



Umow Lai

Lindfield Learning Village – Phases 2 & 3

ESD Commitment Brief

REPORT AUTHORISATION

PROJECT: LINDFIELD LEARNING VILLAGE – STAGES 2 & 3

REPORT NO: S.DOE.0123.ESD-R001

Date	Rev	Comment	Prepared by	Checked by	Authorised by
25-06-19	0	Draft Issue for review and comment	DAA	-	PJ
12-07-19	1	Design Team comments captured, report updated for SI NSW review	DAA	AC	PJ

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1.0 INTRODUCTION

1.1 OVERVIEW

This ESD Commitment Brief has been prepared by Umow Lai on behalf of the NSW Department of Education and School Infrastructure NSW (the Applicant). It accompanies a Response to Submissions Report in support of State Significant Development Application (SSD 16_8114) for Lindfield Learning Village (the site).

On 24 October 2018 the Minister for Planning granted partial development consent to SSD 8114 for Phase 1 construction and operation of a new school for 350 students. The remainder of SSD 8114 (as originally proposed) has not yet been granted consent and has been subject to further investigation, assessment and engagement with the relevant agencies (DPE, RFS, OEH, RMS, TfNSW) and Council.

The Response to Submissions and supporting documents seek approval for the remainder of SSD 8114, being:

Phase 2(a)

- Minor internal works within the approved Phase 1 area to accommodate an additional 35 students.
- The additional 35 students (a total of 385 enrolled students) is needed for Day 1 Term 1 2020, prior to Phase 2(b) being completed.
- Phase 2(a) will occur immediately on approval to allow the additional students for Day 1 Term 1 2020.

Phase 2(b) of construction:

- Works to accommodate 1,050 students (including the approved 350).
- Repurposing of the Phase 1 area.
- A loop road around the southern portion of the site for emergency vehicles, buses and drop off and pick up vehicles.

Phase 3 of construction:

- Works to accommodate an additional 950 students in the western wing of the building.

1.2

Vegetation management will be required to achieve the necessary APZ. The SSD does not seek approval for vegetation management outside the site boundary.

REPORT AIMS

The purpose of this ESD Commitment Brief is to outline the measures that when implemented, will address the following Ecologically Sustainable Development (ESD) requirements as per SSD 8114 Secretary's Environmental Assessment Requirement – as it applies to Stages 2 and 3:

- *Demonstrate that the development has been assessed against a suitably accredited rating scheme to meet industry best practice.*

1.3

It should be read in conjunction with parts 1.0, 2.0 and 3.0 of a previous report authored by Umow Lai – *S.DOE-0104-R01_Rev C dated 20/03/17* – which addresses all other ESD requirements as per SSD 8114, which are applicable site wide.

RESPONSE TO SUBMISSIONS

This ESD Commitment Brief has considered the issues raised by agencies during exhibition of SSD 8114 and subsequent Response to Submissions for Phase 1. This table identifies the agency issue and where it has been addressed within this report.



<i>Discipline</i>	<i>Documentation Type</i>	<i>Issue</i>	<i>Date</i>	<i>Custodian</i>
<i>Architectural</i>	Architectural Drawings	Development Application	21/03/2017 – 06/06/2019	Design Inc
<i>Acoustic</i>	Noise Impact Assessment	Draft	10/07/2019	White Noise Acoustics
<i>Environmental</i>	Operational Waste Management Plan	Draft	11/07/2019	Foresight Environmental
<i>Transport</i>	Traffic and Transport Assessment	Draft	11/07/2019	Arup
<i>Transport</i>	Green Travel Plan	Draft	11/07/2019	Arup
<i>Environmental/ Contamination</i>	Preliminary Environmental Site Assessment	Draft	15/03/2017	Environmental Investigation Services (EIS)

Table 1 Source documentation

1.4 REFERENCED STANDARDS

This report has been undertaken with reference to the following:

- Green Building Council of Australia, Green Star Interiors v1.2 Submission Guidelines
- Green Building Council of Australia, Green Star Design & As-Built v1.2 Submission Guidelines
- NCC 2016 Building Code of Australia – Volume 1

1.5 LIMITATIONS OF THIS REPORT

Due care and skill has been exercised in the preparation of this report.

This report is not intended to be a comprehensive summary of all possible sustainability initiatives which could be incorporated into the project, rather it is compiled for the specific purpose explained in *1.2 Report Aims*. Umow Lai has undertaken this exercise on the basis of previous experience with best practice educational projects.

Inputs in this report have been coordinated with all relevant consultants and it is the responsibility of each of those consultants to ensure that all measures specified in this report are captured in their relevant designs and/or policies and to followed through into construction.

