

UNSW (Applicant & Owner)

D14 Traffic and Transport Report

Lendlease (D&C Partner)

Prepared for UNSW

Issue | 7 November 2018

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

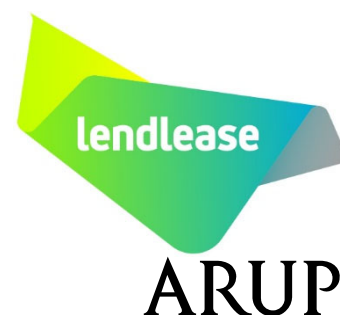
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UNSW
SYDNEY



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1 Introduction

1.1 Background

Arup was appointed by Lendlease to undertake a transport assessment for the proposed new mixed-use building, known as D14, at the University of New South Wales (UNSW) Kensington campus (the campus). The site is located in the Randwick Local Government Area (LGA) of NSW.

This report is lodged as part of the Environmental Impact Statement (EIS) for State Significant Development (SSD) 9606. Specific reference will be made to the Secretary's Environmental Assessment Requirements (SEARs), with recommendations and strategies to ensure compliance with relevant standards and requirements.

UNSW is ranked within the top 50 of the 2018 Quacquarelli Symonds World University Rankings¹ and is one of Australia's largest universities. The Kensington campus currently accommodates over 60,000 students and staff, and is a major source of trip demand, attracting students and staff globally, and from the wider Sydney metropolitan region.

Building D14, which is the subject of this redevelopment, is centrally located within the Kensington campus between Alumni Park (west), the Fig Tree Theatre (north), the UNSW Quadrangle (south) and Fig Tree Lane and Goldstein Hall (east). There is no car parking associated with the building. Vehicle access arrangements for service vehicles is provided to the west of the building, using Gate Two Avenue.

1.2 Scope of the Report

This transport report supports the State Significant Development application for the proposed redevelopment at UNSW, and will outline the following:

- Existing transport conditions;
- Forecast traffic generation;
- Road network impacts;
- Parking provision and analysis;
- Analysis of traffic volumes;
- Access arrangements;
- Public transport availability;
- Construction traffic management plan outline; and
- Pedestrian and cycle linkages.

¹ QS University World Rankings, available at <<https://www.topuniversities.com/>>

1.3 Reference Documents

This report uses the following reference documentation:

- Randwick DCP 2013 – Randwick Education and Health Specialised Centre
- Randwick Local Environmental Plan 2012
- Guide to Traffic Generating Developments (RMS)
- EIS Guidelines – Road and Related Facilities (DoPI)
- NSW Planning Guidelines for Walking and Cycling
- Sydney’s Bus Future
- Sydney’s Cycling Future
- Sydney’s Walking Future
- Sydney’s Light Rail Future
- Austroads Guide to Traffic Management Part 12: Traffic Impacts of Development
- NSW Long Term Transport Master Plan 2012
- Premier’s Council for Active Living (PCAL) – Development & Active Living
- AS2890.2– Australian Standards for Off-Street Commercial Vehicle Facilities
- AS2890.3 – Australian Standards for Bicycle Parking Facilities
- UNSW Bicycle Master Plan 2014

2 Response to Secretary's Environmental Assessment Requirements

This report has been prepared to accompany the EIS for the proposed UNSW Building D14 Redevelopment. It responds to the transport related issues addressed in the SEARs for SSD 9606 as outlined in Table 1 below.

Table 1: Secretary's Environmental Assessment Requirements

SEARs – Transport and Accessibility	Item Discussed at:
accurate details of the current daily and peak hour vehicle, existing and future public transport networks and pedestrian and cycle movement provided on the road network located adjacent to the proposed development	Section 3
details of estimated total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and bicycle trips based on surveys within the local area	Section 4.1
the adequacy of existing public transport or any future public transport infrastructure within the vicinity of the site, pedestrian and bicycle networks and associated infrastructure to meet the likely future demand of the proposed development	Sections 3, 4.4 & 4.5
measures to integrate the development with the existing/future public transport network	Section 4.5
the impact of trips generated by the development on nearby intersections, with consideration of the cumulative impacts from other approved developments in the vicinity, and the need/associated funding for, and details of, upgrades or road improvement works, if required (Traffic modelling is to be undertaken using SIDRA network modelling for current and future years)	Section 4.6
the identification of infrastructure required to ameliorate any impacts on traffic efficiency and road safety impacts associated with the proposed development, including details on improvements required to affected intersections	Section 4.6
details of travel demand management measures to minimise the impact on general traffic and bus operations, including details of a location-specific sustainable travel plan (Green Travel Plan and specific Workplace travel plan) and the provision of facilities to increase the non-car mode share for travel to and from the site	Section 4.7
the proposed walking and cycling access arrangements and connections to public transport services	
the proposed access arrangements, including car and bus pick-up/drop-off facilities, and measures to mitigate any associated traffic impacts and impacts on public transport, pedestrian and bicycle networks, including pedestrian crossings and refuges and speed control devices and zones	Section 4
proposed bicycle parking provision, including end of trip facilities, in secure, convenient, accessible areas close to main entries incorporating lighting and passive surveillance	Section 4.4
proposed number of on-site and campus car parking spaces for staff and visitors and corresponding compliance with existing parking codes and justification for the level of car parking provided as part of the proposed development	Section 4.2

SEARs – Transport and Accessibility	Item Discussed at:
an assessment of the cumulative on-street parking impacts of cars, staff parking and any other parking demands associated with the development	Section 4.2
an assessment of road and pedestrian safety adjacent to the proposed development and the details of required road safety measures and personal safety in line with CPTED	Section 4.10
emergency vehicle access, service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times)	Section 4.8
the preparation of a preliminary Construction Traffic and Pedestrian Management Plan to demonstrate the proposed management of the impact in relation to construction traffic addressing the following: • assessment of cumulative impacts associated with other construction activities (if any) • an assessment of road safety at key intersection and locations subject to heavy vehicle construction traffic movements and high pedestrian activity • details of construction program detailing the anticipated construction duration and highlighting significant and milestone stages and events during the construction process • details of anticipated peak hour and daily construction vehicle movements to and from the site • details of on-site car parking and access arrangements of construction vehicles, construction workers to and from the site, emergency vehicles and service vehicle • details of temporary cycling and pedestrian access during construction.	Appendix A

3 Existing Conditions

3.1 Site Location

The site is located at the UNSW Kensington campus which is situated within the Randwick Local Government Area (LGA). The UNSW Kensington campus lies to the south of the Royal Randwick Racecourse, to the west of the Prince of Wales Hospital Campus / Randwick Health Precinct, and between the Kensington and Kingsford town centres on Anzac Parade. The campus is located 8km south of the Sydney CBD and about 6km north-east of Sydney Airport.

Within the campus, the site is located centrally between Alumni Park (west), the Fig Tree Theatre (north), the UNSW Quadrangle (south) and Fig Tree Lane and Goldstein Hall (east). The site for the proposed enabling works, in its entirety, is situated within Lot 3 in Deposited Plan 1104617. The works area has a total area of approximately 5,000m². A site location map identifying the site within the context of the wider campus is shown in Figure 1.



Figure 1: UNSW site location context plan

Source: Ethos Urban

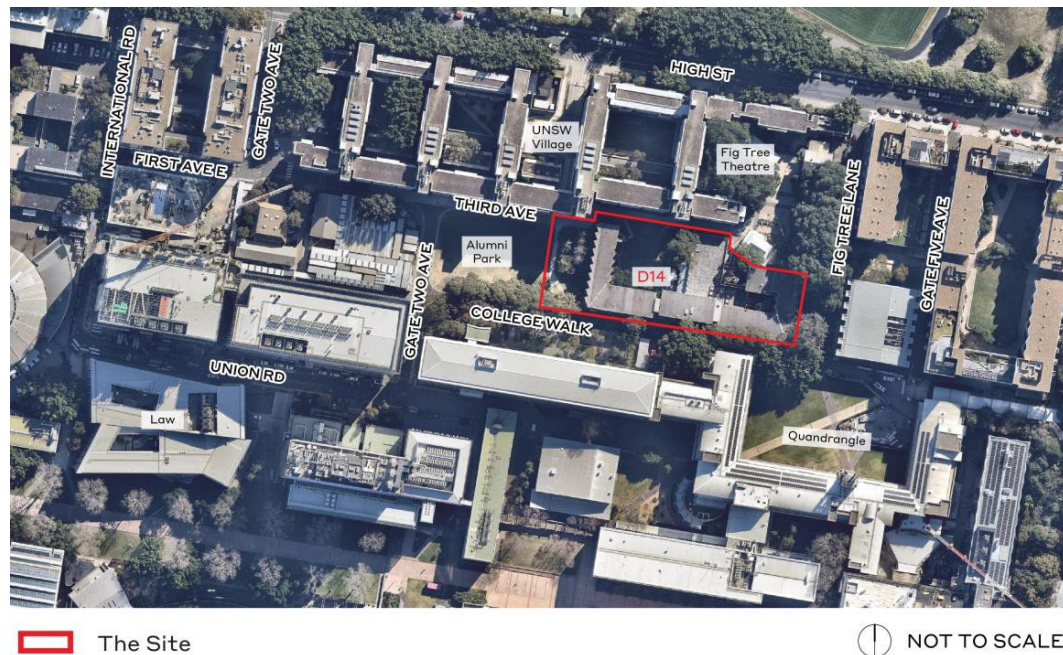


Figure 2: Aerial map of the UNSW Hall Precinct

Source: Ethos Urban

3.2 Access to the Site

There is currently limited vehicular access required to D14. There is a two-way, signalised vehicular site access to this section of UNSW via Gate 2 on High Street. High Street is a collector road forming the northern boundary of the campus connecting Anzac Parade and Botany Street. The internal road network links the development site via Gate Two Avenue. Gate 4 also provides vehicular access to the eastern side of the site via Fig Tree Lane.

The main pedestrian access point at the existing site is on the building's northern perimeter. This entrance is directly off the Fig Tree Precinct, adjacent to The Whitehouse. There is also a secondary pedestrian access on the southern side of the building off College Road. These arrangements are indicated in Figure 3.

