JMT Consulting

RIDBC Centre of Excellence

Transport Impact Assessment

Prepared for:

Royal Institute for Deaf and Blind Children

11 November 2020

PROJECT INFORMATION

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Client:	Royal Institute for Deaf and Blind Children
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1 Introduction

1.1 Background

JMT Consulting has prepared this report on behalf of the Royal Institute for Deaf and Blind Children (RIDBC) in support of a State Significant Development Application (SSDA) to be submitted to the NSW Department of Planning, Industry and Environment (DPIE). The DA relates to the proposed RIDBC Centre for Excellence at Macquarie University's (MQU) North Ryde campus.

The Centre for Excellence will serve a diverse range of employees, students, users and visitors who will visit the centre for diagnostic services, therapy and rehabilitation, research, education, and co-related services. The centre will provide an intricate design response to the needs of the users, in particular children and adults with vision and hearing loss and other cognitive impairments.

1.2 RIDBC overview

The RIDBC is Australia's largest non-government not-for-profit provider of therapy, education and cochlear implant services for children and adults with vision or hearing loss. Established in 1861 as a school with residential facilities, the RIDBC moved to North Rocks in 1961, where the main campus is still located. The RIDBC Mission is to provide quality and innovative services, to achieve the best outcomes for current and future generations of Australians with vision and/or hearing loss.

RIDBC provides a broad range of specialist services which include:

- Early Intervention;
- Allied Health & Therapy;
- Cochlear Implant Program;
- Schools (pre-school, primary to secondary programs);
- Research & Professional Education;
- School support; and
- Paediatric Audiology

The services provided are delivered by a broad group of professionals including: teachers, speech pathologists, occupational therapists, audiologists, orthoptists, psychologists, social workers, technology consultants, physiotherapists, Ear, Nose and Throat (ENT) surgeons and more.

As part of the RIDBC's 2016-2020 Strategic Intent it will relocate its school and clinical services activities from North Rocks to a purpose-built centre at Macquarie University (MQU). The new Centre of Excellence will further strengthen the relationship between MQU and the RIDBC, benefit the Australian

Hearing Hub, and reinforce the cluster of research, audiology, and healthcare which already exists on the campus, which also includes the Cochlear Global headquarters.

1.3 Secretary's Environmental Assessment Requirements (SEARs)

In accordance with Schedule 1 (clause 15(1)) of *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP), the development qualifies as State Significant Development (SSD) as it is a *development for the purpose of a new school (regardless of the capital investment value)*.

The Department of Planning, Industry and Environment (DPIE) issued a list of the Secretary's Environmental Assessment Requirements (SEARs) which inform the Environmental Impact Statement (EIS). The SEARs for the development were issued on 6 May 2020 setting out the documentary and reporting requirements for the preparation of the EIS / DA. Table 1 lists the SEARs that are specific to transport and accessibility.

Table 1 Response to SEARs

SEARs – Transport and Accessibility	Section Discussed
The EIS must include a transport and accessibility impact assessment, which details, but not limited to the following	
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.	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 of the existing and similar schools within the local area.	5.1
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.	3.5, 5.6
Measures to integrate the development with the existing/future public transport network.	5.6, 5.7
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).	5.4

SEARs – Transport and Accessibility	Section Discussed
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, additional school bus routes along bus capable roads (i.e. minimum 3.5 m wide travel lanes), additional bus stops or bus bays.	5.4, 5.6
In consultation with TfNSW, provide details of travel demand management measures to minimise the impact on general traffic and bus operations at the intersection of Culloden Road and Waterloo Road, including details of a location-specific sustainable travel plan (Green Travel Plan and specific Workplace travel plan) which incorporates a review of the University Travel Plan required in the Macquarie University Concept Plan 06_0016 and includes the provision of facilities to increase the non-car mode share for travel to and from the site	6
The proposed walking and cycling access arrangements and connections to public transport services	5.7
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	5.5
Proposed bicycle parking provision, including end of trip facilities, in secure, convenient, accessible areas close to main entries incorporating lighting and passive surveillance.	5.7
Proposed number of on-site car parking spaces for teaching staff and visitors and corresponding compliance with existing parking codes and justification for the level of car parking provided on-site.	5.5
An assessment of the cumulative on-street parking impacts of cars and bus pick-up/drop-off, staff parking and any other parking demands associated with the development.	5.5
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	5.9
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).	5.8

SEARs – Transport and Accessibility	Section Discussed
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.	7

1.4 Consultation

Following the issue of the SEARs consultation was undertaken via email with Transport for NSW (TfNSW) in relation to the project. TfNSW advised that they had no comments to make prior to the submission of the SSDA.

A meeting was held with City of Ryde Council traffic engineering staff on Tuesday 8 September 2020 to discuss the project. Comments received during this meeting have been incorporated as part of the overall assessment, including:

- Vehicle access arrangements via Culloden Road including consideration of no right turns into the site
- Minimising the loss of on-street parking along Culloden Road associated with the porte-cochere driveways
- Consideration of reduced driveway widths based on vehicle swept path analysis

2 Transport Planning Context

This section of the report outlines the framework which guides development and transport planning on the MQU campus, including the RIDBC development which is the subject of this application.

2.1 Macquarie University Concept Plan

The Macquarie University Concept Plan along with the Macquarie University Transport Management and Accessibility Plan (TMAP) provide the framework under which development on campus is to take place. They provide for a structured and staged growth of the University Campus.

In relation to transport and parking, the following conditions are set out:

Car Parking

- Car parking for non-academic uses shall not exceed a maximum rate of 1 space per 80m^2 of gross floor area
- The maximum car parking across the campus is 10,800 spaces comprising 5,000 commercial car parking spaces and 5,800 parking spaces for other uses
- New car parking for commercial buildings shall be located within basements (which may be above ground on sloping sites) and generally contained within the footprint of the building above. The design of any above ground car parking shall include architectural treatment of the elevations to reduce their visual impact and dominance.

Transport and Pedestrian Management

- A 40% non-car mode share target shall be adopted for the commercial uses on the site
- A 62% non-car mode share target shall be adopted for the academic uses on the site
- A travel survey of the academic and commercial uses shall be undertaken every five years and identify the mode share achieved for each transport type.

2.2 Relevant Policies and Guidelines

The following documents have been considered in the development of this transport strategy for the Sydney Modern project:

- RMS Guide to Traffic Generating Developments

  Used to inform the traffic assessment undertaken for the project.

- EIS Guidelines – Road and Related Facilities

  Used to inform the preparation of the transport strategy, in particular the assessment of transport impacts.

- NSW Planning Guidelines for Walking and Cycling & Cycling Aspects of Austroads Guides

  This document has been used to inform the development of the walking and cycling measures proposed in this strategy.

- Guide to Traffic Management – Part 12: Traffic Impacts of Developments (AUSTROADS)

  This guide has been referenced for the appropriate methodology to be used for traffic impact assessment of the development.

- Ryde Draft Traffic Impact Assessment Guidelines

  This guide has been referenced for the appropriate methodology to be used for traffic impact assessment of the development.

- Healthy Urban Development Checklist 2010

  This guide has been referenced to inform the active transport assessment for the project

- Planning Agreement between MQU and City of Ryde Council

  This document has been referenced to inform the traffic assessment particularly in relation to the future traffic volumes that would trigger the upgrade the Waterloo Road / Culloden Road / Gymnasium Road intersection.

- Sydney's Walking Future

  This document has informed the development of the enhanced walking connections proposed as part of the project.

- Sydney's Cycling Future

  This document has been referenced to consider the future cycling connections in the vicinity of the site as well as bicycle parking opportunities

- Sydney's Bus Future

  This document has been referenced to review the planned rapid, suburban and local bus routes in the vicinity of site to inform the overall public transport assessment. This document identifies a number of 'rapid' bus routes in close proximity to the site as shown in Figure 1 *below.*

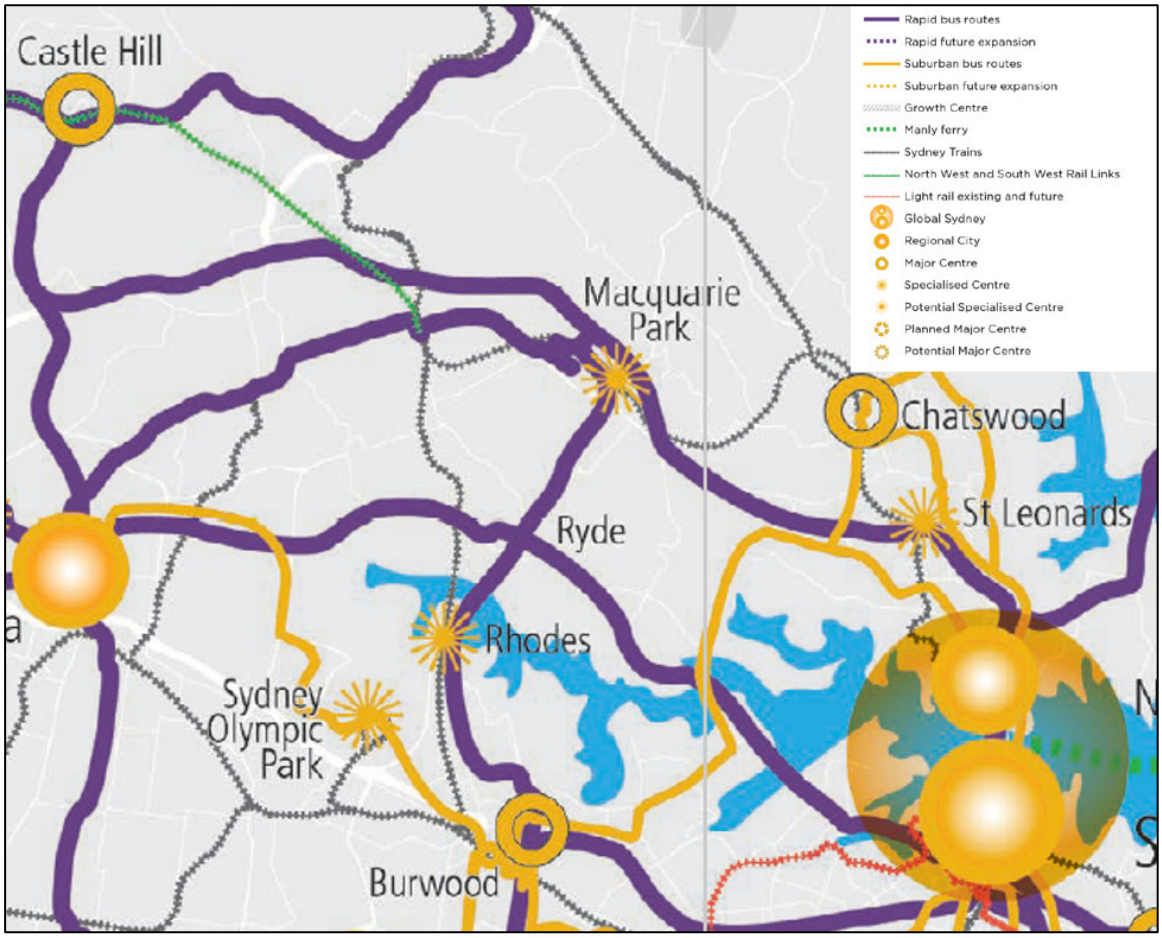


Figure 1 Sydney's bus future – bus routes in vicinity of site

2.3 State Environmental Planning Policy (Infrastructure) 2007

With regards to the State Environmental Planning Policy (Infrastructure) 2007 the following is noted:

- The site does not have a frontage to a classified road, therefore not triggering the assessment requirements of clause 101 of the SEPP.
- The site does not adjoin a road with an annual average daily traffic volume of more than 20,000 vehicles, therefore not triggering the assessment requirements of clause 102 of the SEPP; and
- The proposal is not expected to impact the operation of the local road network and is therefore not considered to be 'traffic generating development' as defined under clause 104 of the SEPP (Infrastructure).

