



**Redevelopment of UNSW Cliffbrook Campus
45 – 51 Beach Street, Coogee
State Significant Development Submission (SSD 8126)**
Transport & Accessibility Assessment Report

Prepared for:
University of New South Wales
22/05/2017

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Redevelopment of UNSW Cliffbrook Campus 45 – 51 Beach Street, Coogee State Significant Development Submission (SSD 8126)



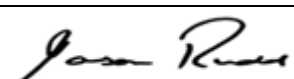
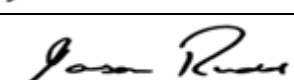

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1 Introduction

1.1 Overview

This Transport Assessment has been prepared on behalf of the University of New South Wales (UNSW) to accompany a State Significant Development application for the proposed redevelopment of the UNSW Cliffbrook Campus at 45-51 Beach Street, Coogee.

The western portion of the Cliffbrook Campus (the site) is zoned by the Randwick LEP 2012 as SP2 Educational Establishment. This portion of the site contains the existing buildings, car parking and internal roadways. The eastern portion of the site is zoned as RE2 Private Recreation.

The Cliffbrook Campus is currently utilised by the UNSW in accordance with the land use zoning, namely as an educational establishment, albeit in an under utilised manner.

The proposed development, which is referred to as the Cliffbrook Campus Redevelopment (CCR) Project, will maintain the existing land zonings and seeks to continue use of the site as an educational establishment with ancillary private recreation areas. The proposal will include:

- Retention of the Cliffbrook House(CC1) building and other heritage items;
- Demolition of two existing buildings on the site;
- Construction of new a new "state of the art" executive residential retreat with accommodation and teaching facilities for the Australian Graduate School of Management (AGSM) Residential Programs;
- Excavation to provide a basement car park under the new building; and
- Retention of the private recreation land use on the eastern portion of the site.

It is proposed that the CCR Project will provide a new facility to house the UNSW Business School's *Australian Graduate School of Management* (AGSM) residential program which is currently provided at the UNSW main campus at Kensington.

The CCR Project will provide a total of 53 bedrooms along with teaching space, dining and eating facilities and recreational spaces principally for the use by the AGSM.

The 53 bedrooms will accommodate:

- 50 participants in the residential program;
- 2 teaching staff; and
- 1 on-site manager.

1.2 Cliffbrook Campus Site Location

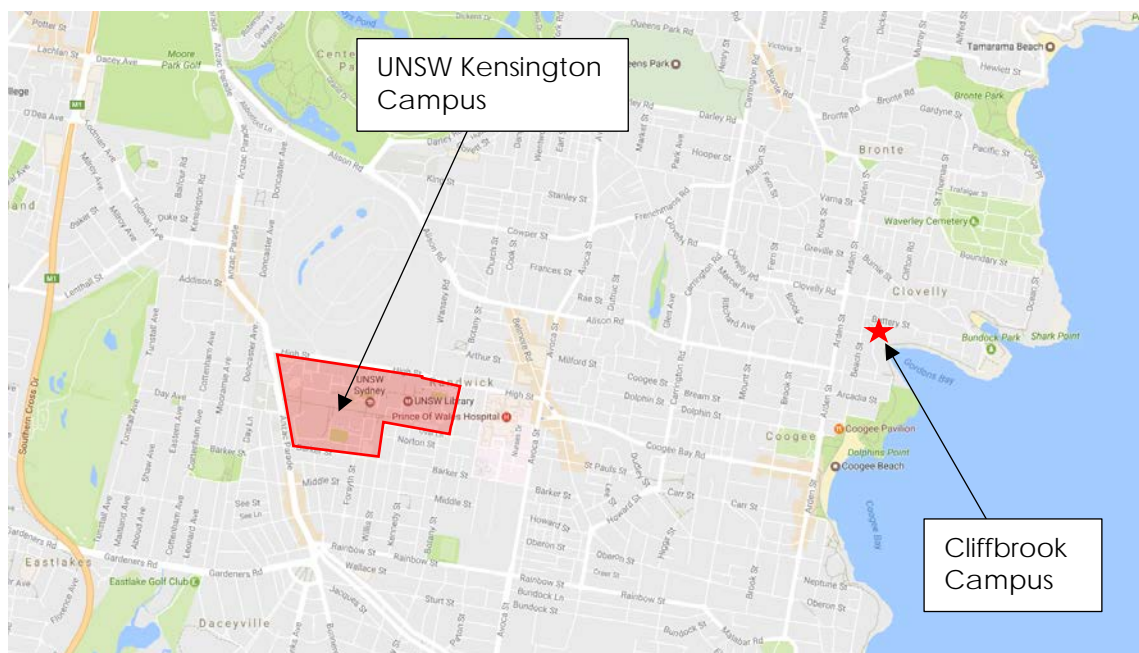
The CCR Project site is located at 45-51 Beach Street, Coogee as shown in Figure 1.1. The site is located some 3 km from the UNSW's main campus at Kensington.

The site has road frontages to Beach Street and Battery Street (see Figure 1.2).

The Cliffbrook Campus most recently housed the UNSW Press whose main activities were book publishing, representation and distribution services, and retail bookselling on the UNSW campus in Kensington.

The UNSW Press facility has been recently relocated and the site used for limited administrative activities associated with the UNSW.

Figure 1.1: Cliffbrook Campus Site Locality



Source: www.maps.google.com

Figure 1.2: Cliffbrook Campus Site Location



Source: www.maps.six.nsw.gov.au

1.3 Secretary's Environmental Assessment Requirements

On 21 December 2016, SEARs were issued for the proposed redevelopment of the UNSW Cliffbrook Campus at 45-51 Beach Street, Coogee.

Item 6 of the SEARs directly relates to Transport and Accessibility. In addressing the SEARs, this transport assessment has considered the transport and accessibility matters of the proposed redevelopment of the Cliffbrook Campus.

1.4 Purpose of this Report

The report sets out an assessment of the anticipated parking, traffic and transport implications of the proposed CCR Project as required by the SEARs.

Specifically, this includes consideration of the:

- Consistency with relevant planning policies and transport management objectives of strategic authorities, State government agencies and Randwick City Council;
- Traffic generation impacts of the proposed development to the operation of the surrounding road network;
- Adequacy of the proposed parking arrangements in terms of supply (quantum), location and layout;
- Adequacy of the proposed pedestrian, bicycle and public transport access arrangements to the site;

- Adequacy of the proposed arrangements for loading and waste collection;
- The acceptability of the traffic impacts of the proposed development, including the need for mitigating road works and appropriate vehicular access; and
- Construction traffic implications and management measures to address potential impacts.

2 Cliffbrook Campus Redevelopment Project - Proposed Development

2.1 Proposed Site Uses and Operation

The primary purpose of the redeveloped Cliffbrook Campus site is for the relocation of the AGSM residential program from the UNSW Kensington Campus to new facility commensurate with the expectations and demands of a leading educational facility for post graduate business studies.

The CCR Project will deliver at Cliffbrook a facility capable of providing on site accommodation, teaching and educational activities.

It is proposed to provide a total 50 residential accommodation rooms to provide short stay on site accommodation for AGSM participants. An additional 2 residential accommodation units will be provided for teaching staff and another unit provided for the on-site manager of Cliffbrook House.

The redevelopment will include the provision of on-site car parking facilities, loading and service vehicle facilities and internal vehicle circulation.

The typical operation of a residential program at the proposed CCR project will include:

- Short term accommodation of 50 participants engaged in the AGSM residential program. Participants will only be on site when the program is run. The residential program is run periodically through the year. Thus, participants will not be present on the site continually;
- Up to 20 staff on site at any one time, comprising:
 - Teaching staff not staying on site = 6 staff
 - Staff staying on site = 2 staff
 - Other staff (ie. catering, office etc) = 12 staff
- On site manager (full time).

