Bankstown North Public School

Green Star Design Review

Prepared for: JDH Architects Pty Ltd

Attention: Vlad Hripac

Date: 30 March 2020

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Ref: 45342

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Revision

Revision	Date	Comment	Prepared By	Approved By
01	05/02/2020	Preliminary - For client review	RL	ALK
02	04/03/2020	Issue for Information	RL	ALK
03	10/03/2020	Issue for Information	RL	ALK
04	17/03/2020	Issue for Information	RL	ALK
05	30/03/2020	Issue for Information	RL	ALK

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1. Introduction

This Green Star Review has been carried out for JDH architects with regards to the Bankstown North Public School, located at 322 Hume Highway, Bankstown NSW 2200. The purpose of this report is to undertake a design review of the current documentation for the project and develop a strategy towards an equivalent 4 Star Green Star performance statement.

In accordance with the Conditions of Approval, the project is required to submit evidence that the school has been designed to achieve an equivalent minimum 4 Star Green Star outcome prior to demolition, excavation or construction. This document is intended to highlight the critical items, documentation amendments, risks and opportunities associated with achieving an equivalent 4 Star rating under the **Green Star Design & As-Built v1.3 tool**. This includes Green Star commitments and requirements to be included in the Principal's Project Requirements (PPR) for the project.

After review and consideration of the relevant design documentation currently available, WGE is proposing a Green Star pathway for the project to achieve the design equivalence with 4 Star Green Star standard. The requirements associated to this proposed pathway take into consideration the initiatives currently have been allowed for in the design and additional cost considerations while facilitating the desired rating.

A Greenstar Compliance Matrix is presented at Section 4 of this report with design team (architect and services engineers) credit compliance confirmation for the targeted Green Star credits which currently compliance is not demonstrated in their documentation.

Refer Design Equivalence Certification for confirmation of the building's design meets a minimum 4 Star Green Star equivalent level of performance under the Green Star & As built v1.3.

1.1 Documentation

This Green Star Review has been prepared based on the following information:

- Green Star Design & As-Built v1.3 Submission Guidelines;
- Architectural Drawings - Stage 4 Schematic design; received date: 24/01/2019 (JDH Architects)
- Mechanical Drawings – Preliminary P1 – P3 Issue; received date: 26/02/2019 (Erbas Engineers)
- Mechanical Specification – Preliminary P1 Issue; received date: 26/02/2019 (Erbas Engineers)
- Hydraulic Drawings – Preliminary P3 Issue; received date: 07/01/2019 (Erbas Engineers)
- Hydraulic Specification – Preliminary P2 Issue; received date: 26/02/2019 (Erbas Engineers)
- Electrical Drawings – Preliminary P3 Issue; received date: 26/02/2019 (Erbas Engineers)
- Electrical Specification – Preliminary P1 Issue; received date: 26/02/2019 (Erbas Engineers)
- Civil Drawings C10.01 Catchment Plan – Preliminary P2 Issue; received date: 11/02/2019 (Northrop Engineers)
- BCA 2019 Section JV3 report, Rev 02 dated 31/01/2020 (Wood & Grieve Engineers now part of Stantec)

2. Green Star Credit Matrix

The following contains a detailed Green Star credit matrix with applicable commentary & actions as a result of the review conducted by WGE.

The project documentation shall demonstrate credit compliance in accordance with the commentary included within the Green Star matrix and details listed within Sections 3 of this report.

