report
Identify how ESD principles (as defined in clause 7(4) of Schedule 2 of the EP&A Regulation) are incorporated in the design and ongoing operation of the development.	Refer Section 2.1
Demonstrate how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards.	Refer Section 2.2
Demonstrate how the development minimises greenhouse gas emissions (reflecting the Government's goal of net zero emissions by 2050) and consumption of energy, water (including water sensitive urban design) and material resources.	Refer Section 2.3
Demonstrate how the development will meet net zero capacity and offset any onsite fossil fuel use and any performance gap in operational energy	Refer Section 2.3

1.6 PROJECT BACKGROUND

The St George Private Hospital new clinical tower development is located in Hogben Street, Kogarah in the St George Private Hospital precinct.

The proposed development is a new clinical tower with direct access via a bridge link to the existing hospital consisting of the following:

- Earthworks involving cut and fill
- Tree removal within the northern portion of the Site
- Augmentation of existing services and infrastructure such as water, power, and sewer
- Construction of 5 levels of basement car parking comprising 241 car spaces
- Construction of a 7-storey tower (including plant room), including:
 - Radiology oncology on basement 5
 - Main entry/pharmacy/end of trip area on ground floor
 - Medical imaging/Pathology/allied health/kitchen on mezz floor
 - Admin/office areas on level 1
 - 155 inpatient beds from level 1 to level 5
 - Consulting suites and plant area on level 6
 - Roof plant area
- Provision of Site landscaping

1.7 PURPOSE

DSA Consulting has prepared an Ecologically Sustainable Development (ESD) report as a part of the Planning Secretary's Environmental Assessment Requirements for the proposed St George Private Hospital new clinical tower development.

Considering the nature of the proposed works on the main Hospital site, ESD and net zero considerations were not deemed appropriate/necessary as the proposed works are within an existing building envelope and opportunities for net zero products may be explored during detailed design.

The purpose of this report is to list the proposed sustainability initiatives that are currently being considered within the design of the new Clinical Tower. The project team will ensure that all aspects outlined in this report are considered within the design and implemented accordingly during construction.

1.8 SOURCES OF INFORMATION AND LIMITATIONS

This report has been based on the following architectural information:

Fitzpatrick and Partners WIP Architectural final DA plans dated 20th October 2025

General Arrangement Plan Site B – Bank Ln

- DA-1301 Basement Level 5 Floor Plan – Lower Deck Issue G
- DA-1302 Basement Level 5 Floor Plan – Upper Deck Issue G
- DA-1303 Basement Level 4 Floor Plan Issue G
- DA-1304 Basement Level 2/3 Floor Plan – Typical Basement Issue G
- DA-1305 Basement Level 1 Floor Plan Issue G
- DA-1306 Ground Floor Plan Issue G
- DA-1307 Mezzanine Floor Plan Issue G
- DA-1308 Level 1 Floor Plan Issue G
- DA-1309 Level 2 Floor Plan Issue G
- DA-1310 Level 3-5 Floor Plan – Typical ICU Issue G
- DA-1311 Level 6 Floor Plan – Consulting/Plant Issue G
- DA-1312 Roof Plan Issue G

General Arrangement Elevation Site B – Bank Ln

- DA-1401 Elevation East Issue G
- DA-1402 Elevation West Issue G
- DA-1403 Elevation North Issue G
- DA-1404 Elevation South Issue G

General Arrangement Section Site B – Bank Ln

- DA-1501 Section A-A Issue G
- DA-1502 Section B-B Issue G

Materiality Site B – Bank Ln

- DA-1601 Materiality Issue G

Detail Site B – Bank Ln

- DA-1701 Façade Details – Typical Issue G

Appendix Site B – Bank Ln

- DA-1701 Area Schedule Issue G
- DA-1702 Shadow Diagram Issue G

Existing Site A – South St

- DA-2201 Scope of Works Issue G
- DA-2202 Survey Issue G
- DA-2203 Existing Plan Issue G

Demolition Site A – South St

- DA-2301 Demolition Plan Issue G

General Arrangement Plan Site A – South St

- DA-2401 Ground Floor Plan Issue G

General Arrangement Elevation Site A – South St

- DA-2501 North – from South St Issue G
- DA-2502 New Entry – From Forecourt Issue G

General Arrangement Section Site A – South St

- DA-2601 Section A-A Issue G
- DA-2602 Section B-B Issue G

Area Schedule Site A – South Street

- DA-2901 Area Schedules South Street Issue G

This ESD Statement is based on our interpretation of the architectural documentation and project briefing requirements issued to date. It is also based on our understanding of the key design considerations that we believe are beneficial to a development of this type and size in order to reduce the development's impact on the environment.

This report has been specifically prepared for the organisation noted on the cover of the report.