The AGSM program run a variety of residential courses with some being held over a 3-5 day period with some occurring over a weekend period while others are held during week day period. As such when courses are being held, the Cliffbrook campus will be occupied both during the week and weekends.

However, it is noted that the residential courses are not held consistently throughout the year and thus the Campus may be vacant of participants and teaching staff for some periods of time.

When residential courses are held, the typical operation of the site are that participants arrive at the start of the course and then stay on site till the end of the course.

2.2 Vehicle Access Arrangements

All vehicle access to and from the CCR Project site will continue to be provided via the existing site access driveway at Beach Street.

The existing width of the gate will be widened to better accommodate two way (entry / exit) movements to and from the site.

The existing site access will connect to the internal vehicle circulation roadway which will connect to:

- At grade car parking;
- At grade drop off / pick up and short stay parking for reception (this includes provisions for taxi movements);
- Basement car parking;
- Turning area; and
- Service vehicle area for loading / unloading.

The locations of the above are shown in Figure 2.1.

2.3 Car Parking Provisions

It is proposed that the on-site car parking provisions will be increased from 27 existing spaces to 37 spaces.

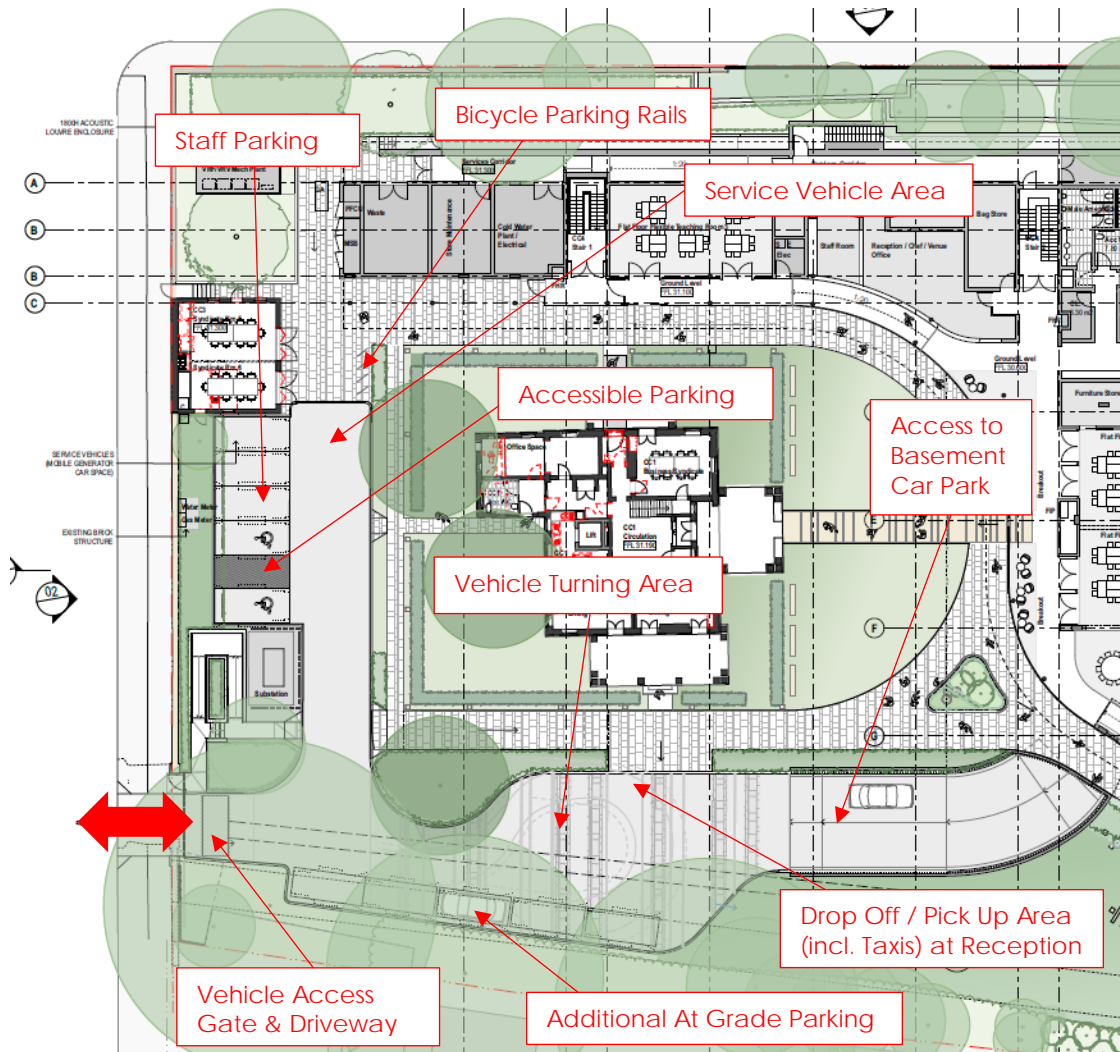
The proposed 37 spaces will include:

- Basement parking 27 car spaces;
- At grade car parking (5 spaces) along the Beach Road boundary wall including 2 accessible car parking spaces (see Figure 2.1); and
- At grade car parking (5 spaces) along the internal circulation road (see Figure 2.1).

At grade car parking will typically be utilised by both residential participants and teaching staff with parking located in the basement generally to be utilised by participants.

As per the existing arrangements, AGSM participants in the residential program can, subject to availability, pre book an on site parking space to use while attending the program. Use of such a system will allow control and management of participant parking demand on the site.

Figure 2.1: Vehicle Access and Circulation Areas



Source: FJMT Architectural Plans (Ground Floor) dated 12/04/17.

2.4 Bicycle Parking Provisions

Formal bicycle parking will be provided on site for use by staff and participants. Bicycle rails accommodating 8 bicycles will be provided at grade near “The Stables” at the end of the vehicle circulation roadway (see Figure 2.1).

2.5 Travel Demand of Residential Participants

The nature of the AGSM residential program is that participants are attracted from Sydney and non-Sydney areas, including a proportion of inter-state and international locations.

The modes of travel by participants currently accessing the residential program at the UNSW Kensington Campus currently include:

- Car with access to on campus parking provided by UNSW;
- Taxi;
- Drop off / pick up with private vehicles;
- Public transport - primarily bus with connections to transport (rail) interchanges; and
- Limited (if any) bicycle and / or pedestrian trips.

An analysis of the parking pass take up for AGSM residential courses for 2015 / 2016 indicated a wide range in demand for on-site parking. Typically, the allocation of parking passes was in the order of between 20-50% of participants.

A key determinate in the level of parking demand is the proportion of Sydney based participants attending in one residential course with higher demand for car parking with higher proportions of Sydney based attendees.

Notwithstanding the above, it was considered that the peak take up of parking passes was up to 50% (1 in 2) of the residential program participants. This rate has been utilised in the assessment of proposed parking provisions (see Section 5).

3 Strategic Context

3.1 NSW Long Term Transport Master Plan 2012

The NSW Long Term Transport Master Plan (LTTMP) was released in 2012. It sets the direction for transport planning in NSW and provides a framework for transport policy and investment decisions.

The objectives of the LTTMP will be used to plan for the future and act as a guide to assessing the best available options for building a world-class transport system for NSW over the next two decades.

The LTTMP is supported by a number of detailed regional transport plans, modal plans and access strategies along with specific projects such as the CBD and South East Light Rail projects and Sydney's walking, cycling and bus futures.

