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Design Verification Statement & CPtED Response

**Hurlstone Agricultural High School
(Hawkebsury)**

SSDA Submission

Documentation Control

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1.0 Project Overview

Project Name: Hurlstone Agricultural High School (Hawkesbury)

Project Address: Vines Drive, Richmond, NSW (Western Sydney University Hawkesbury Campus)

Architect's Name: Phil Baigent (Conrad Gargett Ancher Mortlock Woolley)

Registration No: 6174

I confirm responsibility for designing the proposed development and have applied the Education SEPP Design Quality Principles.

Description of the Project:

The new Hurlstone Agricultural High School (Hawkesbury) at Western Sydney University (WSU), Richmond, will be an academically selective STEM Agricultural high school for 1,500 students (including 300 boarders from across NSW).

The new school will be the most advanced agricultural high school in Australia, to benefit from a unique partnership with Western Sydney University's School of Science and Health, to facilitate the highest quality agricultural and STEM focussed research experience.

The integrated model of high school-university framed education under development for the school, will infuse critical stages of the educational experience, with the intensive agricultural and STEM innovations required to build Australia's competitive advantage in this rapidly expanding sector of our economy. Students at the new school will have access to the university's world leading science, agricultural, STEM & environmental research facilities, as well as the extensive tracts of farm land, suitable for both intensive & progressive farming practices.

The new school's facilities will include interactive learning spaces, designed to incorporate the findings of the DoE's Future Learning Unit, state of the art boarding accommodation, sporting and science laboratories all with full WIFI connectivity.

Design process undertaken:

Engagement with the NSW Department of Education (DoE) & Western Sydney University (WSU) stakeholders was undertaken early in the design process to gain an understanding of the existing site context & university master planning to consider and inform the future of the proposed school in partnership with the WSU campus.

From the outset a key aspiration for the project has been to provide students at the new school with access to the university's world leading science, STEM & environmental research facilities, as well as the extensive tracts of agricultural land, suitable for both intensive & progressive farming practices.

The design has been developed based on extensive consultation with the DoE, the Project Reference Group, the Agricultural Working Group and in response to the local environment and context. As the scheme has progressed a number of presentations have also been provided to local council, neighbouring stakeholders and community groups to ensure a wide range of consultation has been conducted.

Refer to the section 7 and Appendix BB of the Environmental Impact Statement for a detailed outline of the design consultation and review process undertaken.

Key design considerations:

The Hawkesbury region has been the foundation of NSW's food provisions since the late 1700's & colonial times, when early settlers established crops and produce on the rich alluvial lands of the Hawkesbury River. Although in decline over recent years, it remains Sydney's original and enduring food bowl. The local orchardists, farmers & artisan producers still provide for market, about 20% of the city's total food supply.

Within this rich & historic agricultural setting, the architectural response is inspired by Nature and aims to embed agriculture in the design and fabric of the architecture.

As a metaphor for architectural expression, the forms and configuration of the variously connected functional school spaces allude to the structure and anatomy of the flowering plant. The plant symbolising the fundamental basis of agriculture and food production.

A strong visual statement at the main entrance, through a synthesis of landscape and architecture, identifies and promotes the importance of agriculture at the high school. This main avenue merges the school and university context together along an existing axis-line and links the heart of school back to a historically significant building within the university. When staff, students & visitors walk along the avenue entrance to the school, the intention is to express a modern, state of the art school facility, where agriculture is at the core of everything. This symbolises the leadership of the school, embedding agriculture in the school curriculum. It is an agricultural school and not just a school with agriculture studied in it.

The design seeks to look forward to the future and aims to inspire the next generation of agricultural leaders.

The Architectural response supports the civic design concept, the building planning framework and expression of interconnecting agricultural outdoor learning spaces.

2.0 Response to Educational SEPP Design Quality Principals

1. Context, built form and landscape:

The new high school is engaged in the urban planning and building context of the WSU Campus.

The site addresses Vines Drive, one of the main roads through the WSU campus & the school's entrance is established by a main avenue which leads to the school centre. This provides a strong visual and physical pathway connection with the WSU, aligned with the Stable Square building and serves to link & extend the university's pedestrian networks into the school grounds. The design expressed in its entrance and address to the WSU, is to be modern, state of the art, distinctive and inspirational.