Green Star - Design & As Built Scorecard v1.3

Project:	Bankstown North Public School
Targeted Rating:	4 Star - Best Practice

Core Points Available	4 Star Pathway
100	50.0

NA	CATEGORY / CREDIT	AIM OF THE CREDIT / SELECTION	CODE	CREDIT CRITERIA	POINTS AVAILABLE	POINTS TARGETED	COMMENTS
	Management				14		
	Green Star Accredited Professional	To recognise the appointment and active involvement of a Green Star Accredited Professional in order to ensure that the rating tool is applied effectively and as intended.	1.0	Accredited Professional	1	1	WGE are Green Star Accredited Professional (GSAP) status so credit claimed on basis of design review
	Commissioning and Tuning	To encourage and recognise commissioning, handover and tuning initiatives that ensure all building services operate to their full potential.	2.0	Environmental Performance Targets	-	Complies	Project Design Intent Report (DIR) to be developed by Design Team and targets for energy & water consumption to be outlined within DIR. Water and Energy targets should conform with EFSG requirements (Design Guide 02.02), the project shall conform to NSW Government Resource Efficiency Policy which establishes environmental performance targets (i.e. energy & water use, waste, and indoor air quality) consistent with Green Star. **This is deemed to satisfy the intent of Green Star.** The following items will suffice as suitable evidence in demonstrating compliance: - Provision of rooftop solar PV system; - Proposed building fabric exceeding Section J DTS Building Fabric Compliance; - Thermal comfort targets in line with EFSG minimum standard requirements; and - Provision of in-ground rainwater tanks
			2.1	Services and Maintainability Review	1	1	**Contractual Requirements.** Head Contractor to lead Services & Maintainability Review with input from all subcontractors. Review must include items relating to Commissioninability, Controllability, Maintainability, Operability and Safety.
			2.2	Building Commissioning	1	0	**Credit not targeted**
			2.3	Building Systems Tuning	1	0	**Contractual Requirements.** Building owner to commit to 12 month tuning process with quarterly adjustment and measurements. Head Contractor and subcontractors to sign up to tuning process.
			2.4	Independent Commissioning Agent	1	0	**Credit not targeted**
	Adaptation and Resilience	To encourage and recognise projects that are resilient to the impacts of a changing climate and natural disasters.	3.1	Implementation of a Climate Adaptation Plan	2	0	**Credit not targeted**
	Building Information	To recognise the development and provision of building information that facilitates understanding of a building's systems, operation and maintenance requirements, and environmental targets to enable the optimised performance.	4.1	Building Information	1	1	Operations & Maintenance Manuals, Building Log Book and Building Users Guide must be developed in accordance with Green Star standards. Building user information must be delivered in a digital format e.g. through digital signage, website or mobile applications. Additional reporting requirements for sub-contractors.

Commitment to Performance	To recognise practices that encourage building owners, building occupants and facilities management teams to set targets and monitor environmental performance in a collaborative way.	5.1	Environmental Building Performance	1	1	Minimum 80% of the projects Gross Floor Area (GFA) is to have a commitment to set, measure and report on its environmental performance. For this project, the targets will likely be for operational energy and water consumption. Head Contractor to ensure metering and monitoring infrastructure (water & energy) is installed to track operational consumption against the established benchmarks. Based on EFSG requirements (Design Guide 02.02), the project shall conform to NSW Government Resource Efficiency Policy which establishes environmental performance targets (i.e. energy & water use, waste, and indoor air quality) consistent with Green Star. **This is deemed to satisfy the intent of Green Star.**
		5.2	End of Life Waste Performance	1	1	**Contractual Requirements.** Minimum 80% of the projects GFA is to have a commitment to reduce demolition waste at the end of life of an interior fitout or base building component. For this project, the building owner must commit to extending the life of the interior fitout or finishes to at least 10 years, barring minor wear and tear or minor repairs.
Metering and Monitoring	To recognise the implementation of effective energy and water metering and monitoring systems.	6.0	Metering	-		**Credit not targeted**
		6.1	Monitoring Systems	1	0	**Credit not targeted**
Construction Environmental Management	To reward projects that use best practice formal environmental management procedures during construction.	7.0	Environmental Management Plan	-	Complies	A project-specific best practice EMP is to be developed and implemented in accordance with the *NSW Environmental Management Systems Guidelines.*
		7.1	Formalised Environmental Management System	1	1	**Contractual Requirements.** Head Contractor to provide a formal audited Environmental Management System (EMS) against the ISO14001 standard. This certification must be maintained throughout the duration of the project.
		7.2	High Quality Staff Support	1	0	**Credit not targeted**
Operational Waste	Prescriptive Pathway	8B	Prescriptive Pathway - Facilities	1	1	The project is require to provide the following:- 8B.1 Seperation of Waste Streams 3 separate lines of Waste Streams (i.e General Waste, paper waste, e-waste, organics waste or batteries waste etc) 8B.2 Dedicated Waste Storeage Area. Dedicated Waste Storage area sized to accommodate all bins or containers to handle one collection cycle as outlined within third party best practice guidelines. 8B.3 Access to Waste Storage Area Access to waste Storage area as outlined within third-party best practic guidelines.
Total				**14**	**7**	