No responsibility or liability to any third party is accepted for any loss or damage arising from the use of this report by any third party. Any third party wishing to act upon any material contained in this report should confer with DSA Consulting for detailed advice to take into account that party's particular requirements.

This report is not to be used for any other project.

2 SEARS FRAMEWORK

This ESD Statement benchmarks the project against the relevant planning requirements of the relevant authority.

For this project, the relevant authority is the New South Wales Government. The following Planning Secretary's Environmental Assessment Requirements for Ecologically Sustainable Developments (ESD) are addressed.

We understand this project is not subject to the Georges River City Council Development Control Plan (DCP).

2.1 ENVIRONMENTAL PLANNING AND ASSESSMENT (EP&A) REGULATION 2021

The following table outlines the project's response to clause 7(4) of Schedule 2 of the EP&A Regulation.

Requirement	Project Response
Identify how ESD principles (as defined in clause 7(4) of Schedule 2 of the EP&A Regulation) are incorporated in the design and ongoing operation of the development.	Refer specific responses below.
The ESD principles are listed 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,	An Implementation Plan has been developed based on best practice principles and aligns with recognised targets including Green Star. The project will develop and use the Implementation Plan in later stages of design, construction and operation to ensure that all parts of the project adhere to the precautionary principle and adopt best practice environmental measures. We note that one of the sites has a pre-existing hospital on it, and the project is not expected to have significant local environmental impacts. Further, a Construction Environmental Management Plan (CEMP) will include management processes and assessments to assess risks to the environment and prevent environmental damage during construction. The development will be self-assessed against the Green Star Buildings to achieve equivalent to a 4 Star outcome. 4 Star Green Star generally represents 'Australian Excellence' in sustainability in construction. Refer to Section 9 Implementation Plan for key commitments that ensure the precautionary principle will be adhered to.
(b) "inter-generational equity" , namely, that the present generation should ensure that the health,	The development has chosen a sustainability benchmark to guide the project towards best practice

Requirement	Project Response
diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,	sustainability measures which ensure the protection of our natural assets for future generations. The development will be self-assessed against the Green Star Buildings to achieve equivalent to a 4 Star outcome. 4 Star Green Star generally represents 'Australian Excellence' in sustainability in construction. In addition, the project is committed to reducing ongoing energy and water use, implementing a zero carbon action plan as part of a transition to zero emissions, and lowering its impact on the environment through selection of low impact materials. Refer to Section 4 Energy Efficiency, Section 5 Transition to Net Zero Emissions, Section 7 Water Efficiency and Section 8 Material Resources of this report for more details of our commitments in this area.
(c) "conservation of biological diversity and ecological integrity", namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,	We note that one of the sites contains a pre-existing hospital, and the project is not expected to have significant local ecological or biodiversity impacts. Further, a Construction Environmental Management Plan (CEMP) will include management processes and assessments to assess risks to the environment and prevent environmental damage during construction. In addition, the project is committed to limiting its impacts on global biodiversity and ecological integrity by reducing ongoing energy and water use, implementing a zero carbon action plan as part of a transition to zero emissions, and lowering its impact on the environment through selection of low impact materials. Refer to Section 4 Energy Efficiency, Section 5 Transition to Net Zero Emissions, Section 7 Water Efficiency and Section 8 Material Resources of this report for more details of our commitments in this area.

Requirement	Project Response
(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.	The project has implemented a number of strategies to ensure that the environmental factors are incorporated into the valuation and services. The project will incorporate a Construction Environmental Management Plan (CEMP) as part of an overall Environmental Management System (EMS) which will ensure that excessive pollution and waste are minimised. In addition, the project is committed to limiting its impacts on global biodiversity and ecological integrity by reducing ongoing energy and water use, implementing a zero carbon action plan as part of a transition to zero emissions, and lowering its impact on the environment through selection of low impact materials. These initiatives will result in a development that incorporates the external environmental costs of its actions into the development costs and therefore will endeavour to address these impacts in the most cost effective manner, using a polluter pays principle and addressing externalities beyond simple capital costs. Refer to Section 4 Energy Efficiency, Section 5 Transition to Net Zero Emissions, Section 7 Water Efficiency and Section 8 Material Resources of this report for more details of our commitments in this area.

2.2 MEETING OR EXCEEDING INDUSTRY RECOGNISED STANDARDS

Requirement	Project Response
Demonstrate how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards.	The relevant industry recognised building sustainability performance standard has been sourced from the Georges River City Council Energy Efficiency Design Guideline for Commercial and Industrial Development which outlines a minimum 4 Star Green Star outcome as a requirement for all buildings over 4,000m² GFA. The development aims to exceed the minimum 4 star Green Star requirement. Therefore, it will be self-assessed against the Green Star Buildings rating tool to meet a minimum of a 4 Star rating to meet Ramsay Health's ESD commitments and demonstrate Australian "Best Practice" with a commitment to meet Net Zero by 2040. Refer to Section 3 Green Star of this report for more details of our commitments in this area.