3 Existing Conditions

3.1 Site location

The proposed development site sits within the western portion of the MQU campus, near the junction of Culloden Road and Gymnasium Road. MQU is located approximately 15km north-west of Sydney CBD. The site sits partly within Lot 191 DP 1157041 and partly within Lot 8 DP 1047085 within the campus (Precinct B). The site within the context of the Macquarie University Campus is shown in Figure 2, with the site boundary shown in Figure 3

Figure 2 MQU campus with the site circled

Figure 3 Development site boundary

3.2 Travel patterns

Travel patterns for existing staff and students of Macquarie University have been analysed to inform how future users of the RIDBC Centre of Excellence may travel to the site. The results of travel surveys conducted by Macquarie University between 2010 and 2017 have been analysed and are shown in Figure 4. The trends indicate:

- The level of public transport usage (train and bus) has increased significantly from 13% in 2010 to 52% in 2017. This significantly exceeds the 40% non-car mode share target as originally established in the Macquarie University Concept Plan.
- At the same time, private vehicle travel to the University has decreased significantly from 51% in 2010 to 24% in 2017.

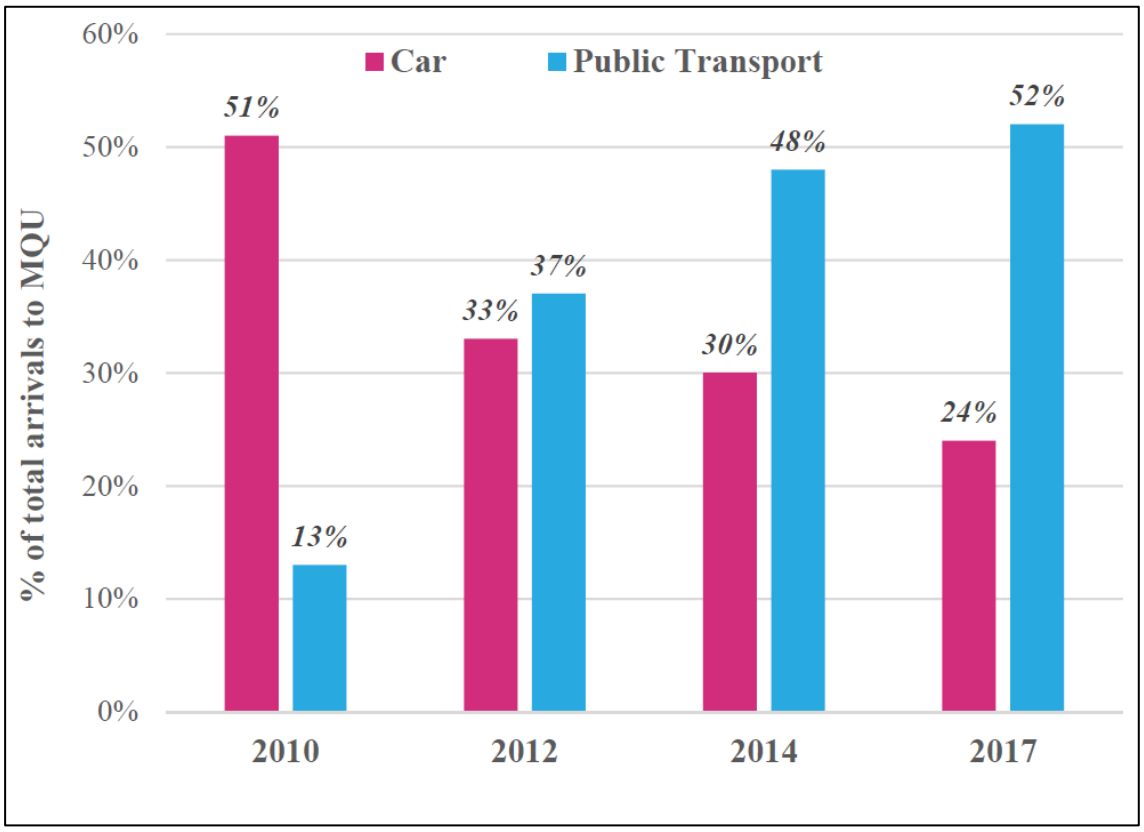


Figure 4 Travel trends to Macquarie University

3.3 Pedestrian Network

The pedestrian network in the vicinity of the proposed development is generally of a high quality, with wide paths and regular crossing points along Gymnasium Road in particular which provides a direct connection through to the eastern end of the campus which ultimately links up with Macquarie University Metro Station.

3.4 Cycling network

A summary of the existing cycle network surrounding the site is shown in Figure 5 and indicates a number of dedicated bicycle paths in the vicinity of the future RIDBC site. This includes shared off-road paths along both Culloden Road and Talavera Road which provide connectivity to the broader Macquarie Park business district. Additionally there are a number of cycle routes within the MQU campus which are generally shared with pedestrians.

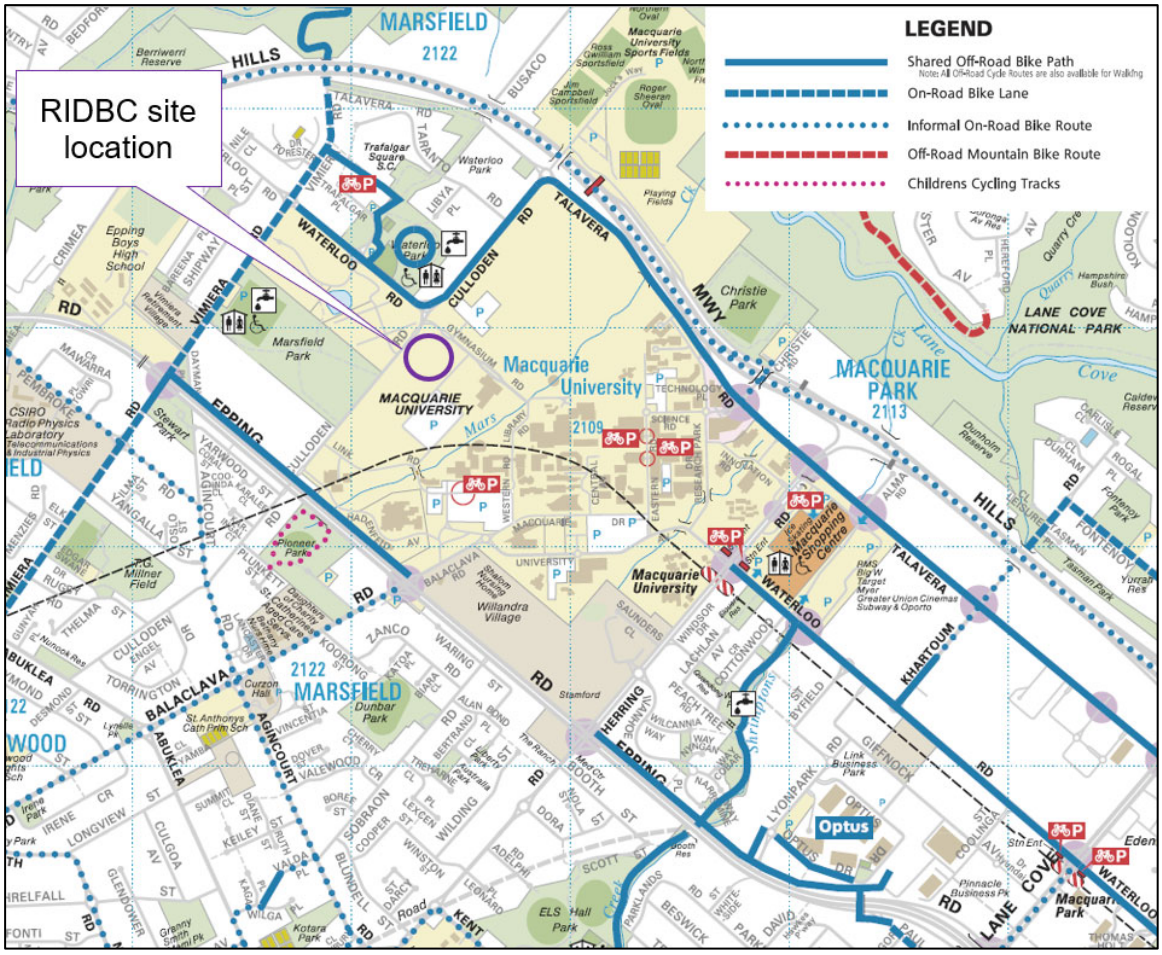


Figure 5 Existing cycling routes

Map source: City of Ryde Council

3.5 Public transport network

3.5.1 Metro

Macquarie University is unique in that it is the only metropolitan university in Sydney with a dedicated railway or metro station. Macquarie University metro station opened in May 2019 and is located approximately 1.3km (approximately 15 minute walk) from the proposed RIDBC centre of excellence. Metro trains run frequently throughout the day at between six to ten minute intervals – offering a high level of public transport accessibility for users. This frequency is likely to increase to every four minutes following the completion of the wider Sydney Metro network. The Macquarie University metro station in the context of the broader Sydney Metro network is presented in Figure 6.