The South East Light Rail project will significantly improve the public transport connections to the UNSW's main campus at Kensington.

The Cliffbrook Campus will also benefit with improved connections from Randwick to the CBD as a result of the operation of the Light Rail project.

3.2 Sydney's Cycling and Walking Future 2013

These policy documents seek to set the direction for the way bicycle and pedestrian infrastructure is planned and implemented across Sydney with the objective of encouraging and facilitating increased choice of these as modes of travel.

Details of the proposed CCR Project's provisions with regard to cycling and pedestrian access is set out in Section 5 of this document. However, it is noted that the proposed redevelopment will maintain and enhance both the attractiveness of cycling and walking as part of the journey to and from the site.

3.3 Sydney's Bus Future 2013

Both Bondi Junction and Maroubra have been identified by the Sydney's Bus Future 2013 document as key destinations for rapid bus routes with connections to the CBD. Bondi Junction is identified as a Major Centre and Randwick as a specialised centre.

Cliffbrook will be connected to both Randwick and Bondi Junction by the local bus services and thus interconnected to the CBD, Airport and other key origin / destinations for residential students and staff associated with the operation of the CCR Project.

3.4 Randwick City Council

Consultation was undertaken with Randwick City Council officers in September 2016. This consultation included discussions related to traffic and parking.

The outcomes of the meeting can be summarised as:

- Council was comfortable that the proposed CCR Project use does not neatly fit into a DCP category in terms of parking rates and traffic generation.
- The assessment of car parking requirements will consider a merit based argument with details pertaining to how residential students participating in the AGSM program currently and will as proposed travel to and from the site.
- Depending on the outcome of the parking analysis a management plan may be required for the ongoing operation of the proposed facility.

The outcomes of the above consultation have been incorporated in the assessment presented in this report.

3.5 RMS and TfNSW

It is noted that the proposed CCR project site is not located on or adjacent to a state road, but rather entirely fronted by local Council roads.

Furthermore, as a residential program for 50 participants, the proposed CCR Project would not generate a significant demand for public transport services when compared to a more traditional under graduate University educational establishment

Notwithstanding the above, a project briefing memo has been prepared and issued to Roads and Maritime Services (RMS) and Transport for NSW (TfNSW) for comments along with an invitation to meet and discuss project issues specifically related to each of the agencies.

4 Existing Conditions

4.1 On Site Parking and Vehicle Access Arrangements

Vehicle access to the site is currently provided via a gated driveway at Beach Street. This driveway facilitates both entry and exit vehicle movements.

The access driveway connects to internal vehicle circulation roads which access at grade car parking (27 spaces) and on site service vehicle loading / unloading areas.

No formal bicycle parking is currently provided within the Cliffbrook site.

4.2 Previous Site Uses – Parking Demand and Traffic Generation Characteristics

The Cliffbrook Campus is currently under-utilised with the site accommodating a limited amount of UNSW administrative staff.

Over time there have been numerous previous occupants of the Cliffbrook site each of which have generated a degree of traffic generation and parking demand.

Cliffbrook was occupied by the Australian Army in the 1940s, the Australian Atomic Energy Commission in the 1950s, 60s and 70s, and UNSW from the 1990s including the Asia Australia Institute and the Australian Taxation Studies Program.

More recently the Cliffbrook site has been occupied predominately by UNSW Press Ltd. In 2016 UNSW Press Ltd employed 20 permanent staff, 7 casual employees and 2 sales representatives. The UNSW Press offices (Building CC4), housed a library to showcase books it had published and its uses included meeting rooms, archives and storage, productions and design studio and amenities. Space within the building was also used for visitors such as auditors, freelance editors, authors and customers.

Thus while the Cliffbrook site is currently relatively under utilised, the site has through its various uses generated traffic and parking demand in the past and can be expected to again whether as a result of the current development proposal or some other UNSW related activity.

Observations of site operation indicate that Cliffbrook currently generates between 5-10 vehicle trips per peak AM and PM period on weekdays. Weekend traffic flows are relatively non-existent.

With the aid of historically aerial photography (www.nearmaps.com.au) it can be determined that when the UNSW Press building was more intensely utilised, parking

demand for on site parking was at capacity during weekdays, namely that the on site parking supply of 27 parking spaces were occupied.

This would imply that the most recent previous uses of the site generated in the order of 20-30 vehicle trips per AM and PM week day peak hour as staff arrived and then left the site at the start and end of the typical office working day.

Similarly, if the site was to be fully occupied with UNSW administrative uses of the other buildings on the site in addition to the CC4 UNSW Press building, then the traffic generation potential of the site could be in the order of 30-40 vehicle trips in the peak hour.

4.3 Surrounding Road Network

The CCR project site has frontages to Beach Street and Battery Street. Both these streets are local roads under the control of Randwick City Council.

Beach Street

At the site, Beach Street has a sealed road width of 12.5 metres and provides two travel lanes in each directions and kerb side parking on both sides of the street.

Beach Street has a speed limit of 50 km/hr. TTPP's observations indicates that Beach Street carries less than 200 vehicles per hour during AM and PM peak periods on week days.

On weekend days flows are expected to vary depending upon the season and weather.

TTPP inspected the site on two different occasions on the weekend, one a sunny Sunday in summer and the other an overcast day in winter. Traffic flows were less than 100 vehicles per hour in the middle of the winter day observations and almost 200 vehicles per hour on the summer day observations.

Notwithstanding the above, Beach Street carries traffic flows commensurate with a local road operating within a residential road network.

Intersections along Beach Street, including the Cliffbrook site access driveway, were observed to operate satisfactorily at all times with minimal, if any, vehicle delay and queuing.

This indicates that there is significant spare capacity within the surrounding road network.

Battery Street

Battery Street has a sealed road width of 6 metres with two way flows permitted and parking along the southern side of the street. The road width is generally insufficient to allow two cars to pass each other adjacent to a parked car.

Traffic flows along Battery Street are low both in volume and speed. Vehicles using Battery Street do so to access residential properties or seek on street car parking for visits to the beach.

4.4 On Street Parking Demand

As described above, unrestricted on street parking is available along both Beach Street and Battery Street.

Observations by TTPP indicate that there is an existing high demand for on street parking, particularly on week day evenings and sunny weekend days.

While the previous use of Cliffbrook generally and in particular the UNSW Press facility would have generated a demand for parking by staff and visitors, the current under-utilisation of the Cliffbrook Campus means that the site's parking demand (or lack of it) can be accommodated on site by the existing car parking provisions.

Thus, the existing high demand for on street parking is generated by existing residential developments in the vicinity and visitor parking by people seeking to access the beach and / or the coastal walking track.

Based on the above, it is considered that there is limited capacity (if any) for future parking demand by the CCR Project to be accommodated on street parking without adversely impacting upon current users of on street parking spaces.

4.5 Public Transport Services

While the site is within close proximity to public transport routes, neither Beach Road nor Battery Street are designated bus routes (see Figure 4.1).

The site is serviced by the following bus routes:

- 360 – Clovelly to Bondi Junction
- X39 – Clovelly to City (Martin Place)
- X40 – Clovelly to City (Museum)
- 338 – Clovelly to Railway Square (Central)

- 339 – Clovelly to City
- 353 – Eastgardens to Bondi Junction

Connections to the UNSW Kensington Campus are provided by routes:

- 370 – Leichhardt Market Place to Coogee
- 374 – Coogee to Circular Quay

The closest bus stops are located on Clovelly Road at the intersection of Beach Street (150 metres from the Cliffbrook site’s main gates) and on Arden Street near Alison Road (350 metres from the site’s main gates).