A sloping landform gently rises from the front boundary & provides a landscaped "narrative" space in the school entrance space. The agricultural theme is to be presented in a selection of crops, native flower beds or orchards in a structured landscape environment. The fields are intended to be tilled & maintained by the students, to provide a unique & distinctive identity for the agricultural high school. At the slope's highest level, it becomes a green roof & terraced outdoor learning space.

The landscaped "narrative" space transitions into the central Assembly Court, a "civic" place as a focus and at the "heart" of the new school.

The 4 main building areas are planned in the centre of the site, like a small township around a village square, with the main "public" function buildings fronting the "civic" space of the school. The buildings and outdoor spaces are organised in a radial arrangement around the central civic place & Assembly Court, linked and interconnected within the overall site planning framework & view corridors to the agricultural fields beyond.

2. Sustainable, efficient and durable:

The design includes a number of key aspects to achieve sustainable outcomes. The design incorporates ecologically sustainable design principles including:

- Passive environmental design, by the provision of solar shading/climatic control screens to minimise heat gain and spatial planning to facilitate natural cross-ventilation.
- A structural column grid layout to enable flexible & multiple modes of use of spaces in the building design.
- Material selections that will be considerate of their environmental impact and reduce their impacts on waste production, through recyclability and long term durability.
- Incorporation of energy efficient technologies and roof mounted solar panels.
- Incorporation of rainwater storage tanks for use in irrigation
- Appropriate material selection which carefully considers the Australian climate & context in a contemporary building.
- Landscape design and plant selection is considerate of location.
- An environmental Sustainable Design Report September 2017 has been prepared by Umow Lai Pty Ltd (Refer Appendix L of Environmental Impact Statement)

3. Accessible and inclusive

The proposal has been designed to be universally accessible and inclusive.

The building and landscape design provides clear and easily traversable access for all students, staff, users and visitors, including people with differing needs and abilities. This is achieved through compliance with the requirements of AS1428.1, AS1428.2 (where applicable), accessible pathway grades and surfaces, clearances at door entries and centrally located lifts in the multi-storey buildings to allow easy access, assist wayfinding and circulation to the upper level facilities.

Engagement between the project managers, design consultants will continue to as the scheme progresses to ensure appropriate outcomes are achieved in building design and exterior planning and landscaping.

4. Health and Safety:

The design aims to provide a healthy and safe environment for all school students, staff, users and visitors. The design utilises multiple strategies including:

- Building design provides healthy, safe & secure learning environments
- Sporting courts, ball areas which are easily accessible to encourage physical fitness and use of outdoor areas.
- The school is entered via a main avenue, which will provide a welcoming address & an entrance clearly marked and signed.
- Building design allows for casual surveillance of the outdoor areas & pathways.
- Entrances to toilet facilities will be clearly visible.
- A line of fencing separates the school grounds from the surrounding areas, securing the school from after-hours and public uses.
- Crime Prevention through Environmental Design (CPtED) has been a key driver in the architectural design and is further discussed below.

5. Amenity:

The design of the buildings and landscape have focused on providing future-focused learning spaces, with a focus on agricultural enterprises to provide a high level of amenity for the students, their teachers and the local neighbourhood through:

- Passive environmental design ensures that the internal amenity is maximised;
- Technology strategies that are flexible and can be easily adapted over time;
- Building design ensures that undue overshadowing of neighbouring properties has been minimised;
- Privacy to the adjoining residential users has been maximised through the location of the proposed building development towards the rear of the site;
- Building design and material selection ensures good interior acoustic amenity and reduces the impact of noise to the adjoining neighbours.

6. Whole of life, flexible and adaptive:

Engagement with the DoE & WSU stakeholders was undertaken early in the design process to gain an understanding of the existing site context and to consider the future of the proposed school in partnership with the WSU campus;

Students at the new school will have access to the university's world leading science, STEM & environmental research facilities, as well as the extensive tracts of agricultural land, suitable for both intensive & progressive farming practices.