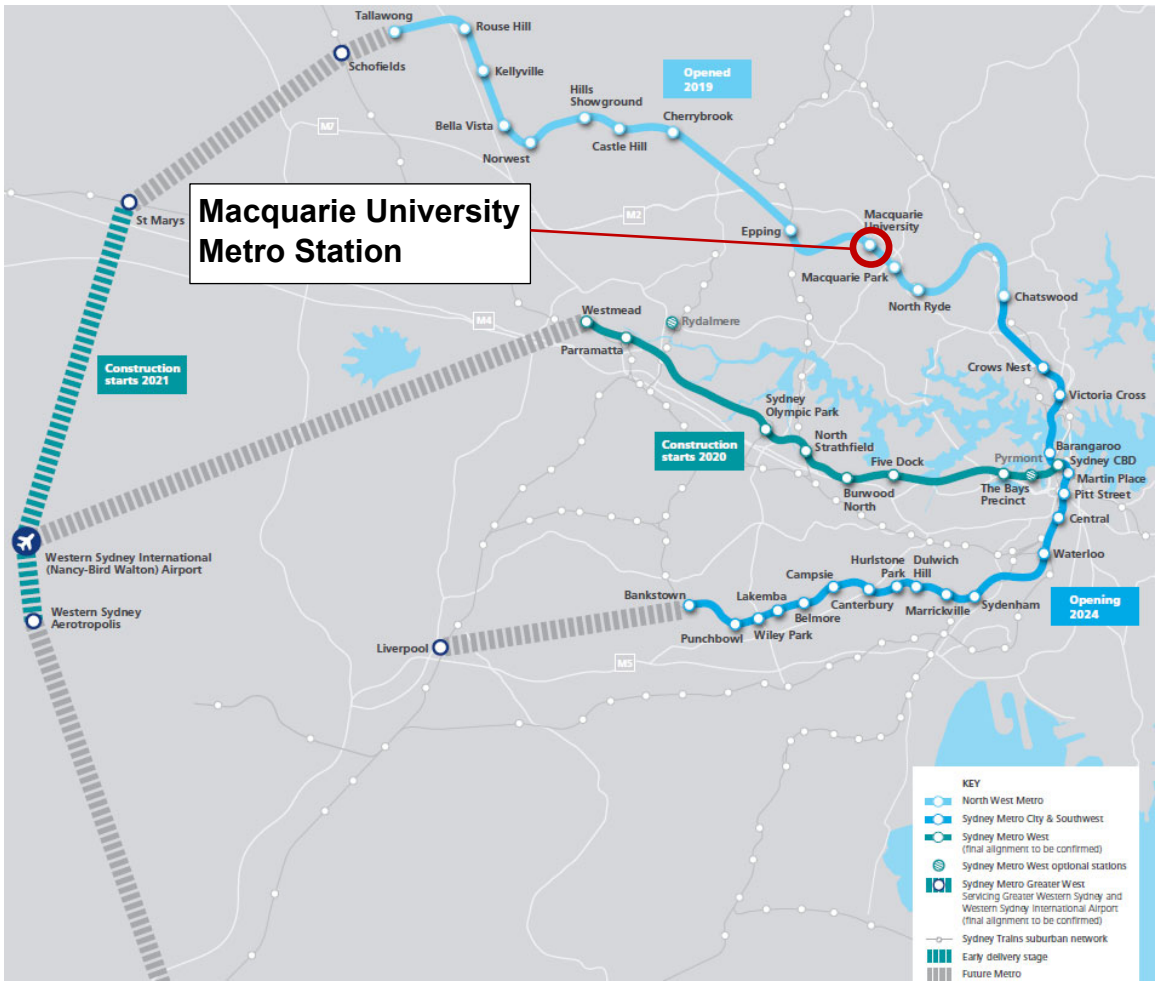


Figure 6 Sydney Metro network

Source: Transport for NSW

3.5.2 Buses

The RIDBC facility will be serviced by bus routes along Culloden Road immediately adjacent to the site as well as a number of other routes travelling through the MQU campus. This is illustrated in Figure 7 below. These bus routes provide connections to a number of different centres across Sydney including the Sydney CBD, Parramatta, Epping and North Sydney. Buses run frequently through the day and evening and will provide an efficient mode of access for many staff and visitors to the future RIDBC site.

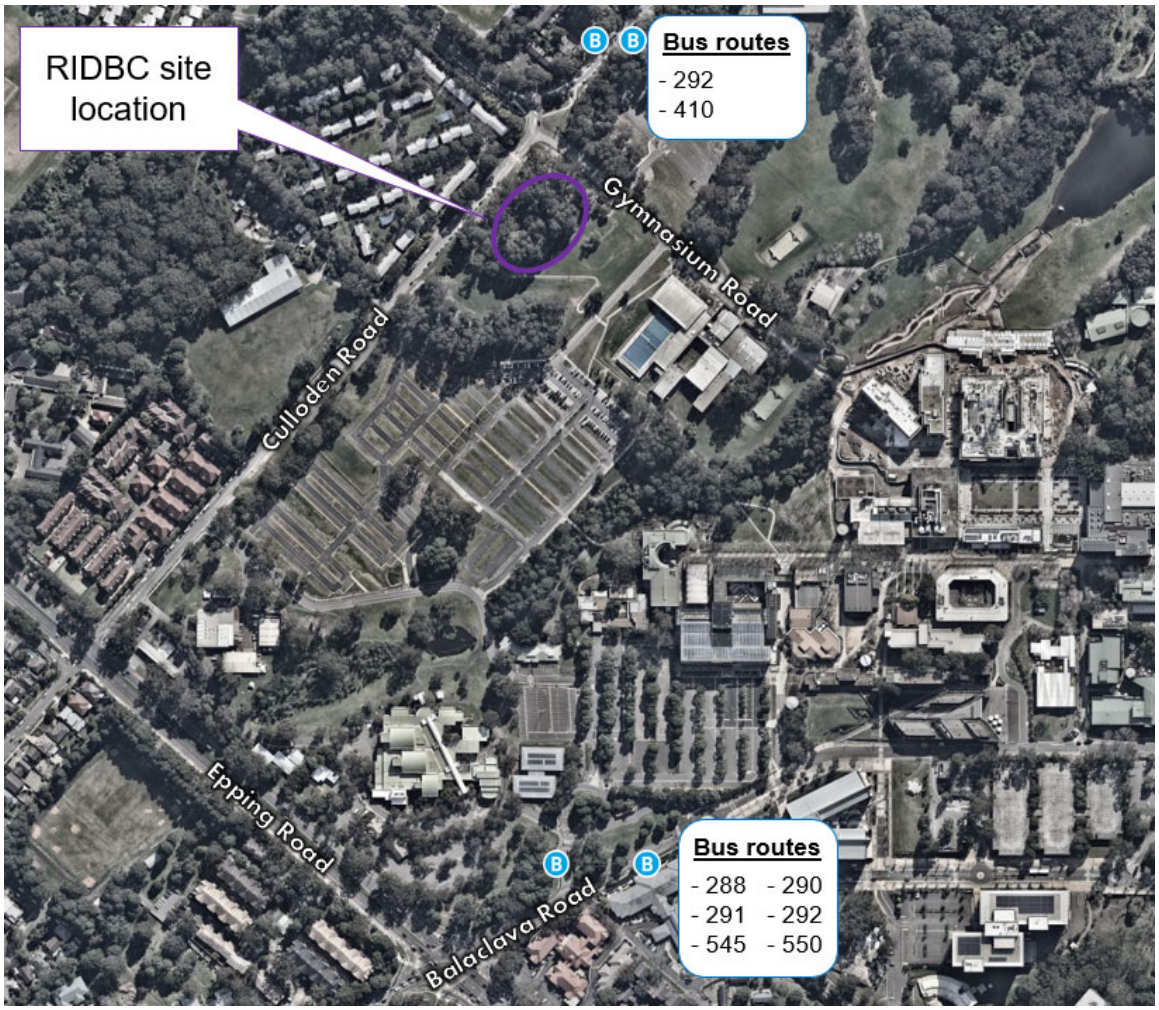


Figure 7 Bus network in vicinity of RIDBC site

3.6 Car parking

There are currently approximately 4,800 on-site parking spaces across the MQU campus in a mixture of multi-storey and at-grade car parks available to staff, student and visitors. This includes a temporary car park adjacent to the RIDBC site which contains approximately 1,360 cars as well as a car park to the north of Gymnasium Road known as the 'North 3' car park which contains a further 300 spaces. These car parks in the context of the future RIDBC site are shown in Figure 8 below.

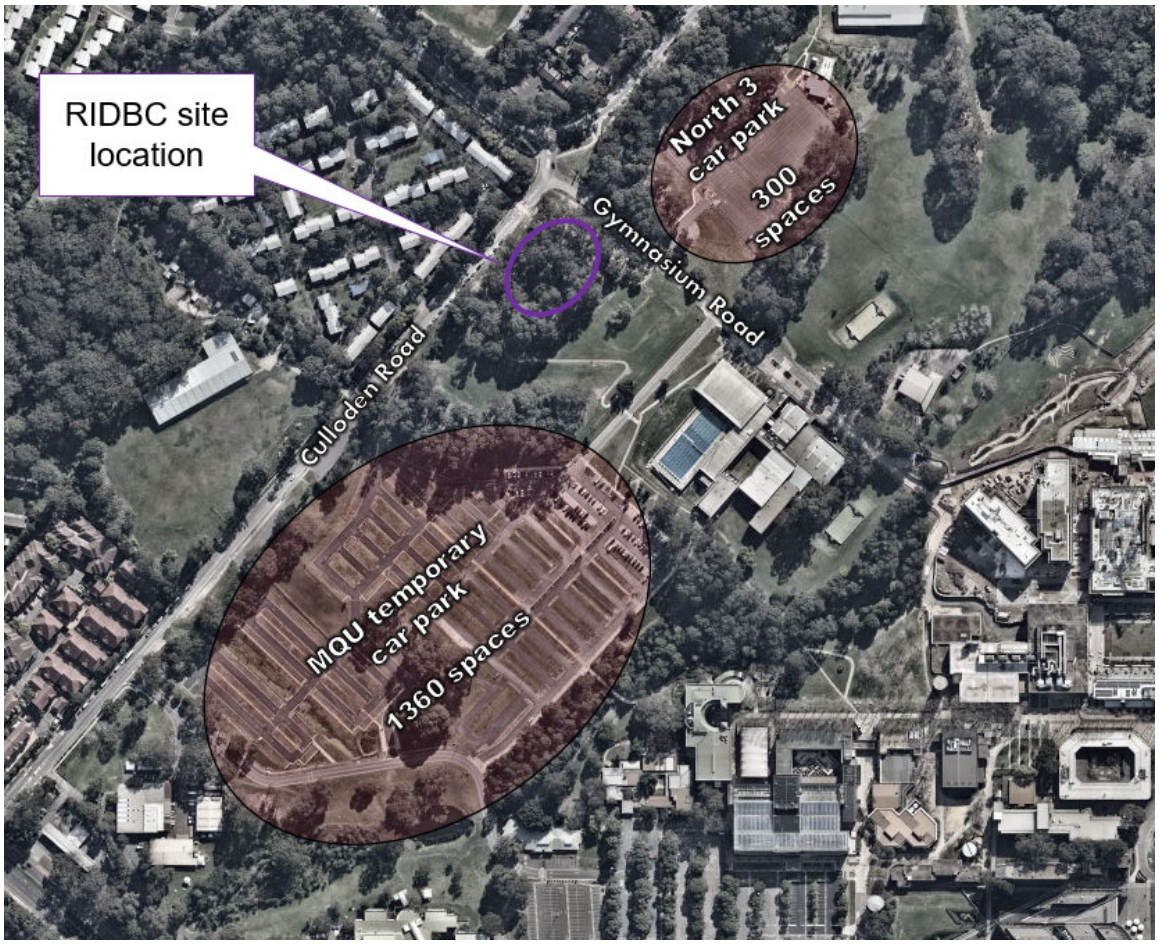


Figure 8 Car parking within MQU

In addition to these off-street parking spaces, unrestricted on-street parking is available on both sides of Culloden Road immediately adjacent to the future RIDBC site.

