Sustainability
7.1 UNSW Project Targets

D14 is targeting 6 star green star exemplar environmental sustainability in both construction and operation to support and align with the UNSW 2025 strategy.

Reference and Rating
- The proposed design incorporates sustainability initiatives to achieve a minimum of 75 points under the Green Star Design & As Built v1.2 tool.
- The project is designed to achieve high energy performance in operation which will be measured using UNSW's "Whole of System" methodology to enable benchmarking against their existing assets.

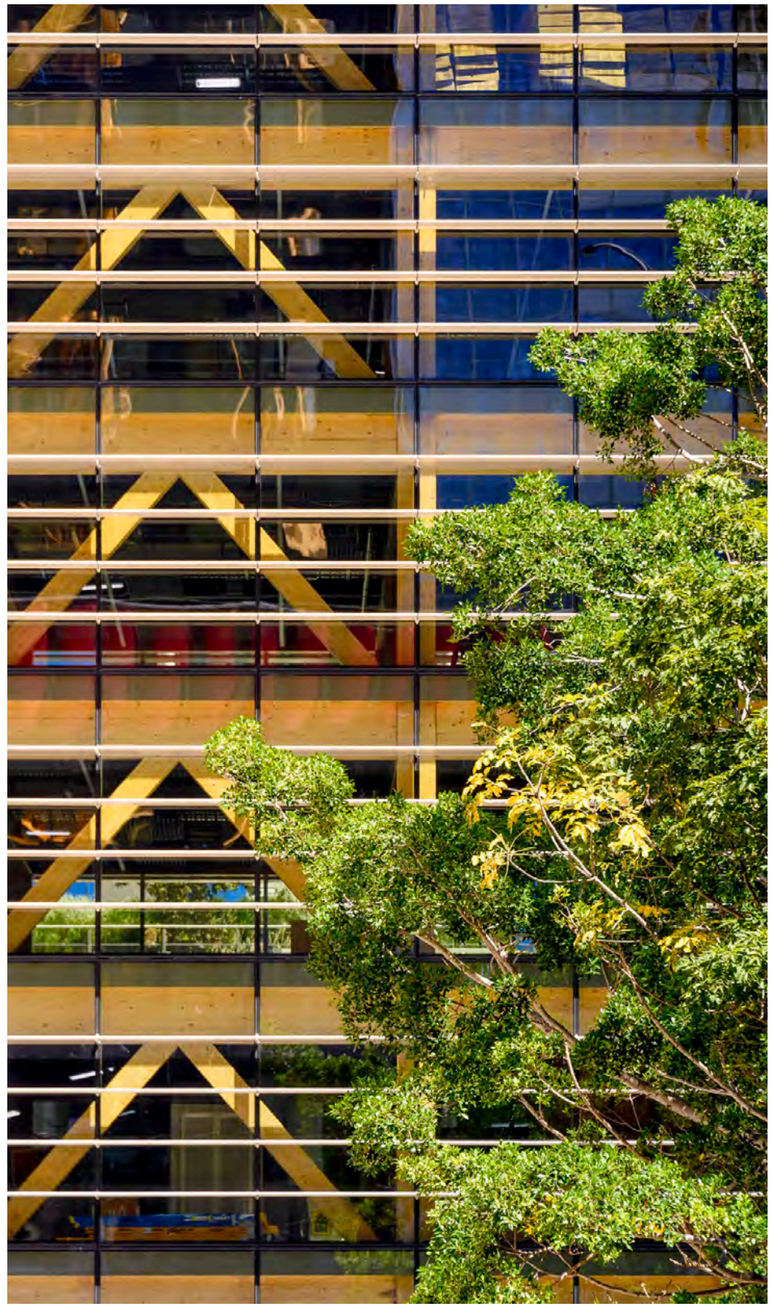
Carbon Positive Building
- A 30 kWp rooftop solar photovoltaic array is proposed to support the Campus' Carbon Positive principle.
- Use of sustainable materials including a responsibly sourced, prefabricated cross laminated timber (CLT) structure to significantly reduce embodied carbon of the project.
- Low energy design incorporating external shading, low energy LED lighting, low temp VAV air distribution system and high efficiency cooling and heating plants
- Extensive and comprehensive energy metering