	Indoor Environment Quality				**17**	
☐	**Indoor Air Quality**	To recognise projects that provide high air quality to occupants.	9.1	Ventilation System Attributes	1	1	9.1.1 Entry of Outdoor Pollutants: **Mechancial drawings demonstrated Credit Compliance** 9.1.2 Design of Ease of Maintenance and Cleaning: **Mechancial drawings demonstrated Credit Compliance** 9.1.3 Cleaning Prior to Use and Occupation - **Contractor Requirement** Before installation/occupation, all existing ductwork must have been cleaned and all new ducts must be kept sealed / free of moisture and debris.
☐			9.2	Provision of Outdoor Air	2	0	**Credit not targeted**
☐			9.3	Exhaust or Elimination of Pollutants	1	0	**Credit not targeted**
☐	**Acoustic Comfort**	To reward projects that provide appropriate and comfortable acoustic conditions for occupants.	10.1	Internal Noise Levels	1	1	Internal ambient noise levels to primary & secondary spaces to be no more than 5dB(A) above the lower figure in AS/NZS 2107:2016. Measurements are to be taken in at least 10% of spaces at project completion to verify the required levels are met.
☐			10.2	Reverberation	1	1	Requires reverberation times in primary & secondary spaces to meet AS/NZS 2107. This includes general learning spaces, auditorium, Staff rooms, Library etc. More difficult to achieve if the space is mainly comprise of hard surfaces.
☐			10.3	Acoustic Separation	1	0	**Credit not targeted**
☐	**Lighting Comfort**	To encourage and recognise well-lit spaces that provide a high degree of comfort to users.	11.0	Minimum Lighting Comfort	-	Complies	Internal lights are to be flicker free and have a CRI>80.
☐			11.1	General Illuminance and Glare Reduction	1	1	Internal lighting to primary & secondary spaces to comply with AS 1680 AND be fitted with glare reduction features (opaque diffusers). **Electrical Specification demonstrated all electrical works comply with AS1680.**
☐			11.2	Surface Illuminance	1	0	**Credit not targeted**
☐			11.3	Localised Lighting Control	1	0	**Credit not targeted**
☐	**Visual Comfort**	To recognise the delivery of well-lit spaces that provide high levels of visual comfort to building occupants.	12.0	Glare Reduction	-	Complies	Requires blinds/screens with VLT < 10% to ALL window/skylight/glazed doors forming part of the external envelope to all School Primary spaces. (i.e. Homebases,General learning spaces and staff adminstration rooms., etc)
☐			12.1	Daylight	2	1	The project requires to achieve a daylight factor > 2% to at least 40% of all primary spaces. (i.e. Homebases,General learning spaces and staff adminstration rooms., etc) **Provisional review by WGE confirmed design to be compliant with mimimum credit criteria.**

☐		12.2	Views	1	1	The Project is require to achieve an external views area (minimum 60% of primary area) based on Green Star calculation methodology (i.e. 8m of view away from external window) **Provisional review by WGE confirmed design to be compliant with mimimum credit criteria.**

☐	**Indoor Pollutants**	To recognise projects that safeguard occupant health through the reduction in internal air pollutant levels.	13.1	Paints, Adhesives, Sealants and Carpets	1	1	At least 95% of paints, adhesives, sealants (by volume) and carpets (by area) to meet Green Star emissions limits. Requires additional documentation, careful tracking and monitoring during construction. **Architect FFE schedules demonstrated all carpets meets the credit emission limits.**
☐			13.2	Engineered Wood Products	1	1	The project is require to demonstrate that either no timber or at least 95% (by area) of all engineered wood products meet the Green Star formaldehyde emission limites. Requires additional documentation, careful tracking and monitoring during construction. **Architect FFE schedules demonstrated all engineered wood products are EO and meets the credit emission limits.**
☐	**Thermal Comfort**	To encourage and recognise projects that achieve high levels of thermal comfort.	14.1	Thermal Comfort	1	1	The project is require to demonstrate all primary and secondary spaces (with normal air-con) to achieve thermal comfort of -1<PMV<+1 for 98% of the year. **Provisional review by WGE confirmed design to be compliant with mimimum credit criteria.**
☐			14.2	Advanced Thermal Comfort	1	0	**Credit not targeted**
	Total				**17**	**9**	