3.7 Road network

The future RIDBC site is surrounded by a number of major roads (refer to Figure 9). These roads, including the administrative classification, are:

- Epping Road (State road)
- M2 Motorway (State road)
- Herring Road (Regional road between Epping Road and Talavera Road)
- Talavera Road (Regional road between Lane Cove Road and Culloden Road)
- Waterloo Road (Local road)
- Balaclava Road (Local road)
- Culloden Road (Local road)

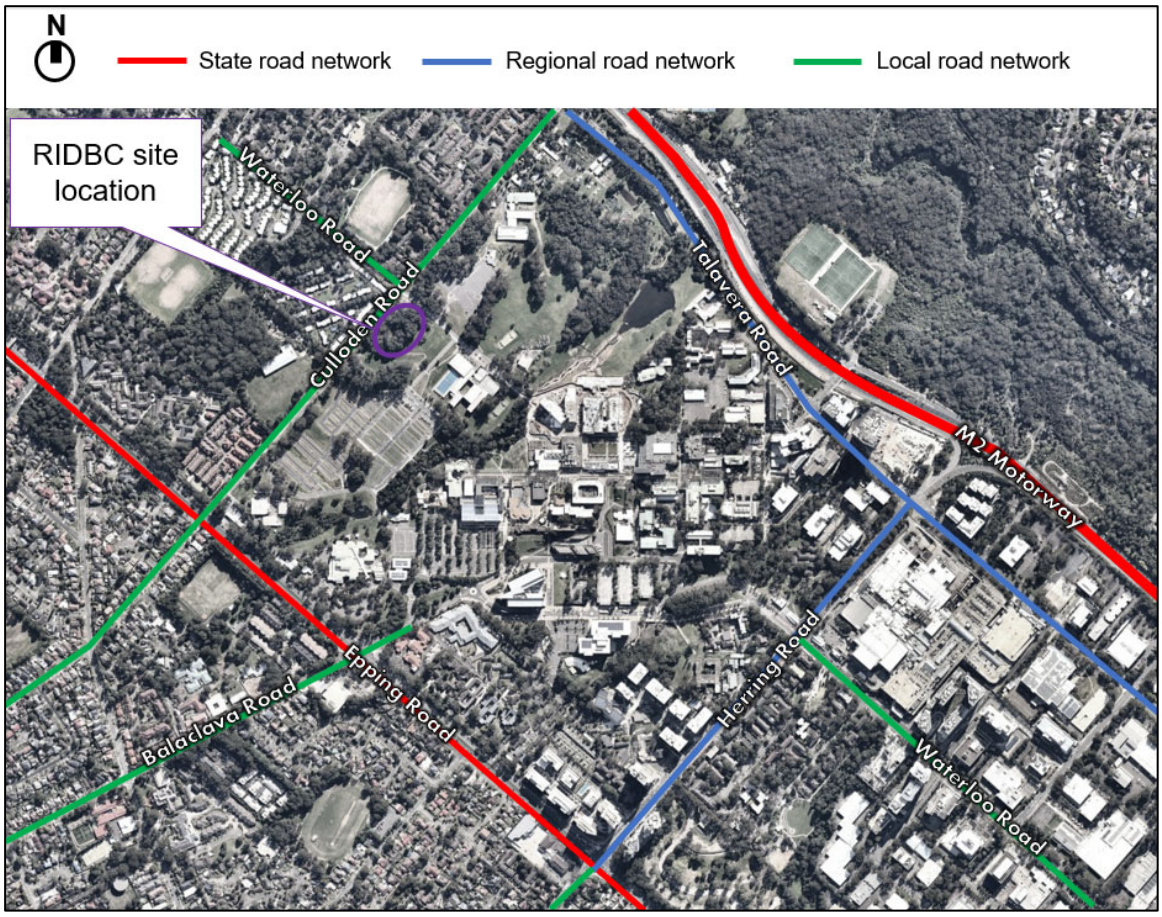


Figure 9 Surrounding road network

The closest site access point to the future RIDBC building is the Waterloo Road / Culloden Road / Gymnasium Road intersection as shown in Figure 10 below. This consists of two off-sets junctions including a roundabout at Waterloo Road and a priority control junction at Gymnasium Road which provides access into MQU.

Figure 10 Waterloo Road / Culloden Road / Gymnasium Road intersection

3.8 Traffic volumes

Macquarie University recently undertook traffic counts on Gymnasium Road during normal teaching periods (prior to COVID-19). The survey was located on Gymnasium Road immediately east of Culloden Road. The traffic survey indicated two way hourly traffic volumes on Gymnasium Road typically peak at between 400-450 vehicles between 5pm and 6pm in the evening. The profile of vehicle activity over an average weekday is illustrated in Figure 11 below. On an average weekday approximately 4,900 vehicles were recorded at this location.

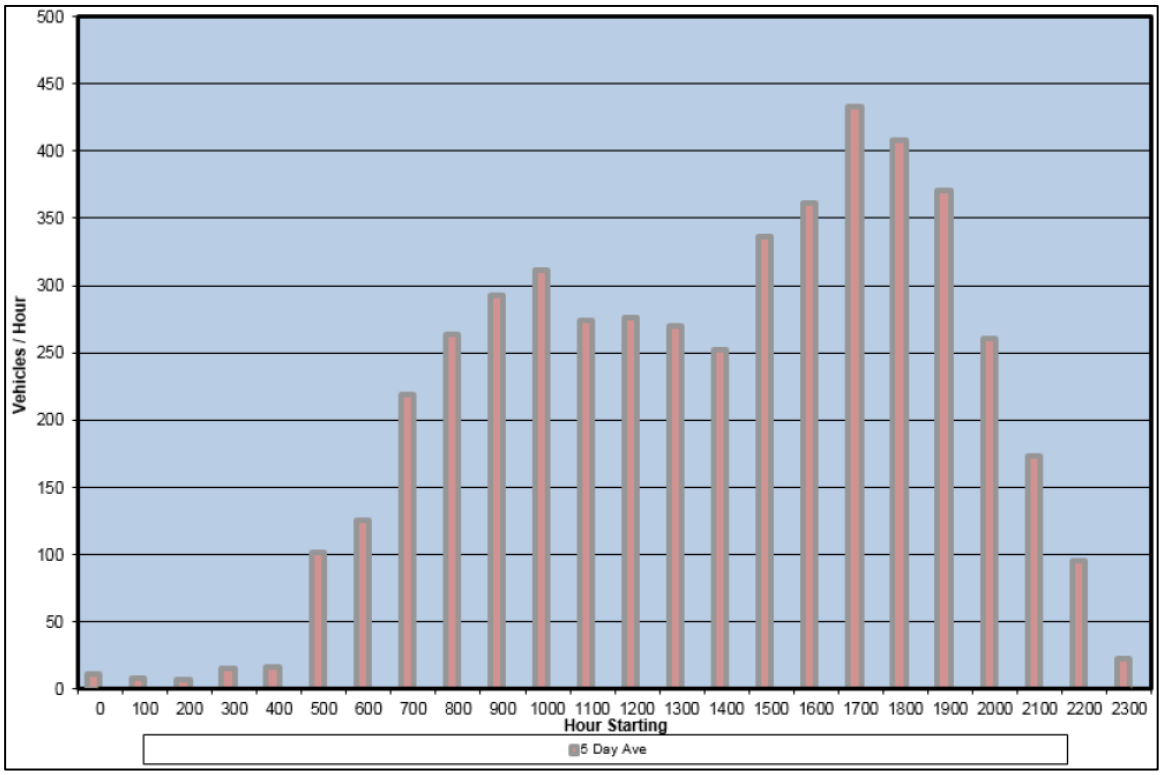


Figure 11 Traffic flows – Gymnasium Road

4 Proposed Development

The proposed development generally seeks consent for the construction and operation of the new purpose-built 1-3 storey (including basement level) Centre of Excellence across two interconnected pavilions at the corner of Culloden and Gymnasium Road within the MQU Campus.

The Centre of Excellence will serve a diverse range of employees, students, users and visitors who will visit the centre for diagnostic services, therapy and rehabilitation, research, education, and co-related services. The centre will provide an intricate design response to the needs of the users, in particular children and adults with vision and hearing loss and other cognitive impairments.

The development includes:

- Pre-School and School accommodation for up to 80 pre-school children and up to 120 school children in a single storey pavilion addressing Culloden Road; and
- The main RIDBC building (accommodating approximately 260 staff) of up to three storeys, including basement level:
    - Public areas for staff and visitors;
    - RIDBC Renwick Centre classrooms (doubling also as conferencing facilities) and a business hub;
    - Medical Facility for various clinical services; and
    - RIDBC Renwick Centre resource centre; use between RIDBC Renwick Centre staff, clinicians and pre-school / primary school teaching staff.

5 Transport Assessment

5.1 Travel demand

The RIDBC Centre of Excellence facility may accommodate approximately 300 staff on a typical day, inclusive of both the administration building and school / pre-school. The forecast mode share and travel demand has been developed based on the maximum car parking rate of 1 space / 80m^2 and the site's public transport accessibility, as well as current travel patterns to MQU as previously described in Section 3.2 of this document. In line with the targets set out in Modification 1 to the Concept Plan (MP 06_0016 MOD 1) a non-car mode share of 62% for staff within the RIDBC building has been adopted. The forecast number of staff travelling to site over the day and peak period is summarised in Table 2 below. The estimated future daily trips is based on surveys undertaken by Transport for NSW which indicates that trips generated during the AM peak hour account for approximately 20% of the daily number of person trips.

Table 2 Total staff trips

Mode	Mode Share	Number of staff travelling to the site		
		AM peak period* (6.30am – 9.30am)	AM peak hour** (8am – 9am)	Daily
Metro	35%	105	53	263
Bus	15%	45	23	113
Car Driver	38%	114	57	285
Walked only	5%	15	8	38
Bicycle	2%	6	3	15
Car Passenger	5%	15	8	38
Total	**100%**	**300**	**150**	**750**

* Figures are consistent with PM peak period travel demand (4pm – 7pm)

** Figures are consistent with PM peak hour travel demand (5pm – 6pm)

5.2 Site access

Vehicle access to the RIDBC site will be provided via the following means:

- For school and pre-school drop off and pick up, via a new porte-cochere accessed directly from Culloden Road. Two driveways, angled at 90 degrees to the kerb, would be provided on Culloden Road which facilitates the one-way flow of traffic through the porte-cochere. Traffic movements from all directions into and out of this porte-cochere are proposed via Culloden Road.
- For access to the site basement parking area and loading dock, via Gymnasium Road within MQU and West Precinct Road.
- For access to the administration building, via a new porte-cochere access directly from Gymnasium Road. This area would act as a drop off location as well as facilitate testing of children as they remain within their car.

These access arrangements are illustrated in Figure 12 below.