Learning spaces designed using the findings of DoE's Future Learning Unit to deliver adaptable & flexible multi-use facilities.

The new school's facilities will include interactive learning spaces, state of the art boarding accommodation, sporting and science laboratories, all with full WIFI connectivity.

7. Aesthetics:

The design has been developed based on extensive consultation with the DoE, the Project Reference Group and in response to the local environment and context.

The scale of the proposed new school buildings in relation to the neighbouring buildings, is significant. Most of the campus buildings are 1 to 2 storeys high & spread out across the WSU site.

Within this building context, the visual impact of the school development presented to Vines Drive is mitigated by the sloping landform, which serves to conceal the view & diminish the scale of the main buildings beyond. The buildings which front & are closest to the neighbouring WSU facilities, ie the University residential housing & Microbiology facility are single storey high buildings. The 3-storey high library & academic buildings are well setback towards the "rear" of the school site, to reduce the visual impact of their larger scale.

The orientation of the school buildings align with the WSU campus buildings, apart from academic building whose 'wings' have a northern aspect to capture the best natural light and address the alignment of the woodland along the boundary edge. The building forms are wedge shaped, generated from the radial planning geometry. Their curvilinear roofs serve to reduce the overall height of the buildings & visual impact of their scale.

While the buildings may be presented as large 'farm sheds', the dignity of their simple, strong & honest agricultural building forms are celebrated in the architectural design. The forms & shapes of the buildings are purposeful & responsive to the different functions they accommodate. The façades seek to create protective enclosures, in the expression of their sheltering function & the nature inspired theme, like the protective husk or shell to the kernel of the seed inside. The facades utilise traditional galvanise coloured sheet metal claddings & louvres, but are to be designed in a sophisticated & purposeful way with contemporary detailing & modulated wall panelling. The fenestration is overlaid by lightweight external screens of folded & perforated metal panels, to provide protection from the wind & rain, and as a sun control shading device to the façade.

3.0 Crime Prevention through Environmental Design (CPtED)

Conrad Gargett Ancher Mortlock Woolley have safely designed these buildings using the following three concepts.

- Crimes against people and property are less likely to occur if other people are around
- It is important that other people are able to see what is happening
- It is important to give people options and safe choices, particularly in their responses to what is happening

Although the school is said to be integrated into the Western Sydney University, it will to some extent operate in isolation due to its security fencing. Due to this we have considered the following;

- How to provide clearly identified, overlooked and well-used routes to gain access to the buildings, sports fields, university facilities (including playing fields and lecture halls) and public transport facilities;
- How to ensure security monitoring using the NSW DoE guidelines are placed at strategic locations along key routes especially for afterhours usage;
- Whether to provide shuttle bus or other transport service linking destinations beyond the site (for example car parks and public transport facilities); and
- How to improve surveillance through:
 - Organised and mechanical surveillance in addition to informal surveillance in and around buildings and along key routes,
 - The clustering of after-hours activities within the same area,
 - Controlling and monitoring after-hours access to buildings and facilities.
- How to introduce other activities such as outdoor learning spaces and agricultural landscape, along important routes to augment activity and surveillance.

Also other items considered include;

- Location of car parking in areas of activity;
- Ensuring that after-hours staff car parking is well-lit and in close proximity to building access points;
- How to monitor car parking by mechanical and/ or organised surveillance;
- Ensuring that well-lit and sign posted pedestrian routes throughout car parks link the users to the main entrance of the buildings;
- Consideration of Bus Stop locations;
- Consideration of lighting design

We have used six key principles to inform the approach to the built environment.

1. Surveillance

The idea of passive surveillance is central to CPtED. We have designed our buildings to encourage movement between uses. This maximises student flow paths and visual surveillance in and around the buildings. For example;

- Building 1 green roof provides open surveillance to surrounding landscape
- Building 1 (administration and staff) faces in towards the school not away from it.
- The level 1 circulation ring offers great surveillance of the assembly court.
- All buildings are designed to be 'open ended' so that surrounding ground level landscape can be seen.
- The incorporation of large glass frontages to Building 4 (the Multi-purpose building) enables visual contact from inside to outside and vice versa.
- Large open spaces in between the buildings enable surveillance to surrounding fields.
- Mature trees will be incorporated which allow views under canopies.
- Screening elements to be designed to avoid 'blind spots'.
- Design of lighting reduces the effects of shadows and glare which might put people at risk.

