CONSULTANTS

Suite 2, Level 1
33 Herbert Street
ST LEONARDS NSW 2065

PO Box 292
ST LEONARDS NSW 1590

T 02 9438 5098
F 02 9438 5398

www.acor.com.au

ENGINEERS

MANAGERS

INFRASTRUCTURE
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CONSULTANTS

International Maarif Schools of Australia (IMSA)

Gallipoli Campus

2 Percy Street, Auburn

ESD SEARs Report

State Significant Development Application

Prepared for: Australian Turkish Maarif Foundation (ATMF)

Project No: SY180038

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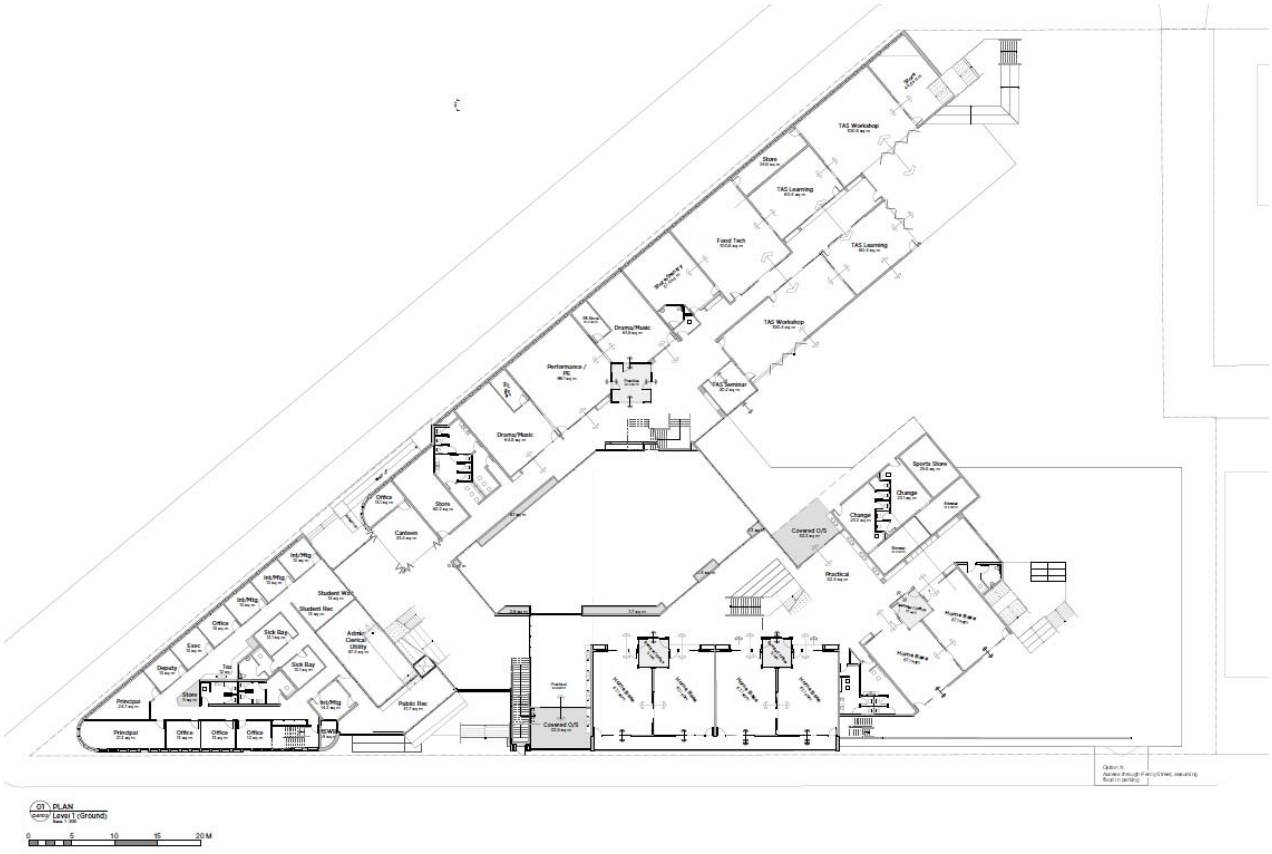

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REVISIONS

Revision	Date	Purpose	Prepared By	Approved By
01	04.6.18	Prelimianry Issue ESD SEARs Report	T.Zheng	W.M
02	22.6.18	Final Issue ESD SEARs Report	T.Zheng	W.M
03	28.6.18	Final Issue ESD SEARs Report	T.Zheng	W.M

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1 Executive Summary

1.1 Background

The following report has been prepared by ACOR Consultants to support the State Significant Development Application (SSDA) for the proposed International Maarif School of Australia – Gallipoli Campus in Auburn – The 'project'

The development is located at 2 Percy Street Auburn and consists of an independent, co-educational combined primary and secondary school facilities with shared multipurpose space, outdoor play area, supporting administration and a basement carpark.