2.3 MINIMISING GREENHOUSE GAS EMISSIONS, ENERGY CONSUMPTION, WATER AND MATERIAL RESOURCES

Requirement	Project Response
Demonstrate how the development minimises greenhouse gas emissions (reflecting the Government's goal of net zero emissions by 2050) and consumption of energy, water (including water sensitive urban design) and material resources.	The development will be designed to ensure the following: • The building's upfront carbon emissions are at least 10% less than those of a reference building. • The building's energy use is at least 20% less than a reference building. • A 30% reduction in life cycle impacts when compared to standard practice. • A Zero Carbon Action Plan will also outline scope 1 and 2 emissions and the projects pathway to being climate positive. • Ramsay Health have announced a 42% reduction of greenhouse gases by 2030 and net zero by 2040 in line with their Climate Action Plan, and this building will form part of these operational emissions targets. These targets have been set using the Science Based Targets Initiative (SBTi) which is the global standard for effective climate action. Refer to Section 4 Energy Efficiency and Section 5 Transition to Net Zero Emissions of this report for more details of our commitments in this area.

2.4 SUSTAINABLE BUILDINGS SEPP 2022 CLAUSE 3.2

Requirement	Project Response
Minimisation of waste from construction including by the choice of building materials.	Further to the projects Operational & Construction Waste Management Plan The project's waste management objectives will include: • Meeting all waste management standards while ensuring the health and safety of the workers on the project • Maximising the quantities of materials diverted from landfill by reusing, recycling, and reprocessing off-site • Minimise the Disposal of residual waste materials to a licensed landfill in accordance with both regulatory and legal requirements.
A reduction in peak demand for electricity, including through the use of energy efficient technology	Heating to the building will be provided via 4-pipe chiller/heat pumps which will be more efficient than traditional electric heaters especially when cooling and heating is required simultaneously. The cooling and heating chillers will be 4-pipe allowing the heating to be produced as an output of the cooling without rejection to the atmosphere. The COP (coefficient of performance) of electric heater is 1 while a heat pump would be around 3. The combined Total Energy Ratio (TER) would be 6. Variable speed drives will be provided on the pumps so pump energy can be reduced according to actual building load.

Requirement	Project Response
	High efficiency variable speed EC fans will be used. All plantroom mounted air handling systems will utilize outside air economy cycles. Lighting will be controlled in the building corridors and entrances with light level PE control. The domestic hot water make up water will be preheated by the 4-pipe chillers. These chillers can produce cooling and heating without additional energy input whilst chilling.
A reduction in the reliance on artificial lighting and mechanical heating and cooling through passive design	The ductwork/pipe work insulation will be 10% higher than the NCC section J requirement to reduce the energy lost. Building envelope will be min 10% better than BCA DTS requirement as per below: Shading and double glazed thermally broken suites will be used on the façade. Glazing to achieve a maximum of overall 2.5W/m²K and SHGC of 0.33 with thermally broken suites. Solid wall to achieve a minimum of overall R value of 2.0 Floor above non air condition space to achieve minimum of R2.2 Roof to achieve a minimum of overall R value of R4.2 heat flow downward. Spandrel panel to achieve a minimum of overall R value of R1.5 in accordance with BCA Spandrel specification with thermally broken double glazed.
The generation and storage of renewable energy	80 kW of PV will be provided as part of the development. No storage is proposed at this stage of the development.
The metering and monitoring of energy consumption	All electrical boards will be provided with energy metering as per NCC requirement and monitored by BMCS. All tenant distribution boards will be provided with energy meter. All the power to the medical equipment will be separated metered. Chilled/hot water take offs to tenancies and to each floor will be provided with energy meters to ensure consumption of energy and the COP of the chiller/heatpump system are monitored closely.
The minimisation of the consumption of potable water	Refer to Section 7

3 GREEN STAR

The project is proposing to self-assess against the Green Star Buildings v1 to achieve equivalent to a 4 Star outcome. The Green Star rating system provides a holistic framework to assess the sustainability impact of a project in the following areas.



Responsible

Recognises activities that ensure the building is designed, procured, built, and handed over in a responsible manner.



Places

Supports the creation of safe, enjoyable, integrated, and comfortable places.



Healthy

Promotes actions and solutions that improve the physical and mental health of occupants.



People

Encourages solutions that address the social health of the community.



Resilient

Encourages solutions that address the capacity of the building to bounce back from short-term shocks and long-term stresses



Nature

Encourages active connections between people and nature and rewards creating biodiverse green spaces in cities.