Energy					**22**	
Greenhouse Gas Emissions	E. Modelled Performance Pathway	15E.0	Conditional Requirement: Reference Building Pathway	-	Complies	Complies with minimum requirement.
		15E.1	GHG Emissions Reduction: Building Fabric (Intermediate Building relative to Reference Building)	4	0	**Credit not targeted**
		15E.2	GHG Emissions Reduction (Proposed Building relative to Benchmark Building)	16	7	Project will need to target 33% less greenhouse gas emissions (estimated) than benchmark building (equivalent to 4 points under Credit 15E.2) through the following energy efficient initiatives: - LED based lighting; - Efficient Air-conditionoing units (i.e. VRV/VRF units); - Building fabric performance exceeding NCC 2019 Section J DTS requirements - 99.6 kW Solar Photovoltaic System. Provision of 99.6 kW solar PV system can achieve credit criteria. **Provisional review by WGE confirmed design to be compliant with credit criteria.**
		15E.3	Off-Site Renewables	8	0	**Credit not targeted**
		15E.4	District Services	7	0	**Credit not targeted**
		15E.5.1	Transition Plan	1	0	**Credit not targeted**
		15E.5.2	Fuel Switching	2	0	**Credit not targeted**
		15E.5.3	On-site storage	1	0	**Credit not targeted**

Peak Electricity Demand Reduction	Performance Pathway	16B	Performance Pathway - Reference Building	2	2	Requires at least 20% reduction in peak electricity demand. Provision of 99.6 kW solar PV system can achieve credit criteria. **Provisional review by WGE confirmed design to be compliant with credit criteria.**
Total				**20**	**9**	

Transport				**10**		
Sustainable Transport	Performance Pathway	17A.1	Performance Pathway	10	2	Transport Consultant can be engaged to develop a Green Travel Plan. Site is predominantly accessible by car and bus. Estimated 2 points targeted for future expansion of pedestrian access, promotion/encouragement of public transportation, electric vehicle charging spaces and provision of secure bicycle parking spaces. Having a regular shuttle bus service may also be beneficial
Total				**10**	**2**	

Water				**12**		
Potable Water	Performance Pathway	18A.1	Potable Water - Performance Pathway	12	8	Estimated 8 points targeted through the following water efficiency initiatives: - High-efficient WELS fixtures & appliances; - Re-use of rainwater for landscape irrigation around the site. **WGE reviewed architectual FFE Schedules with Hydraulic documentation and confirmed design to be compliant with credit criteria.**
Total				**12**	**8**	

Materials				**14**		
Life Cycle Impacts	Prescriptive Pathway - Life Cycle Impacts	19A.1	Comparative Life Cycle Assessment	0	0	**Credit not targeted**
		19A.2	Additional Life Cycle Impact Reporting	0	0	**Credit not targeted**
		19B.1	Concrete	3	0	**Credit not targeted**
		19B.2	Steel	1	0	**Credit not targeted**
		19B.3	Building Reuse	4	0	**Credit not targeted**
Responsible Building Materials	To reward projects that include materials that are responsibly sourced or have a sustainable supply chain.	20.1	Structural and Reinforcing Steel	1	1	95% of steel (by mass) is sourced from a responsible steel maker and at least 60% by mass of all reinforcing bar and mesh is produced using energy-reducing processes. Steel to be sourced from compliant producers/suppliers
		20.2	Timber Products	1	0	**Credit not targeted**
		20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	1	0	**Credit not targeted**
Sustainable Products	To encourage sustainability and transparency in product specification.	21.1	Product Transparency and Sustainability	3	1	3% of products to have sustainability credential. Can be achieved through use of environmentally certified products (flooring, plasterboard, paints, steel) Estimated one (1) point is awarded on the basis of providing sustainable materials as per EFSG requirements (Design Guide 02.05) and in support of Credit 13 and Credit 20. This is deemed to satisfy the intent of Green Star.
Construction and Demolition Waste	Percentage Benchmark	22B	Percentage Benchmark	1	1	At least 90% of waste generated during construction and demolition (excluding contaminated materials, excavation waste) is to be diverted from landfill. Waste contractors & waste facilities must hold Green Star waste compliance verification summaries and provide monthly waste reports.
Total				**12**	**3**	

