German International School Sydney

Design statement

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Introduction

The purpose of this statement is to address the seven design quality principles as set out in the State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017.

Description of the Project:

The project is the development of a new Science Centre and Administration Area extension. The project comprises of a Science Centre and Reception Area extension.

Key Design Considerations:

The original brief for the project was to consider the requirements of the school to replace the existing outdated science teaching spaces and provide a new science centre with state of the art chemistry, biology and physics labs.
The brief also ask for a redefinition of the entrance to the Campus, which includes an extension of the existing administration building by a new reception, which is easily accessible and improves way finding on campus.

Outside the functional brief requirements, a truly sustainable and highly energy efficient building was of the highest priority. As such the desire for building with a low carbon footprint using timber as the main construction material and complying with the stringent international Passivehouse standard to provide a highly energy efficient building were key.

Schedule 4 School - Design Quality Principles (Clause 35(6)(a))

Principle 1- context, built form and landscape

Schools should be designed to respond to and enhance the positive qualities of their setting, landscape, and heritage, including Aboriginal cultural heritage. The design and spatial organisation of buildings and the spaces between them should be informed by site conditions such as topography, orientation and climate.

Landscape should be integrated into the design of school developments to enhance on-site amenity, contribute to the streetscape and mitigate negative impacts on neighbouring sites.

School buildings and their grounds on land that is identified in or under a local environmental plan as a scenic protection area should be designed to recognise and protect the special visual qualities and natural environment of the area and located and designed to minimise the development's visual impact on those qualities and that natural environment.

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The German International School Sydney site is located on the north western side of Myoora Road, approximately 300m to the south east of Terrey Hills Public School.

The site is irregular in configuration, with a total area of 1.62ha. The site has a frontage of 115.45m to Myoora Road and a maximum depth of 151.85m along the north eastern side boundary.
The site has a maximum fall of approximately 10m from the north to the south of the site.

No known items of cultural heritage have been identified on the site.

The campus currently contains buildings and structures that are predominantly confined to the southern and western portions of the site. The south eastern corner of the site contains a covered sport's court, with some scattered buildings and structures also located within the central portion of the site. Land to the north is vegetated, creating a transition from the bushland area to the north of the site. The existing buildings are generally of solid nature, built from concrete block/fibre cement sheeting painted and corrugated wall cladding.

The location of the new Science Building was chosen due to its proximity to the main street frontage, with a desire to use the building form as a method of way finding to the new Reception Area; the heart of the campus. The structure creates a guiding path for students or visitors and invites interest for those that pass due to its openness. This sense of transparency is achieved through a layering of large windows onto an expansive corridor, with unobstructed views into the light filled learning spaces and provides a connection between outside spaces and the building itself, inviting an interchangeable learning environment. The use of external learning areas for additional classrooms has been inspired by gathering areas practiced by the Traditional Custodians of Country in Australia.

Designed to be harmonious amongst the existing school landscape and trees, natural rough sawn timber cladding together with a sawtooth green roof is proposed to minimise the visual impact of the building from a distance and respond to its natural setting. Internal light will be captured from the Southwest utilising highlight windows on the sawtooth roof design, reducing electrical reliability.

Principle 2 - sustainable, efficient and durable

Good design combines positive environmental, social and economic outcomes. Schools and school buildings should be designed to minimise the consumption of energy, water and natural resources and reduce waste and encourage recycling.

Schools should be designed to be durable, resilient and adaptable, enabling them to evolve over time to meet future requirements.

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The Science Centre will be the first school building in Australia to be certified to the 'International Passivhaus Standard', which reduces energy consumption for heating and cooling by 90%. The building will also be the first 'Mass Timber' school building in NSW, acting as a carbon store by utilising Cross Laminated Timber (CLT) slab, walls and glue-laminated column/beam structure, local bushfire resistant hardwood cladding and exposed Spruce walls. Implementing a complex scientific approach to building physics, the Science Centre will be fit for purpose. It will showcase the future of comfortable building design utilising available future resources and address sustainability criteria using the following design components:

- The green roof design will contribute to local biodiversity through rainwater harvesting to irrigate the landscape, reduce temperatures and assist with stormwater retention.
- Power supply to the building will be provided by a large solar PV array situated on the roof, with surplus power distributed to the remaining campus. In addition, an EV and EB (E-Bike) charging station will be available.
- Triple glazed thermally broken aluminium windows and doors will ensure thermal efficiency and noise management.
- Heat Recovery Ventilation units will maintain a comfortable room temperature throughout the year and provide fresh filtered air to benefit the student learning environments.
- Durable materials, such as sustainable Linoleum flooring and Rockwool insulation will be applied for longevity.
- Water and energy efficient fixtures and fittings will be selected for installation.

Overall, the building design will provide a flexible learning space and enable adaptive use of the spaces to meet any future learning requirements.