2. Legibility

An urban environment is said to be legible if it is designed in ways that allow people in it to easily know where they are and know how to get where they are going. The access paths can be understood, are not confusing and students won't get lost.

- The buildings have been designed so that the important and appropriate routes can be seen and easily accessed.
- The access paths allow the students and users to be confident, assured and less stressed in the spaces.
- Inclusion of landmarks within the school environment will aid legibility.
- The buildings' fabric has been designed with appropriate variety which will create legible urban environment.
- Buildings will incorporate wayfinding including signage, maps, building names and room numbers.

3. Territoriality

Most people would prefer to avoid embarrassment or incident by being aware of other's territory and not trespassing by accident. A sense of clarity helps determine how spaces will be used and what represents appropriate behaviour within them.

- The school will be fully fenced which clearly defines university domain and school territory. Security is also supported by these legitimate boundaries. Due to the 'open' nature of the type of fence, surveillance is not lost.
- The height of the school fence assists in the security management of the school site.
- The School design will creatively use built and landscape features like planting, changes of material and texture, shelter, changes of level, artwork, signage, low walls, seating and the like to define desired movement areas and delineate borders.
- The approach and entry to the buildings is simplified to reduce ambiguity and confusion.

4. Ownership of the Outcomes

Passive surveillance is the most powerful CPtED strategy. When people are able to see what is happening around them, this provides an enhanced feeling of safety for themselves and others.

The sense of 'ownership' is crucial to the success of CPtED and the sustainability of the school. Therefore the architectural design needs to be inspirational so that the school community lives to embrace these passive surveillance qualities. The school design facilitates the school spirit and can encourage people to feel safe to be out and about in their environment.

- A level of shared responsibility is encouraged through a feeling of combined ownership of the built environment.
- The buildings are designed to promote a sense of pride in the community.
- The design recognises the needs and aspirations of many groups within the community, government agencies and key stakeholders.
- Safety strategies that celebrate and build on the cultural and heritage strengths and icons of the community are being developed.
- Understanding that the school must not alienate the WSU (that surrounds the community) so as not to withdraw their engagement or support.

5. Management

The maintenance and management of the physical asset is important. Spaces that are broken down, dirty, vandalised, full of rubbish and generally looking unloved, reduces the sense of pride and ownership by the community. Places that are well looked after send out messages to would be offenders that the community cares. Not only does maintenance strategies for the environment need to be considered at the early design stages but integrated systems of both routine and emergency maintenance must be instituted early and continue to operate during the life of the school.

- The building designs will be detailed to minimise damage and the need for undue maintenance, without undermining the aesthetic and functional qualities that make it attractive.
- Systems of both regular and reactive maintenance and repair must be implemented to maintain the quality of the places.
- The design aims to use sturdy/ durable materials without resorting to harsh, industrial strength, prison-like materials that might undermine the attractiveness of the place.
- Implement a system to encourage the quick reporting of safety risks.
- Implement a system for prompt cleaning, repair or replacement of infrastructure that is damaged.
- Use graffiti resistant finishes to limit vandalism.

6. Vulnerability

Isolated places make people and property more vulnerable. Hidden places provide opportunities for unforeseen crime.

- The built environment is designed to reduce or limit risk from assault by providing active and overlooked places and identified routes to important places.
- Access from the school car park 'drop off' zone and bus stop, to the school entrance gate, need to be carefully considered.
- The school design aims to eliminate hidden corners, blind spots or bends that create places of concealment which prevent surveillance and limit choices.
- The designs of the buildings do not create strong shadowing to adjacent properties or interfere with the appropriate amenity of the neighbours.
- Closed tunnels and bridges which limit surveillance are excluded.
- School gates are to be locked after hours.
- Natural light infiltration (through the use of atriums and voids) into the main academic buildings (Building 2 and 3) and open ended corridors where views out of the buildings can be appreciated are seen as essential design components to reduce the feeling of vulnerability.

END OF REPORT

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