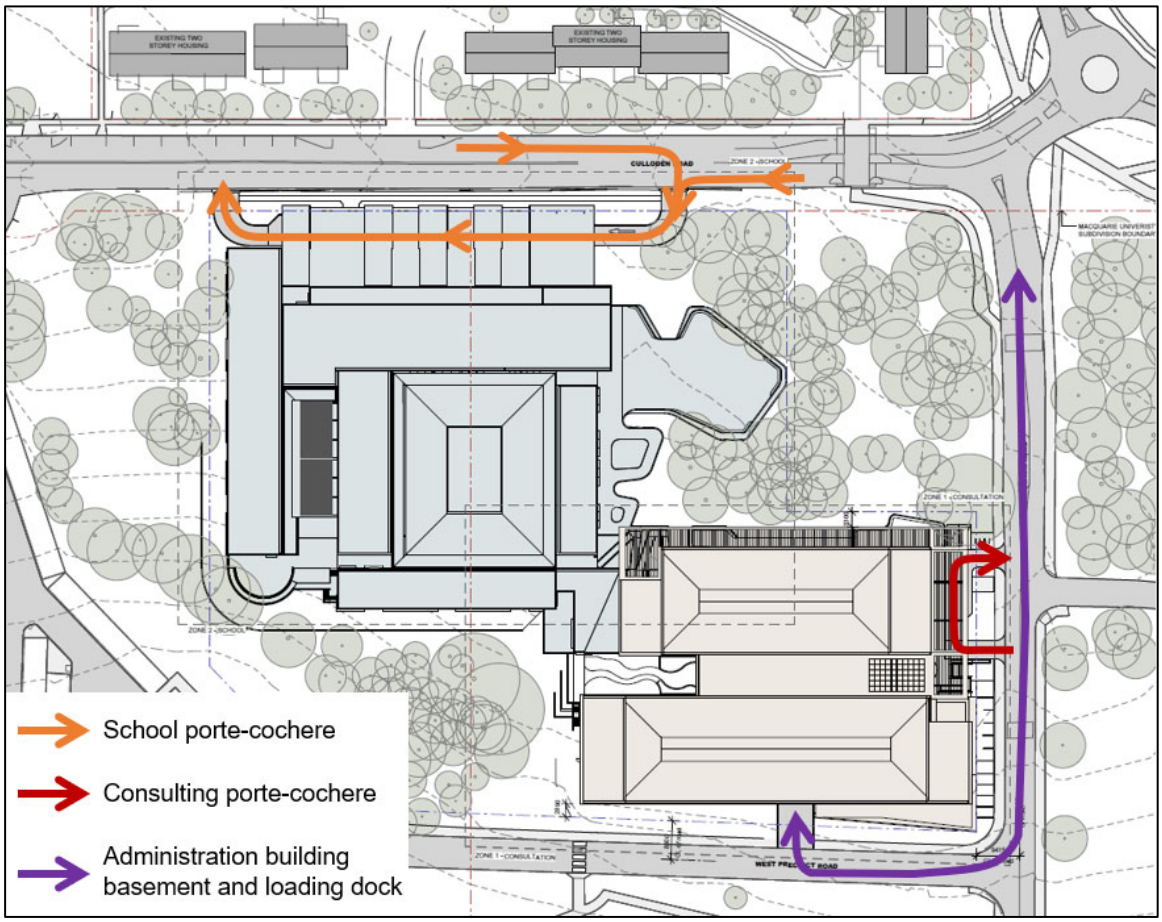
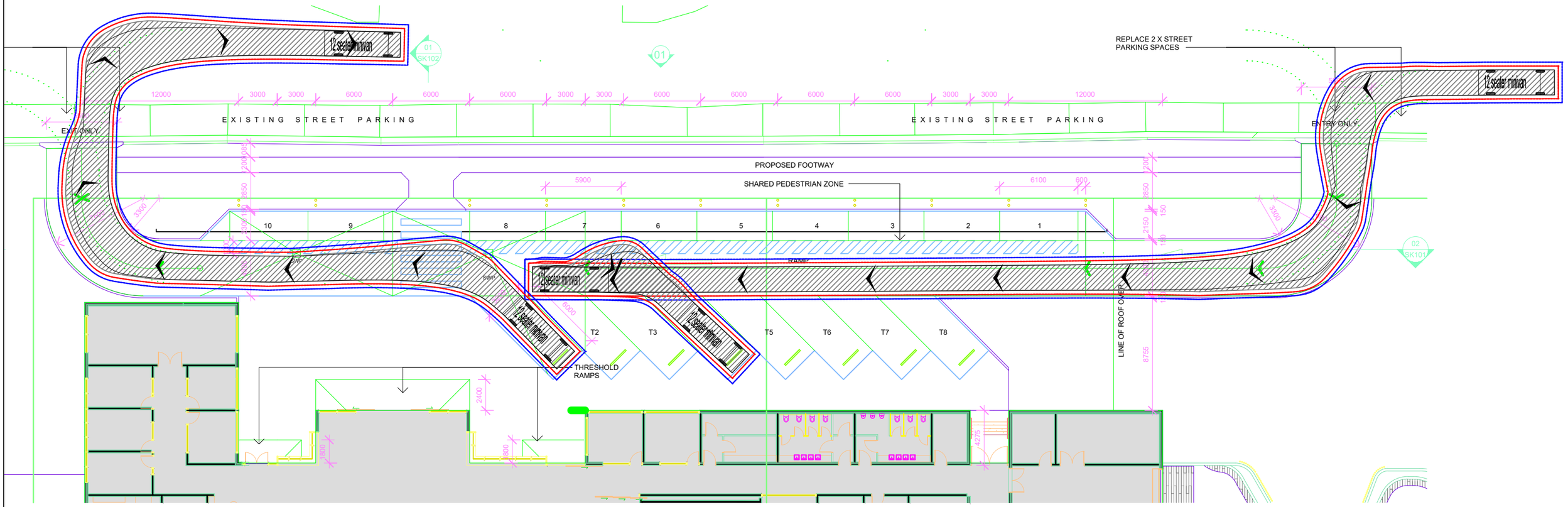


Figure 12 Vehicle access arrangements

Vehicle swept path analysis is provided on the following pages



Client
Royal Institute for Deaf & Blind Children

Job Title
RIDBC Centre of Excellence

Date
10/09/20

Job No
2044

Drawing Title
Turning Paths
Culloden Road Entry

Drawing No SKT01

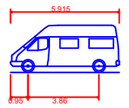
Drawing Status
For SSDA lodgement

Legend

- Body Envelope
- 300mm Envelope
- 600mm Envelope
- Wheel Envelope

Scale at A3
1:400

Vehicle type(s)



12 seater minivan	
Overall Length	5.915m
Overall Width	1.950m
Overall Body Height	2.280m
Min Body Ground Clearance	0.331m
Track Width	1.950m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.400m

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SCAPE SEATING W/
TE RETAINING WALLS

ELECTRICAL METER ENCLOSURE

SHORT TERM
VISITOR PARKING

SECONDARY TEMPORARY
GENERATOR LOCATION (PRIMARY
LOCATION IS IN VISITOR PARKING
SPOTS)

CON-01

SITE BOUNDARY

FOOTPATH

CON-01

RL 77.510

RL 77.100

OUTDOOR CAFE SEATING

EXIT

B1:4
15 m²

B1:26
23 m²

BICYCLE
PARKING

PAVING

B1:6
34 m²

A1:7
136 m²

B1:26
14 m²

A1:10
21 m²

A1:6
43 m²

A1:5
39 m²

GRASS &
PLANTED AREA

E:20
7 m²

A1:10
21 m²

A1:9
53 m²

PORTE
COCHERE
DROP-OFF

B1:24
13 m²

E:7
9 m²

A1:14
13 m²

A1:12
9 m²

ENTRY

LEVEL 01
(ABOVE)

B1:1
155 m²

AIRLOCK

UP

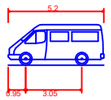
Client
Royal Institute for Deaf & Blind Children

Job Title
RIDBC Centre of Excellence

Drawing Title
Turning Paths
Consulting Services Porte-Cochere

Legend
- Body Envelope
- 300mm Envelope
- 600mm Envelope
- Wheel Envelope

Vehicle type(s)



Car/van vehicle (5.2 m)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.300m

Date
29/09/20

Job No
2044

Drawing No
SKT02

Drawing Status
For SSDA lodgement

Scale at A3
1:200

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5.3 Traffic generation

5.3.1 Staff

Based on the trip generation assumptions previously noted in Section 5.1 of this document, the following traffic generation is anticipated from staff of the RIDBC site (both education and administration functions)

- AM peak hour (8am – 9am): 57 vehicle trips
- PM road network peak hour (5pm – 6pm): 57 vehicle trips

5.3.2 Primary School

Travel behaviours based on RIDBC's existing school at North Rocks has been used to inform the trip generation assessment. The RIDBC primary school, containing a maximum of 120 children, will operate in a very different way when compared to a typical public school given the following:

- A high proportion of students are picked up in taxis and minivans containing up to 12 seats and are transported to the site. RIDBC participate in the NSW Government's Assisted School Travel Program (ASTP) which plays a significant role in meeting the needs of students with disability by providing free specialised transport to and from school. Children are picked up from their residences and then transport in groups to the school.
- Students typically arrive to the school between 8am and 9am, with mixed pick-up times due to outreach programmes with other schools. Students leave and arrive in shifts, with RIDBC allocating time-slots to drivers so as to stagger the arrival and departure periods. This has the effect of distributing traffic movements over a longer period of time when compared to a typical public school.
- No Out of School Hours Care (OOSH) placements are to be provided at the school.

At the existing Norths Rocks site, only 10-15 children currently arrive via private vehicle. The remaining 70 children arrive in taxis or minivans. Based on these specific travel characteristics of special needs students, the following trip generation forecasts have been developed for the future 120 (maximum) place school:

- AM road network peak hour (8am – 9am): 30 vehicle trips
- PM road network peak hour (5pm – 6pm): 0 vehicle trips

5.3.3 Pre-school

The number of trips to the site for the pre-school has been estimated based on the 81 places to be offered at the centre. Unlike the primary school, travel to the pre-school is typically undertaken by private vehicle as pre-school aged children are generally not eligible to participate in the assisted school travel program. It should be noted however that the hours of operation for the pre-school are 8.30am – 4pm, and therefore no vehicles would be generated during the afternoon road network peak hour of 5pm – 6pm. At the existing RIDBC pre-schools children are typically dropped off between 8.30am and 9.30am and collected between 3pm and 4pm.

Adopting the findings of the recent investigations by TfNSW into trip generation for child care centres in NSW[1], the following vehicle trips are forecast during the road network peak hours:

- AM road network peak hour (8am – 9am): 41 vehicle trips
- PM road network peak hour (5pm – 6pm): 0 vehicle trips

5.3.4 Traffic generation summary

A summary of the traffic generation forecasts associated with the RIDBC proposal is provided in Table 3 below.

Table 3 Forecast traffic generation

Period	Time	Traffic Generation			
		Staff	***Pre-school***	***Primary school***	***Total***
Morning peak	7am - 8am	19	0	0	19
	8am - 9am*	57	41	30	128
	9am - 10am	26	29	10	65
Afternoon peak	2pm - 3pm	5	29	20	54
	3pm - 4pm	8	41	20	69
	4pm - 5pm	19	0	0	19
	5pm - 6pm*	57	0	0	57

* Represents the road network peak hours within Macquarie Park

[1] Trip Generation Surveys—Child Care Centres, TEF Consulting (September 2015)

5.4 Traffic analysis and road network impacts

5.4.1 Background

Condition C10 of the Macquarie University Concept Plan was the development of a detailed micro-simulation model, to be prepared in liaison with Council, the RTA and the Ministry of Transport and submitted to the Department of Planning for approval prior to or with the submission of the first application for new non-academic floor space on the site.

The traffic modelling involved extensive consultation with key agencies, including RMS, City of Ryde and Transport NSW. Numerous meeting were held with the RMS to agree key parameters for the modelling and to provide feedback at key stages of the modelling process.

5.4.2 Assumed development

The micro-simulation traffic modelling undertaken considered a total of 400,000m^2 of new non-academic GFA within the Macquarie University campus, with a maximum of 10,800 parking spaces allowed across the campus. The GFA as part of the proposed RIDBC project is to be included in this total new non-academic GFA, and therefore the traffic modelling has already made provision for development of this site.

5.4.3 Traffic modelling outcomes

Relevant to the RIDBC site, detailed traffic modelling undertaken to support the Macquarie University Concept Plan identified the need in future to upgrade the Waterloo Road / Gymnasium Road / Culloden Road intersection. The Planning Agreement signed between MQU and City of Ryde Concept Plan notes that works are to be undertaken at this location to provide for a two lane circulating roundabout including the realignment of Gymnasium Road to be located opposite Waterloo Road. The traffic modelling noted that the trigger for this upgrade would be when daily traffic flows on Gymnasium Road (immediately east of Culloden Road) exceeded 7,000 vehicles per day (during normal teaching periods). The most recent traffic count carried out on Gymnasium Road, prior to the COVID-19 pandemic, indicated that daily traffic flows were in the order of 5,000 vehicles per day. As previously noted in Section 5.1 of this document, the RIDBC proposal may increase traffic flows on Gymnasium Road by approximately 285 vehicles per day and therefore would not trigger the upgrade of this intersection.