Positive

Encourages a positive contribution to key environmental issues of carbon, water, and the impact of materials.



Leadership

Recognises projects that set a strategic direction, build a vision for industry, or enhance the industry's capacity to innovate.

The Green Building Council of Australia has aligned the Green Star Buildings v1 rating tool to assess a developments environmental impact and categorises buildings' outcomes as follows.

- Legal compliance – The building is compliant with legislation (National Construction Code – 2022 or later)
- Good Practice – The building meets the Minimum Expectations of good practice – energy and water efficient, good indoor environment quality, and built to operate well.
- 4 Star – reflects a Best Practice environmental performer. It builds on the Minimum Expectations to deliver a building that is either climate positive or a higher performer in energy, water, and health related issues (15 out of 100 points)
- 5 Star – demonstrates Australian Excellence by being a high environmental performer that addresses social issues relevant to the building owner (35 out of 100 points)
- 6 Star – showcases World Leadership. It has been built to be a highly efficient building fully powered by renewables that addresses a significant number of environmental and social issues, and contributes to the community (70 out of 100 points)



This project is aiming to comply with the minimum expectations of the Green Star rating scheme, as well as comply with the enough credit requirements to achieve at least 35 points.

The project is not proposing to formally certify the building under the Green Star rating scheme.

4 ENERGY EFFICIENCY

The building must be 10% more energy efficient than a reference building that is modelled to Section J requirements of the National Construction Code 2022.

Elements where energy efficiency can be explored include the following

- Renewable energy (Solar PV)
- Building fabric and glazing (thermal performance)
- Building services (fan systems, pump systems, refrigerant chillers, heat rejection equipment, efficient lighting design, efficient fixtures)

4.1 RENEWABLE ENERGY – SOLAR PV

With the new building at the St George Private Hospital precinct, there will be available roof area for the provision of solar PV.

The proposed new tower building will be made to be 'solar ready' for the provision of solar PV to be installed as a part of the current scope of works and future works. The proposed PV would be 80-90 kW.

4.2 BUILDING FABRIC AND GLAZING

The new clinical tower should achieve a min 10% better thermal performance requirements outlined in NCC 2022.

Fabric Element	Thermal Performance Requirements
Roof and ceiling system forming building envelope	Insulation to ensure the total roof system meets R4.2 (DTS R3.7).
Wall system forming building envelope	Insulation to ensure non vision panel of the walls meets R2.0(DTS R1.4) including the thermal bridging effect.
Spandrel panel	R2.0 insulation complete with opaque double glazed face and thermally broken frame to achieve an overall R1.11 as per NCC 2022.
Floor above carpark/non AC space	Slab above non air conditioned space to achieve R2.2. (DTS R2.0)
Windows forming building envelope	Performance: U-Value of U2.5 and SHGC of SHGC0.33 for whole of window performance including glass and frame. Typical glazing solution: Double glazed clear low-e window with thermally broken frame

In the NCC 2022 building code the thermal performance requirements have significantly increased from the 2016 version. The calculation methodology now includes thermal bridging from studwork, making it more difficult to achieve the requirements through a standard stud framing system.

It is proposed that using a modified wall type that allows for insulation to be installed in a bracket and channel system, rather than a stud framing system, can reduce heat loss through the frame from 65% to 12%.

We would recommend that these wall types be investigated during the design stage to ensure all opportunities to improve thermal performance are explored.

4.3 BUILDING SERVICES

In addition to the initiatives outlined above, the following options are available for the project to include to improve energy efficiency. To meet the Ramsay ROI requirements of 20% IRR, the following will be considered in the design and a requirement for all electric systems:

- Efficient ventilation design, including fan systems, refrigerant chillers, heat rejection equipment
- Heat recovery air handling unit for outside air processing
- Efficient pump systems
- Efficient lighting design
- Efficient water fixtures and fittings

The following equipment is proposed:

- Cooling/heating 4-pipe electric chiller/heat pumps
- Energy recovery AHU for the outside air processing AHUs for 24/7 ward areas.
- Domestic hot water electric heat pumps with preheating from 4 pipe heat pumps
- LED lighting

5 TRANSITION TO NET ZERO EMISSIONS

The NSW Government has set a goal to achieve net zero emissions by 2050. The development will incorporate initiatives through the design and through a project specific Zero Carbon Action Plan to address and quantify the following aspects:

- Scope 1 (including refrigerant) and 2 emissions between now and 2050, before and after all interventions have occurred
- Identify requirements for the building to be climate positive as distinct parts of the building's systems reach end of life
- Identify special considerations and physical interventions needed to replace fossil fuel using equipment, refrigerants, and infrastructure
- Undertake a cost analysis to determine the potential costs and savings if the building was designed to be climate positive.
- Fossil fuel use for energy demands within the building will be analysed and assessed to determine a potential timeline for a transition to renewables.