The structures are designed to be delivered in discrete stages – identified as:

- Stage 1 – Alterations to the existing two-level building to accommodate for initial classrooms and administration facilities.
- Stage 2 – Retention of stage 1 building and demolition of adjacent warehouse structure. Construction of basement carpark, and three levels of teaching spaces above, including terraced external areas.
- Stage 3A – Retention of stage 1 building and commencement of construction of three-level wing for Technical and General Classrooms.
- Stage 3B – Demolition of stage 1 building and extension of stage 3A levels into building 1 area and completion of links to stage 3A and stage 2.

This report identifies and summarise the Ecologically Sustainable Design (ESD) initiatives under the Secretary's Environmental Assessment Requirements (SEARs) with matters pertinent in the design of the proposed Maarif School.

The report examines the principles of Ecologically Sustainable Design (as defined in clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000) and demonstrate ways on how it will be incorporated in the design and on-going operation phases of the development.

The report aims to accompany the State Significant Development Application (SSDA) to the NSW Department of Planning and Environment. This report should be read in conjunction with the Architectural design drawings and other consultant design reports submitted as part of the application.

The building is classified as Class 9b (school), with class 7 (basement carpark) in Climate Zone 6.

2 Secretary's Environmental Assessment Requirements (SEARs)

2.1 Requirement Guidelines

This report acknowledges the SEARs with reference to section 9 of the documents for the following list of requirements under "Ecologically Sustainable Development (ESD)".

- Detail how the ESD principles (as defined in clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000) will be incorporated in the design and ongoing operation phases of the development.
- Include a description of the measures that would be implemented to minimise consumption of resources, water (including water sensitive urban design) and energy.
- Demonstrate that the development has been assessed against a suitably accredited rating scheme to meet industry best practice.

2.2 Environment Planning Assessment Regulation

The following list of Clause 7(4) of Schedule 2 Environmental Planning and Assessment Regulation 2000 have been incorporated into the design and on-going operation phases of the development as follows:

- 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.

  Project Response

  The proposed development is designed with the view to ensure suitability is incorporated through a broad range of ESD goals in service design, building construction and operations. The development team will ensure that building minimises the impact on the environment.

  A strong emphasis on electrical and mechanical design including minimising energy and water use, building materials, environment friendly refrigerants and maximising controls efficiencies etc will be taken in to account to prevent irreversible damages to the environmental. In addition, ATMF will be guided to explore the use of renewable energy sources. Best possible design practices with expectation to exceed BCA/NCC Section J – Energy Efficiency Targets.

  Design will use Australian Green Building Council Green Star benchmarks as a guideline, with reference to department of Education's Facilities Standards and associated ESD Guidelines to help drive a balanced approach with risk weighted assessments to ATMF school projects.

  The proposed building embraces sustainable design principles to maximise where possible natural daylight and natural ventilation. The orientation and massing of built form allows northern daylight into the building. Roof material and columns will be carefully selected and

inclusion of landscaped terraces with future mass planting contribute to the cooling of the immediate environment.

Building construction will be expected to be resource efficient, cost-effective and to deliver enhanced sustainability benefits with respect to impacts on the environment and health and well-being of students and staff for the best possible learning facilities

List of items with possible effects on environment are categorised to the following:

- Management
- Building Envelope
- Services Installations(MEP)
- Lighting
- Water
- Materials
- Waste
- Landscaping

- *Inter-generational equity*

  Namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations

  Project Response

  The new development will replace existing Master Plumber association and is expected to highly beneficial for the local community of the future generation.

  The IMSA is ideally positioned near Auburn Gallipoli Mosque, has good access to community sport & recreational facilities and local services which supports the new School.
  ATMF's vision is to build a Kindergarten to 12 grade, co-ed two stream school, with accommodation of up to 728 students and 58 staff to meet the growing demand for an educational institute that services its local community in the same faith & culture. The new School will also be available for use, after school hours by its local community.

- *Conservation of biological diversity and ecological integrity*

  Namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration

  Project Response

  This development is proposed on a previous plumbing training facility within light industrial zone featuring 2 story warehouse, office block and open carpark.
  Its expected the development will have minimal environmental impact as it will encourage natural parkland, playgrounds and enhance general biological diversity. Several trees located along side north boundary of site will be retained and the landscape design strengthens and diversifies the existing landscaping by introducing new specimen planting that reinforces the quantity and legibility of the existing established landscape pattern.

- Improved valuation, pricing and incentive mechanisms

  (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.