Therefore based on the outcomes of the detailed traffic modelling previously undertaken for the Macquarie University campus, the Waterloo Road / Gymnasium Road / Culloden Road will continue to perform acceptably following the development of the RIDBC facility. In this context no additional SIDRA modelling is required to support the proposal.

It is also important to recognise that overall levels of travel to Macquarie University has been significantly impacted by the COVID-19 pandemic, including

Macquarie University. This has accelerated the practice of online learning methods, with rates of in-person attendance likely to significantly decrease amongst students and staff even following the conclusion of the pandemic. This resultant fall in traffic movements to the campus will further extend the timing for the upgrade of the intersection.

5.5 Parking

5.5.1 Off-street parking

A total of 58 car parking spaces are proposed to be provided as part of the proposal, comprising of:

- 38 car parking spaces for staff and RIDBC fleet vehicles within the basement of the administration building, comprising of 37 standard car parking spaces as well as one accessible space. In addition there is to be a loading area with space for one vehicle, bringing the total provision to 39 spaces.
- 2 short term visitor parking spaces within the consulting porte-cochere
- 18 short term parking spaces within the Culloden Road porte-cochere for the purposes of drop off and pick up for the pre-school and primary school. 10 of these spaces are parallel parking spaces which will primarily service the pre-school component of the site given these children arrive by private vehicle. This provision is in accordance with City of Ryde Council's DCP requirement of 1 drop off / pick up space for every 8 children. The remaining 8 parking spaces will be utilised for school drop off / pick up are angled parking spaces which are 3.2m wide by 6.0m long to accommodate the larger minivans that are utilised as part of the assisted school travel program. As previously noted in Section 5.1, RIDBC stagger drop off and pick up times for school students in order to distribute parking demand.

All parking spaces have been designed in accordance with the requirements outlined in Australian Standards for off-street parking AS2890.1.

The Macquarie University Concept Plan sets a car parking standard of a maximum of 1 parking space per 80m^2 for non-academic uses on the campus. On the basis of the approximately 10,475m^2 Gross Floor Area for the RIDBC project, a maximum of 130 car parking spaces could be provided. The project proposes to provide 58 car parking spaces which is below the maximum permissible number and therefore complies with the Concept Plan approval.

RIDBC will enter into an agreement with Macquarie University to lease car parking spaces for staff of the pre-school, school and administration building within an existing car parking area in the campus (most likely the 'North 3' car park). These leased spaces are included as part of the maximum 10,800 parking spaces to be provided on the campus as part of the Concept Plan approval. Therefore the RIDBC project will not increase car parking on the MQU campus beyond that originally considered as part of the traffic modelling to support the Concept Plan approval.

5.5.2 On-street parking

As a result of the introduction of the driveways along Culloden Road providing access to the school porte-cochere, it is expected that between three and four existing on-street parking spaces on Culloden Road will need to be removed. This loss of on-street parking is not considered to be significant given the following factors:

- There are approximately 170 on-street parking spaces already available on Culloden Road. The loss of three to four spaces as a result of the proposal is not significant in this context
- The impacted parking spaces do not directly service any residential or commercial premises and are typically used by University students or construction staff parking for long periods of time.
- The parking spaces are not timed limited nor subject to any fees.

Following discussions with City of Ryde Council, an area of kerbside space on Culloden Road has been identified to entirely offset the loss of the parking spaces by providing for additional on-street parking opportunities. These spaces are illustrated in Figure 15, and would be subject to approval from Council's traffic committee.

Figure 15 Potential additional on-street parking spaces

5.6 Public transport

As previously noted in Section 3.5 the site is highly accessible by public transport given it's location within the MQU campus. The recently opened Sydney Metro Northwest offers a high capacity, high frequency public transport service that will be utilised by staff of the site. From 2023 public transport to the site will further improve following the opening of the Sydney Metro City and Southwest line, which will provide an uninterrupted journey between Macquarie University, North Sydney and the Sydney CBD all the way through to Bankstown. In addition there are a number of bus stops in close proximity which will accommodate trips from staff members not serviced by the metro.

Given children attending the RIDBC school participate in the NSW Government's Assisted School Travel Program (ASTP), there is no requirement for additional school bus stops or bus capable roads. The school porte-cochere has been specifically designed to accommodate the swept path of larger vehicles (up to the 6m Toyota Hiace Commuter) which participate in the ASTP. This includes longer and wider parking bays compared to a typical off-street car parking area.

5.7 Walking and cycling

As illustrated in Figure 16 on the following page the RIDBC site will provide connections to the future pedestrian and cycling network as outlined in the Macquarie University Design Excellence Strategy and Urban Design Guidelines. In particular a high quality walking connection will be provided between the Macquarie University metro station on Herring Road and the RIDBC site following the completion of the 'Macquarie University Gateway' project. The Gateway project (which is the subject of a separate approvals process) will provide pedestrians with a direct and uninterrupted link between the Macquarie University metro station through to the Academic Core within Macquarie University – accommodating existing and future demands from students, staff and visitors to the campus.

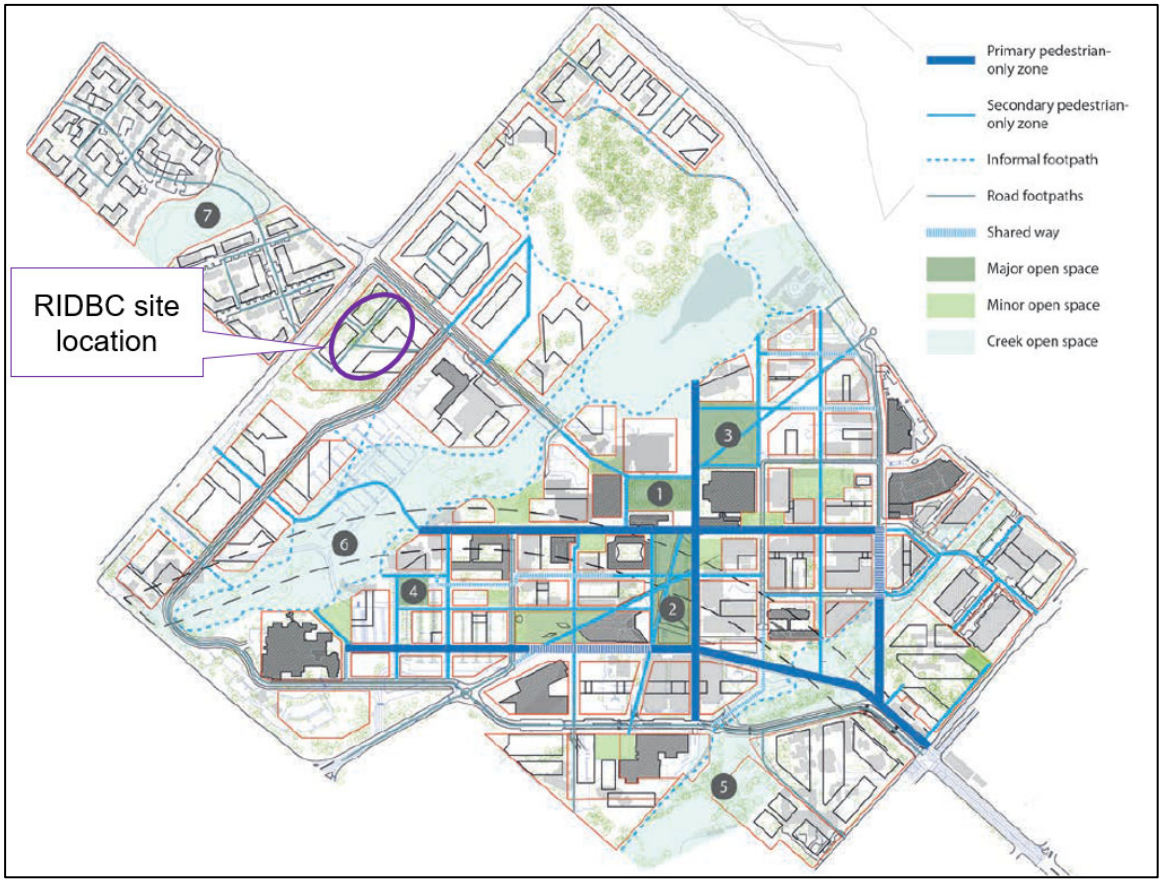

Figure 16 MQU future pedestrian access

Source: Macquarie University Design Excellence Strategy and Urban Design Guidelines (2018)

To support cycling as a mode of access to the site, the following provision will be made:

- Secure space in the basement to park 15 bikes for staff – equivalent to 5% of the total number of staff on-site. This provision is over and above the bicycle parking rate outlined in the City of Ryde DCP which would require approximately 7 spaces based on the total car parking provision.
- One male and one female change room also located within the basement. Each room will have 1 shower, 1 toilet and provision for 8 lockers
- Four bicycle parking rails (to park up to eight bicycles) for visitor parking to be located near the main entrance as part of the Porte-Cochere

5.8 Service and emergency vehicles

Service vehicles would enter the basement car park via West Precinct Road in order to access the on-site loading area. The loading area has been designed to accommodate a Medium Rigid Vehicle (MRV) with a height clearance of up to 4m. All service vehicles would enter and exit the site in a forwards direction.

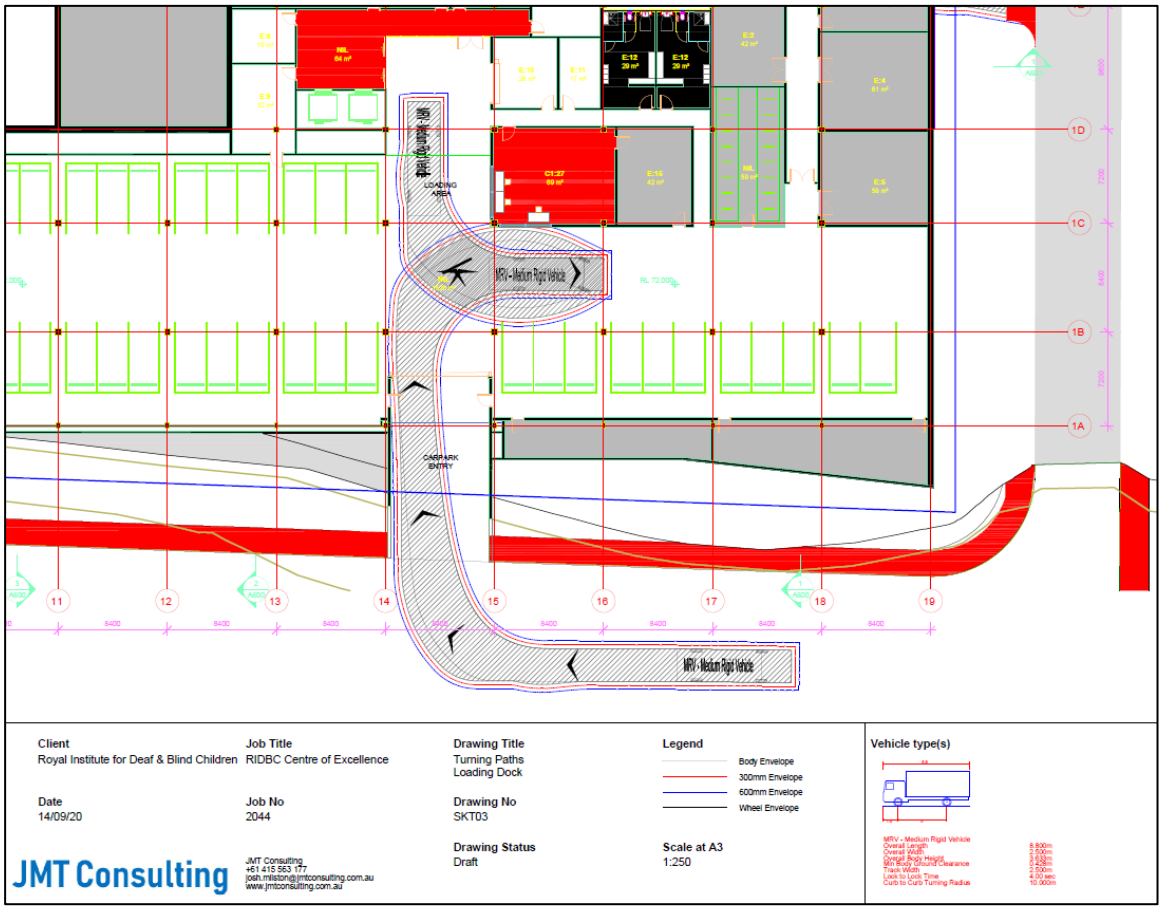

Figure 17 Swept path of service vehicle entering loading dock

It is expected that the loading bay will be used by smaller delivery vehicles (e.g. courier vans) more commonly than larger delivery trucks. It is expected MRVs would access the site once per day on average, with the remaining vehicles to comprise of smaller vans, utes and Small Rigid Vehicles (SRVs).