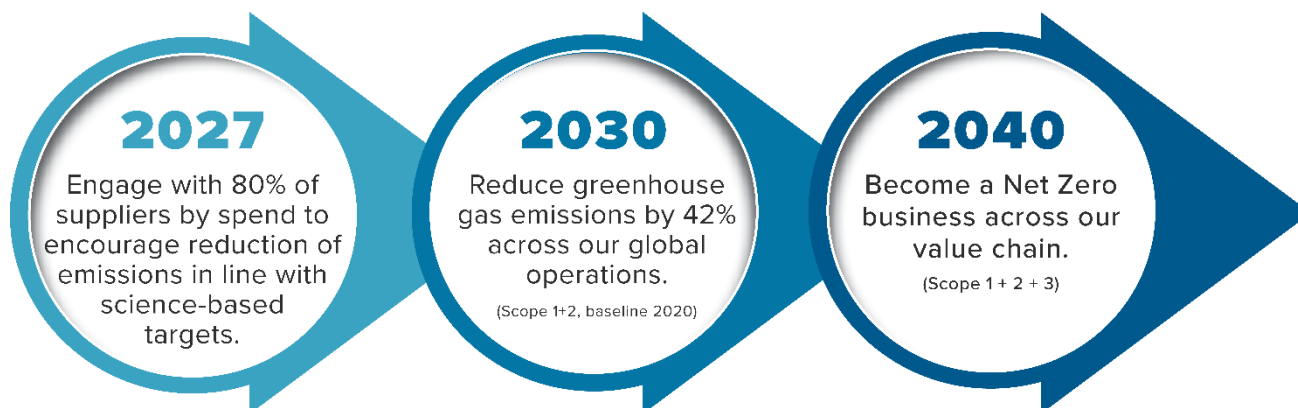
In addition, the Ramsay Health climate action plan will be implemented which targets a 42% reduction of greenhouse gases by 2030 and net zero by 2040 across Ramsay's operations, including this building. These targets have been set using the Science Based Targets Initiative (SBTi) which is the global standard for effective climate action.

The development aims to achieve the following:

Requirement	Solution Proposed
Evidence of how the development will be fossil fuel free after occupancy of the development commences and transition to be fossil fuel free by 1 Jan 2035.	The building will utilize all electric heating and cooling through the use of 4-pipe chiller/heat pumps. The Hospital will continue to utilize diesel powered back-up generators as this is a requirement of an alternative energy source in the BCA. Ramsay will implement carbon offsets for the diesel utilized.
Detail of renewable energy generation and storage infrastructure implantation	80 kW of PV will be provided as part of the development. No storage is proposed at this stage of the development.
Passive and technical design features that minimise energy consumption	Shading and double glazed thermally broken suites will be used on the façade. All plantroom mounted air handling systems will utilize outside air economy cycles. Lighting will be controlled in the building corridors and entrances with light level PE control. The cooling and heating chillers will be 4-pipe allowing the heating to be produced as an output of the cooling without rejection to the atmosphere. The domestic hot water make up water will be preheated by the 4-pipe chillers. These chillers can produce cooling and heating without additional energy input whilst chilling.

6 RAMSAY HEALTH CARE NET ZERO BY 2040

Our targets



*95% coverage for Scope 1 & 2 emissions and 90% for Scope 3

Ramsay Health Care
NET ZERO
BY 2040

7 WATER EFFICIENCY

Water efficiency is included within the design of the building to reduce the use of local potable water within the Kogarah/Georges River district.

This project will incorporate efficient fittings and fixtures designed to minimise water use within the building.

Taps	5 Star WELS
Urinals	5 Star WELS
Toilets	4 Star WELS
Showers	3 Star WELS
Clothes Washing Machines	4 Star WELS
Dishwashers	5 Star WELS

8 MATERIALS RESOURCES

A Life Cycle Assessment will be completed for this project during the design and construction stages. During this assessment there will be the following opportunities to limit the environmental impact of the building:

- Diversion of waste from landfill
- Selection of third party certified internal finishes (i.e., GECA, Greentag etc.)
- Flooring
- Plasterboard
- Paints
- Ceilings
- Partitions
- Doors
- Internal windows
- Joinery (e.g., wall panelling, shelving, cupboards)
- Sealants and adhesives

For full list of approved third party certified standards refer to the [Responsible Products Framework](#).