Figure 4.1: Bus Routes



Source: www.transport.nsw.com.au

4.6 Pedestrian and Cyclist Facilities

Paved footpaths along both sides of Beach Street and both sides of Battery Street within the vicinity of the CCR Project site.

Both Beach Street and Battery Street form part of the designated “on road” cycle route which makes up the Coastal Cycleway running from Tamarama Beach to La Perouse (see Figure 4.2).

No formal on site bicycle parking or end of trip facilities are currently provided on site. At least one bicycle was observed to be parked on site, chained to a fire hydrant, indicating that there is a limited demand for cycling modes to access the site.

Figure 4.2: Cycle and Pedestrian Routes



Source: www.randwick.nsw.gov.au

5 Assessment of Proposed Development

5.1 Car Parking Provisions

As noted above, the existing demand for on street car parking surrounding the Cliffbrook Campus is on weekday evenings and weekends.

These periods of peak demand for on street parking would coincide with the peak demands of the proposed AGSM residential accommodation.

Thus it is considered that in order avoid adversely impacting upon the amenity of surrounding residents and visitors, the proposed CCR Project should have the objective of providing sufficient on site parking to accommodate the demands of the CCR Project operation.

5.1.1 Randwick City Council Development Control Plan (DCP)

As noted above and confirmed through consultation with Randwick City Council, Council's DCP parking rates are not considered relevant to the proposed CCR project.

To ensure that on street parking is not adversely impacted by the CCR Project then it is suggested by TTPP that demand for on-site parking should be estimated based on first principles and assessed accordingly.

In particular, consideration needs to be given to the specific needs of UNSW with regard to the car parking offering to staff and to participants.

Notwithstanding the above, Council's DCP provides the following car parking rates:

- Hotel (Short Term Accommodation) : 1 space / 5 rooms
- Hotel Staff : 1 space / 2 staff
- Staff Tertiary (not staying on site): 1 spaces / 1.4 staff
- Residential unit (on site manager): 1 space / care taker

These DCP rates have been applied to the CCR project to determine a DCP car parking space requirement as set out in Table 5.1.

Table 5.1: Council DCP Parking Requirements for CCR Project

Land Use	No. of Units	Car Parking Rate (Parking Spaces / Unit)	Car Parking Requirement (Spaces)
Hotel Rooms (Participants)	50	1 / 5 rooms	10
Tertiary Staff Staying On Site	2	1 / 2 staff	2
Tertiary Staff Not Staying on site	6	1 space / 1.4 staff	4
Other Staff	12	1 / 2 staff	6
On Site Caretaker	1	1 space / unit	1
TOTAL			23

Based on the above rates and a 53 room accommodation facility, the parking requirements under Council’s DCP would be 23 spaces.

With regard to DCP requirements, it could be argued that the proposed 37 on site parking spaces far exceeds the DCP requirements. However, it is considered appropriate to also undertake a merit assessment of parking demand.

5.1.2 Merit Assessment of Car Parking Demand

When considering the current and likely future behaviour and transport mode selections of participants and staff for the AGSM residential program, it is expected that the demand for car parking associated with full occupation of the 52 residential accommodation rooms at the Cliffbrook Campus would be greater than the DCP requirements as set out in Table 5.1.

As indicated in Section 2.5, residential program participant utilisation of on site parking at the Kensington Campus currently varies between 20-50% of the total participants. This is a rate of between 1 space / 5 participant to 1 space / 2 participants (or 1 space / 2 rooms).

While a proportion of residential participants will arrive and depart the site by public transport, taxis or as a private vehicle passenger, the provision of secure on-site parking is considered to be a key marketing measure for attracting participants to the facility.

Thus for the purpose of this assessment, a parking demand of 1 space / 2 rooms has been utilised to estimate the peak demand for parking associated with residential participants.

For staff a parking demand of 1 space / 2 staff has been utilised. It is noted that the staff parking demand could be manipulated and lowered by UNSW through parking allocation policies for staff parking.

The likely peak parking demand for the proposed development is set out in Table 5.2.

Table 5.2: Estimated Car Parking Demand for CCR Project

Land Use	No. of Units	Car Parking Rate (Parking Spaces / Unit)	Car Parking Requirement (Spaces)
Participant Accommodation Rooms	50	1 / 2 rooms	25
Staff Accommodation Rooms	2	1 / 2 rooms	1
Staff (non residential)	18	1 / 2 staff	9
On Site Caretaker	1	1 / unit	1
TOTAL			36

Thus the likely peak parking demand of the CCR project is estimated to be 36 parking spaces.

The proposed provision of 37 on site parking spaces would provide sufficient on site car parking to accommodate the peak level of expected parking demand on site.

Furthermore, the UNSW has the ability to provide overflow parking and manage parking demand through parking provisions at the UNSW Kensington campus should, in the unlikely event, it be required.

It is noted that there is the potential to extend the UNSW shuttle bus route to link the Cliffbrook site and the Kensington Campus. Thus any additional parking demand could be provided at the Kensington campus and participants transported to the Cliffbrook campus should demand for car parking exceed the provisions at Cliffbrook.

5.1.3 Summary of Car Parking Provisions

Based on the DCP requirements and a first principles assessment of parking demand, it is concluded that the proposed provision of 37 on site parking spaces will adequately accommodate on site the peak parking demands of the proposed CCR Project.

Furthermore, the UNSW has the ability to manage overflow parking demand should it occur without necessitating the use of on street parking spaces.

Thus, the proposed on-site parking provisions are considered to be satisfactory for the proposed development.

5.1.4 Car Park Layout and Design

The proposed layout of the at grade and basement car parking spaces are set out in accordance with AS2890 and are appropriate for the intended use.

The internal vehicle circulation area and parking layout (see Figure 2.1) adequately incorporates:

- accessible car parking spaces (2 spaces provided at grade);
- drop off / pick up spaces with convenient access to the proposed reception area;
- taxi drop off / pick up area;
- adequate vehicle circulation including turning areas (see Appendix A); and
- interface with pedestrian spaces.

With regard to accessible (disabled) parking spaces, AS2890.1 specifies a provision of approximately 5% of total parking spaces (ie. 1 accessible space / 20 parking spaces). Application of this rate to the proposed car parking provisions would require 1-2 accessible car parking spaces. Thus the provision of 2 accessible parking spaces is sufficient for the CCR Project.

Furthermore, the accessible spaces are provided at grade (ie. ground level) within close proximity to the building access and associated pathways.

The vehicle turning area at the ground floor is satisfactory to accommodate drop offs by either taxis or passenger cars. The vehicle turning path movements associated with these turning movements are shown in Appendix A.

5.2 Traffic Generation Implications of Proposed CCR Project

When considering the traffic generation implications of the Cliffbrook Campus site on the surrounding road network, it should be noted that the site has, is and will be used in some form all of which did, does and will generate traffic.

Thus while the site's current uses represent a low intensity activity on the site, the traffic assessment presented herein has undertaken a comparative assessment of the traffic generation potential of the proposed CCR Project with previous and current site uses.

Furthermore, it is noted that the educational establishment zoning of the site permits (with approval) University activities such as teaching classes which are likely to represent a more intense use of the site than the proposed residential AGSM program and CCR Project.

As described in Section 4.2 of this report, the Cliffbrook Campus site has historically generated traffic flows to and from the site associated with the various site uses.

Additionally the site currently generates traffic flows with the existing (albeit under utilised) uses of the site. Existing traffic will cease upon construction / operation of the proposed CCR Project.

Table 5.3 provides a summary comparison of the traffic generation potential of the various potential uses of the Cliffbrook Campus site.