Project Response

The project aims to minimise the consumption of resources required for construction, by where practicable, the adaptive reuse of existing buildings on site for staging works.
The mechanical, electrical and plumbing service design of this development will employ lifecycle costing to determine the optimum strategy with regards to major items of plant and equipment, with decisions being made based on whole of life costs rather than capital expenditure only.

Internal building digital signage and possible interactive screens will be implemented for public display of welcome messages, student information and IMSA marketing etc.

Selection of durable, attractive and robust building materials although have a higher upfront cost, will have long term benefits in providing a easy to maintain building and lowering maintenance costs.

2.3 Demonstration of Accredited Rating Scheme.

Current development is not under formal pursuit of an accredited Green Star rating, however most relevant initiatives proposed are based on credits in the Green Star Education V1 Rating Tool.
For the purposes of overview and to help achieve best industry practice, the following table summarises all related design rating scheme that forms part of project assessment recognised by the Green Star Education V1 tool.

Initiatives	Recognised	Credit Reference
Green Star Accredited Professional	Yes	Man1
Commissioning and Building Tuning	Yes	Man3
Shading and Daylighting	Yes	IEQ-11
Impacts from Refrigerants	Yes	EMI-7
Metering	Yes	Man16
Gas heating including Hot water	Yes	IEQ1
Lighting Control	Yes	Man1
Lighting to achieve 15% improvement over BCA J6	Yes	IEQ13
Materials, Recycled Contents	Yes	Mat 3
Construction & Demolition Waste	Yes	Man7

Initiatives	Recognised	Credit Reference
Waste Storage and Sorting	Yes	Man7
Building Information Public Information Display	Yes	Man5
Quality of Internal Air	Yes	IEQ 1,2
Solar Photovoltaics Peak Electricity Demand Reduction	Yes	ENE3
Material Life Cycle Impacts	Yes	Mat 3,4
Green House Gas emissions	Yes	ENE3
Storm water and Potable water	Yes	Wat 3
Sustainable Transport	Yes	Tra-1-6
Water Sensitive Urban Design	Yes	Env-1

2.4 Initiative description for Minimising Resources/Energy Consumption.

- General Resource Saving Initiatives

  The ATMF School project team is committed to achieving sustainability outcomes in the design and construction phases, as well as in operation. The following management objectives will be incorporated into the project to minimise consumption of resources.

- Green Star Accredited Professional

  All engaged members of the design team are experienced in delivering sustainable outcomes. ACOR Green Star Accredited Professionals will oversee the product engineering services packages and the design processes with the intent to aim and help achieve for relevant sustainability targets where possible.

- Commissioning And building Tuning

  Services design team will provide detailed commissioning procedures including controls to ensure building is operating efficiently in accordance with the design intent and carried out in line with the Green Star guidelines.

- Shading and Daylighting

  Percy st and Gelibolu pde façades for both west and east wings are provided with substantial shading element, perforated mesh of approximately 50% openable panel areas. The panel mesh shading scheme helps increased natural daylight whilst minimising unwanted passive solar heat gain and glare for the building, this facilitates maximum use of glazing without tinting treatment that reduce natural light transmission.

  The triangular shape building profile with high façade area provide passive design features allow for enriched daylighting and greater access to external views for occupants. Additional daylighting

reduces the reliance on artificial light and benefits alertness, mood and productivity. External views provide a connection to 'Wyatt park' to the east and the campus environment and help to create an environment encouraging constructive learning.

- Impact of refrigerant

  All refrigerant comes with ozone depletion potential (ODP) of 0 with minimal GWP. HVAV design Proposal will aim to keep total System Direct Environmental Impact (TSDEI) of the refrigerant systems in the building to less than 15 to ensure the environmental impacts of refrigeration and air conditioning equipment are minimised. Alternatively, leak detection system will be fitted for cooling capacity above 50kW.

- Metering

  Minimum number of electricity metering and sub-metering shall be specified in accordance with section J. Additional metering shall be provided in accordance to Green Star standards to enhance monitoring and management of electricity consumption and will be reviewed during detail design.

- Gas Heating

  Natural Gas-fired, overhead style, radiant type heating shall be provided for the large common assembly area.

  Radiant Gas heating is planned for the space. It is more efficient than electric systems with direct impacts upon human comfort levels without major effects on the surrounding atmosphere. System has been chosen based on a life cycle costing approach.

- Hot Water

  Energy efficient options for generation and reticulation will be investigated further during detailed design phase. Because wet areas are not centralised it's possible to install multiple small hot water plants to save energy and avoid unnecessary heat loss through the system.

- Lighting Control

  Lighting in all areas/rooms (except small storage rooms) will be controlled by movement sensors. External lighting will be controlled via a daylight censor (PE cell) and timer.

  Lighting is to achieve a minimum 15% improvement over BCA Section J6 lighting power density allowances (W/m_2) predominantly using LEDs.