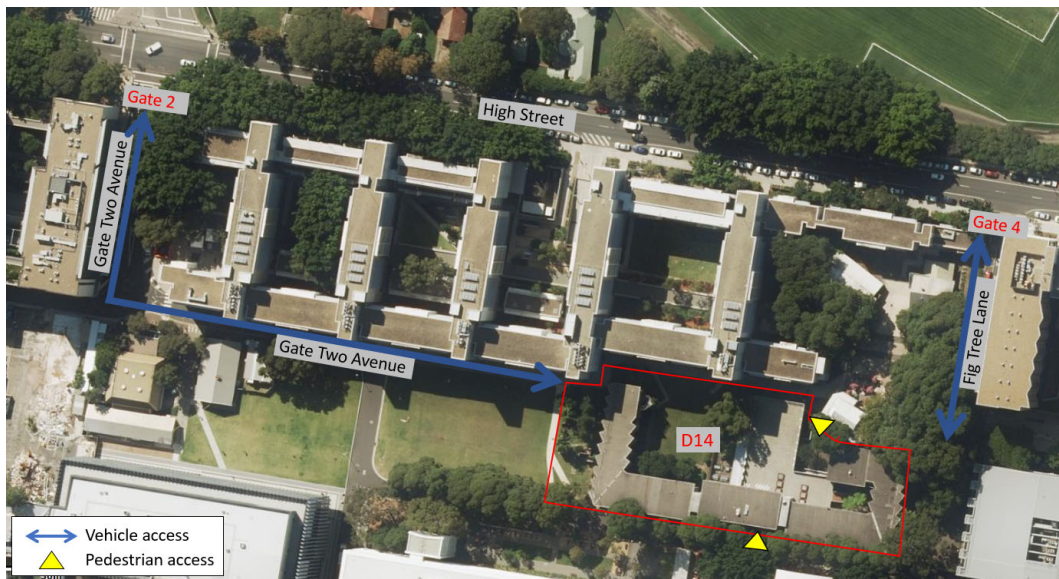


Figure 3: Site access

3.3 Parking and Loading

There is no car parking directly associated with the building, however vehicle access is provided for servicing via Gate Two Avenue. The maximum service vehicles are 8.8m Medium Rigid Vehicles (MRV), and garbage collection vehicles up to 10.8m in length.

Parking areas are located on the perimeter of the campus and are accessed from Gates 2, 5, 8, 9, 11 and 14. They include multi-storey parking stations (Botany Street and Barker Street parking stations), basement parking (University Terraces, UNSW Village, Kensington Colleges) and several at-grade parking areas. The closest parking area to the project is the basement parking located beneath the UNSW Village, accessed directly from High Street.

A limited number of parking permits are available to staff and then extended to students who study 20 hours a week or more. Parking permits and casual rates are as follows:

- \$6 per hour 2P/4P parking near campus entrances and internal campus streets
- All day parking at a minimum of \$11 for two hours and then \$4 per hour subsequently for up to 12 hours
- \$21.50 day permit for staff and visitors
- \$74 weekly permit for staff
- \$774-\$1542 yearly permit for staff (depending on staff salary)

Outside the hours of 7:30am to 7:30pm Monday to Friday, parking on the campus is free. Motorcycle parking is also free in designated areas.

On-street parking is generally restricted surrounding the campus, with a high demand generated by both local residents and existing campus students/staff. Parking on-street is often unavailable up to 400m surrounding the campus.

3.4 Public Transport

The majority of students and staff use public transport to access the Kensington campus. In 2015, almost 60% of respondents of the UNSW Travel Survey travelled to the campus by public transport, which is up from 49% in 2007.

Currently public transport access to the campus is limited to local bus services. A number of UNSW express buses services (891, 893, 898) operate to carry the more than 26,000 daily person bus trips to the campus. These buses currently run between Central Station and High Street, stopping at both Gate 3 and Gate 9. The high number of pedestrians entering at these gates (Figure 6) is reflective of those people using the UNSW express services to access the campus.

3.4.1 Bus

As discussed above, the campus is currently well serviced by the UNSW express bus routes (891, 893, 898) from Central Railway Station. In addition, a number of other bus routes connect the site to various other suburbs such as Bondi Junction, Little Bay, Leichardt, and Coogee. Several bus stops are located within 400m (less than 5-minute walk) from the site (see Figure 4).

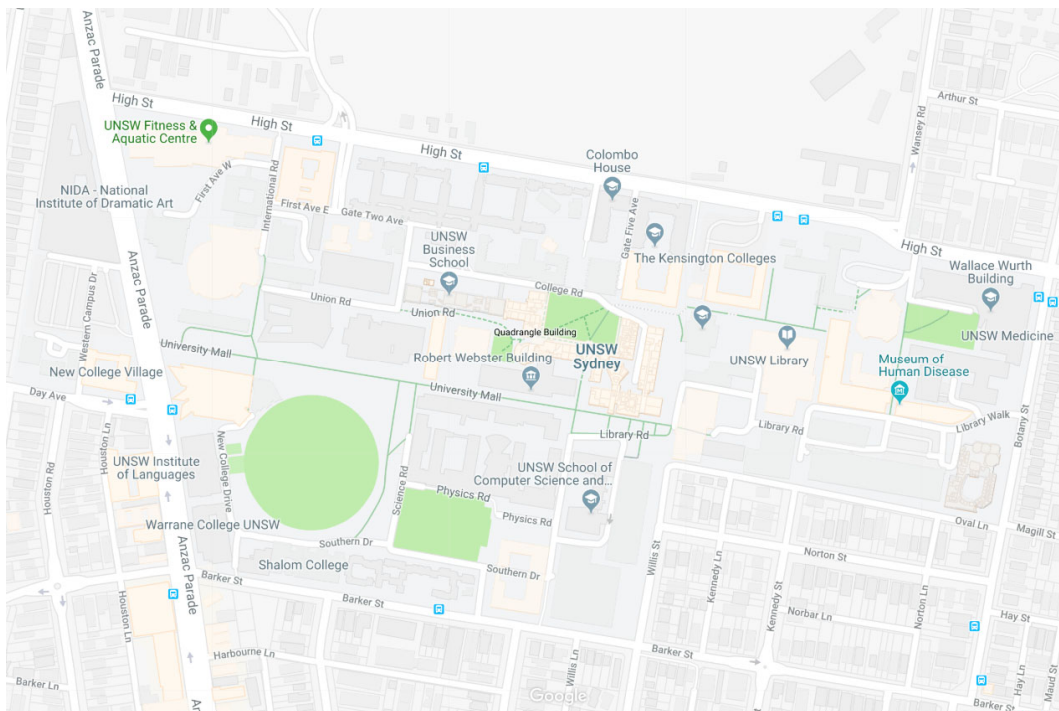


Figure 4: Bus stops surrounding the campus

3.4.2 Train

The closest railway stations to UNSW are Green Square (approximately 3 km away), Bondi Junction (approximately 3 km away) and Central (approximately 4.5 km away). Access between these stations and the campus is by the 400 route bus.

3.4.3 Light Rail

The scheduled opening of the CBD and South East Light Rail (CSELR) in 2020 will significantly improve the public transport accessibility of the campus. The light rail route and stops are shown in Figure 5.

Even when CSELR opens, buses will also continue to play an important role in providing access to the campus – particularly those arriving from the south such as Maroubra.

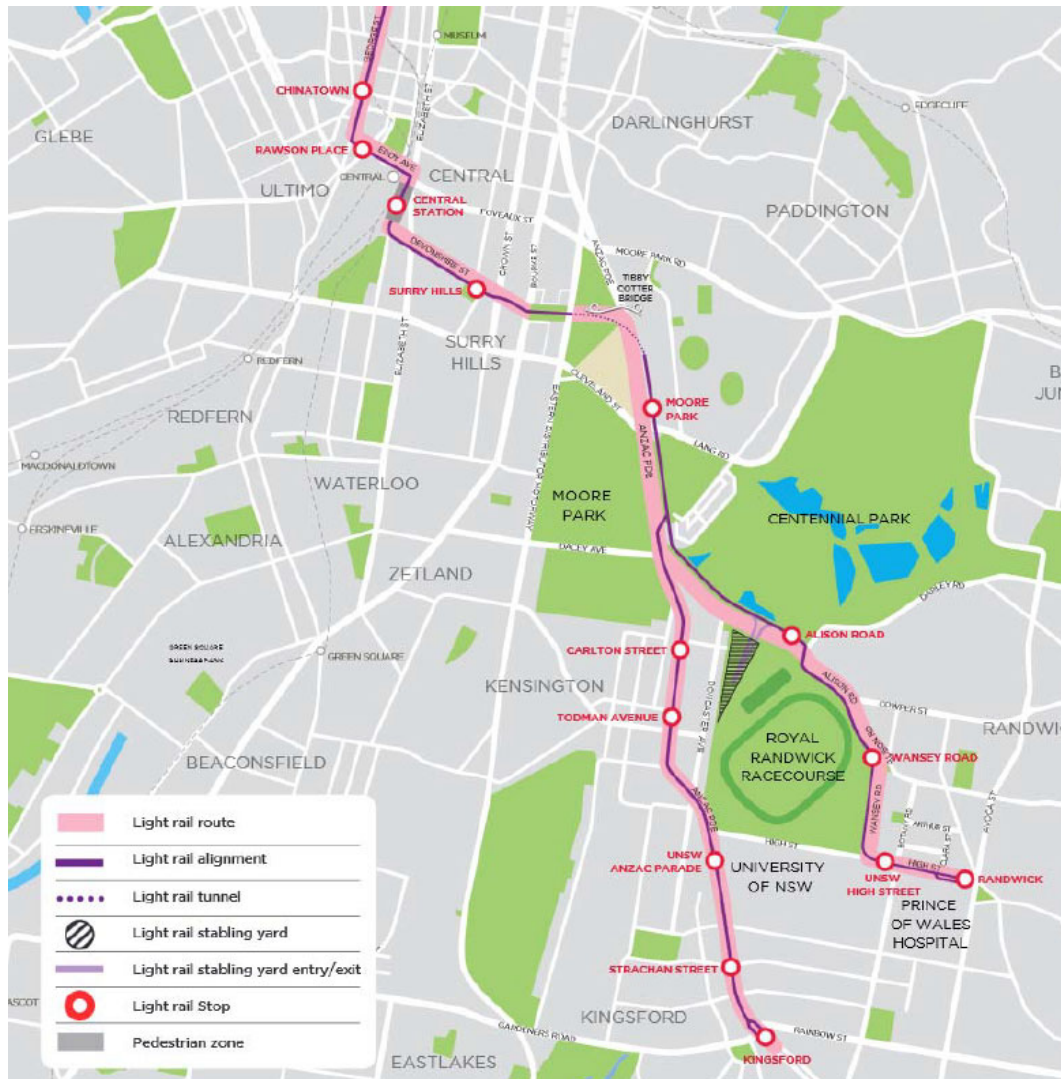


Figure 5: CBD and South East Light Rail route

Source: TfNSW

3.5 Active Travel

3.5.1 Pedestrian Movements

There are multiple existing pedestrian access points to the campus. The University Mall entrance on Anzac Parade and Gates 2, 8 and 9 on High Street are currently the major arrival points on a typical semester day (UNSW Travel Survey, 2015). This is a consequence of the morning drop-off locations for the express buses to the campus. Figure 6 shows the key pedestrian links throughout the campus, as well as the proportion of staff and students currently entering at each gate.