Facades:
- Solar control to facades
- High performance double glazing

Water Concious Campus:
- All water fixtures are to meet or exceed the following WELS ratings:
  - Taps – 5 Star
  - Urinals – 5 star
  - Toilets – 4 star
  - Showers – 3 star
  - Clothes Washing Machines – 4 star
  - Dishwashers – 5 star
- Use of borewater for non-potable water end uses such as irrigation and cistern flushing
- Aquifer recharging with storm water

Circular Economy Approach:
- Recycling of construction waste in accordance with the project Waste Management Plan to target 90%+ diversion of construction waste.
- The design will facilitate the separation of waste during operation to enable waste diverted from landfill to be maximised.

Healthy Campus Community:
- End-of-Trip facilities including secure bike storage, lockers and showers are provided on the ground floor
- Ground, level 1 and level 2 are interconnected by a series of stairs. Level 1 is also connected to the ground plane on the east via a series of 'bleacher' stairs.
- Plantings are proposed for D14 at ground and level 1 terraces.
- Use of native flora.
- Natural ventilation to Ground floor and Level 1.



ESD Principles in Design and Operation

The design of the building focuses on energy and water efficiency, a high quality of indoor environment and carbon reduction in delivery and operation. The project will achieve a 6 Star Green Star rating under the Design and As-Built v1.2 tool which, when accompanied by UNSW's own sustainability requirements, forms the backbone of the ESD principles being considered.

The project is also committed to a comprehensive commissioning and building tuning programme to ensure that the building operates to design intent and a high level of occupant satisfaction as well as energy and water efficiency targets are achieved.

Sustainable Building Principles

The project is targeting a 6 star Green Star rating under the Design and As-Built v1.2 tool which forms the ESD framework which includes the following features which will contribute to this rating.

- Strong passive design response including external shading, high performance double glazing and blinds to the west, north and east to minimise energy use, maintain a high standard of thermal comfort, and maintain access to views and daylight.
- The building will utilise superior cooling efficiency relative to packaged type plant that would typically be used for this size of building.
- The use of LED lighting will result in a significant energy reduction relative to fluorescent lighting historically used in this type of application
- Improved air quality through high ventilation rates and minimising recirculated air. In addition, selection of finishes and adhesives and sealants will minimise VOC and formaldehyde off-gassing
- A timber structure is proposed that will significantly reduced the embodied carbon associated with the project. In addition a Life Cycle Assessment (LCA) is proposed to be carried out to identify design opportunities to further lower embodied carbon of the building.
- Inclusion of a rooftop solar photovoltaic array. Minimum target capacity is 30kWp that is to be confirmed during design development and procurement.
- Improve ecological value of the site area via introduction of planted vegetation
- Utilise bore water wherever possible which will greatly reduce the buildings potable water consumption.

Building Performance

Building D14 is to be designed and constructed to achieve a high standard of operational building performance by incorporating the following principles:

- Energy and water efficiency are a primary consideration of the building design.
- A high standard of indoor environment quality with a focus on occupant thermal comfort, daylighting and air quality. In addition, the use of natural materials such as the timber structure that enhances the occupants biophilic response.
- Proposed structure will not only result in reduced embodied carbon, but also reduced waste from site diverted to landfill. The design will also facilitate the separation of waste in operation to reduce waste to landfill.

A climate change risk assessment will be undertaken and mitigation strategies to significant risks will be developed by the project team for consideration during future design stages and operation.

The project team is committed to a building tuning process to ensure that the building operates in accordance with design intent. This will assist in enabling a future Green Star performance rating consistent with the building's capabilities.

Climate Change

The project team will undertake a detailed Climate Change Risk assessment for the project. The risk assessment process will follow Australian Standard 5334:2013 Climate change adaptation for settlements and infrastructure - A risk based approach, and the Lendlease Corporate Risk Methodology and Framework.