For the proposed CCR Project, traffic generation will be generated by:

- Residential participants arriving / departing by car and parking on site (spread say over a 2 hour period).
- Residential participants arriving / departing by car or taxi as a passenger (spread say over a 2 hour period)
- Staff arriving / departing and parking on site.

Table 5.3: Cliffbrook Campus Site Traffic Generation Potential – Peak Hour Periods

Error! Not a valid bookmark self-reference.Development Scenario	Estimated Weekday Peak Vehicles / Hr	Estimated Weekend day Peak Vehicles / Hr
Previous Site Use (UNSW Press – 2016)	20-30	0-5
Existing Site Uses	5-10	0-5
Proposed CCR Project	30	30

It is estimated that in the order of 30 vehicle trips per hour would be made to / from the Cliffbrook Campus for the arrival / departure periods of the residential AGSM sessions associated with the CCR Project.

It should be noted that both the previous UNSW Press and existing uses of the site would have generated traffic flows each weekday while the CCR Project will only generate traffic on days when the residential accommodation is commencing and finishing.

As the AGSM residential courses typically run over a 3 – 5 day period, the proposed CCR Project is likely to have in the order of 4 peak hour traffic periods per week compared to the existing and previous uses which had and have 10 peak periods per week.

The traffic generation potential of the CCR Project is considered to be similar if not less than the previous use of the site as the UNSW Press facility.

The generation of some 30 vehicles per hour on the occasions when the residential participants are arriving and departing would represent 1 vehicle every 2 minutes.

Given the relatively low volumes of traffic currently utilising Beach Road, the addition of some 15 – 25 vehicle movements would not adversely impact on the operation of the surrounding road network.

In summary, the proposed CCR Project, would represent a relatively low intensity use of the site which is commensurate with recent previous uses of the site.

5.3 Vehicle Access Arrangements

The proposed retention of the existing vehicle access location at Beach Street is supported by TTPP and considered to be the preferred access arrangement for the CCR Project as it will minimise potential adverse traffic impacts to the surrounding community.

Retention of the existing driveway will allow the existing on street parking provisions to be retained and unaffected by the proposed development. That is no on street parking spaces will be lost as a direct impact of the CCR project.

It is understood that gates will be widened slightly to improve two way traffic flow and to accommodate additional security measures for site access.

With regard to sight lines to pedestrians for exiting vehicles, it is recommended that the existing convex mirror mounted on the existing gate support be retained.

5.4 Service Vehicle Arrangements

Service vehicles accessing the site for CCR Project will include waste collection vehicles, delivery vehicles and general maintenance vehicles.

It is understood that waste will be collected from the site by private contractors employed by UNSW rather than by Council collection vehicles. As such, the size of the collection vehicle can be specified by UNSW and incorporated into ongoing waste management plans for the site to ensure that the vehicles accessing the site are appropriately sized for waste and deliveries.

Similarly delivery vehicles bringing materials and goods to the site will be pre-arranged and organised through the UNSW and as such the size of vehicles accessing the site can be controlled and regulated and thus be accommodated by the on site service vehicle facilities.

Deliveries of goods such as catering food and beverages, linen, teaching materials etc and maintenance activities would be generally undertaken by delivery vans, utilities and small rigid vehicles (SRV – 6.4m long).

The frequency of service vehicle movements to and from the Cliffbrook Campus will peak prior to and immediately following each individual course. Namely goods and materials will be delivered to site prior to commence of each course such that they are ready for use during the course. Waste and linen would be removed after the completion of the course. As such service vehicle activity will generally not peak at the same time as participant arrival / departures.

Therefore, the peak participant and peak service vehicle movement will not occur simultaneously.

Notwithstanding the above, the frequency of service vehicle movements to and from the site are expected to be relatively low. Furthermore, the frequency will vary upon the number of participants for each course.

The estimated frequency of service vehicle movements for a pre / post course period is set out in Table 5.4.

It is noted that UNSW will have the ability to control the time of deliveries to and from the site. As such it is expected that no more than two service vehicles will need to be on-site simultaneously.

With consideration of the service vehicle types likely to access the site as described above, the proposed internal circulation road and site access driveway will have been designed with the ability satisfactorily to accommodate a medium rigid vehicle (MRV – 8.8m long) as defined by AS2890.2 and set out in the UNSW briefing information for the CCR Project.

Larger service vehicles would also be able to access the site albeit with reversing movements within the general car park circulation areas.

Table 5.4: Cliffbrook Campus – Estimated Service Vehicle Frequencies

Type of Service Vehicle Activity	Typical Vehicle Type	Estimated No. of Deliveries / Week
Waste Collection	Medium Rigid Vehicle	1 – 2
Recycling Collection	Medium Rigid Vehicle	1 – 2
Linen / Laundry Materials (clean in / dirty out)	Small Rigid Vehicle / Van	2
Teaching / Office Materials	Small Rigid Vehicle / Van	2 - 3
Food and Beverage	Small Rigid Vehicle / Van	2 - 5
General Maintenance	Small Rigid Vehicle / Van	2-3

Given the likely infrequent visitation by larger trucks this arrangement is considered by TTPP to be acceptable with the implementation of some management measures such as avoiding periods of peak car park activity, namely the arrival and departure periods of the residential participants.

The vehicle turning path of the MRV accessing the unloading / loading area is shown in Appendix A.

It is noted that the standing area for the unloading and loading of a service vehicle will occur within the parking aisle adjacent to the staff parking spaces. These parking spaces have been purposefully allocated as staff parking who will be aware that infrequent and short stay disruptions to parking space access may occur.

5.5 Emergency Vehicle Access

Emergency vehicle access to and from the site will continue to be provided via the existing Beach Street access driveway.

Ambulance vehicle parking can be provided either in the service vehicle area or the drop off / pick up area adjacent to the turning area.

Fire truck access will be via the same arrangements or via Battery Street with trucks parked in Battery Street and directing hoses over the wall from the fire fighting appliances if required.

5.6 Public Transport Accessibility

As detailed in Section 4 above, the Cliffbrook Campus is well service with convenient access to quality public transport services with bus stops located within 150 metres walking distance of the site's main access.

The various bus routes that can be utilised to access the Cliffbrook Campus will provide potential participants and staff with an array of options for accessing the site from a number of trip origins.

The future operation of the SE and CBD Light Rail will improve access from the CBD to the UNSW main campus and beyond.

5.7 Pedestrian and Bicycle Facilities

As noted in Section 4 of this report, the Cliffbrook Campus is well located with regard to existing cycle and pedestrian routes.

The proposed CCR Project will maintain these external connections.

Internally, the proposed CCR Project will provide formal on site bicycle parking facilities with 4 rails (8 spaces – see Figure 2.1) provided in the north western corner of the site. The bicycle parking spaces are conveniently accessible from the internal roadway and are located adjacent to the internal site pedestrian circulation footway between Cliffbrook House and the new building.

End of trip staff shower facilities are provided at the Lower Ground Level while showers are provided in each of the residential accommodation rooms.

While bicycle and pedestrian modes do not currently represent a significant proportion of the travel demand for residential participants of the AGSM program, the provision of formal on site bicycle parking and links to external bicycle / pedestrian paths may encourage a greater proportion of travel by bicycle and foot for the CCR Project.

5.8 Construction Traffic Impacts

A preliminary construction traffic management plan (CTMP) has been prepared as a separate document to this transport assessment and will accompany the SSD submission.

While a detailed CTMP will be prepared following project approval, the preliminary CTMP sets out the proposed duration of construction works and the estimated construction

traffic generation for the various construction stages along with the principles of construction traffic management for redevelopment of the Cliffbrook campus.