The D14 site is surrounded by a number of secondary pedestrian links connecting the western and eastern ends of the campus, and connecting the campus to High Street gates. The Fig Tree Precinct to the north-east of the site is an active pedestrian area due to The Whitehouse and its function as a through-route between lower and upper campus.

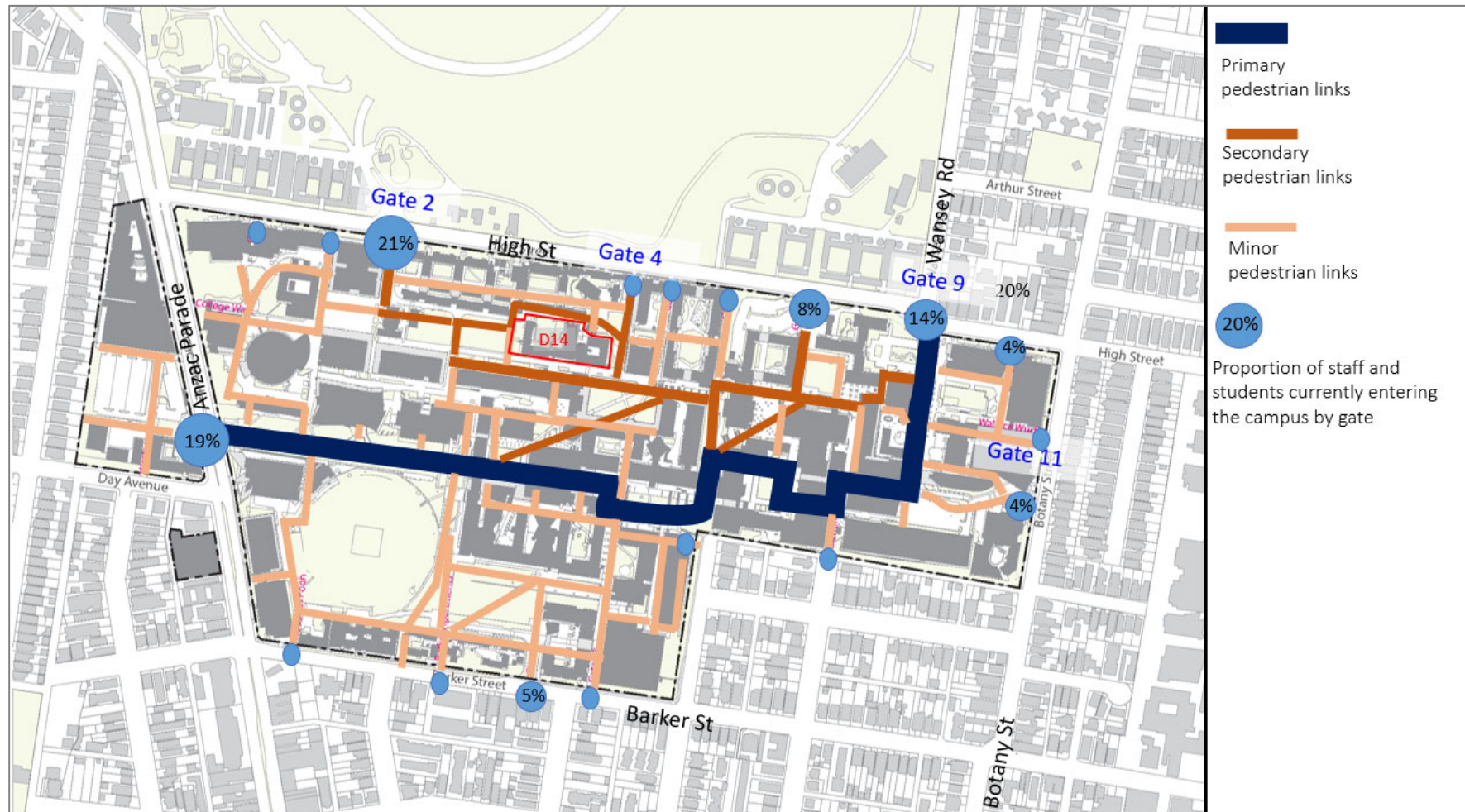


Figure 6: Existing pedestrian links surrounding the site

3.5.2 Cycling Facilities

The existing bicycle network surrounding the campus is shown in Figure 7. The road shoulder on Doncaster Avenue and Houston Road provides a north-south bicycle route that connects Kingsford and Kensington to the Anzac Parade bicycle route at Centennial Park, continuing on to the Sydney CBD. A shared path (shared by pedestrians and cyclists) on Alison Road and Wansey Road provides a connection between the campus, Randwick Racecourse and Centennial Park. It should be noted however, that Wansey Road is temporarily unavailable to bicycles due to construction works for the CSELR and that cyclists currently use Botany Street.

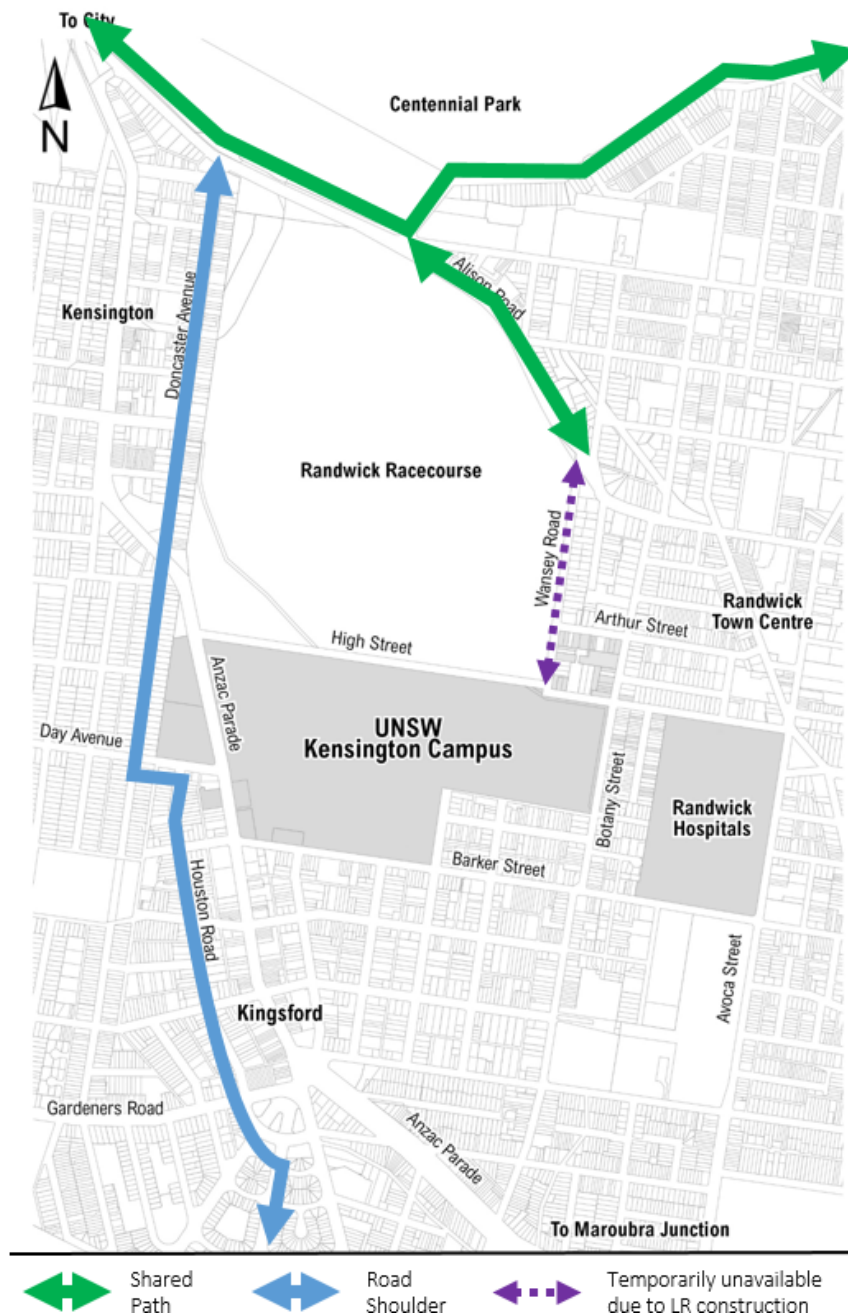


Figure 7: Existing bicycle network serving the campus

Approximately 800 publicly-available bicycle parking spaces are provided on the Kensington campus. The vast majority of these are provided adjacent to buildings, with varying degrees of lighting, shelter and passive surveillance.

Several bicycle racks and U-rail facilities are within close proximity to the D14 site. It should also be noted that approximately 13% of cyclists accessing the campus, do so via Gate 2. The existing end of trip facilities available on the campus, as well as the proportional split of campus entry locations, is shown in Figure 8.