Principle 3 - accessible and inclusive

School buildings and their grounds should provide good wayfinding and be welcoming, accessible and inclusive to people with differing needs and capabilities.
Note -
Wayfinding refers to information systems that guide people through a physical environment and enhance their understanding and experience of the space.
Schools should actively seek opportunities for their facilities to be shared with the community and cater for activities outside of school hours.

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Located near the main street frontage of Myoora Road, the new Science Centre acts as a gateway onto the school campus. The structure provides a clear line of sight from the street and sets a definitive path to the new reception area. The orientation of the building provides some privacy to the sprawling campus behind, whilst

improving the visibility of the entrance and access into the school. The extension to the Reception area creates a central prominence for the administration building and improves proximity to stairs, disabled access lifts and ramps and forms the daily access way for parents and carers with prams and students alike. Through the additional use of strong signage on classrooms, amenities, access areas and so forth, navigation on campus will be significantly improved.

Principle 4—health and safety

Good school development optimises health, safety and security within its boundaries and the surrounding public domain, and balances this with the need to create a welcoming and accessible environment.

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Biophilic Design principles have been incorporated into the Science Centre's indoor and outdoor design. The proven psychological benefits to students and staff through landscaping, nontoxic materials, natural patterns and processes, light and space, sensory variability and a community connection to nature are fundamental. The use of timber will counteract humidity levels to reabsorb humidity during wet weather and release in dry weather, naturally helping to create a balanced indoor comfort. Clean and fresh filtered air will also be supplied within the certified Passivhaus envelope through Heat Recovery Ventilation units. This will maintain a comfortable room temperature throughout the year and provide fresh filtered air to benefit the student learning environments. Not only beneficial in hot and cold months or to students with asthma and allergies, HRV units are valuable additions throughout the bushfire season and CO2 levels will be maintained below a critical 800 ppm in all classrooms.
The transparency of building allows for views from the courtyards into the building and classrooms and vice versa, creating a safe, bright and airy environment for students and users.

Principle 5—amenity

Schools should provide pleasant and engaging spaces that are accessible for a wide range of educational, informal and community activities, while also considering the amenity of adjacent development and the local neighbourhood.
Schools located near busy roads or near rail corridors should incorporate appropriate noise mitigation measures to ensure a high level of amenity for occupants.
Schools should include appropriate, efficient, stage and age appropriate indoor and outdoor learning and play spaces, access to sunlight, natural ventilation, outlook, visual and acoustic privacy, storage and service areas.

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The new Science Centre is designed to engage and invite a desire for exploratory learning by the students. Landscaping around the building will be abundant and the views of the natural outdoor areas from classrooms

will be unobstructed. Internally spaces are open, adaptable and transparent in design to enable teachers to utilise them in a variety of ways. Ample storage rooms will allow for a large material library, laboratory equipment to be stored away when not in use and large preparation rooms. Teachers will be able to close off rooms for acoustic privacy or students will be able to separate into small groups in separate indoor and outdoor learning spaces if required. This flow between spaces is enhanced due to the corridors opening onto outside courtyards and staged seating, which will be used as outside learning spaces. These landscaped areas will also be utilised by the school community for many other activities and gatherings such as, the annual School Christmas Market. Whilst the building is located near the main street frontage of the campus, the window orientation is facing away from the road, reducing noise pollution and providing privacy. To maintain this immersive green learning space, trees will also be established to soften the views of the nearby road.

Principle 6—whole of life, flexible and adaptive

School design should consider future needs and take a whole-of-life-cycle approach underpinned by site wide strategic and spatial planning. Good design for schools should deliver high environmental performance, ease of adaptation and maximise multi-use facilities.

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The Science Centre is an innovative space with adaptive zones which can be used for a variety of teaching and learning styles, subject classes, storage areas and additional uses. It promotes collaboration amongst students and an engaged community ethos.
Its prominent location viewed from the street and on campus, will create a new and exciting hub.

Principle 7—aesthetics

School buildings and their landscape setting should be aesthetically pleasing by achieving a built form that has good proportions and a balanced composition of elements. Schools should respond to positive elements from the site and surrounding neighbourhood and have a positive impact on the quality and character of a neighbourhood.
The built form should respond to the existing or desired future context, particularly, positive elements from the site and surrounding neighbourhood, and have a positive impact on the quality and sense of identity of the neighbourhood.

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The form of the new two storey Science Centre complements the simple rectangular volumes of the existing two storey buildings on the school campus and maintains some aesthetic dialogue.
However, in contrast to the existing concrete buildings, the use of rough sawn timber as the exterior cladding on the Science Centre will be natural, sustainable and will blend into the forest environment. The transparent

and flexible classroom boundaries invite interactions between students, giving them space to enquire, observe and showcase their learning. The building's open and transparent façade is distinctly different to the existing campus buildings, which are introverted and closed.

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