Land Use & Ecology						
				6		
Ecological Value	To reward projects that improve the ecological value of their site.	23.0	Endangered, Threatened or Vulnerable Sp	-	Complies	As per EFSG (Design Guide 02.06), new works has no impact on biodiversity within the existing school site. **This is deemed to satisfy the intent of Green Star.**
		23.1	Ecological Value	3	0	Based on the proposed new landscape area, For conservatism, 0 point is estimated to be achieved.
Sustainable Sites	To reward projects that choose to develop sites that have limited ecological value, re-use previously developed land and remediate contaminate land.	24.0	Conditional Requirement	-	Complies	**Deemed to comply** with Green Star conditional requirements as new works is developed on previously existing school site.
		24.1	Reuse of Land	1	1	**Deemed to satisfy** the intent of Green Star as new works is developed on previously existing school si
		24.2	Contamination and Hazardous Materials	1	1	Site-specific Geotechnical and Contamination reports is require to identify presence of asbestos. Assumed compliance based on remediation and validation works to be carried out by appropriate contractor in accordance with EPA/OH&S requirements.
Heat Island Effect	To encourage and recognise projects that reduce the contribution of the project site to the heat island effect.	25.0	Heat Island Effect Reduction	1	0	**Credit not targeted**
Total				**6**	**2**	

Emissions				5		
Stormwater	To reward projects that minimise peak stormwater flows and reduce pollutants entering public sewer infrastructure.	26.1	Reduced Peak Discharge	1	1	Post development stormwater discharge to not exceed pre-development discharge. Based on EFSG requirements (Design Guide 02.04), rainwater tanks will be provided reduce flow into the stormwater system. This is deemed to satisfy the intent of Green Star. **Civil Catchment Plan demonstrated Credit Compliance**
		26.2	Reduced Pollution Targets	1	0	**Credit not targeted**
Light Pollution	To reward projects that minimise light pollution.	27.0	Light Pollution to Neighbouring Bodies	-	Complies	External lights to be AS 4282 compliant
		27.1	Light Pollution to Night Sky	1	1	External lights shall not exceed 5% ULOR. Alternatively, external lights design to meet external illuminance requirements.
Microbial Control	To recognise projects that implement systems to minimise the impacts associated with harmful microbes in building systems.	28.0	Legionella Impacts from Cooling Systems	1	1	This is achieved based on air cooled HVAC system and natural ventilation. **Mechancial drawings demonstrated Credit Compliance**
Refrigerant Impacts	To encourage operational practices that minimise the environmental impacts of refrigeration equipment.	29.0	Refrigerants Impacts	1	0	**Credit not targeted**
Total				**5**	**3**	

Innovation				10		
Innovative Technology or Process	The project meets the aims of an existing credit using a technology or process that is considered innovative in Australia or the world.	30A	Innovative Technology or Process		0	
Market Transformation	The project has undertaken a sustainability initiative that substantially contributes to the broader market transformation towards sustainable development in	30B	Market Transformation		0	
Improving on Green Star Benchmarks	The project has achieved full points in a Green Star credit and demonstrates a substantial improvement on the benchmark required to achieve full points.	30C	Improving on Green Star Benchmarks		2	Powered by renewables - 2 points for >10% PV power **Electrical drawings demonstrated Credit Compliance**
Innovation Challenge	Where the project addresses an sustainability issue not included within any of the Credits in the existing Green Star rating tools.	30D	Innovation Challenge	10	4	Financial Transparency (1 pt) - by Head Contractor Community Benefits (1Pt) - By Department of Education Universal Design (1 Pt) - by architect - **(EFSG DG19 Access for people with Disabilites deems to satisfy this requirements)** Reconciliation Action Plan (1 pt) - **(NSW DOE Draft Reflect RAP and APIC Policy June 2018 documents by Department of Education Deems to satisfy this requirements)**
Global Sustainability	Project teams may adopt an approved credit from a Global Green Building Rating tool that addresses a sustainability issue that is currently outside the scope of this Green Star	30E	Global Sustainability		1	Green Cleaning (1 pt) - By Building Owner
Total				**10**	**7**	

TOTALS	AVAILABLE	TARGETED
CORE POINTS	100	43.0

CATEGORY PERCENTAGE SCORE		43.0
INNOVATION POINTS	10	7.0
TOTAL SCORE TARGETED		50.0

3. Critical Items

Based on the Schematic Design Documentation received by Wood & Grieve Engineers, we can confirm that the following critical items remain as items to be confirmed. These critical items are required for School Infrastructure (SI) to confirm and included the items as part of their Principal's Project Requirements (PPR).