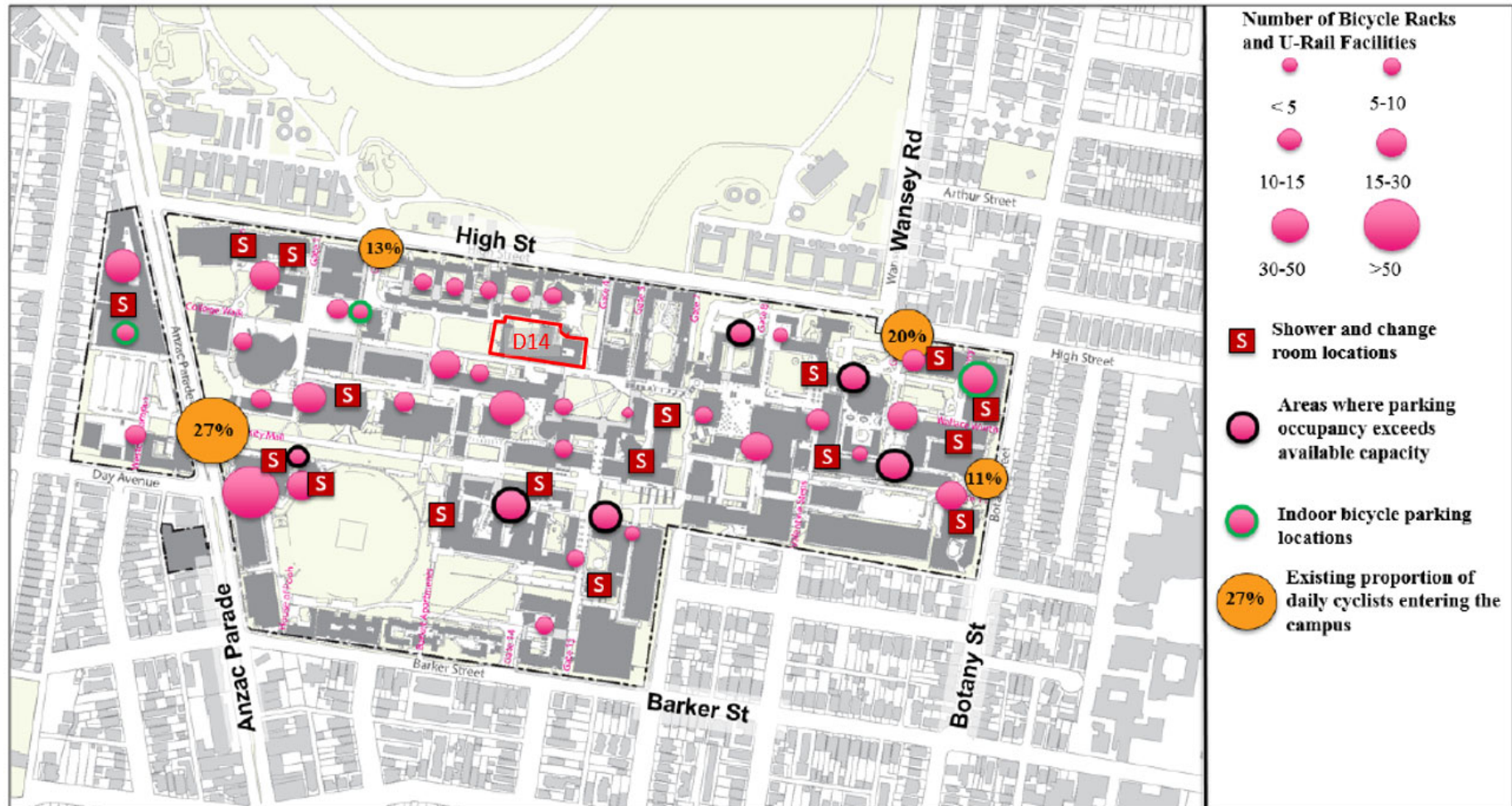


Figure 8: Existing bicycle end of trip facilities

3.6 UNSW Australia Travel Survey

UNSW has been conducting a comprehensive travel survey yearly since 2007. The aim of this is to determine trends and mode choice of students and staff. The 2015 travel survey received 11,700 responses, representing 22% of total travellers to the campus. Of the respondents 82.2% were students and 17.8% were staff.

As shown in Figure 9, the majority of respondents (57.5%) travelled to the area using public transport, representing 39.4% of staff and 61.5% of students. The majority, or 61.2%, of those travelling by public transport used UNSW express bus services.

The next popular mode of transport to the area was private vehicle, with 18.5% of travellers choosing this option. However, as shown in Figure 10, private vehicle usage has decreased by 13.6% since 2007. These results reflect the aims of the Randwick DCP (2013) to improve the sustainability of transport by reducing private car usage and increasing public transport usage.

The travel survey also investigated arrival and departure times of staff and students, finding that 39% arrive within the morning peak (8-9am) and 25% depart in the afternoon peak (5- 6pm). This is lower than typical arrival and departure percentages for workers, reducing impacts on public transport.

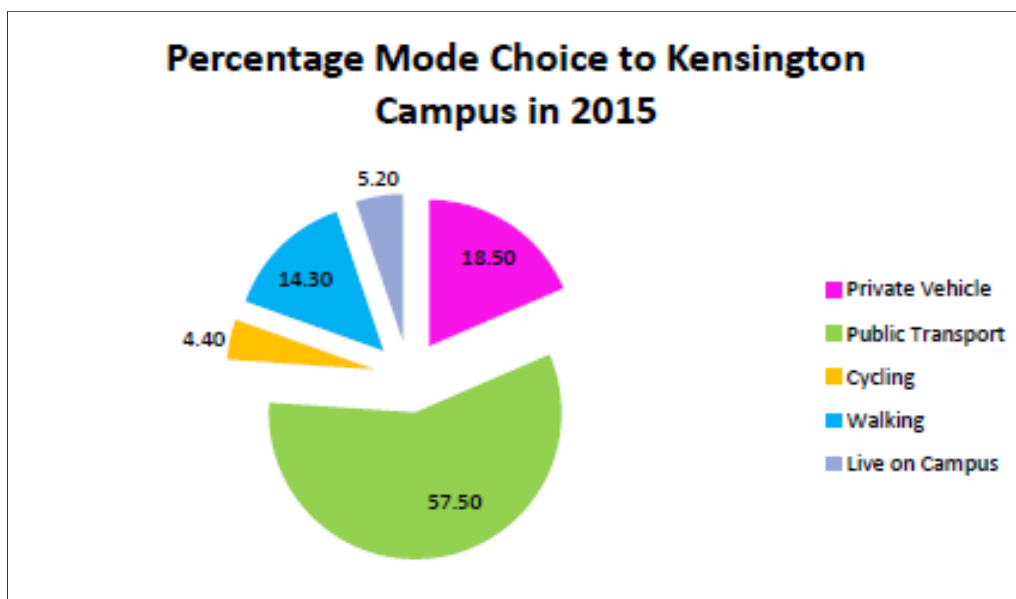


Figure 9: Travel survey results (2015)

Source: UNSW Facilities Management

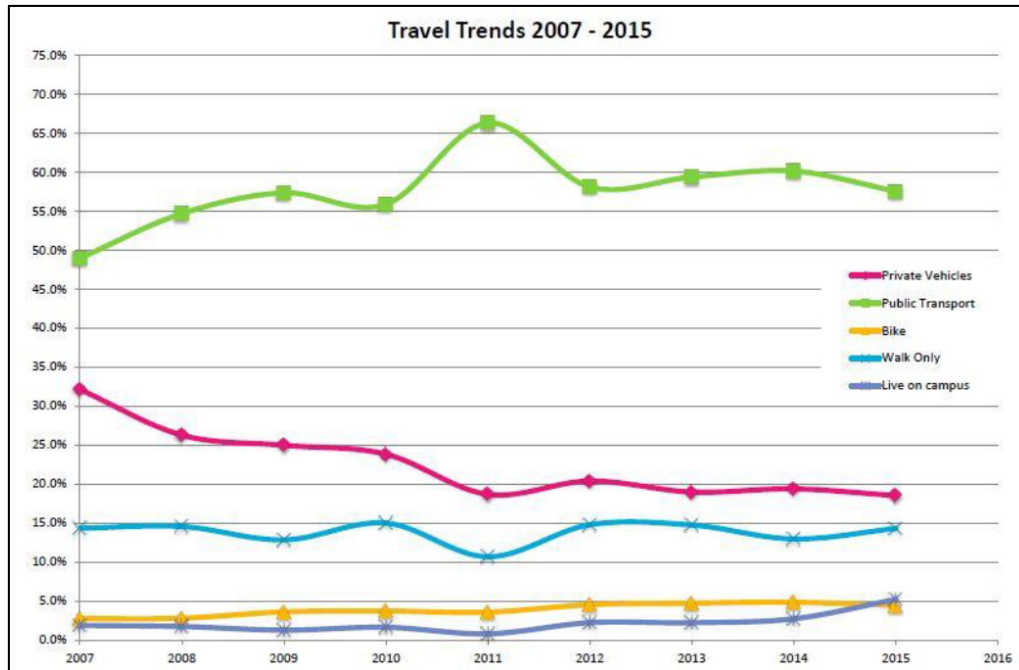


Figure 10: Travel trends to UNSW (2015)

Source: UNSW Facilities Management

4 Proposed UNSW D14 Redevelopment

4.1 Scope of Proposed Redevelopment

The proposed scope includes the demolition of the existing D14 building and the construction of a new building of up to 15,000m² Gross Floor Area (GFA). The proposed new building is to be multifunctional, serving the following functions:

- Faculty space;
- Learning environments;
- Centrally Allocated Teaching Spaces (CATS);
- End of trip facilities;
- Retail; and
- Outdoor places.

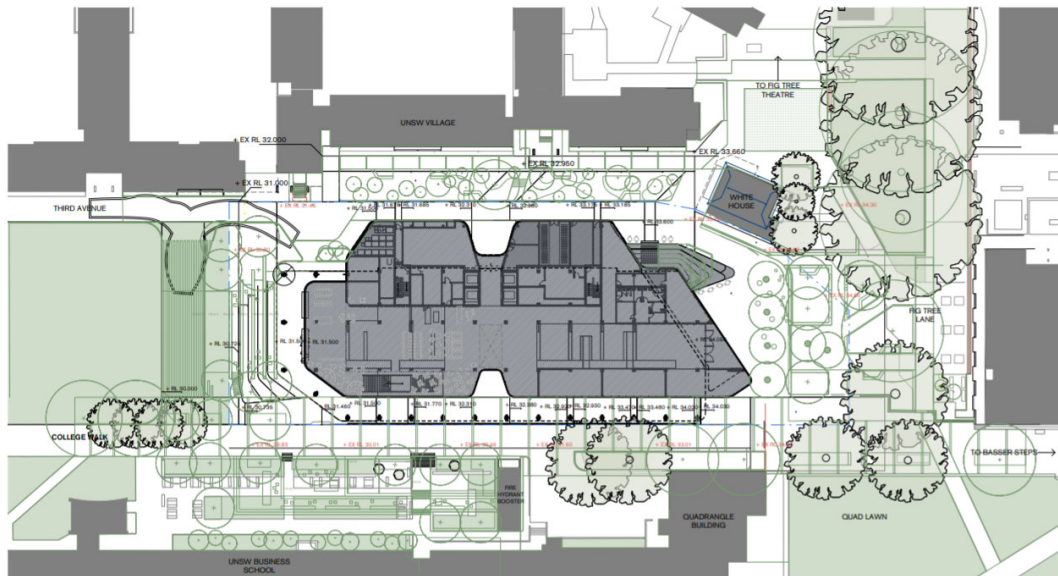


Figure 11: Indicative new building envelope

Source: Tzannes (2018)

There will be no net increase in staff, students or visitations to the campus as a result of the proposal. Rather, the development is allowing for a re-distribution of the existing campus population. As a result, the development is not anticipated to generate any additional person trips to the campus.