The preliminary CTMP has indicated that during the excavation phase, average peak construction traffic generation would be in the order of 5-10 movements per hour.

While the generation of 5-10 truck movements per hour is not considered to be an excessive amount of movements and could be accommodated by the surrounding road network, the cumulative implications of the CCR Project and other construction projects in the vicinity of the site are considered.

Appendix B provides a summary of Development Applications approved in the vicinity of the Cliffbrook Campus site since the start of 2016 based on Randwick City Council's DA tracker and DoPE's state significant tracker to potentially assist in addressing the 'cumulative impact of construction traffic' issue in the SEARs.

While it is not known in detail which of the approved DA's will be under construction simultaneously with the CCR project, the approved developments shown in Appendix B within the immediate vicinity of Cliffbrook are all relatively small scale and typical of general conditions on the road network.

On a more regional scale, the SE and CBD Light Rail Projects are major construction projects currently under way and are resulting in changed traffic conditions within the eastern suburbs generally.

The proposed construction vehicle routes for the CCR project as identified in the preliminary CTMP have attempt to utilise non-local road where ever possible and minimise interaction with the SE and CBD Light Rail construction works.

Notwithstanding the above, it is noted that the detailed CTMP to be prepared following approval of the CCR Project will need to review and potentially revise the construction vehicle routes following consultation with the relevant agencies associated with Light Rail project construction works.

5.9 Sustainable (Green) Travel Planning

UNSW's environmental policies are reflected in their *Environmental Management Plan* (2016-2018)¹.

The UNSW Environmental Management Plan outlines the University's sustainability objectives, targets, indicators, strategies and actions to guide environmental planning

¹ UNSW Environmental Management Plan 2016 – 2018.
(http://sustainability.unsw.edu.au/sites/all/files/news_file_attachments/UNSW_EMP_2016-18.pdf)

and management to 2018 and beyond and includes a range of transport objectives and measures.

In simple terms with regard to transport, the UNSW Environment Policy seeks to promote and encourage sustainable forms of travel and transport by staff and students.

The transport related strategies and programs set out in the UNSW Environmental Management Plan include:

- 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.

As part of the UNSW, the Cliffbrook Campus would be part and be expected to be bound by the guiding objectives, principles and measures set out in the UNSW Environmental Management Plan.

It is noted that the Cliffbrook campus has different accessibility levels to non-private vehicle modes of travel compared with the Kensington Campus. Furthermore, the operational characteristics of participants at Cliffbrook will be very different to student travel demands for the Kensington Campus.

However, UNSW will have a high degree of contact with course participants at the Cliffbrook Campus and thus will have the ability to influence travel behaviour and encourage the selection of non-private motor vehicle travel to and from the site.

It is noted that as part of the CCR Project, UNSW has committed to updating the current travel information relating to the Cliffbrook Campus on the UNSW "Getting to Uni" website (<http://www.facilities.unsw.edu.au/getting-uni>).

The update would include information about how to get to Cliffbrook using the following modes:

- bus services and connections to rail and ferry services;
- bicycle routes and available on site end of trip facilities;
- walking; and
- car pooling, car share and taxi services.

Information such as a Travel Access Guide (TAG) would also be provided to course participants with their enrolment information packs such that participants will have the opportunity to research and select their mode of travel.

6 Conclusions

This report has been prepared to consider the traffic and transport implications associated with the proposed redevelopment of the UNSW Cliffbrook Campus at Coogee.

The proposed redevelopment (CCR Project) seeks to relocate the UNSW School of Business's AGSM residential accommodation and teaching program from the UNSW Kensington campus to a new facility at Cliffbrook.

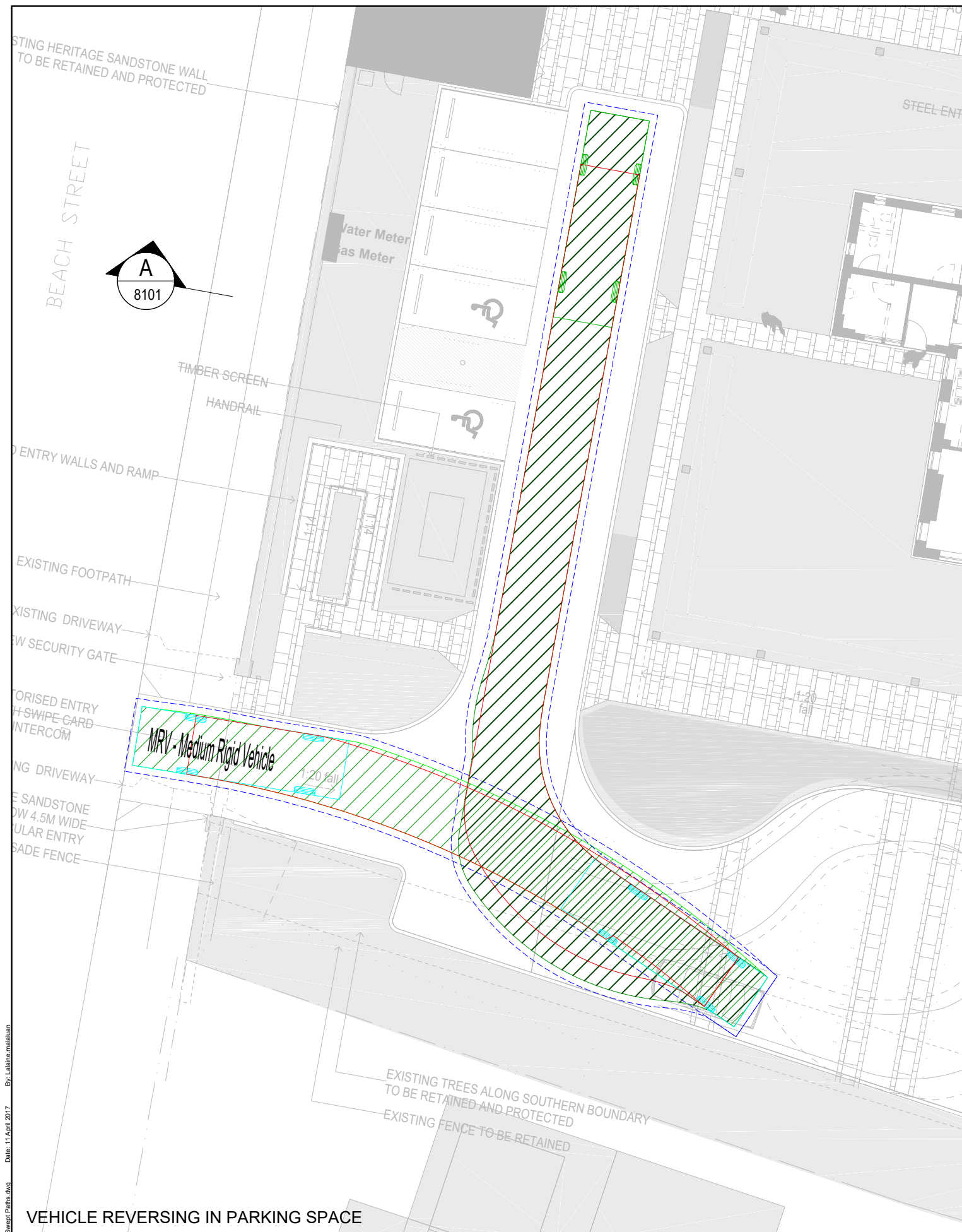
The assessment presented in this report has concluded that:

- The proposed on-site parking provision of 37 car spaces will adequately accommodate the peak parking demands of the proposed CCR Project on site and thus not adversely impact upon on street parking conditions.
- The traffic generation potential of the CCR Project will be similar if not less than the most recent previous use of the Cliffbrook Campus site, namely the UNSW Press facility.
- The traffic generation potential of the proposed CCR Project is relatively low and will not have a discernible impact on the existing operation of the surrounding road network. No additional modification or upgrades are required to the road network to accommodate the estimate traffic demands of the CCR Project.
- Notwithstanding the above, the proposed use of the Cliffbrook Campus will allow the University to highly manage and control both the traffic generation and parking demand associated with the site. The UNSW has the ability to provide overflow parking should in the unlikely event it be required on the UNSW Kensington Campus and utilise the UNSW shuttle bus service to transport people between Cliffbrook and Kensington campuses if required.