The outcome of the risk assessment will be used to inform the detailed design phase of the project culminating in a detailed Climate Change Adaptation and Resilience Plan. The plan will detail an appropriate design response and action plan to address the future climate change effects on the development its future occupants, stakeholders and surrounding public realm landscape, including:

- Increased average temperatures
- Extended and more frequent heatwaves
- Changes to relative humidity
- Extreme rainfall events
- Increased storm and high wind events
- Extended drought and bushfires / reduced air quality

08 Heritage

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Heritage

The site lies in part within an identified heritage conservation area (HCA), the Old Tote / Fig Tree Theatre Conservation Area.

The precinct's three period buildings are situated in an open space, surrounded by large fig trees and other campus buildings. The White House, the Old Tote and the Fig Tree Theatre have historical significance as surviving evidence of the use of the university site as Kensington Racecourse, from 1893 to 1941. These three buildings are in a heritage conservation area, however, they are not heritage listed items.

The D14 building responds sensitively to the surrounding buildings on the east through its facade orientation, gently splaying away from the Whitehouse and creating a setback relief from Goldstien Hall. This new open space defined by the eastern facade of D14 , the southern facade of the Whitehouse and the western facade of Goldstein Hall creates a forecourt and meaningful address at the eastern entry of D14. Additionally, the splay of the eastern facade of D14 provides more solar access to the Quadrangle and Goldstein Hall than the existing UNSW Hall building.

The existing building, built in 1959, is a four-storey concrete construction with brick infill, externally characterised by exposed materials, staggered rectilinear forms, projecting timber roof fascia and timber framed vertical slit windows. It comprises of three built forms centred around a courtyard and lawn.

THE OLD TOTE VIEWED FROM THE WESTERN SIDE OF GOLDSTEIN HALL

THE WHITE HOUSE VIEWED FROM THE WESTERN SIDE OF GOLDSTEIN HALL.

THE FIG TREE THEATRE

WESTERN WING OF UNIVERSITY HALL

09 Significant Trees

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Significant Trees

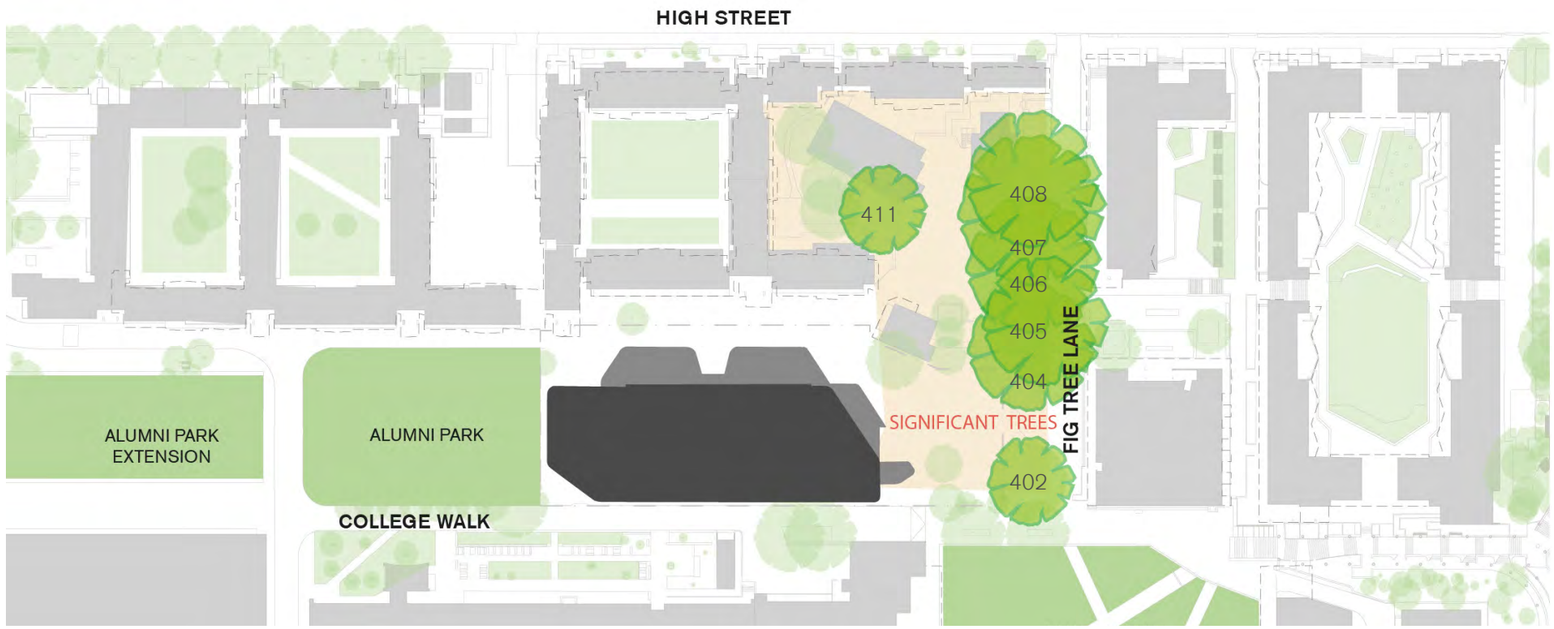
The trees nominated to be assessed are located on and adjoining the proposed works site from Fig Tree Lane to the East, College Walk to the South, Alumni Park to the West and the UNSW Village/ White House to the North, on the UNSW Kensington Campus. Some of the trees are significant in the immediate landscape and some are considered important in the local areas landscape in terms of amenity and function. The trees are located on partially sheltered site with some protection from surrounding structures, trees and topography from most aspects. The soil on site appears to be sandy loam that has been disturbed previously when the existing building and hardscapes were built and the site was cleared.