- Construction/Demolition Waste (Refer to Operational Waste Management Plan by 'Waste Audit')

  During the construction and demolishing phase of the project, waste shall be recycled. Centralised waste and recycling bin systems shall be provided for the building during operation as well as a dedicated storage area for the separation and collection of recyclable wastes.

- Building/public information display

  All relevant information about the design and correct operation of the building's environmental features will be transferred to the occupants via the Building Users' Guide.

  Internal building digital signage and interactive screens will be implemented for public information display of welcome messages, student information and IMSA marketing etc.

  Digital screens will help achieve a paperless environment by reducing the need for print materials and labour costs for the service and maintenance of traditional solid display boards.

- Quality of Internal Air

  Natural ventilation via openable windows is not an available option for this project in its entirety. The stage 3 portions along the 'Galibdu' parade boundary fronts a busy railway corridor. The acoustic impacts from open windows would be unacceptable to teaching activities. Therefore, a sealed façade has been proposed.

  Adequate natural ventilation via openable doors and windows, permeable airways and permanent openings in façades are proposed to the major transient areas of the buildings.

  All classrooms, and large eastern common area, shall be provided with mechanical ventilation through local façade penetrations for each level, to ensure adequate fresh air for each classroom whilst minimizing thermal leakage from air-conditioned zones. Heat exchangers and carbon CO2 controls shall be implemented where required to reduce energy consumption of HVAC equipment.

- Peak electricity demand reduction

  Any proposal PV (photovoltaic) panels to be provided will further reduce ongoing energy costs for the school. The area of roof could potentially accommodate a large amount of PV panels to satisfy a significant proportion of the electrical usage of the school and reduce peak demand from power grid.

- Material Life Cycle

  Material use for building adhesives, sealants, flooring and paint products will be selected to contain low or no Volatile Organic Compounds (VOCs) and all engineered wood products used in exposed or concealed applications are specified to contain low or no formaldehyde to avoid harmful emissions that can cause illness and discomfort for occupants.

  Internal furnishings within the building can be selected based on their recycled content, end-of-life recyclability and reduction of carbon foot print.

- Green gas Emission Reduction

Where possible apply implementation of independent environmental certification, for example use ‘Ecospecifier’ or Good Environmental Choice Australia related products, the project will confidently reduce environmental impacts and waste from furnishings over the life of the building.

Use building’s structural and reinforcing steel sourced from a responsible steel maker.

Steel will have a post-consumer recycled content or be reused steel. Sustainable timber shall be specified for at least half of the timber products used on the project. Recycled concrete shall be specified using recycled aggregate or manufactured sand and reduced quantities of Portland cement to reduce environmental impacts of concrete production and embodied energy.

- Storm Water and Non-Potable Use

  Rain water collected from roof will be collected in an existing inground tank for irrigation purposes including mass-planted areas of landscape.

  Water treatment including filtration and ultraviolet disinfection of rainwater will be provided prior to reticulation and re-use. Tank sized of approximately 100,000L will be provided as advised by landscape architect. This will help alleviate environment impact by reducing dependency on mains water supply reduce negatives effects of storm water runoff minimise water consumption and costs.

- Sustainable Transport (Refer to Green travel Plan Report by ‘GTA Consultants’)

  Provide sustainable and alternative transport options. Bicycle parking and a shower facility shall be provided. Car parking shall be limited to the minimum requirements. Building access and pedestrian connectivity allows for building users to take advantage of multiple bus routes in the area.

- Water Sensitive Urban Design

  External area design will implement best practices of water sensitive landscaping and urban design, including permeable paving and indigenous low water usage plants to increase storm water retention. Decrease total suspended solids to reduce exposed roof area, use of lighter-coloured surface or landscaped roof terraces to mitigate the urban heat island effect. The carbon sequestration of the plants on the exposed surfaces will also combat climate change contributions.

  Water efficient fixtures and fittings will be implemented to reduce water consumption in accordance with the Australian Government’s Water Efficiency Labelling Scheme (WELS) using Triple-A rated tap ware.

3 References

Document Number	Revision	Date
ESD SEARs Report	01	22/06/2018

I am an appropriately qualified and competent person operating with >10 years industry experience in the field of HVAC design, installation and ESD analysis and as such qualified to assess building compliance in respect to ESD and appropriate performance-based requirements.

Signature:

Date:
04/06/2018

Qualifications:
BE (Hons)
Dip HVAC
MIE Aust
MAIRAH

Name of Author:
Tian Zheng
Mechanical Engineer
ACOR Consultants Pty Ltd

Signature:

Date:
04/06/2018

Qualifications:
BE (Hons)
FIEAust
CPEng 211107
NER
RBP – EM 1031
RPEQ - 16436

Name of Reviewer:
Warwick Meadows
Principal
ACOR Consultants Pty Ltd