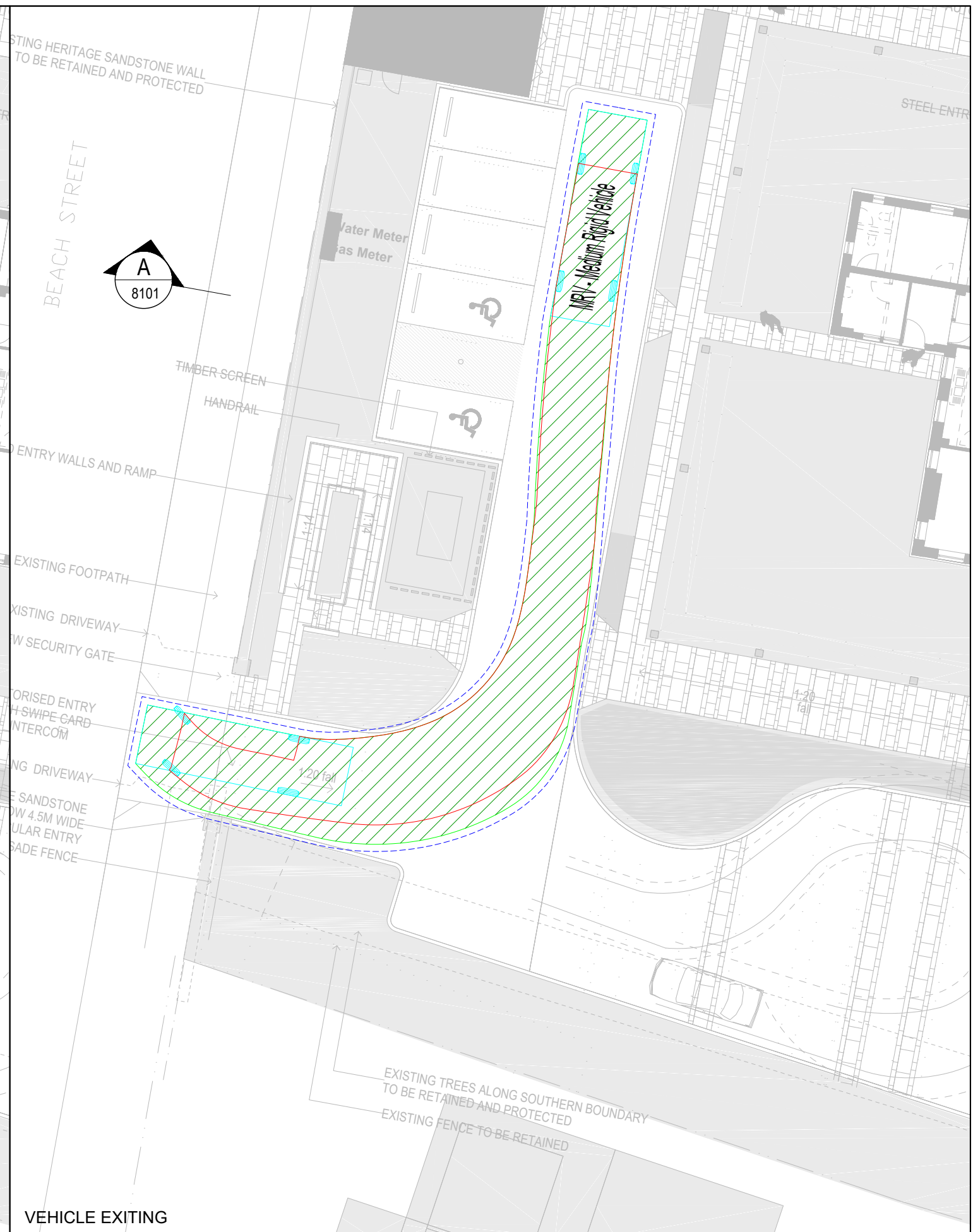
Overall, it is concluded that the proposed CCR Project will represent an appropriate redevelopment of the site with regard to traffic and transport.

Appendix A

Vehicle Turning (Swept) Path Analysis



VEHICLE REVERSING IN PARKING SPACE



VEHICLE EXITING

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	LM	JR	JR	11/04/17

The Transport Planning Partnership
 Suite 402, 22 Alchison Street
 St. Leonards NSW 2065
 Tel: 02 8437 7800
 Email: info@tpp.net.au

PROJECT
UNSW CLIFFBROOK

TITLE
AS2890.1 8.8m MRV - SWEEP PATH

DWG No.	FIGURE A		
DATE STAMP	11 APRIL 2017		
PROJECT No.	SCALE	REV.	
16002	1:200 (@A3)	A	

File name: 16002CAD01-170411-UNSW_Sweep Paths.dwg Date: 11 April 2017 By: Lalana Mahajan



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	LM	JR	JR	11/04/17

The Transport Planning Partnership

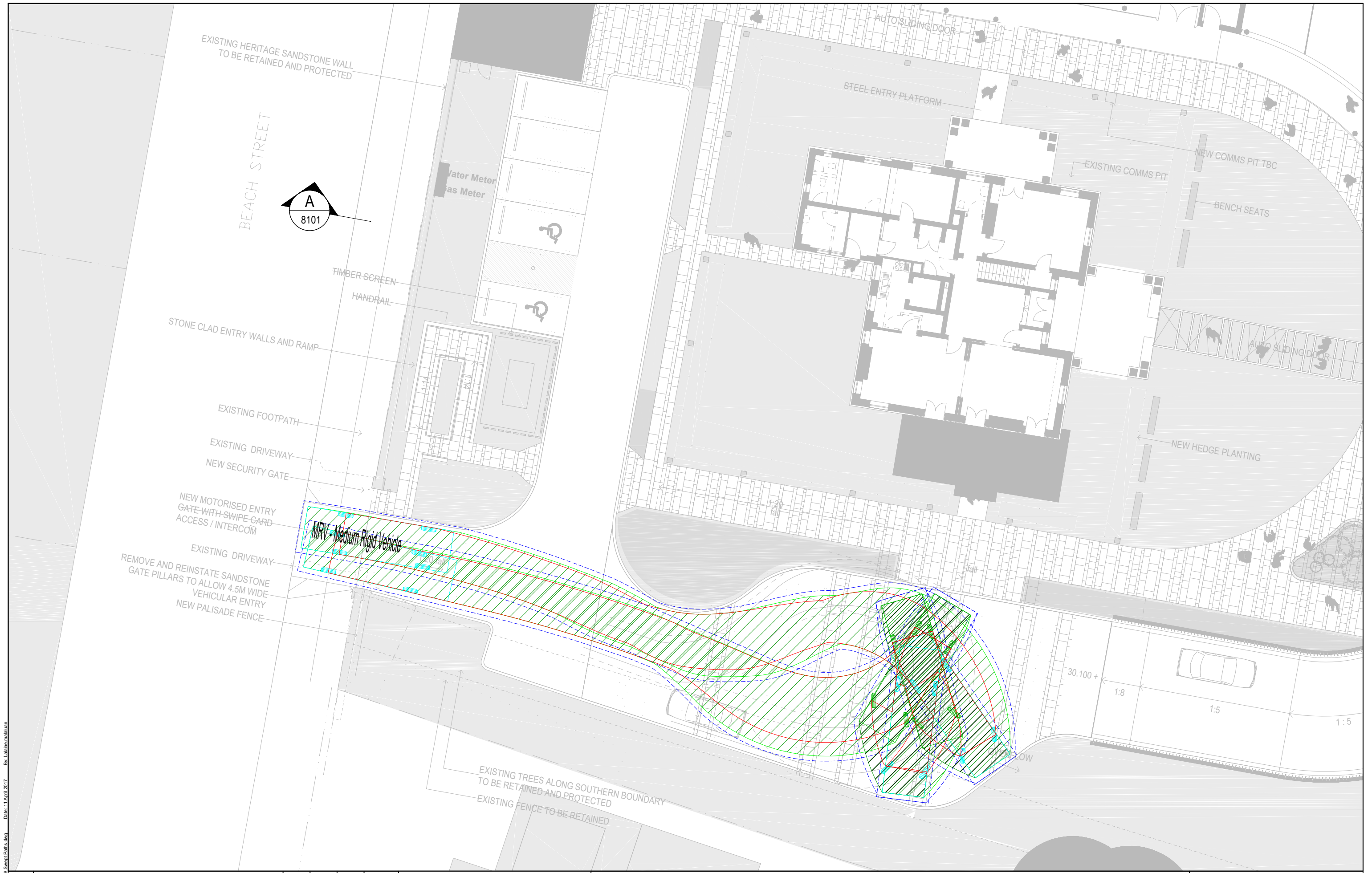
Suite 402, 22 Alchison Street
 St. Leonards NSW 2065
 Tel: 02 8437 7800
 Email: info@tpp.net.au

