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BUSINESS PAPER

ORDINARY MEETING OF COUNCIL

To be held at 6.00 pm on

Monday 24 February 2020

Council Chambers, Level 10,
Council Administration Building, 41 Burelli Street, Wollongong

Order of Business

1 Opening Meeting
2 Acknowledgement of Traditional Owners
3 Civic Prayer
4 Apologies and Applications for Leave of Absence by Councillors
5 Confirmation of Minutes of Ordinary Council Meeting
6 Confirmation of Minutes of Extraordinary Ordinary Council Meeting
7 Conflicts of Interest
8 Petitions and Presentations
9 Confirmation of Minutes of Council Committee Meeting
10 Public Access Forum
11 Call of the Agenda
12 Lord Mayoral Minute
13 Urgent Items
14 Reports to Council
15 Reports of Committees
16 Items Laid on the Table
17 Notices of Motions(s)/Questions with Notice
18 Notice of Rescission Motion
19 Confidential Business
20 Conclusion of Meeting

Members

Lord Mayor –
Councillor Gordon Bradbery AM (Chair)
Deputy Lord Mayor –
Councillor Tania Brown
Councillor Ann Martin
Councillor Cameron Walters
Councillor Cath Blakey
Councillor David Brown
Councillor Dom Figliomeni
Councillor Janice Kershaw
Councillor Jenelle Rimmer
Councillor John Dorahy
Councillor Leigh Colacino
Councillor Mithra Cox
Councillor Vicky King

QUORUM – 7 MEMBERS TO BE PRESENT

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MINUTES

ORDINARY MEETING OF COUNCIL

at 6.00 pm

Monday 3 February 2020

Present

Lord Mayor – Councillor Gordon Bradbery AM (in the Chair)
Deputy Lord Mayor – Councillor Tania Brown
Councillor Ann Martin
Councillor Cameron Walters
Councillor Cath Blakey
Councillor David Brown
Councillor Dom Figliomeni
Councillor Janice Kershaw
Councillor Jenelle Rimmer
Councillor John Dorahy
Councillor Leigh Colacino
Councillor Mithra Cox

In Attendance

General Manager	Greg Doyle
Director Infrastructure + Works, Connectivity Assets + Liveable City	Andrew Carfield
Director Planning + Environment, Future City and Neighbourhoods	Linda Davis
Director Corporate Services, Connected + Engaged City	Renee Campbell
Director Community Services, Creative + Innovative City	Kerry Hunt
Manager Governance + Customer Service	Todd Hopwood
Chief Information Officer	Ingrid McAlpin
Manager City Strategy	Chris Stewart
Manager Project Delivery	Glenn Whittaker
Manager Infrastructure Strategy + Planning (Acting)	Mark Roebuck
Manager Open Space + Environmental Services	Joanne Page
Manager Community Cultural + Economic Development	Sue Savage
Manager Library + Community Services	Jenny Thompson

Apologies

Min No.

334 COUNCIL'S RESOLUTION - RESOLVED UNANIMOUSLY on the motion of Councillor D Brown seconded Councillor Figliomeni that the apology tendered on behalf of Councillor King be accepted and a leave of absence be granted.

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CONFLICTS OF INTERESTS

Councillor Figliomeni declared a non-pecuniary, not-significant Conflict of Interest in Item 1 – Connecting Neighbours Programs Grants – Round 3 as a grant was made to a Port Kembla Community Group and he resides in Port Kembla. Councillor Figliomeni advised that he will remain in the Chamber during debate and voting on the item.

Councillor Dorahy declared a non-pecuniary, not-significant Conflict of Interest in Item 5 – Tender T19/44 – Proposed Bridge Bearing Replacement and Structural Rehabilitation of the Bridge at Uralba Street, Figtree as he resides nearby. Councillor Dorahy will stay in the Chamber during debate and voting on the item.

Councillor Blakey declared a non-pecuniary, not-significant, perceived Conflict of Interest in Item 1 – Connecting Neighbours Program Grants – Round 3 as she utilises the services of the Make-Do Library of Things and Better Births Illawarra. Councillor Blakey will remain in the Chamber during debate and voting on the item.

Councillor Martin declared a non-pecuniary, not-significant Conflict of Interest in Item 1 – Connecting Neighbour Program Grants – Round 3 as she is the Chair of the Our Community Project, involved in Transition Port Kembla and utilises the Bulli Shared Library of Things. Councillor Martin will remain in the chamber during debate and voting on the item.

PETITION –

At this time Councillor Figliomeni presented a petition which was accepted by the General Manager as the petition was in relation to an active Development Application.

CONFIRMATION OF MINUTES OF ORDINARY MEETING OF COUNCIL HELD ON MONDAY, 9 DECEMBER 2019

335 COUNCIL'S RESOLUTION - RESOLVED UNANIMOUSLY on the motion of Councillor D Brown seconded Councillor Colacino that the Minutes of the Ordinary Meeting of Council held on Monday, 9 December 2019 (a copy having been circulated to Councillors) be taken as read and confirmed.

PUBLIC ACCESS FORUM

ITEM	TITLE	NAME OF SPEAKER
Not an Agenda Item	Review of Historical Height Limits Associated with Planning Policy	Jane Robertson on behalf of Save Our Heritage Precinct Wollongong

336 COUNCIL'S RESOLUTION - RESOLVED UNANIMOUSLY on the motion of Councillor D Brown seconded Councillor Colacino that the speaker be thanked for their presentation and invited to table their notes.

CALL OF THE AGENDA

337 COUNCIL'S RESOLUTION - RESOLVED UNANIMOUSLY on the motion of Councillor D Brown seconded Councillor Figliomeni that the staff recommendations for Items 3 to 8 inclusive be adopted as a block.

