



Sustainable Development Plan (SDP)

Irrawang High School (IHS)

ESD SERVICES

JHA

CONSULTING ENGINEERS

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DOCUMENT CONTROL SHEET

Project Number	220265
Project Name	Irrawang High School
Report Phase	Phase 3 – Schematic Design
Description	Sustainable Development Plan (SDP)
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Revision History

Issued To	Revision and Date							
SINSW	REV	P1						
	DATE	29/07/22						
	REV							
	DATE							
	REV							
	DATE							

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1 EXECUTIVE SUMMARY

This Sustainable Development Plan (SDP) has been prepared by JHA for the proposed Irrawang School (IHS) development.

This report states the proposed ESD initiatives to achieve compliance with Educational Facilities Standard Guidelines (EFSG) DG02 requirements and 4 Star Green Star Design & As-Built (GS DAB) v1.3 certification. This report should be read in conjunction with the Architectural drawings, EFSG DG02, GS DAB v1.3 Submission Guidelines and other consultant reports submitted as part of the application.

The ESD objectives is to encourage a balanced approach to designing new facilities for the public school project; to be resource efficient, cost-effective in construction and operation; and to deliver enhanced sustainability benefits with respect to impacts on the environment and on the health and well-being of students, staff and visitors whilst providing the best possible facilities for a constructive student learning experience.

Some of the key ESD commitments for the proposed development are listed below:

- Good access to natural daylight
- Well-designed openings to promote natural ventilation
- Appropriate construction and glazing selection
- Energy efficient air-conditioning systems
- LED luminaires
- Rainwater recycle tank
- Efficient water fixtures
- Water-wise Landscaping

2 INTRODUCTION

2.1 PROPOSED DEVELOPMENT

The proposed development involves the upgrade of Irrawang High School. Irrawang High School is a government co-educational High School, accommodating around 1,000 students from Years 7 -12. The proposed upgrade will provide additional general learning spaces and upgrading existing spaces, to improve the school's stream to a Stream 6 school to meet its current capacity.

The changes to the school will include the following:

- 14 new general learning space, including a Senior Learning Unit;
- Modification of existing general learning spaces in Building G to provide flexible teaching spaces;
- Upgrade fitness learning unit;
- Expansion of learning space;
- Support unit upgrade of 10 classes;
- Upgrading Block G; and
- Implementation of additional student toilets.

This report covers the ESD requirements of EFSG (applicable to the whole project) and the requirements to achieve a 4 Star Green Star Design & As-Built certification of the proposed New Learning Hub.

2.2 SITE LOCATION

The School is located two kilometres east of the local town centre, at 80 Mount Hall Rd, Raymond Terrace NSW 2324. The site is roughly rectangular in shape, and has an approximate site area of 5 hectares.



Figure 1 – Aerial photo of existing site

The site is located within the Port Stephens Local Government Area (LGA) and is subject to the Port Stephens Local Environmental Plan 2013 (PSLEP 2013). The site is zoned R2 Low Density Residential. All land surrounding the site is zoned R2 Low Density Residential, with SP2 Infrastructure to the West and RE1 Public Recreation to the east.

3 EFSG SUSTAINABILITY TARGETS

3.1 OVERVIEW

The Educational Facilities Standards and Guidelines (EFSG) have been developed by the NSW Department of Education, to assist the management, planning, design, construction and maintenance of new and refurbished school facilities. The EFSG is to be treated as a reference guide that provides a starting point to allow for a consistent standard of delivery across various types of school developments.

The proceeding sections outline how the project addresses each of the requirements of the EFSG DG02 Design guideline.