9 IMPLEMENTATION PLAN

Initiative	GS Points	Discipline(s)	Project Stage			
			Town Planning Documents	Tender Documents	Construction Documents	Construction & Completion
Responsible						
Head contractor to develop an environmental management system in place to manage its environmental impacts on site.	Mandatory	Head Contractor		Y	Y	
Head contractor to develop environmental management plan to cover the scope of construction activities.	Mandatory	Head Contractor		Y	Y	
Head contractor to divert at least 80% of construction waste from landfill.	Mandatory	Head Contractor			Y	Y
Head Contractor to provide training on the site specific sustainability targets.	Mandatory	Head Contractor			Y	Y
90% of construction waste is diverted from landfill, and waste contractors and facilities comply with the <i>Green Star Construction and Demolition Waste Reporting Criteria</i> .	1 Point	Head Contractor			Y	Y
The building must have accessible energy and water metering for all common uses, major uses, and major sources. Meters must be connected to an automatic monitoring system.	Mandatory	Head Contractor		Y	Y	Y
The monitoring system must accurately and clearly present the metered data and include reports on consumption trends for the automatic monitoring system. The monitoring strategy must be developed in accordance with a recognised Standard, such as CIBSE TM39 Building Energy Metering.	Mandatory	Electrical Mechanical Hydraulic		Y	Y	Y
Project team must set and document environmental performance targets for the development. Targets must include: - Energy and water consumption targets - Indoor environment quality targets - Airtightness targets	Mandatory	ESD		Y		
Project team must conduct a services and maintainability review of the building to address the following: - Commissionability - Controllability - Operability	Mandatory	Architect ESD Head Contractor		Y		

Initiative	GS Points	Discipline(s)	Project Stage			
			Town Planning Documents	Tender Documents	Construction Documents	Construction & Completion
Safety of all systems						
During construction and before practical completion, all building systems must be commissioned per a recognised commissioning standard (CIBSE or ASHRAE commissioning guides).	Mandatory	Mechanical Electrical Hydraulic			Y	Y
Post completion airtightness testing must be undertaken.	Mandatory	Architect		Y	Y	Y
The building is designed for the collection of separate waste and resource streams. And has safe access to adequate waste storage facilities.	Mandatory	Architect	Y	Y	Y	Y
The building's internal finishes are comprised of responsibly manufactured products. Where the project must have 60% of all internal building finishes (by cost) meet a Responsible Products Value of at least 7 . Refer to the <u>Responsible Products Framework</u> guidance in regarding the relevant schemes and certifications.	2 Points	Builder		Y	Y	Y
Healthy						
Building ventilation systems must be designed to comply with ASHRAE Standard 62.1:2013 or AS 1668:2015 (whichever is greater) regarding minimum separation distances between pollution sources and outdoor air intakes.	Mandatory	Mechanical		Y	Y	Y
All new and existing ductwork that serves the building must be cleaned prior to occupation in accordance with a recognised Standard. This includes all ductwork in the base building that serves the building from the air handling unit(s) to the supply vents.	Mandatory	Mechanical				Y
The building must provide a 50% improvement of outdoor air required by AS 1668.2:2015 to each space in the regularly occupied areas, or alternatively provide sufficient outside air to meet a CO2 level of 800ppm.	Mandatory	Mechanical		Y	Y	Y
Project team must demonstrate pollutants from printing and photocopying equipment, cooking processes and equipment are limited from the regularly occupied areas by either: - Removing the source of pollutants - Exhausting the pollutants directly to the outside	Mandatory	Mechanical		Y	Y	

Initiative	GS Points	Discipline(s)	Project Stage			
			Town Planning Documents	Tender Documents	Construction Documents	Construction & Completion
Any mechanical ventilation system within the building, must provide adequate access to both sides of all moisture and debris-catching components for maintenance within the air distribution system.	Mandatory	Mechanical		Y	Y	Y
Lighting within the building must have no adverse effect to occupants as per the standard IEEE 1789-2015 - IEEE Recommended Practices for Modulating Current in High-Brightness LEDs for Mitigating Health Risks to Viewers. Light sources must also have a minimum Colour Rendering Index (CRI) 85 or higher.	Mandatory	Electrical		Y		
Lighting within the building must maintain the illuminance levels as per AS/NZS 1680.1:2006 standard. And all light sources must have a MacAdam Ellipse or a Standard Deviation Colour Matching (SDCM) of 3 or lower.	Mandatory	Electrical		Y		
Glare from light sources must be minimised by ensuring: - Bare light sources must be fitted with baffles, louvers, translucent diffusers, ceiling design. - or - The Unified Glare Rating (UGR) for LED luminaires must not exceed maximum values listed in Table 8.2 of AS/NZS 1680.1:2006	Mandatory	Electrical				
All areas where patients are expected to remain for longer than two hours have must access to a view and daylight.	Mandatory	Architect		Y		
An Acoustic Comfort Strategy is prepared to describe how the building and acoustic design aims to deliver acoustic comfort to the building occupants.	Mandatory	Architect		Y	Y	Y
95% of the building's paints adhesives, sealants, and carpets must be low in TVOC or non-toxic. Compliance must be demonstrated by either using: - Product(s) that are certified under a Recognised Product Certification Scheme listed in the 'Exposure to Toxins Product Certifications Schemes Index'. - Product(s) that are tested in a laboratory and meet max TVOC limits.	Mandatory	Architect		Y	Y	Y
95% (by area) of the building's engineered wood products must meet specified formaldehyde emission limits. Compliance must be demonstrated by either using: - Product(s) that are certified under a Recognised Product Certification Scheme - Product(s) that are tested in a laboratory and are below formaldehyde emission limits	Mandatory	Architect		Y	Y	Y