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2.0 DEMONSTRATING BEST PRACTICE

Green Star has been selected as a framework for the proposal's sustainability attributes. Green Star is a comprehensive environmental rating system for buildings. Green Star separately evaluates the environmental initiatives of design, projects and/or buildings based on a number of criteria; including energy and water efficiency, indoor environmental quality and resource conservation. Refer to 2.1 below.

The unique nature of this proposal, being an existing building with elements of heritage protection, limits the application of many of the Green Star Design & As-Built credits. However, by reviewing the credit criteria of Green Star Interiors, many obtainable alternatives are apparent. As such, to acknowledge the inherent limitations of the project, whilst still demonstrating best practice, both tools have been utilised. An informal (i.e. not formally certified by the Green Building Council of Australia, the administrators for Green Star) rating achieves 4-Stars, which is considered a 'Best Practice' equivalency outcome.

The Green Star environmental rating system for buildings was created for the property industry in order to:

- Establish a common language;
- Set a standard of measurement for green buildings;
- Promote integrated, whole-building design;
- Recognise environmental leadership;
- Identify building life-cycle impacts; and
- Raise awareness of green building benefits.

2.1 GREEN STAR CATEGORIES

In both Green Star Design & As-Built and Green Star Interiors the rating systems are made up of the following environmental categories:

- Management
- Indoor Environmental Quality
- Energy
- Transport
- Water
- Materials
- Land Use and Ecology
- Emissions
- Innovation

The categories are then divided into individual credits, each of which addresses an initiative that improves or has the potential to improve, a design, project or building's environmental performance. Points are awarded in each credit for actions that demonstrate the project has met the overall objectives of Green Star and the specific aims of the rating tool.

In establishing the project's level of alignment with the Green Star rating tool 'scorecard', several assumptions must be made relating to how the future School will be managed and operated. Given that Green Star rewards projects not only for built works but also for how the completed building operates, it is necessary during design phases to assume a minimum or best practice level of operational performance. The assumptions made within are considered 'typical' for new buildings and will without exception contribute to better environmental and financial performance of the completed project.



2.1.1 Management

The management category encourages and rewards the adoption of practices and processes that enable and support best practice sustainability outcomes throughout the different phases of a project's design, construction and its ongoing operation. The management category intends to improve a projects' sustainability performance by influencing areas where decision-making is critical, rewarding the implementation of processes and strategies that support positive sustainability outcomes during construction. The category also promotes practices that ensure a project will be used to its optimum operational potential.

The Project will include the following initiatives:

1. The School will establish ongoing environmental performance targets relating to its consumption of energy and water, the production and recycling of waste, and to the ongoing maintenance and improvement of good indoor environmental quality. Furthermore, the School will monitor and report on nominated targets to ensure consequential outcomes.
2. During design and documentation, the School will review the design for its ease of maintenance for all building services and building fabric.
3. Comprehensive pre-commissioning and commissioning activities will be performed for all nominated building systems.
4. Building services will be fine-tuned during the first 12 months of operation, covering all four seasons, providing monthly reviews, quarterly tuning and a final re-commissioning after 12 months. The purpose of this process is to tune the buildings to suit the way they are being used.
5. Building user guides will be produced by the project team to help users interact effectively with the buildings, optimising building performance and user comfort. The Guides will include guidance on all sustainability attributes of the site, and also information on maintenance requirements.
6. Building services will include separate metering for all major energy and water common uses, major uses and sources. This includes a breakdown of metering for distinct uses or floors. If an entire floor has a single use than floor-by-floor metering will suffice. If a floor has multiple uses, each different use shall be sub-metered.
7. A monitoring system shall be provided, capable of capturing and processing data produced by the installed energy and water meters, providing the facility manager with information on system performance and allowing them to closely manage efficient use of resources on site.
8. A systematic and methodical Environmental Management Plan will be formalised for implementation during the construction phase by the Contractor.
9. The Contractor shall ensure high quality support staff practices are in place that:
 - a. Promote positive mental and physical health outcomes on-site through targeted policies and programs
 - b. Enhance site workers' knowledge on sustainable practices through on-site, off-site, or online education programs.
10. Infrastructure for waste management and the separation of waste streams will be verified through the design by either ensuring existing School facilities are fit for purpose or via the provision of the appropriate facilities for on-going management by the school.



2.1.2 Indoor Environmental Quality

The Indoor Environment Quality category aims to encourage and reward initiatives that enhance the comfort and well-being of occupants. The credits within this category address issues such as air quality, thermal comfort and acoustic comfort. This category rewards projects that achieve sustainability performance improvements in a manner that also improves occupants' experience of the space. The 'Indoor Environment Quality' category recognises that buildings are designed for people and that reductions in energy use should never be made at the expense of the occupants' health and wellbeing.