4.2 Future Modal Split

A future transport modal split was developed as part of the UNSW Campus Masterplan (2018) to inform the likely travel demand generated by UNSW students and staff in future years. This modal split considered the following factors:

- The likely growth of students and staff at the campus;

- The introduction of the new CSELR, which will have two stops servicing UNSW; and
- The policy of UNSW of not to provide additional car parking to service future growth, which will reduce the proportion of people driving to the campus.

The forecast future mode share for both staff and students is presented in Figure 12.

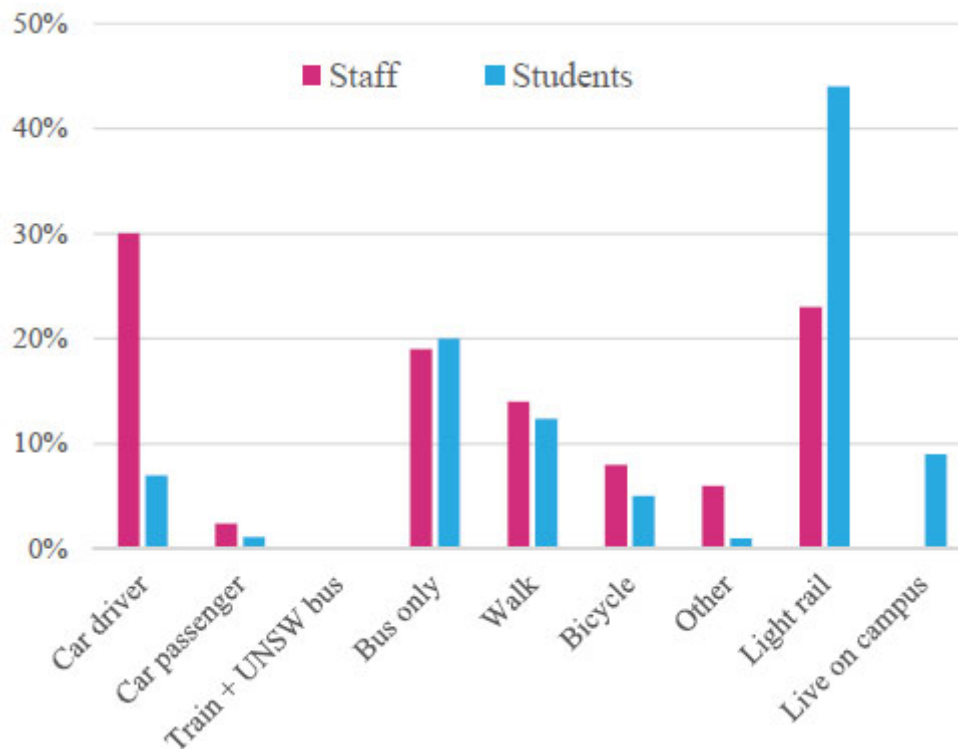


Figure 12: Future transport mode share – 2037

Source: UNSW Campus Masterplan (2018)

Figure 13 includes the current and projected number of trips per mode of transport used by staff and students to access the campus (over the morning peak hour). Aligning with the projected increase in staff and student numbers on campus, the number of trips for all modes will increase in 2037. The number of cars accessing the campus will remain similar to current levels, due to the promotion of sustainable access initiatives as well as limited availability of on-site parking. The existing ‘train + UNSW bus’ trips will be transferred to light rail following its opening in 2020.

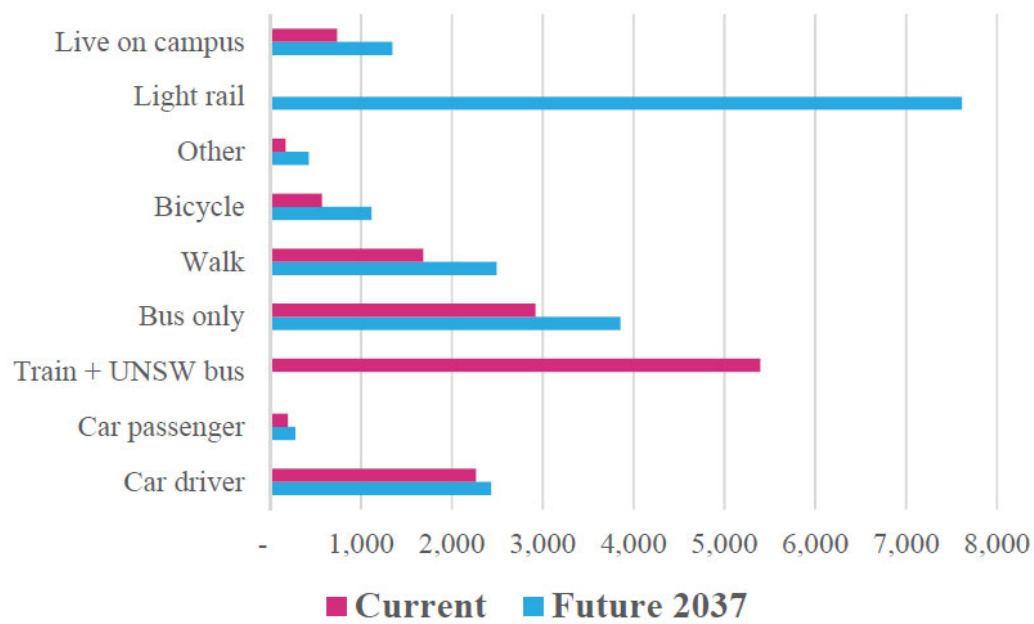


Figure 13: Number of trips to UNSW (between 8am and 9am)

Source: *UNSW Campus Masterplan (2018)*

Future changes to internal access arrangements is also expected as a result of the opening of CSELR. The likely proportion of total pedestrian entries by public transport users accessing the campus by different gates following the introduction of CSELR is shown in Figure 14.

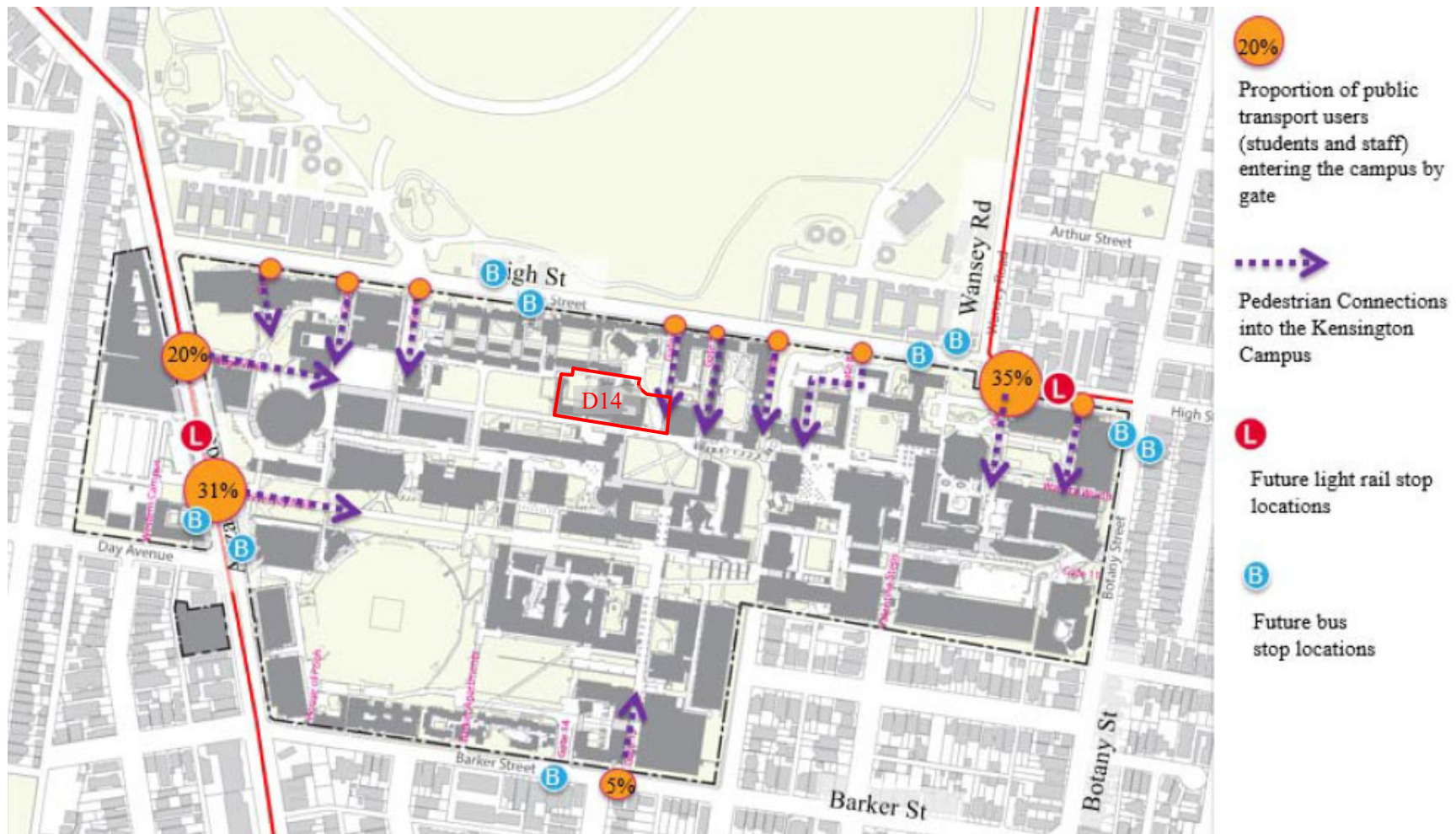


Figure 14: Future public transport entries to the campus

4.3 Car Parking

Section 3.3 outlines that no car parking is currently directly associated with the building. In addition, there will be no relocation or modification of existing parking areas as a result of the redevelopment. The works involve an upgrade of existing facilities and in the context of the whole campus student and staff population, there will be no increase in parking requirements on or off the university campus.