Initiative	GS Points	Discipline(s)	Project Stage			
			Town Planning Documents	Tender Documents	Construction Documents	Construction & Completion
Hazardous materials survey must be carried out on any existing buildings or structures on the project site, in accordance with the relevant Environmental and Work Health and Safety (WHS) legislation. Any Asbestos, lead or PBSs identified through the survey must be stabilised or removed and disposed of in accordance with best practice guidelines.	Mandatory	Builder		Y		
On site tests must be undertaken during commissioning to verify that TVOC and Formaldehyde concentration is below 0.27 ppm and 0.02 ppm respectively. Testing must be conducted in regularly occupied areas through an active collection method in accordance with ISO 16000-6, ASTM D5197 and EPA TO-17	2 Points	Builder				Y
The building must include one or several amenity rooms to promote either inclusivity, mindfulness or exercise for staff or occupants e.g., parent room, relaxation, mediation or prayer room, exercise room.	2 Points	Architect		Y		
Resilience						
The project team completes the climate change pre-screening checklist. The project team communicates the building's exposure to climate change risks to the applicant.	Mandatory	ESD	Y	Y		
The project team develops a project-specific climate-change risk and adaptation assessment for the building and addresses extreme and high risks.	1 point	ESD	Y	Y		
Positive						
The building's upfront carbon emissions must be calculated via Life Cycle Analysis (LCA), at least 20% less than those of a reference building built to code (NCC 2022), and demolition works in buildings less than 50 years old are offset.	3 Points	Architect ESD		Y	Y	Y
The building's energy use is at least 20% less than a reference building built to code (NCC 2022).	3 Points	Architect ESD		Y	Y	Y
The building provides a Zero Carbon Action Plan. The Zero Carbon Action Plan must include a target date by when the building is expected to operate as fossil fuel free. The Zero Carbon Action Plan must cover all energy consumption, procurement, and generation and cannot rely on procuring renewable fuels as its only solution. It must also include infrastructure provided for tenants or future occupants such as gas installations for cooking.	Mandatory	Mechanical Hydraulic Building Owner ESD	Y	Y		

Initiative	GS Points	Discipline(s)	Project Stage			
			Town Planning Documents	Tender Documents	Construction Documents	Construction & Completion
No gas equipment will be provided, diesel equipment will only be for backup usage, and no other fossil fuel energy will be used in the building.	3 points	Mechanical Hydraulic Building Owner ESD	Y	Y	Y	Y
100% of the building's energy comes from renewables.	3 points	Mechanical Hydraulic Building Owner ESD	Y	Y	Y	Y
The building owner eliminates or offsets emissions from refrigerants.	2 Points	Building Owner Mechanical		Y	Y	Y
The building owner eliminates or offsets all other emissions resulting from: - The building's energy use, - Modules A1-A5 - Any other carbon emissions over 1% of the total carbon emissions profile for the building (significant emissions).	2 Points	Building Owner Mechanical ESD		Y	Y	Y
The building installs efficient water fixtures. - Taps: 5 Star WELS - Urinals: 5 Star WELS - Toilets: 4 Star WELS - Showers: 3 Star WELS - Clothes Washing Machines: 4 Star WELS - Dishwashers: 5 Star WELS	Mandatory	Architect		Y	Y	Y