PROJECT: UNSW CLIFFBROOK

TITLE: AS2890.1 B99 CAR - SWEPT PATH

DWG No.	FIGURE B		
DATE STAMP	11 APRIL 2017		
PROJECT No.	SCALE	REV.	
16002	1:200 (@A3)	A	

File name: 16002CAD01-170411-UNSW_Swept Paths.dwg Date: 11 April 2017 By: Lalana Mahajan



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	LM	JR	JR	11/04/17

The Transport Planning Partnership

Suite 402, 22 Alchison Street
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PROJECT: UNSW CLIFFBROOK

TITLE: AS2890.1 8.8m MRV - SWEPT PATH

DWG No.	FIGURE C		
DATE STAMP	11 APRIL 2017		
PROJECT No.	SCALE	REV.	
16002	1:200 (@A3)	A	

File name: 16002CAD01-170411-UNSW_Swept Paths.dwg Date: 11 April 2017 By: Lalaine Mahajan

Appendix B

Approved Construction Projects in Vicinity of Cliffbrook

Source: URBIS (2/5/17)

Significant Development Applications – Approved from start 2016 to April 201

Item No.	Address	Description of Development
DA/11/2015	293-295 Alison Road, Coogee	Demolition of existing buildings, and construction of two residential flat buildings and basement car parking.
DA-269/2015	31 Beach Street, Clovelly	Demolition of existing structures and construction of a pair of part 2 and part 3 storey semi-detached dwellings.
DA-565/2015	223-225 Coogee Bay Road, Coogee	Demolition of all structures on site and construction of two storey mixed use development comprising of commercial/retail floor space at ground floor level and 8 studio dwellings at first floor and mezzanine floor levels, associated site works and landscape works.
DA-194/2015	20 Waltham Street, Coogee	Demolition of all structures on site and construction of a new four storey residential flat building comprising of 6 dwellings and basement parking for 7 vehicles, associated site and landscaped works.
DA-266/2015	131 Mount Street, Coogee	Demolition of the existing dwelling house and construction of a four storey residential flat building.
DA-491/2014	81 Bream Street COOGEE	Demolition of the existing building and construction of a part 3 and part 4 storey residential flat building containing 6x2 bedroom units and basement carpark for 6 vehicles.

Item No.	Address	Description of Development
DA-725/2012	32-34 Carr Street COOGEE	Demolition of existing dwellings, construction of a part 3/part 4 storey multi unit development with 11 units, basement car parking for 20 cars
DA-189/2016	5 Stark Street COOGEE	Demolition of the existing structures, construction of a part 3/part 4 storey residential flat building containing 11 dwellings, semi-basement car parking for 20 vehicles
DA-88/2014	137 Carrington Road COOGEE	Demolish existing structures and construct a part four/part two storey multi-unit development in two building forms.
DA-31/2016	284 Clovelly Road COOGEE	Demolition of existing structures, construction of a part 3/part 4 storey boarding house with 28 boarding rooms, manager's room, basement parking for 6 cars, 5 motorcycles and 5 bicycles
DA-936/2015	54B Bream Street COOGEE	Demolition of existing Eastern Suburbs Tennis Club building and construction of a 4 storey building containing a gymnasium, tennis club and child care centre for 55 children.
DA-695/2015	325-327 Arden Street, Coogee	Demolition of the existing structures, consolidation of lots, construction of a 4 storey residential flat building in two building forms containing 18 dwellings, basement car parking for 29 vehicles
DA-551/2015	20 Moore Street COOGEE	Demolition of all structures on site and construction of a two part three part residential flat building comprising 3 x 2 bedroom and 1 x 3 bedroom dwellings and basement parking for 7 vehicles
DA-927/2016	300 Clovelly Road CLOVELLY NSW 2031	Demolition of existing structures, construction of 3 storey residential flat building and semi-basement level parking comprising of 8 dwellings

Item No.	Address	Description of Development
DA-487/2016	45-51W Burnie Street CLOVELLY	Construction of a 4 level building including childcare centre for 80 children and 16 staff, 2 bedroom dwelling on top level, semi-basement level with car parking
SSD- 5002-2001 Royal Randwick Hotel Development	Alison Road, Randwick	The construction of a 170 room, 8 level hotel with ancillary restaurant, bar, restaurant, conference facilities and basement parking.
SSD 6180 Stage 2 Development of the Comprehensive Cancer Care and Blood Disorder Centre	61 High Street, Randwick	demolition of the Radiation and Oncology Building; - construction of an 11 level building (including two basement levels and one level of plant); - modifications to the staff car park, including provision of a vehicle drop off area; and - courtyards and landscaping.
MP 10_0096 Sydney Childrens Hospital Extension	High Street and Avoca Street, Randwick	Construction of a five storey hospital building for the Sydney Children's Hospital at Randwick Health Campus to support and reconfigure the existing services and facilities. The proposal comprises approximately 4,660m ² of gross floor area, connections to existing Sydney Children's Hospital building, relocation of existing car parking and associated landscaping.
MP10_0098	Alison Road	Construction of 600 new stables in 6 two storey barns.
MP09_0075 UNSW Medical Sciences Building	Corner High Street and Botany Street	demolition of an existing single storey administration building (B27) and a dangerous goods store (D27), refurbishment of the existing Wallace Wurth Building, an additional level above the west wing of the building and construction of new seven storey extension to the north and south of the existing east of the building

Item No.	Address	Description of Development
MP 09_0163 Energy Technologies Building, UNSW	UNSW	Construction of a part 5/part 6 storey building comprising approximately 15,000m ² of GFA including laboratories, plant, teaching and learning facilities and office accommodation to support clean energy research.
08_0153 Neuroscience Research Precinct	Barker Street	construction of a new 9 storey research building, including car park, landscaping and associated works.

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