It should be noted that the majority of the significant trees on site and all the trees adjoining the site are proposed to be retained and protected for the duration of the works. The trees nominated to be retained, will need to be retained using sympathetic building activities to allow the works to proceed. Options for managing the trees nominated to be retained on and adjoining the proposed works site should be based on the Australian Standard AS4970 2009 Protection of trees on development sites. It should be noted that heavy pruning of the trees crown will not be permissible. Any proposed pruning works should be planned to adhere to the Australian Standard for the Pruning of Amenity Trees AS4373 2007.

There are several trees rated as high retention to the east and north of the proposed works site. These are trees 404 – 408 and tree 411. There are trees within this group which are more valuable than others. These trees (404 – 408) are the stand alone feature trees on Fig Tree Lane. Tree 411 also contributes to the significance of the landscape in the area. No disturbance to the trees crowns or root zones are proposed however due to the site access past the trees, tree protection will be required. All existing hardstands and garden areas should remain in place to minimise stress to the trees. No pruning will be permitted for access or scaffolding. Any services, level changes or new paving ect within the trees projected TPZ need to be calculated

Tree Protection Trees 404 - 408, 411 and trees 480-483. All of these trees will require tree protection measures to be installed to retain the trees in good condition for the duration of the works. It is anticipated that the existing hardscapes will remain in place for the duration of the works protection the trees root zones, limiting any root disturbance. To protect the trees vascular tissue and rootzones in exposed garden areas,1.8m tree protection fencing will be required to be installed prior to the works commencing. Trees 404-408 and tree 411 will have the fences installed at the edge of their garden beds, separating the trees from the works.

Tree 402 is a large and significant standalone tree that is of high value. No disturbances to the trees root zone will be permitted within 5m of the tree to ensure its stability and to protect the trees large roots. Calculations in regard to the impact of the building works to the impact of the tree are estimated to be 10% (at 9m to the west or 20% at 6m to the west). Care during demolition works will be required when removing the existing building, the adjoining hardscapes and the wall to the south of the tree. All works within 5m of the tree will be required to be supervised by the AQF level 5 site Arborist. Any services, level changes or new paving ect within the trees projected TPZ need to be calculated.