3.2 SCOPE

All school projects in Planning phases must develop a Sustainable Development Plan including sustainability targets, initiatives and an ESD schedule detailing the relevant Green Star/EFSG pathway adopted by the project. The NSW Government Resource Efficiency Policy's (GREP) is a mandatory NSW Government policy to reduce the NSW Government's operating costs and lead by example in increasing resource efficiency through ESD principles. The GREP requires all new projects above 1,000m² and project costs over \$10 million to be designed to the following standard:

- 5 Stars Green Star for projects located in metropolitan Sydney, Wollongong, and Newcastle,
- 4 Stars Green Star for projects located in other areas of NSW

The new buildings in the proposed development are targeting 4 Star GS DAB v1.3 certification in accordance with above requirements.

3.3 NSW GOVERNMENT RESOURCE EFFICIENCY POLICY

The purpose of the GREP is to reduce NSW government agency operating costs by implementing resource efficiency measures, and its implementation is mandatory for all NSW Government agencies, including the Department of Education. The policy includes measures, targets and minimum standards to drive efficiency in energy and water use and waste and also improving air quality.

3.4 ENERGY CONSERVATION

In accordance with the NSW Government Resource Efficiency Policy all new facilities must be designed and built so that energy consumption is predicted to be at least 10% lower than if build to minimum compliance with National Construction Code requirements. The energy consumption reduction must be achieved without including renewable energy generation in the calculation.

3.5 CLIMATE CHANGE

In accordance with EFSG DG02.08 Climate Change Adaptation, an initial assessment of natural hazards and project vulnerability has been carried out in the previous phase of the project. The design measures that are to be undertaken by the project team to address the risks identified are provided in Section 4 Climate Change Adaptations.

4 GREEN STAR DESIGN & AS-BUILT

The proposed development is targeting a 4 Star GS DAB v1.3 certification for the New Learning Hub.

4.1 OVERVIEW

The Green star rating system is a comprehensive tool for assessing environmental performance of Australian buildings.

The Green Star framework incorporates ESD principles that are categorized into nine categories. Points are awarded across each category for ESD initiatives that are incorporated into the project. The Design and As-built documentation is then verified through two rounds of independent assessments by the Green Building Council of Australia (GBCA). This section outlines the pathway for Irrawang High School to achieve a 4 Star certified rating under the GS DAB v1.3.

4.2 THE GREEN STAR RATING SCALE

The Green Star rating is determined by comparing the percentage of available points achieved out for the total available points. The rating scale shown below details the percentage thresholds for the star ratings awarded.

% of available points	Rating	Outcome
Less than 10	Zero Star	Assessed
10 – 19	One Star	Minimum Practice
20 – 29	Two Star	Average Practice
30 – 44	Three Star	Good Practice
45 – 59	Four Star	Australian Best Practice
60 – 74	Five Star	Australian Excellence
75+	Six Star	World Leadership

Credit points available:

Category	Total Points Available
Management	14
Indoor Environment Quality	17
Energy	22
Transport	10
Water	12
Materials	14
Land Use & Ecology	6
Emissions	5
Total	100 points + 10 innovation

4.3 SINSW UMBRELLA GREEN STAR CREDIT RECOMMENDATIONS

To support the large volume of new schools that will be certified by the GBCA using the Green Star Tool, SINSW has partnered with the GBCA to streamline the documentation and assessment process for schools.

The SINSW Green Star Credit Recommendations spreadsheet has been developed to consider how each credit in Green Star may be applied to SINSW schools. The spreadsheet also details SINSW's preferred approach for projects to achieve each credit, including any pre-approved alternate approaches agreed to by the GBCA in response to a Technical Question. It provides references to relevant sections of the EFSG or other policies or guidelines, and examples of standard project documentation that could be used as supporting evidence in claiming a credit.

4.4 DESIGN POINTS FOR THIS PROJECT

In accordance with GREP requirements, compliance with EFSG, and under SINSW Green Star umbrella, the Green Star points that can be targeted for this project are tabled as below.