Further, there will be minimal cumulative impacts to on-street parking from student and staff parking demands associated with the development.

4.4 Active Travel

The site is well served by a network of walking and cycling routes, with no changes proposed to the existing network during the course of the redevelopment. The current network is deemed both adequate and appropriate for the proposed works.

Secure bicycle parking is available across the campus with complementary end of trip (EOT) facilities such as lockers and showers in many locations (see Figure 8). The proposed EOT facilities for the development include:

- 11 showers;
- 72 lockers; and
- 45 bicycle parking facilities.

The provision of these facilities will encourage cycling as a viable mode of transport to the site and contribute to a reduced car mode share. The Campus 2020 Masterplan states that bicycle parking should be provided in favour of providing car parking to further encourage cycling.

The perimeter of the site will remain a key pedestrian thoroughfare, particularly along College Road and throughout the Fig Tree Precinct. The future College Walk will provide a key east-west access route through the campus, connecting to the new light rail stop on Anzac Parade. The light rail is expected to open in 2020.

4.5 Public Transport

Section 3.4 demonstrates that the site is well located for public transport access, particularly so to high frequency bus services. The arrival and departure patterns of many workers in the Randwick area (i.e. arrive 7-9am and depart 4-6pm) is different to that of university students. Students arrive and depart throughout the day based on lecture times which are often outside the commuter peak periods – further reducing the impact on the local public transport network. The UNSW Travel Survey (2015) described in Section 3.6 states of all students and staff, approximately 40% arrive in the AM peak period (8-9am) and approximately 25% leave in PM peak period (5-6pm). This is lower than the typical arrival and departure profile of commercial workers.

As such, the existing public transport system is considered adequate to cater for this development.

4.6 Traffic Impact of the Development

The proposal is considered to have a minimal impact on the operation of the local road network. Reasons for this include:

- Time restricted parking areas (including paid parking) are closely managed and enforced by Randwick Council and UNSW;
- The UNSW Travel Survey (2015) found that 77% of staff and students currently use non-car modes of transport (mostly public transport) to access the campus;
- No change in parking provision is proposed;
- Given that the proposed development does not involve any increase to student numbers at the campus, and no additional staff parking will be available, there will be no increase in site traffic generation resulting from the proposal;
- No roads are proposed to be closed during construction and completion; and
- Vehicular site access into UNSW is to be retained via Gate 2 on High Street.

Due to the above factors, no traffic modelling was undertaken for the proposal. Further, no infrastructure will be required to ameliorate any impacts on the road network as a result of the proposed development.

4.7 Travel Demand Management Measures

Travel demand management measures, e.g. Travel Plans and carpooling, are currently well established at UNSW. The UNSW Environmental Management Plan (2016-2018) outlines the following strategies and programs:

- Develop sustainable transport strategy to reduce car dependence;
- Improve bike facilities including establishment of a Bike Hub;
- Review, improve and promote sharing services (Carpooling, GoGet);
- Develop transport emissions reduction and offsets plan;
- Establish annual data collection and reporting processes for relevant transport data;
- Develop a communication plan to promote active transport; and
- Organise and participate in Ride to work/Uni and Walk to Work day events.

The implementation of these strategies will contribute to reducing parking demand, particularly for staff, and encourage other forms of transport to the site.

Travel demand management measures that have contributed to a change in the travel mode share on campus include:

- No additional car parking on-campus;

- Restricted on-street parking availability;
- Additional student accommodation on campus;
- Improved bus shuttle between Central Station and the campus;
- Preparation of a Campus Bicycle Master Plan to guide ongoing implementation of end of trip facilities and promotion of cycling as a viable access mode;
- Improved pedestrian crossing facilities for access to the campus;
- Increasing trend to distance learning where students attend the campus less frequently; and
- Promotion of alternative travel modes to private vehicle use for new students and staff through induction processes.

4.8 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. The swept path analysis is shown in Figure 15. 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.

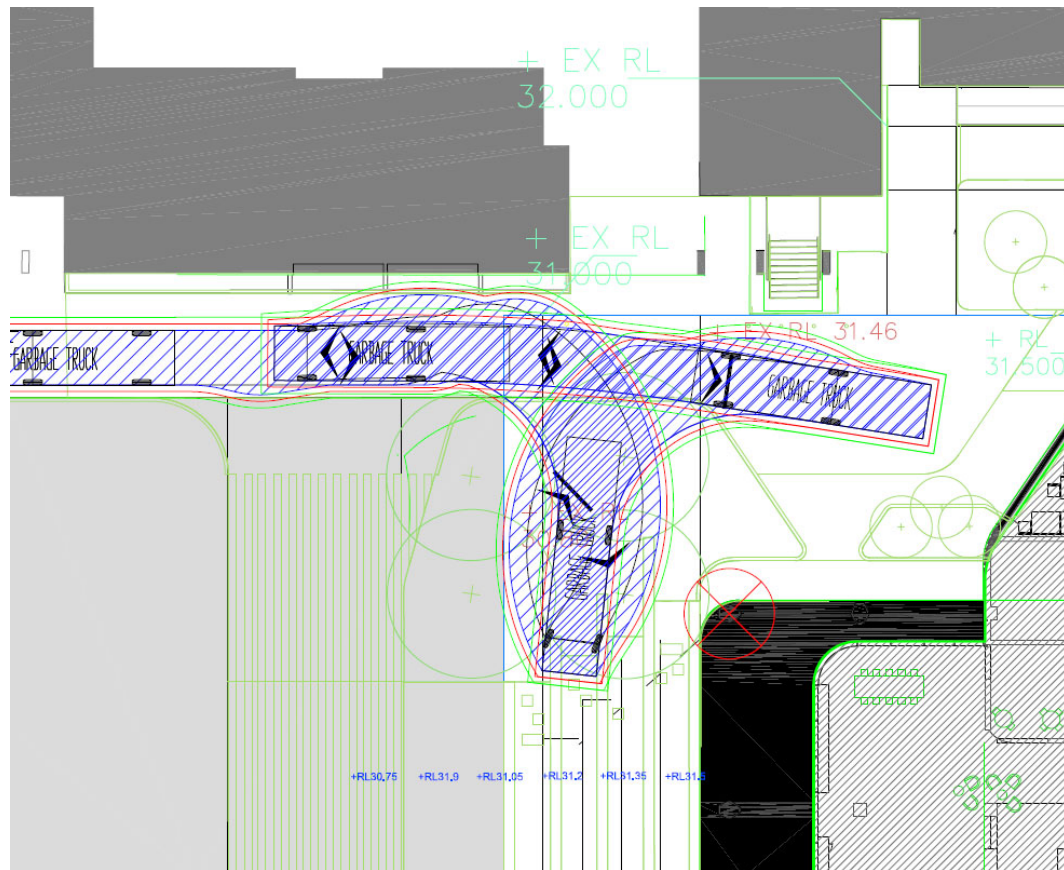


Figure 15: Service vehicle access (subject to landscaping changes)

4.9 Construction Access

A standalone preliminary Construction Traffic Management Plan (CTMP) has been prepared and is appended to this report as Appendix A.

The CTMP identifies potential heavy vehicle movements into and out of the site on a daily basis and the associated impacts on the local road network.

The following items are addressed in the CTMP report:

- Construction programme and description of works;
- Impact of proposed works;
- Existing site traffic and forecast construction traffic;
- Construction traffic routes;
- Site access for construction workers;
- Measures to ameliorate impacts;
- Public transport services affected; and
- Details of provisions made for emergency vehicles, heavy vehicles, cyclists and pedestrians;

4.10 Circulation and Safety

The following considerations have been made with regard to pedestrian safety surrounding the proposed site, in line with CPTED principles:

- Building D14 is located adjacent to the future College Walk – a major pedestrian route through the campus providing a connection to the new light rail stop. Internal circulation within the building will be integrated with other surrounding campus footpaths to ensure a high level of pedestrian comfort and safety;
- The design has ensured that vehicles servicing the building will access and egress the site in the north-west corner of the building, away from the main pedestrian desire lines, therefore reducing the potential for pedestrian/vehicle conflicts;
- Good levels of passive surveillance will be in place for the building due to its location adjacent to major pedestrian routes throughout the campus; and
- Appropriate lighting will be provided as part of the building design (to be detailed in later design stages).

4.11 Consultation

Both Transport for NSW and Roads and Maritime Services have been notified of the proposed works. Arup are in ongoing consultation with both agencies, and intend to keep them informed throughout the application lodgement process.

5 Conclusions

This report provides a review assessment of the proposed Building D14 Redevelopment at UNSW's Kensington campus. This study has been undertaken to evaluate the traffic and accessibility impacts of the project, and responds to the specific matters listed in the Secretary's Environmental Assessment Requirements (SEARs) for SSD 9606. The key findings and conclusions from the assessment are summarised below:

- The site is well serviced by a number of public transport services;
- There are a number of designated walking and cycling routes close to the site;
- 77% of staff and students currently use non-car modes of transport to access the campus;
- The application proposes no net increase to the student/staff population at the campus;
- There will be no change to total site traffic generation compared with existing levels, and no change in parking provision is proposed;
- All roads and vehicular site access into UNSW are to be retained via Gate 2 on High Street with no proposed changes; and
- A construction traffic management plan will be implemented to reduce impact to the pedestrians in the area.

The assessment concludes that the traffic impacts arising from the works proposed for the redevelopment of Building D14 (SSD 9606) are minimal and can be appropriately managed.

Appendix A

Preliminary Construction Traffic Management Plan

Lendlease

**UNSW D14 Redevelopment (SSD
9606)**

**Preliminary Construction Traffic
Management Plan**

Issue | 7 November 2018

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 264478-00

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1 Introduction

This report details the Construction Traffic Management Plan (CTMP) for the proposed new mixed-use building, known as D14, at the University of New South Wales (UNSW) Kensington campus (the campus). The plan has been created by Arup on behalf of Lendlease.

The purpose of the CTMP is to assess the proposed access and operation of construction traffic associated with the proposed development with respect to safety and capacity.