The Project will include the following initiatives:

1. All HVAC systems will mitigate the entry of outdoor pollutants and be designed for ease of maintenance and cleaning.
2. Mechanical design will allow for the exhausting pollutants from print/photocopy equipment, cooking equipment and carpark vehicle exhaust through dedicated exhaust systems to avoid lowering IAQ of adjacent spaces.
3. Indoor noise levels will provide a high level of acoustic comfort, with internal noise levels being no higher than 5db(A) above the 'satisfactory' sound levels in Table 1 of AS/NZS 2107:2000;
4. The project will address noise transmission in enclosed spaces through acoustic separation, whereby fixed solid partitions between teaching spaces or private offices will be constructed to achieve a weighted sound reduction index of at least 45. The design includes some sliding glass partitions and areas open to adjacent common learning spaces. However, the acoustic qualities of the dividing walls will enable this planning. The design also envisages acoustic clouds to float above the teaching areas to reduce sound transfer, and waffle foam on the underside of the floor slab above to assist in breaking up sound.
5. Light fittings shall be selected, where possible, such that glare is controlled or reduced and occupants will have the ability to control lighting in the spaces through manual lighting controls.
6. Wherever possible teaching and learning spaces are extensively daylight through well considered window placement, delivering high levels of daylight.
7. Occupants have extensive views to the surrounding landscape, a key factor in a building's connection to an occupants' health and wellbeing.
8. All paints, sealants, adhesives, floor coverings and composite timbers used internally will meet low VOC (Volatile Organic Compound) emissions limits in accordance with Green Star Design and As-Built v1.2 VOC Emissions limits tables.
9. Any engineered wood products will meet stipulated formaldehyde limits as per Green Star Design and As-Built v1.2 Table 13.2: Formaldehyde Emissions Limit Values for Engineering Wood Products.
10. A minimum 5% of the total floor area (excluding toilets, storage, circulation and the like) will provide high amenity spaces for the enjoyment of staff and regular occupants, whereby they meet at least three of the specified criteria for; interaction, ventilation, daylight, views, landscaping and noise as per the requirements of Green Star Interiors 14B



2.1.3 Energy

The Energy category aims to reward projects that are designed and constructed to reduce their overall operational energy consumption below that of a comparable standard-practice building. Such reductions are directly related to reduced greenhouse gas emissions, lower overall energy demand as well as reductions in operating costs for building owners and occupants. The Energy category rewards projects that facilitate reductions in greenhouse gas emissions through energy efficient design and encourage the utilisation of energy generated by low-emission sources.

The Project will include the following initiatives:

1. Installed lighting aggregate illumination power density shall be a minimum 5% less than the maximum power densities as defined in NCC 2016 Table J6.2a
2. A high percentage of lighting will be controlled through time switches and motion detector controls to meet BCA Section J6 requirements.
3. Mechanical systems shall be designed to achieve the following, where applicable:
 - a. At least 5% less than maximum fan motor power and pump power specified in NCC 2016
 - b. Thermal efficiency of any installed water heater is 5% more than the minimum specified in NCC 2016
 - c. Minimum energy efficiency ratio for package air-conditioning equipment and refrigerant chillers is at least 5% high than specified in NCC 2016 of MEPS (where Section J does not apply)
4. The domestic hot water system (DHW) will be low-emission, utilising one or any combination of the following technologies (to be selected during detailed design):
 - a. Natural gas with solar pre-heat
 - b. Natural gas with high-efficiency condensing boilers
 - c. Heat-pump technology. Heat-pumps utilising natural refrigerants (e.g. CO₂) will be preferred over those using conventional refrigerants.
5. All computer monitors shall have an Energy Rating Labelling of at least 6 stars, or the highest available where 6 star equipment is not available
6. All workstation equipment will be set to standby mode after no more than 10 minutes of inactivity, and all workstation equipment will be automatically scheduled to turn off at the end of the working day. Computers required to run 24 hours a day for specific uses are excluded from this requirement.
7. All refrigerators, freezers, dishwashers and display screens that meet the following:
 - a. Be within one star of the highest energy star rating of the comparable equipment class; or
 - b. Where appliances are not covered by the Energy Rating Labelling system, be 20% more efficient than comparable equipment that is no more than 2 years of age.
8. The project is considering provisions for the inclusion of solar photovoltaic (PV) arrays to supplement energy consumption and reduce ongoing operating costs. Investigations of the available roof space are being reviewed and a suitable PV system is being assessed for feasibility in detailed design stage.



2.1.4 Transport

The Transport category aims to reward projects that facilitate a reduction of the dependency on private car use and promote the use of healthy means of transport as an important means of reducing overall greenhouse gas emissions.

If reliance on individual motor vehicle transportation is to be reduced, it is necessary to maximise alternative transportation options. Rather than limiting access to private fossil fuel vehicles, the Transport category aims to encourage and reward initiatives that reduce the need for their use. This may include initiatives that encourage and make possible the use of mass transport options, cycling or walking, and the selection of sites that are close to a large number of amenities.