Category	Points Targeted	Points TBC
Management	8	0
Indoor Environment Quality	12	0
Energy	5	2
Transport	10	0
Water	5	0
Materials	1	3
Land Use & Ecology	1	0
Emissions	4	0
Innovation	8	2
Total	54 (46 points + 8 innovation)	7
Buffer in Achieving 4 Star	9 Points	-

5 CLIMATE CHANGE ADAPTATIONS

High level climate change interventions were set out for the project during Phase 2 Concept Design. Note a comprehensive Climate Adaptation Plan has not been developed and as such Green Star Credit 3 Adaptation and Resilience has not been targeted for this project.

As per instructions by SINSW Sustainability, to mitigate the adverse impacts of climate change on the future of the school, the following responsible parties need to ensure the appropriate adaptation strategies to the identified Climate Risks are considered and implemented within the project design.

Climate Risks	Climate Risk Interventions	Responsible Parties
Sea Level Rise Long term changes to coastal processes (e.g. erosion / accretion)	Floor levels located above 1:100 year flooding event and general levels at 7m AHD.	Architect
Average annual rainfall Long term changes to frequency, intensity, and duration	Installation of water harvest equipment e.g. rainwater tanks - to capture a portion of rainwater for reuse, limiting spill across the site.	Hydraulics/Civil
Extreme rainfall events (flooding) Includes frequency and intensity, leads to changes in the intensity and frequency of flooding and to landslides and erosion, and to intensity of electrical storms	Prepare flood management plan to manage evacuation procedures. Identify max. flood levels to direct detailed design of power & other services.	SINSW Architect/Services Consultants
Drought Changes to frequency, intensity, and duration	Installation of water storage equipment e.g. rainwater tanks - to capture rainfall for reuse during drought periods and to conserve water. Installation of water flow equipment to minimise water usage and wastage e.g. flow restrictors, installation of taps with timed flow, use of non-portable water sources for irrigation & toilet flushing and the installation of water efficient appliances within the project. Recommend native and drought tolerant planting.	Hydraulics/Civil Architect Landscape Architect
Gales and extreme wind Winds in excess of 8 on the Beaufort scale	Selection of materials, fixtures, and fittings to address extreme wind speeds and reduce the amounts of enclosed exterior corridors to minimise wind tunnels through the site. Regularly inspect established trees to minimise risk of falling branches and trees during high wind and storm surges. Remove any branches and/or trees that pose a risk.	Architect SINSW

<p>Storms</p> <p>Increased frequency and intensity of snow, hail, dust, and lightning storms, storm surges, and storm tides</p>	<p>Utilise stormwater management practices to reduce stormwater pollution and erosion during rainfall & storm surges. Strategies includes incorporating water sensitive design practices into the project to promote filtration, utilising stormwater retention units, overflow pipes and swales to control water flow and capturing overflow to be utilised for irrigation.</p> <p>Regularly inspect established trees to minimise risk of falling branches and tree during high wind and storm surges. Remove any branches and/or trees that propose a risk.</p> <p>Provide external gutters and leaf guards that overflow away from the building in the event of being blocked and cross falls to walkways.</p>	<p>Civil/Landscape Architect</p> <p>SINSW Architect</p>
<p>Bush fire risk</p> <p>Changes to Fire Danger Index</p>	<p>Selection of non-combustible materials.</p> <p>Maintain vegetation on site to limit fuel</p>	<p>Architect</p> <p>Landscape Architect/SINSW</p>
<p>Average temperatures</p> <p>Long term changes to average annual temperatures, including extreme temperature events and solar radiation</p>	<p>Selection of materials with reduced solar absorbency and good thermal performance to regulate room temperatures.</p> <p>Provisions for adequate insulation in walls and roofing.</p> <p>Undercover walkways to limit sun exposure</p> <p>Retain trees to provide shade to buildings and student areas.</p>	<p>Architect</p> <p>Landscape Architect</p>

Confirmation/Status of above climate risk interventions are attached as Appendix C.

APPENDIX A – EFSG SCHEDULE

APPENDIX B – GREEN STAR MATRIX

APPENDIX C – CLIMATE RISK INTERVENTIONS SCHEDULE