This plan details the management needed to control construction traffic, while minimising effects on the surrounding developments and allowing for appropriate access at all times. Lendlease will prepare a more detailed version of this plan, with detailed Traffic Control Plans including specific methods of safely managing construction vehicle traffic within the surrounding area when subcontractors are appointed.

1.1 Site Location

The site is located at the UNSW Kensington campus which is situated within the Randwick Local Government Area (LGA). The UNSW Kensington campus lies to the south of the Royal Randwick Racecourse, to the west of the Prince of Wales Hospital Campus / Randwick Health Precinct, and between the Kensington and Kingsford town centres on Anzac Parade. The campus is located 8km south of the Sydney CBD and about 6km north-east of Sydney Airport.

Within the campus, the site is located centrally between Alumni Park (west), the Fig Tree Theatre (north), the UNSW Quadrangle (south) and Fig Tree Lane and Goldstein Hall (east). The site for the proposed enabling works, in its entirety, is situated within Lot 3 in Deposited Plan 1104617. The works area has a total area of approximately 5,000m². A site location map identifying the site within the context of the wider campus is shown in Figure 1, and the indicative building envelope is shown in Figure 2.



Figure 1: UNSW site location context plan

Source: Ethos Urban

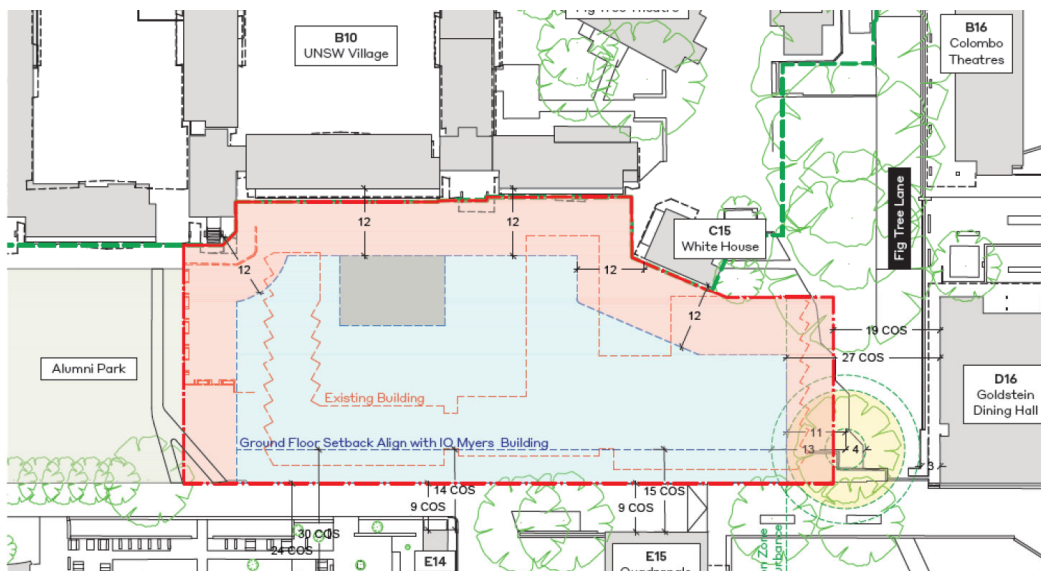


Figure 2: Indicative building envelope

Source: Estate Management UNSW Sydney (2018)

2 Description of Proposed Works

2.1 Overview

The proposed scope includes the demolition of the existing D14 building and the construction of a new building of up to 15,000m² Gross Floor Area (GFA). The proposed new building is to be multifunctional, serving the following functions:

- Faculty space;
- Learning environments;
- Centrally Allocated Teaching Spaces (CATS);
- End of trip facilities;
- Retail; and
- Outdoor places.

There will be no net increase in staff, students or visitations to the campus as a result of the proposal. Rather, the development is allowing for a re-distribution of the existing campus population. As a result, the development is not anticipated to generate any additional person trips to the campus.

2.2 Construction Programme

Construction is anticipated to occur between June 2019 and September 2020.

2.3 Vehicle Types Expected

The following types of 2890.2 Australian Standard trucks are proposed to be used during the project:

- Single Articulated Vehicles (AVs);
- Small Rigid Vehicles (SRVs);
- Utes/vans; and

The large construction materials are proposed to be transported via truck. The maximum truck size that will likely utilise the site is a 19m Articulated Vehicle. There is provision on-site for these vehicles to turn around and so they will be able to access the site directly, and will not require a Works Zone.

All heavy goods such as machinery plant will need to be delivered outside of peak traffic hours. It is envisaged that a number of mobile crane days will be required during the construction stage of the program, with limited lifting operations on weekends. These operations will be subject to a separate application for partial road closure with the Roads and Maritime Services and Randwick City Council as required.

2.4 Proposed Site Access

All construction vehicles are proposed to enter and exit the campus via the signalised intersection of Gate Two Avenue and High Street (UNSW Gate 2) during construction activities (shown in Figure 3). Secondary access for SRVs and small utes/vans is available at Gate 4 off High Street.



Figure 3: Gate Two Avenue / High Street intersection

Vehicles will travel along Gate Two Avenue, enter Alumni Park at its north-west corner before setting down adjacent to the western end of the site. To exit, vehicles will depart a site gate on the north-east corner of Alumni Park and travel along Gate Two Avenue. This configuration is a loop and will thus allow the vehicles to both enter and exit the area in the forward direction. The access to the site will permit manoeuvres to and from High Street in the forwards direction only, with no reverse manoeuvres permitted.

A swept path analysis was undertaken with a 19m articulated vehicle to test the feasibility of this access arrangement. The vehicle paths for the site circulation loop on Alumni Park and the left turn on Gate Two Avenue can be seen in Figure 5 and Figure 6, respectively.

Existing pedestrian controls at Gate 2 and along Gate Two Avenue will apply to construction traffic. Specifically, the signalised pedestrian crossing at Gate 2 and the zebra crossing on Gate Two Avenue, adjacent to the IGA. Traffic controllers may need to be considered to manage the interaction of pedestrians and construction vehicles closer to Alumni Park.



Figure 4: Construction vehicle access – site circulation

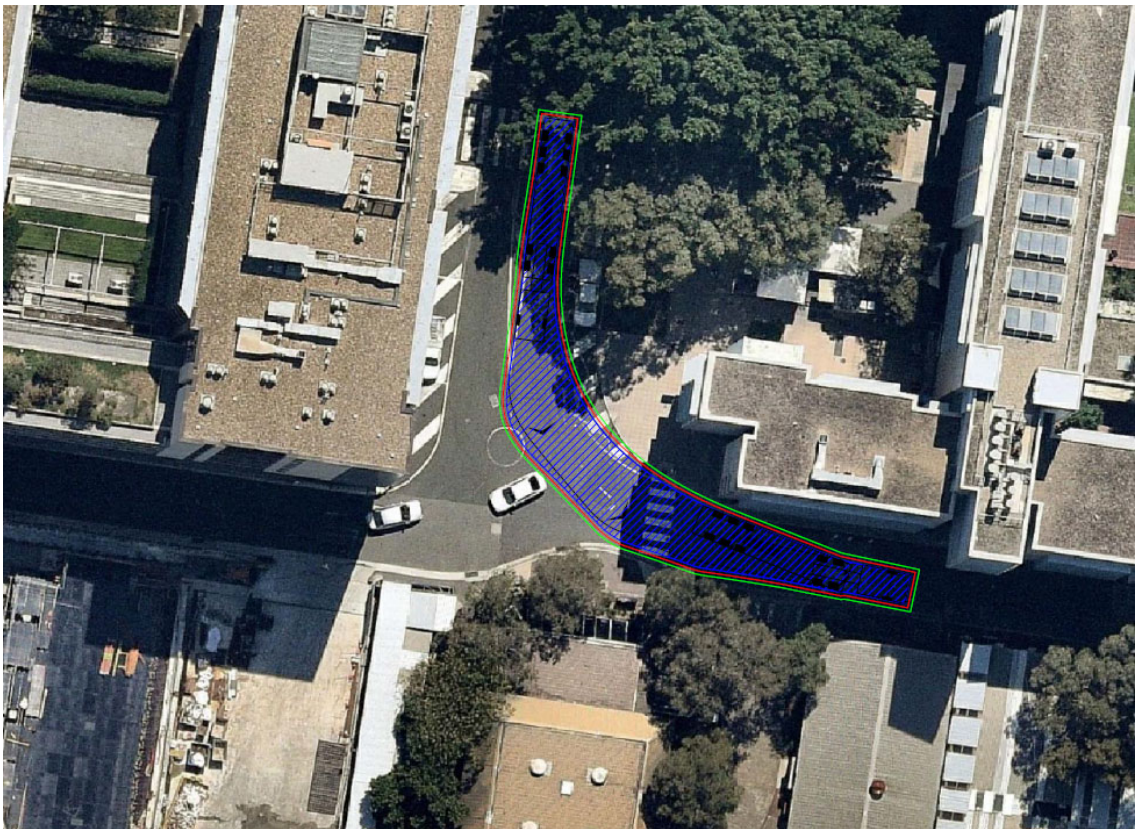


Figure 5: Construction vehicle access – Gate Two Avenue

2.5 Works Zone

All construction vehicles will be wholly accommodated within the site, and so no Works Zones are proposed.

3 Impact of Proposed Measures

3.1 Truck Routes and Controls

To keep construction-related traffic to a minimum on the surrounding roads, it is necessary to define a route for the holding circulation and access into the site from the main access points such as Anzac Parade and Gardeners Road. The routes will be clearly marked by traffic control signage to ensure construction vehicles are following the correct route.

Figure 6 describes the inbound routes to the construction site. Outbound vehicles are anticipated to follow the same routes. All vehicles accessing Gate 2 will be required to turn right into the campus and left out of the campus, with the aid of the traffic signals.