SIGNIFICANT STAND OF TREES ALONG FIG TREE LANE TO BE RETAINED

SIGNIFICANT GUM TREE TO BE RETAINED

10 Service and Access

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Service and Access

Loading and Servicing

All loading and servicing of Building D14 will be undertaken at ground level, in a loading area to the west of the building. Service and emergency vehicles accessing Building D14 are proposed to enter and exit the campus via the signalised intersection of Gate Two Avenue and High Street (UNSW Gate 2). Vehicles will travel along Gate Two Avenue, turn right between Alumni Park and the western edge of the building, reverse manoeuvre such that they are positioned adjacent to the building and able to exit via Gate Two Avenue in the forward direction. To examine the feasibility of this configuration, a swept path analysis was undertaken for a:

- 8m garbage truck (common in market);
- 10.8m garbage truck (currently used by some UNSW waste contractors); and
- 10.1m fire truck (emergency vehicle).

The larger 10.8m garbage truck can adequately turn around in this arrangement, subject to some minor changes in landscaping. The proposed arrangements minimise reverse movements and ensure vehicle motion is in the forward direction along Gate Two Avenue. Fire trucks are assumed to drive forwards to the booster (location to be confirmed), and turn around by slightly mounting Alumni Park.

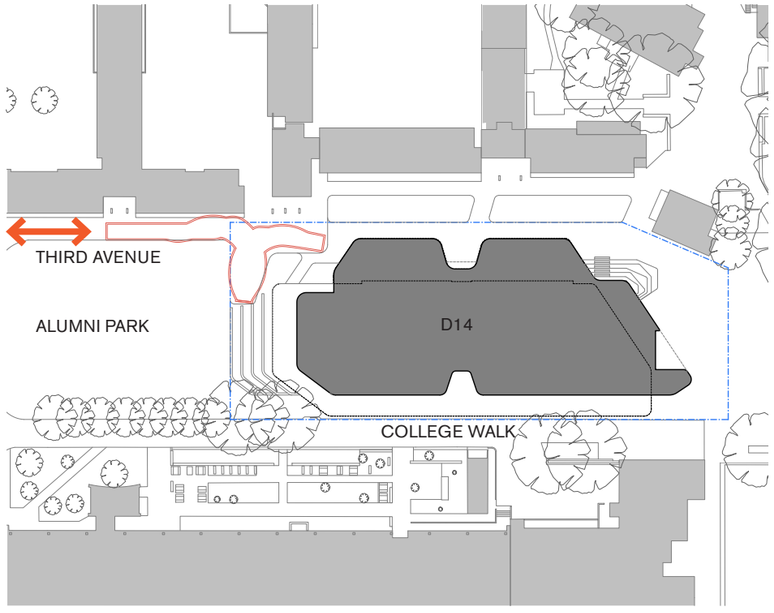
No booking system is anticipated to be implemented for the servicing of the building.

Waste Collection

All waste and recycling systems will be collected by the appointed waste contractor (TBC) with a rear-lift truck from an area directly adjacent to the waste storage room. Figure 01 shows the collection zone which will be accessed from High Street via Third Avenue.

Waste and Recycling Storage areas

The main waste area is located on ground floor in the north west corner of the building and is easily accessed from the upper floors via the goods lift. Figure 02 provides an indicative layout of the recommended systems.



SITE SERVICING AND LOADING

(Figure diagrams extracted from Operational Waste Management Plan Report)

FIGURE 01. WASTE COLLECTION ZONE

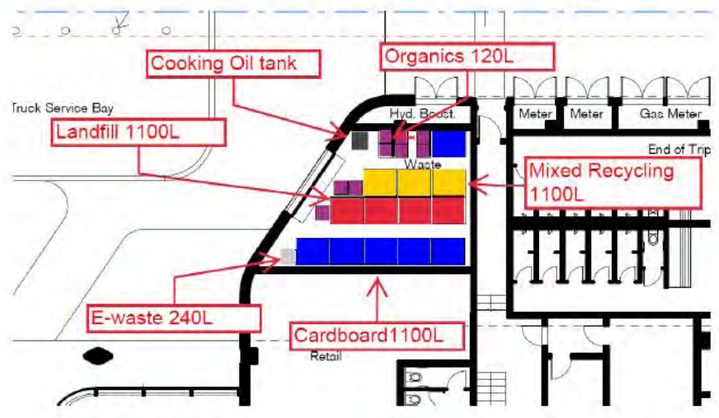


FIGURE 02. WASTE STORAGE ROOM INDICATIVE LAYOUT

11 Landscape Strategy

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