Initiative	GS Points	Discipline(s)	Project Stage			
			Town Planning Documents	Tender Documents	Construction Documents	Construction & Completion
The project demonstrates a 30% reduction in life cycle impacts when compared to standard practice. The reduction in life cycle impacts must be demonstrated through a whole-of-building, whole-of-life (cradle to grave) comparative Life Cycle Assessment (LCA), as defined by EN 15978. All EN 15978 modules (A to D) must be included in the assessment.	2 Points	Architect Builder	Y	Y	Y	Y
Places						
The building includes showers, changing facilities and lockers for building occupants. The facilities are required to be accessible, inclusive, and located in a safe and protected space.	Mandatory	Architect		Y	Y	
The building must also provide the following to promote sustainable transport options: • The building's access prioritises cycling and includes bicycle parking facilities. • A Sustainable Transport Plan has been prepared and implemented. • The building has EV charging capabilities. • Transport options that reduce the need for private fossil fuel powered vehicles are prioritised. • The building's design and location encourage walking.	3 Points	Architect Project team		Y	Y	Y
People						
During the building's construction, the head contractor provides gender inclusive facilities and protective equipment. The head contractor also installs policies on-site to increase awareness and reduces instances of discrimination, racism, and bullying.	Mandatory	Head Contractor		Y	Y	
Head contractor must complete a needs analysis of potential site workers and sub-contractors to determine appropriate policies and programs implemented on site.	1 Point	Head Contractor		Y	Y	
The head contractor provides high quality staff support on-site to reduce at least five key physical and mental health impacts. The effectiveness of the interventions will need to be evaluated.		Head Contractor			Y	Y
The building is designed and constructed to be inclusive to a diverse range of people with different needs. This must include: • Equal access to the building • Diverse wayfinding • Inclusive spaces	2 Points	Architect	Y	Y		

Initiative	GS Points	Discipline(s)	Project Stage			
			Town Planning Documents	Tender Documents	Construction Documents	Construction & Completion
Nature						
The building was not built on, or significantly impacted, a site with a high ecological value.	Mandatory	Architect	Y			
The building’s light pollution has been minimised. The project team must demonstrate that all outdoor lighting on the project complies with AS/NZS 4282:2019 Control of the obtrusive effects of outdoor lighting. While it also must be demonstrated that one of the following specified reductions in light pollution has been achieved by the project: - Control of upward light output ratio (ULOR) - Control of direct illuminance	Mandatory	Electrical	Y	Y		

10 GREEN STAR PATHWAY



Submission planner

Summary

Registering from / certified	2020 onwards		
Climate Positive Pathway targeted	No	Targeted Green Star rating	4 Star
Minimum expectations met	Yes	Core points targeted	19
Credit Achievement points targeted	18	Leadership points targeted	0
Exceptional Performance points targeted	1	Total points targeted	19

Credit	Minimum Expectation	Credit Achievement	Exceptional Performance	Total points available	Targeted performance level	Total points targeted
Responsible				17		
1 Industry Development		1		1		0
2 Responsible Construction	•	1		1	Credit Achievement	1
3 Verification and Handover	•	1		1	Minimum Expectation	•
4 Operational Waste	•			0	Minimum Expectation	•
5 Responsible Procurement		1		1		0
6 Responsible Structure		3	2	5		0
7 Responsible Envelope		2	2	4		0
8 Responsible Systems		1	1	2		0
9 Responsible Finishes		1	1	2	Exceptional Performance	2
					Total	3
Healthy				14		
10 Clean Air	•	2		2	Credit Achievement	2
11 Light Quality	•	2	2	4	Minimum Expectation	•
12 Acoustic Comfort	•	2		2	Credit Achievement	2
13 Exposure to Toxins	•	2		2	Minimum Expectation	•
14 Amenity and Comfort		2		2	Credit Achievement	2
15 Connection to Nature		1	1	2		0
					Total	6

Places					8		
27	Movement and Place	.	3		3	Credit Achievement	3
28	Enjoyable Places		2		2		0
29	Contribution to Place		2		2		0
30	Culture, Heritage and Identity		1		1		0
						Total	3
People					9		
31	Inclusive Construction Practices	.	1		1	Credit Achievement	1
32	Indigenous Inclusion		2		2		0
33	Procurement and Workforce Inclusion		2	1	3		0
34	Design for Inclusion		2	1	3	Credit Achievement	2
						Total	3
Nature					14		
35	Impacts to Nature	.	2		2	Minimum Expectation	.
36	Biodiversity Enhancement		2	2	4		0
37	Nature Connectivity		2		2		0
38	Nature Stewardship		2		2		0
39	Waterway Protection		2	2	4		0
						Total	0
Leadership					0		
40	Market Transformation				0		0
41	Leadership Challenges				0		1
						Total	1

11 ENERGY

The following annual energy consumption for the building will be assessed as part of the design and assessment of Greenstar. The target for Greenstar will be 4 stars.

Based on the energy modelling, the estimated energy consumption for the proposed new expansion with the proposed fabric and PV panel is 68.32KgCO₂-e/m² annually which equate to 0.35Gj/m²/Annual which is 18% better than the DTS reference building (83.49KgCO₂-e/m² or 0.43GJ/m²/annual)

Ramsay targets for energy include a 15% reduction by 2035 on the current levels.

For comparison purposes, the annual energy consumption for another Ramsay hospital (Lake Macquarie Private Hospital) is 18640GJ/annum which equates to 0.70GJ/m²/annum.

Report prepared by:

Eric Fu/David Shreeve

DSA Consulting