3.1 Responsible Building Practices

This item is to target GS credit point - 7.1 Formalised Environment Management system – Refer Credit Matrix in Section 2 for compliance requirements.

Contractor Requirement for ISO14001 certification and for developing site specific Environmental Management Plan.

SI to confirm inclusion of scope in PPR.

3.2 Building System Tuning

This item is to target GS credit point – 2.3 Building System Tuning – Refer Credit Matrix in Section 2 for compliance requirements.

Contractor is required to conduct a comprehensive services and maintainability review for all services during the design stage and prior to construction.

SI to confirm inclusion of scope in PPR.

3.3 End of Life Waste Performance

This item is to target GS credit point – 5.2 End of Life Waste performance – Refer Credit Matrix in Section 2 for compliance requirements.

The project is required to commit to extending the life of the interior fitout or finishes to at least 10 years, barring minor wear and tear or minor repairs.

SI to commit to not having major refurbishment works for 10 years.

4. Conclusion

Based on the review of the Schematic Design Documentation received by Wood & Grieve Engineers as the Green Star Accredited Professional (GSAP), we confirm that the project design is able to achieve its targeted minimum 4 Star Green Star 'equivalence' rating outcome provided that the critical items listed in Section 3 have been confirmed and addressed.

The Green Star Compliance Confirmation Matrix below listed the green star items which are not currently included in the project documentation but has been confirmed by the design team that will be included within the project scope of works. Following acceptance and confirm.

Refer Design Equivalence Certification for confirmation of the building's design meets a minimum 4 Star Green Star equivalent level of performance under the Green Star & As built v1.3.

Green Star Compliance Confirmation Matrix

Green Star Credit Items	Responsible Party	Action Required for Credit Compliance	Confirm Compliance
2.1 - Services and Maintainability Review	Mechanical	Mechanical Consultant to confirm "Service and Maintainability report" by head contractor is included in the mechanical specification as part of the contractual requirements – refer Section 2 "Credit Matrix" of this report for further detail.	Confirmed
	Electrical	Electrical Consultant to confirm "Service and Maintainability report" by head contractor is included in the electrical specification as part of the contractual requirements – refer Section 2 "Credit Matrix" of this report for further detail.	Confirmed
	Hydraulic	Hydraulic Consultant to confirm if "Service and Maintainability report" by head contractor is included in the specification as part of the hydraulic contractual requirements – refer Section 2 "Credit Matrix" of this report for further detail.	Confirmed
9.1 Ventilation System Attributes – 9.1.3 Cleaning prior to use and occupation.	Mechanical	Mechanical Consultant to confirm if credit 9.1.3 requirements is included in the mechanical specification - refer Section 2 "Credit Matrix" of this report for further detail.	Confirmed
11.0 Minimum Lighting Control	Electrical	Electrical Consultant to confirm if credit requirements is included in the electrical specification – refer Section 2 "Credit Matrix" of this report for further detail.	Confirmed
11.1 General illuminance and Glare Reduction	Electrical	Electrical Consultant to confirm if all internal lighting is to be fitted with glare reduction features (opaque diffusers)	Confirmed

17.A.1 Sustainable Transport	Architect	Traffic Consultant to confirm if Transport Consultant will be engaged for the project to develop a “Green Travel Plan”.	Confirmed
27.0 Light Pollution to Neighbouring Bodies	Electrical	Electrical Consultant to confirm if credit requirements is included in the electrical specification – refer Section 2 “Credit Matrix” of this report for further detail.	Confirmed
27.1 Light Pollution to Night Sky	Electrical	Electrical Consultant to confirm if credit requirements is included in the electrical specification – refer Section 2 “Credit Matrix” of this report for further detail.	Confirmed
24.2 Contamination and Hazardous Materials	Architect	Architect to confirm if “Site Specific Geotechnical and Contamination report” is to be provided for the project.	Confirmed

Design with
community in mind

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