The Project will include the following initiatives:

1. The proposal includes cyclist facilities for students and staff.

2.1.5 Water

The Water category aims to encourage and reward initiatives that reduce the consumption of potable water through measures such as the incorporation of water efficient fixtures and building systems and water re-use.

Reductions in operational water consumption may be achieved through maximisation of water efficiency within the project, as well as through the utilisation of reclaimed water sources.

The Project will include the following initiatives:

1. The proposal includes rainwater harvesting and re-use for landscape irrigation
2. All bathroom fixtures (toilet pans, urinals, hand basin taps and showers) will meet minimum WELS ratings in accordance with the applicable Green Star Guidelines:
 - a. Basin taps and urinals to be equal to, or more than, 5 Star WELS
 - b. Showers to be equal to or more than, 3 Star (6.0 but ≤ 7.5 L/min) WELS
 - c. Toilets to be equal to or more than, 4 Star WELS
3. All domestic appliances installed by the project shall achieve the following minimum WELS ratings
 - a. Clothes washing machines equal to, or more than, 4 Star WELS
 - b. Dishwashers equal to, or more than, 5 Star WELS
4. All HVAC systems will avoid water based heat rejection
5. Areas with mass planting will be irrigated using sub-soil drip irrigation with wherever practical, automated control to limit unnecessary irrigation.
6. Fire protection systems will not expel any water for testing.



2.1.6 Materials

The Materials category aims to address the consumption of resources within a building construction context, by encouraging the selection of lower-impact materials. The category also encourages absolute reductions in the amount of waste generated, or the recycling of as much of the waste generated as possible.

The Project will include the following initiatives:

1. A minimum 90% of all construction waste generated will be diverted from landfill by either re-use or recycling.
2. A high percentage of PVC products used in the project including those in all formwork, pipes, flooring, blinds and cables shall meet the *Best Practice Guidelines for PVC in the Built Environment*, published by the Green Building Council of Australia.
3. A high percentage of timber used in building and construction will be from a reused source or certified by a forest certification scheme.

2.1.7 Land Use and Ecology

The Land Use and Ecology category aims to reduce the negative impacts on the site's ecological value as a result of urban development and reward projects that minimise harm and enhance the quality of local ecology.

The Project addresses this category through the following:

1. The total proposed works are contained within the existing site, which has heritage significance. The site's current ecological value will be improved through well-considered landscape design, which includes a large roof terrace.
2. Given the presences of contaminates on site, remediation works shall be undertake in accordance with a best practice remediation strategy.

2.1.8 Emissions

The Emissions category aims to assess the environmental impacts of 'point source' pollution generated by projects. Negative impacts commonly associated with buildings include damage to the environment through refrigerant leaks or disturbances to native animals and their migratory patterns as a result of light pollution.

The Project will include the following initiatives:

1. The lighting design shall be compliant with AS1158: Lighting for Roads and Public Spaces and AS 4282: Control of the Obtrusive Effects of Outdoor Lighting. This will be achieved through control of upward light output ration (LOR) or control of direct illuminance.
2. Landscape concepts will be applied to achieve a high level of stormwater performance across the site, improving water quality prior to discharge from the site.



2.1.9 Innovation

The Innovation category is a way of encouraging, recognising, and rewarding the spread of innovative practices, processes and strategies that promote sustainable communities and cities.

The Innovation category acknowledges efforts which demonstrate that sustainable development principles have been incorporated, not only for the community for which the Green Star criteria apply, but in also in a broader sense. This may include collaboration between developers and other parties, and is recognised separately from any outcomes rewarded in other categories.

Three “Innovation Challenges” will be incorporated into the project. They are

1. Community Benefits – The project has incorporated facilities which are accessible to the wider public, allowing for greater engagement with the boarder community.
2. Occupant Engagement – The proposed solar system will be separately metered and connected to a user friendly dashboard interface, whereby live information on power generation can be monitored and used as a learning resource for students
3. Integrating Healthy Environments – A Healthy School Canteens strategy has been developed by SI NSW, informed by a comprehensive evidence report and consultation process. This strategy will be incorporated into the schools operations whereby staff will promote healthy eating in all school activities and provide education on good nutritional habits.



3.0 CONCLUSION

Umow Lai has, on the basis of previous experience with best practice educational projects, consolidated sustainability initiatives for consideration in the Lindfield Learning Village, Stages 2 & 3. These will be further considered during detailed design.

Inputs in this report have been coordinated with all relevant consultants and it is the responsibility of each of those consultants to ensure that all measures specified in this report are captured in their relevant designs and/or policies and to followed through into construction.

The sustainability initiatives identified were considered robust, pragmatic and deemed appropriate for a facility of this nature