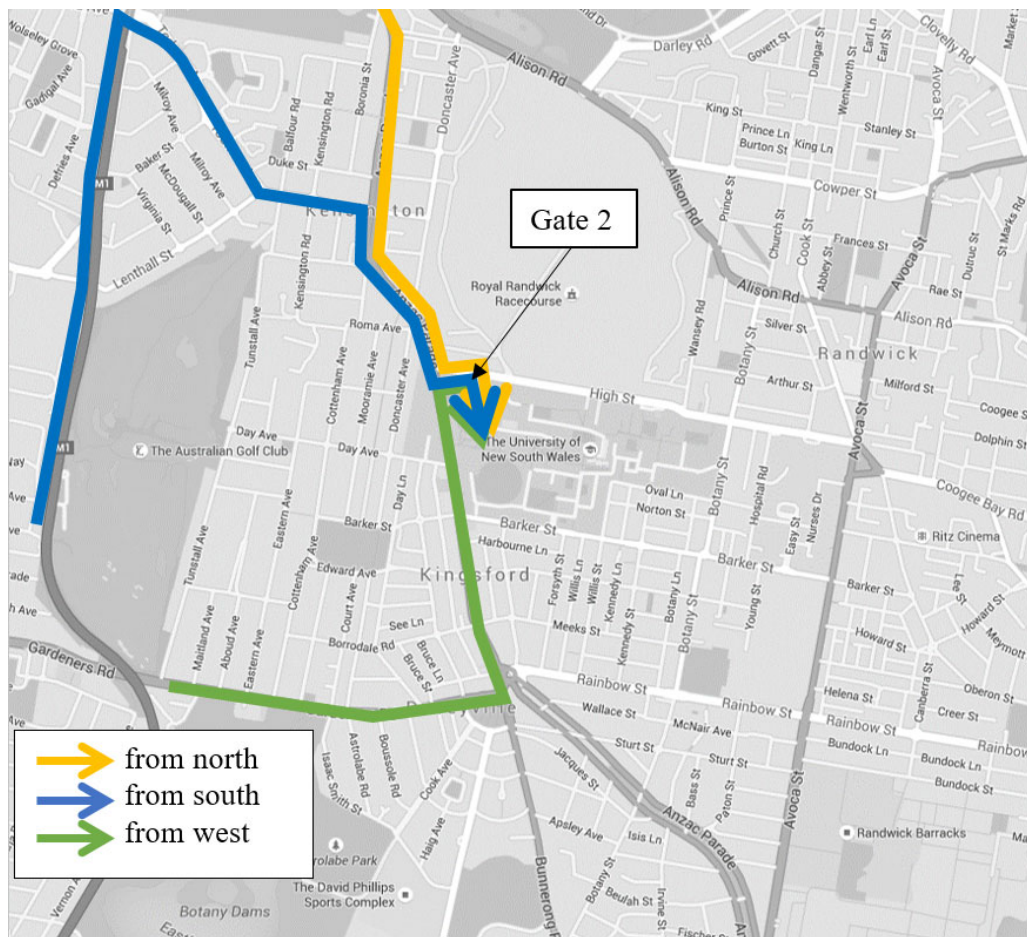


Figure 6: Construction vehicle inbound routes

3.2 Construction Traffic

Heavy vehicle trips generated are estimated to be in the order of approximately 60 truck movements per day or up to 20 trips per hour.

Workers may generate additional traffic to the site in the form of vans, utes and SRVs. A maximum workforce of approximately 100 personnel are forecast during the project. Construction workers generally start earlier and finish earlier than the commuter peak periods, and would likely not coincide with the commuter and UNSW peak periods.

3.3 Road Network Impacts

Traffic generation of this magnitude is anticipated to have a minimal impact on the surrounding road network. The largest number of truck movements associated with the site is in the order of 20 trips per hour, which is expected to have a minimal impact on surrounding roads and intersections. If queuing around the site becomes an issue, this may be managed by an off-site marshalling area.

Furthermore, road network impacts may be mitigated by the fact that construction workers generally start earlier and finish earlier than the commuter peak periods, and would likely not coincide with the peak traffic period of the Kensington/Randwick road network.

3.4 Parking

No car parking is proposed to be provided for construction staff. As part of site induction employees will be advised of the public transport options and encouraged to use these facilities or carpooling arrangements to decrease the number of employee vehicles.

3.5 Pedestrians

Construction vehicles entering, exiting and driving around the site will be required to give way to pedestrians at all times, as required under the NSW Road Rules.

No pedestrian access or general vehicle access will be provided on College Road adjacent to the building during the duration of the project. Access will be limited to emergency vehicles and deliveries, noting truck sizes will be limited. This access will be managed by on-site personnel.

The existing footpath immediately to the north of the site will remain open, with scaffolding providing a barrier to the site. Pedestrians who currently use the footpath across Alumni Park will be diverted to a temporary walkway further west on Alumni Park. These arrangements are shown in Figure 7 below.

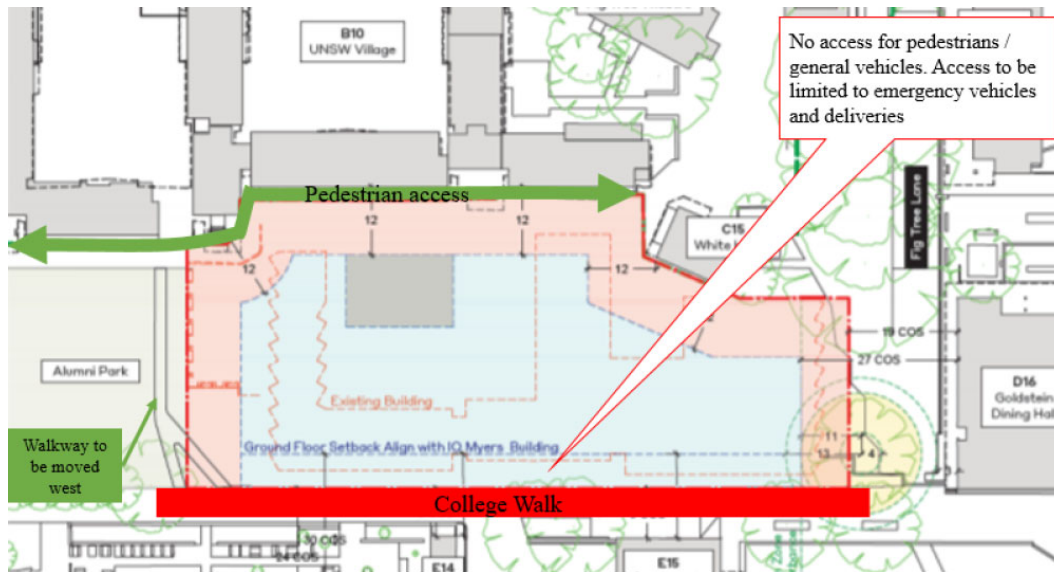


Figure 7: Pedestrian access plan

The Fig Tree Precinct to north-east of the site will remain an active pedestrian area due to The Whitehouse and its function as a through-route between lower and upper campus.

Roads and Maritime Services accredited traffic controllers will manage the interaction of construction vehicles with pedestrians and allow pedestrians to cross these works area. Lendlease will prepare a detailed Construction Pedestrian and Traffic Management Plan (CPTMP) prior to works being carried out on site and will include details in relation to advanced warning signage and the location of traffic controllers.

3.6 Cumulative Impacts

There are a number of ongoing and future construction projects in the vicinity of the D14 development. These concurrent projects occurring on the campus will be managed and coordinated to ensure safety for pedestrians and vehicles using the campus are maintained. Where possible, works will also be coordinated to efficiently utilise and share space within the campus for materials handling and construction compounds.

The construction works associated with the CBD and South East Light Rail were originally scheduled for completion in early 2019, coinciding with the start of the demolition works for the D14 building. However, it is now envisaged the light rail construction will continue throughout 2019. Notwithstanding this, the number of construction vehicles associated with the light rail construction around Kensington is low, given the majority of trackwork has been completed. In this context, noting the relatively low construction traffic volumes associated with the D14 development, it is not expected that cumulative construction impacts would be significant enough to warrant any upgrades.

4 Details of Provisions Made for Emergency Vehicles, Heavy Vehicles and Cyclists

No special provisions are required or proposed for emergency vehicles and cyclists.

Construction activity is not expected to affect heavy vehicles travelling on surrounding roads not associated with this site. Garbage and delivery vehicles are proposed to continue accessing the site via Gate 2. Construction works and vehicle storage will be confined to the site. As such, no additional specific provisions for emergency vehicles, heavy vehicles, cyclists or pedestrians have been identified on the surrounding road network.

Waste collection and Fire Brigade access is to be maintained at all times to existing buildings. Generally, these vehicles are in the range of up to 12.5 metres in length.

5 Measures to Ameliorate Impacts

Mitigation measures will be adopted during construction to ensure traffic movements have minimal impact on surrounding land uses and the community in general, and would include the following:

- Manage and control construction traffic movements on the adjacent road network and vehicle movements to and from the site;
- Trucks to enter and exit the site in a forward direction;
- No provision of vehicle parking for construction workers;
- Maintain traffic capacity at intersections in the vicinity of the site;
- Restrict construction vehicle activity to designated truck routes;
- Construction access from the external road network to mainly occur at signalised intersection;
- Pedestrian movements adjacent to demolition activity will be managed and controlled by site personnel where required;
- Pedestrian warning signs and construction safety signs/devices to be utilised in the vicinity of the site and to be provided in accordance with WorkCover requirements;
- Construction activity to be carried out in accordance with Council's approved hours of work;
- Truck loads would be covered during transportation off-site;
- Establishment and enforcement of appropriate on-site vehicle speed limits (30km/h), which would be reviewed depending on weather conditions or safety requirements;
- Activities related to the construction works would not impede traffic flow along local roads;
- Materials would be delivered and spoil removed during standard construction hours;
- Construction vehicles not to queue on Gate Two Avenue and be wholly accommodated within the site;
- Minimal construction traffic movements to/from the site will be made during peak hours to minimise the impact on the wider road network.

5.1 Driver Code of Conduct

No queuing or marshalling of trucks is permitted on a public road marked as No Stopping or No Parking. All vehicles must enter and exit the site from High Street in a forward direction. The Roads Act does not give any special treatment to trucks leaving a construction site – the vehicles already on the road have right-of-way. Vehicles entering, exiting and driving around the site will be required to give way to pedestrians at all times.

6 Public Transport Services Affected

No bus services are expected to be impacted by construction traffic as the work will be confined to the off-street site. All construction vehicles will be traffic controlled to ensure minimal impacts on surrounding traffic and pedestrian flows.

7 Public Consultation

Randwick City Council, Sydney Buses and Roads and Maritime Services will be given the opportunity to contribute to the final version of this report.

Should temporary road closures be required at any stage during the construction period, they will be obtained separately through the normal approvals process.

Ongoing consultation will be conducted with UNSW and Lendlease to ensure building occupants are updated on the construction works.