Given the size of the development proposal and range of uses service vehicle movements are expected to be low – in the order of 10-15 vehicles per day. These movements will be distributed throughout the course of the day given the number of different uses on the site. The on-site servicing provision is considered suitable to accommodate this relatively small number of vehicle movements.

Emergency vehicles would access the site via Gymnasium Road and West Precinct Road in line with broader arrangements in place at MQU. There is also the potential for smaller emergency vehicles to access the future school porte-cochere along Culloden Road if required.

5.9 Road user safety

No impacts to road user safety are expected given:

- The minor increase in traffic flows associated with the proposal;
- Construction of driveway access points on Culloden Road to be consistent with City of Ryde Council standards, including the prioritisation of pedestrian movements over vehicle activity
- Driveway access points to be angled at 90 degrees to the roadway to maximise the sight distances for drivers
- Provision of a zebra crossing within the school porte-cochere to provide for safe pedestrian access
- Integration of the building and public domain with the broader MQU campus pedestrian network, including provision of connections to nearby public transport
- Encouragement of sustainable transport modes as described in Section 0 of this document.

6 Green Travel Plan

6.1 Travel plan overview

A Green Travel Plan (GTP) is a tool to minimise the negative impact of private vehicle travel on the environment. The Plan is a package of measures put in place to encourage more sustainable travel. The GTP describes ways in which the use of sustainable transport may be encouraged. Using public transport, cycling, walking, working from home and carpooling are all more sustainable means of transport than single occupant driving.

More generally, the principles of a Green Travel Plan are applied to all people travelling to and from a site. Government authorities are placing increasing emphasis on the need to reduce the number and lengths of motorised journeys and in doing so encourage greater use of alternative means of travel which have less environmental impact than cars.

6.2 Objectives

The main objectives of the travel plan are to reduce the reliance on private vehicles and promoting sustainable means of transport to the RIDBC site. The more specific objectives include:

- Encouragement of the use of public transport, cycling and walking journeys for staff and visitors;
- To ensure adequate facilities are provided at the site to enable users to travel by sustainable transport modes
- To raise awareness of sustainable transport amongst users

The travel plan for the RIDBC site responds to these objectives by:

- Promoting alternative travel modes to the car to encourage increased public transport, walking and cycling usage;
- Reducing the environmental impact associated with vehicle movements by raising travel awareness and encouraging travel by more sustainable transport modes, to reduce private car usage;
- Connecting the site to the surrounding transport network by the strong promotion of walking and cycling, thus minimising the impact on the adjacent road network;

6.3 Existing Macquarie University travel plan

Macquarie University have in place a travel plan which outlines the strategies and actions to manage transport demand on Campus in order to reduce car based trips. This travel plan is in accordance with the requirements of the the Macquarie University Concept Plan 06_0016.

The purpose of the Travel Plan is to bring about better transport arrangements to manage travel demands on Campus, particularly promoting more sustainable modes of transport within the University whilst recognising the unique context of travel planning at universities. The Travel Plan aims to deliver the following benefits within the Campus:

- reduce traffic congestion and greenhouse gas emissions (GHE)
- increase Campus amenity by reducing the need to supply additional car parking
- promote a healthy lifestyle for all
- contribute to social equity and reduce social exclusion.

Contained within the Travel Plan is a site audit of the existing transport networks on the Campus, a summary of the issues and opportunities and travel plan strategies for each mode as well as for bicycle and car parking. An action plan with timeframes was prepared in accordance with the aims of these strategies.

The RIDBC proposal aligns with and complements the identified actions of the Macquarie University travel plan by:

- Providing car parking below the maximum on-site parking rate of 1 space / 80m^2 GFA
- Providing bicycle parking and end of trip facilities to promote cycling as a form of transport to staff
- Integrating the design of the building and adjacent public domain with the broader MQU campus pedestrian network in order to provide for good quality pedestrian connections to nearby public transport.

6.4 Proposed travel plan measures

In addition to those measures previously listed in Section 6.3, the following travel demand measures would be considered for implementation as part of any future building occupation.

6.4.1 General Marketing and Promotion

The objectives of the GTP will only be achieved with the support of the RIDBC staff. Marketing the benefits and promoting the sustainable alternatives available are therefore crucial in encouraging staff to adopt the GTP measures. It is important that at an early stage, staff are made aware of the need for the GTP, and that it is emphasised that the measures are being introduced to support and encourage people to use cars more wisely. In addition to raising general awareness, any successes achieved will be fully publicised to staff in order to motivate them to use sustainable modes of transport.

6.4.2 Staff induction

To ensure all RIDBC staff members are aware of the GTP, they should be made aware of the Plan as part of their induction process. The GTP section of the induction should provide new starters with the following:

- A brief introduction to the GTP and its purpose;
- Tour of the office to include a visit to cycle parking areas and shower and changing facilities; and
- Provision of GTP information which would include information on incentives to use sustainable means of transport e.g. /taxi share system.

6.4.3 Reducing the need to travel

To ensure that sustainable transport options are promoted to staff when making journeys for work purposes, and to reduce the need to travel, the following measures should be implemented. These measures require implementation by staff members across the building.

- Active promotion of the office videoconferencing facilities as an alternative to face to face meetings. This can be achieved by placing ‘reducing the need to travel’ as an item on internal group meeting agendas;
- Consider a more formal approach to working from home and actively encourage staff to consider this option. Include working from home as an item on the agenda for internal group meetings.

6.4.4 Cycling

As previously noted in this document the RIDBC site has good access to the cycling network and will provide onsite facilities for cyclists i.e. easily accessible bike room/shelter, changing rooms and showers, lockers and good access from

those facilities to the office. In order to activate and promote cycling the following measures should be taken:

- Provide Sydney cycle maps to staff;
- Participate in annual events such as 'Ride to Work Day';
- Provide secure bicycle parking and end of trip facilities for staff
- Staff who cycle to work should be encouraged to form a Bicycle User Group in order to provide a body of regular cyclists who can discuss issues relating to the provision of on-site cycling facilities and the maintenance of off-site cycle routes; and
- Set up ‘Bike Buddies’ scheme for less confident staff interested in cycling.
- Provide pool bikes for staff to use during the day

6.4.5 Walking and public transport

- Participate in National Walk to Work day and look into holding a ‘healthy breakfast’ as a reward to all those who participate
- Provide useful public transport maps and promotional items to potential and current public transport users
- Investigate the possibility of purchasing an Opal Card for general use of building staff for business journeys, in lieu of cars and taxis

6.4.6 Spreading travel demand

As previously noted students currently attending the RIDBC primary school at North Rocks leave and arrive in shifts, with RIDBC allocating time-slots to drivers so as to stagger the arrival and departure periods. This has the effect of distributing traffic movements over a longer period of time when compared to a typical public school. This policy will be continued across to the new school at Macquarie University which will have a positive effect on the operation of the transport network.

6.5 Monitoring

An important part of any Travel Plan is the continual monitoring and review of its effectiveness. It is essential that a Travel Plan is not a one-off event, but evolves over time. Regular monitoring and reviewing will help to gauge progress and, if necessary, enable the Travel Plan to be refined and adapted in order to improve its progression. If travel patterns or policies change significantly, then policies should be updated to reflect the current environment.

The monitoring measures may include:

- Staff travel surveys undertaken every one to two years
- Collecting data on employee travel patterns for journeys to work (through surveys or analysing journey to work or Opal data)
- Utilisation of bicycle parking facilities in the precinct.

One of the most effective ways of monitoring the success of the GTP is to undertake a travel questionnaire survey of staff and visitors. This survey would consider year on year travel trends and be used to inform the development of the GTP over time.

7 Preliminary Construction Pedestrian Traffic Management Plan

7.1 Preliminary CPTMP overview

This section details a preliminary Construction Pedestrian and Traffic Management Plan (CPTMP) for the construction of the RIDBC Centre of Excellence. The purpose of the CPTMP is to assess the proposed access and operation of construction traffic associated with the proposed development with respect to safety and capacity.

The contractor (once appointed) will prepare a more detailed CPTMP prior to the commencement of works which will include the following:

- Traffic Control Plans;
- Specific methods of safely managing construction vehicle and pedestrian traffic within the surrounding area;
- Crane locations;
- Vehicle turning paths;
- Site compound layout and access;
- Driver facility areas; and
- Additional work zones / road closures.

7.2 Construction timing

At this stage it is expected that construction will take place over a 18 month period, with commencement in July 2021 and completion by December 2022. As the project is in its preliminary stages, the following timeframes are approximate and may vary once further details are known.

7.3 Working Hours

Work associated with the proposal will be carried out between the following hours of construction:

- Weekdays: 7am – 6pm
- Saturdays: 8am - 4pm
- Sundays and public holidays: No work

The appointed contractor will be responsible for instructing and controlling all subcontractors regarding the hours of work. Any work outside the approved construction hours would be subject to specific prior approval.

7.4 Construction site boundary

The proposed site boundary for the construction works is illustrated in Figure 18 below, and largely encompasses the perimeter of the site. Fencing and hoarding will be installed by the contractor to establish this boundary and ensure appropriate separation of construction works with other users of the precinct.

Figure 18 Construction site boundary

7.5 Construction vehicle access

Access to the site for construction vehicles will primarily be via Culloden Road, with a secondary access from West Precinct Road to allow for excavation works as shown in Figure 19. Gymnasium Road would be kept clear for general access to/from Macquarie University. Traffic controllers will be present at all vehicle crossover points to manage interactions with pedestrians.

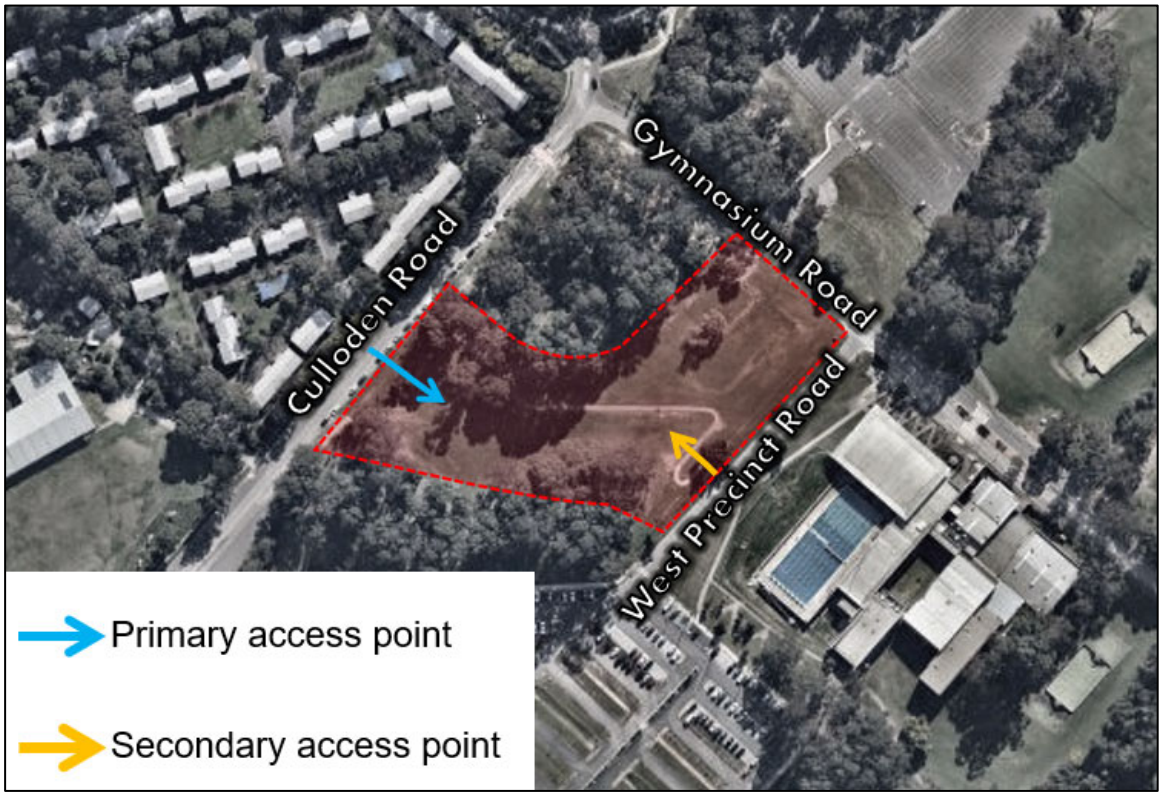

Figure 19 Construction vehicle site access

7.6 Works zone

To facilitate the construction project, a work zone may be established on the eastern side of Culloden Road adjacent to the site. The work zone would require the removal of approximately 4 existing on-street parking spaces, which are proposed to be removed regardless following the opening of the RIDBC centre of excellence to facilitate access to the porte-cochere pick up / drop off area. The work zone would be approximately 25m in length and allow for large items to be lifted by cranes positioned within the site.

A B-Class hoarding will be installed adjacent to the work zone to provide protection to pedestrians walking along Culloden Road. The Culloden Road footpath will remain open at all times during the construction period.

7.7 Construction vehicle routes

Key inbound traffic routes for construction vehicles will be:

- From M2 south, Talavera Road, Culloden Road and/or Gymnasium Road
- From M2 north, Christie Road bridge, Talavera Road, Culloden Road and/or Gymnasium Road
- From Epping Road North, Culloden Road and/or Gymnasium Road
- From Epping Road South, Culloden Road and/or Gymnasium Road (not permitted from 6am – 10am, Monday to Friday, alternative route during this time is along Herring Road, Talavera Road, Culloden Road Gymnasium Rd.

Key outbound traffic routes for construction vehicles will be

- To M2 south, by Gymnasium Road and/or Culloden Road, Talavera Road and Christie Road
- To M2 north, by Gymnasium Road and/or Culloden Road, Talavera Road and M2 ramp (across from Herring Road)
- To Epping Road North, by Gymnasium Road and/or Culloden Road, Waterloo Road and Vimiera Road (right turns are not permitted from Culloden Road onto Epping Road).
- To Epping Road South, by Gymnasium Road and/or Culloden Road.

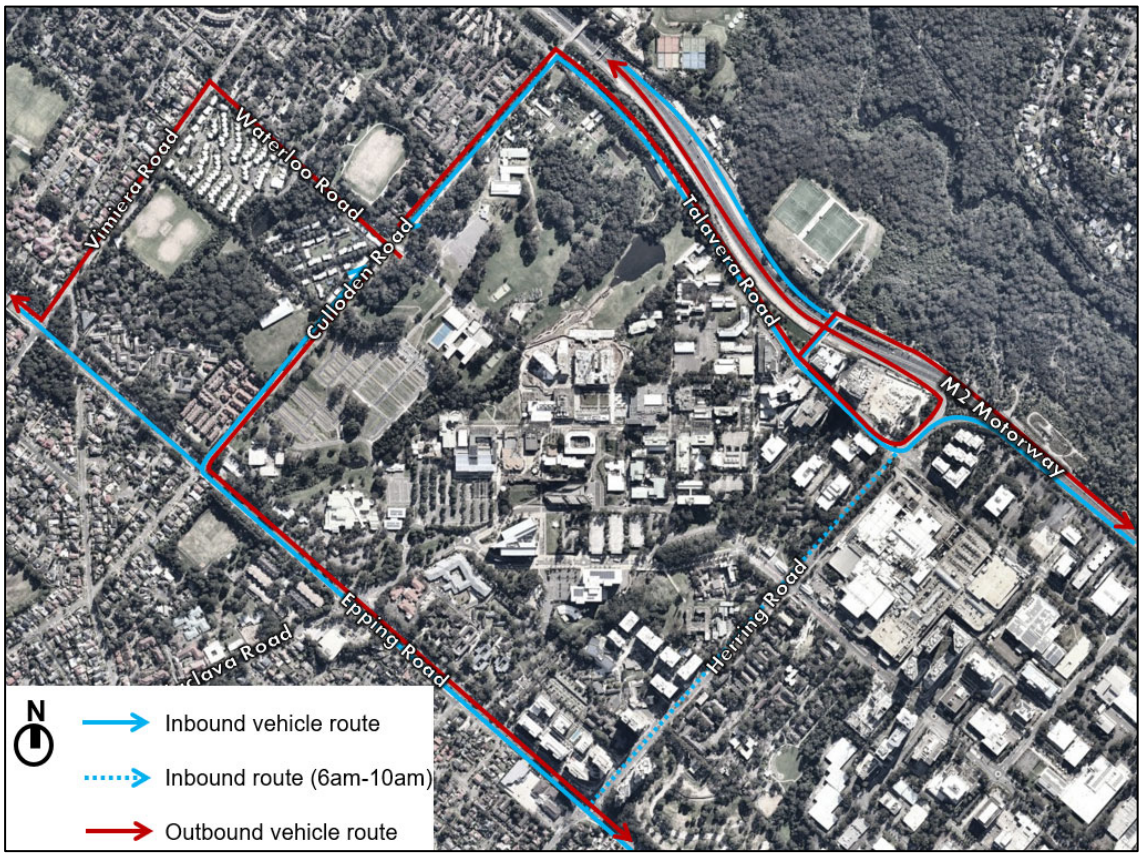

Figure 20 Construction vehicle routes

7.8 Construction traffic volumes

Construction traffic generation of approximately 50 trucks per day is anticipated at the peak of the works, with each truck generating an entry and exit trip. It is anticipated that a peak of 15 two-way truck movements may occur during a one hour period. Trips generated by construction staff will typically be outside of the main road network peaks. The impact of construction traffic volumes on the external network is therefore expected to be low. The good availability of public transport in the precinct, with Macquarie University railway station within walking distance and a number of buses serving the campus adjacent to the site, will encourage workers to minimise private vehicle use which will further reduce the impacts on the local road network.

7.9 Car parking

A limited amount of parking will be contained within the site for construction staff and visitors to the site. Some car parks on the MQU campus are subject to parking permits and will not be available for use by contractor staff. There are other car parks in the campus that allow public car parking (subject to hourly parking fees) which could be available for use by construction staff.

It is expected that a number of workers will travel by public transport to the site, with workers able to store their tools on site. Carpooling will also be encouraged.

7.10 Emergency vehicles

Construction works and vehicle storage would be confined to the site. As such, no additional specific provisions for emergency vehicles have been identified on the surrounding road network.

7.11 Mitigation measures

Mitigation measures will be adopted during the demolition and construction phases 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;
- Limited amount of parking to be provided for construction workers;
- Restrict construction vehicle activity to designated truck routes;
- Construction access driveways to be managed and controlled by certified site personnel;
- Pedestrian movements across construction access driveways and to/from public transport facilities 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 the 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 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 public roads and be wholly accommodated within the site; and
- Minimal construction traffic movements to/from the site will be made during peak hours to minimise the impact on the wider road network.

To manage driver conduct, the following measures are to be considered for implementation:

- All deliveries are to be pre-booked;
- All deliveries are to check-in at the site office; and
- Drivers are to give way to pedestrians.

Traffic controllers will be used to stop traffic on the public streets to allow trucks to enter or leave the site. Vehicles must enter and exit the site in a forward direction. They must wait until a suitable gap in traffic allows them to assist trucks to enter or exit the site. Vehicles entering, exiting and driving around the site will be required to give way to pedestrians.

8 Summary

This transport assessment has been prepared by JMT Consulting on behalf of the Royal Institute for Deaf and Blind Children (RIDBC) in support of their proposed RIDBC Centre for Excellence at Macquarie University's (MQU) North Ryde campus. Key findings from the transport assessment supporting the proposal are as follows:

- A non-car mode share of 62% for staff within the RIDBC building has been adopted which is consistent with the targets set out in Modification 1 to the Concept Plan (MP 06_0016 MOD 1)
- Vehicle access to the site will be via the following access points:
  - For school and pre-school drop off and pick up, via a new porte-cochere accessed directly from Culloden Road
  - For access to the site basement parking area and loading dock, via Gymnasium Road within MQU and West Precinct Road.
- The school porte-cochere has been specifically designed to accommodate the swept path of larger vehicles (up to the 6m Toyota Hiace Commuter) which participate in the NSW Government's Assisted School Travel Program.
- Given the RIDBC cater for children with special needs, a high proportion of students are picked up in taxis and minivans containing up to 12 seats and are transported to the site. This has the effect of reducing the transport impacts of the proposal.
- Detailed traffic modelling carried out to support the Macquarie University Concept Plan considered future development on the RIDBC site. The development proposal is not forecast to increase traffic volumes along Gymnasium Road above 7,000 vehicles per day and therefore would not trigger the upgrade of the Waterloo Road / Gymnasium Road / Culloden Road intersection.
- A total of 58 parking spaces are proposed to be provided as part of the proposal which complies with the parking rates noted in the Macquarie University Concept Plan approval.
- To accommodate the driveways along Culloden Road providing access to the school porte-cochere, it is expected that between three and four existing on-street parking spaces on Culloden Road will need to be removed. An area of kerbside space on Culloden Road has been identified to entirely offset the loss of these parking spaces which will be subject to further Council review and approval.
- The site is highly accessible by public transport given it's location within the MQU campus – including pedestrian connections to the nearby Macquarie University metro station

It is therefore concluded that the transport impacts arising from the proposal are minimal and can be managed by existing facilities within the site as well as the external transport network.