ITEM A - LORD MAYORAL MINUTE - BUSHFIRE CRISIS

338 COUNCIL'S RESOLUTION – RESOLVED UNANIMOUSLY on the motion of Councillor Bradbery that, following the recent bushfires across the South Coast, Southern Highlands, Wollondilly and beyond, Wollongong City Council -

1 Acknowledge the loss of life and trauma experienced by those directly impacted by the bushfire crisis.

2 Acknowledge and thank emergency services, especially Rural Fire Service personnel, for their efforts in managing the bushfire crisis.

3 Organise an opportunity for the community to officially acknowledge and thank emergency services.

4 Acknowledge and thank the Council staff who, under the leadership of the General Manager, have provided support to emergency services and neighbouring Councils.

5 Recognise the outstanding efforts of Mayors, Councillors and staff of our neighbouring Councils who are in midst of the bushfire crisis and recovery.

6 Offer continued support to our neighbouring Councils as determined by the General Manager.

7 Thank ABC Radio and their staff, and acknowledge that during the height of the crisis, radio was often the most up to date communications channel and during power and phone outages was the only channel for people to access life-saving information.

Variation *The variation moved by Councillor Cox (additional point 7 'Thank ABC Radio and their staff, and acknowledge that during the height of the crisis, radio was often the most up to date communications channel and during power and phone outages was the only channel for people to access life-saving information') was accepted by the mover.*

URGENT MATTER WITHOUT NOTICE

Councillor D Brown moved a PROCEDURAL MOTION that an Urgency Item be brought forward in relation to the WIN Entertainment Centre due to a significant roof leak that occurred at the venue on the weekend.

339 COUNCIL'S RESOLUTION - RESOLVED UNANIMOUSLY on the motion of Councillor D Brown seconded Councillor T Brown that Council consider Business Without Notice regarding the WIN Entertainment Centre due to a significant roof leak that occurred on the weekend.

Following the Resolution of Council, the Lord Mayor, Councillor Bradbery, ruled in accordance with Clause 9.3(b) of Council's Code of Meeting Practice that the matter was of great urgency and required a decision by the Council before the next scheduled ordinary meeting of Council.

DEPARTURE OF COUNCILLOR

During debate and prior to voting on Urgency Item, Councillor Cox departed and returned to the meeting, the time being from 7.41 pm to 7.42 pm.

During debate and voting on Urgency Item, the following Conflicts of Interests were declared

Councillor T Brown declared a non-pecuniary, not-significant Conflict of Interest in the Urgency Item – Refurbishment of WIN Entertainment Centre as she is a season ticket holder to the Illawarra Hawks. Councillor T Brown will stay in the Chamber during debate and voting on the item.

Councillor Rimmer declared a non-pecuniary, not-significant Conflict of Interest in the Urgency Item – Refurbishment of WIN Entertainment Centre as she is a season ticket holder to the Illawarra Hawks and her son plays with the Under 16's Hawks team. Councillor Rimmer will stay in the Chamber during debate and voting on the item.

Councillor Figliomeni declared a non-pecuniary, not-significant Conflict of Interest in the Urgency Item – Refurbishment of WIN Entertainment Centre as he is a season ticket holder to the Illawarra Hawks. Councillor Figliomeni will stay in the Chamber during debate and voting on the item.

Councillor D Brown declared a non-pecuniary, not-significant Conflict of Interest in the Urgency Item – Refurbishment of WIN Entertainment Centre as he is a season ticket holder to the Illawarra Hawks. Councillor D Brown will stay in the Chamber during debate and voting on the item.

URGENCY ITEM – REFURBISHMENT OF WIN ENTERTAINMENT CENTRE

340 COUNCIL'S RESOLUTION – RESOLVED UNANIMOUSLY on the motion of Councillor Bradbery seconded Councillor Martin that Council –

1 Requests as a matter of urgency that the New South Wales Government, through the Acting Minister for Sport, Multiculturalism, Seniors and Veterans and the Premier, reprioritise the need for an immediate refurbishment, with appropriate funding, of the WIN Entertainment Centre to bring it up to contemporary standards as an entertainment, conference and sporting venue.

2 Call on the Acting Minister to release the Masterplan prepared by Venues NSW, to give surety that this Government asset will be refurbished to align with community expectations.

3 Write to and invite the Premier, the Acting Minister and the Venues NSW Board to visit Wollongong and the WEC and meet to discuss options for its future.

Variation *The variation moved by Councillor T Brown (addition of point 2 'Call on the Acting Minister to release the Masterplan prepared by Venues NSW, to give surety that this Government asset will be refurbished to align with community expectations') was accepted by the mover and seconder.*

Variation *The variation moved by Councillor Dorahy (addition of point 3 'That Wollongong City Council write to and invite the Premier, the Acting Minister and the Venues NSW Board to visit Wollongong and the WEC and meet to discuss options for its future') was accepted by the mover and seconder.*

ITEM 1 - CONNECTING NEIGHBOURS PROGRAM GRANTS - ROUND 3

341 COUNCIL'S RESOLUTION - RESOLVED UNANIMOUSLY on the motion of Councillor Martin seconded Councillor Cox that Council note the successful recipients for Connecting Neighbours Grants Round 3.

DEPARTURE OF COUNCILLOR

During debate and prior to voting on Item 2, Councillor Walters departed and returned to the meeting, the time being from 8.18 pm to 8.19 pm.

ITEM 2 - STATE GOVERNMENT FUNDING FOR NSW PUBLIC LIBRARIES

342 COUNCIL'S RESOLUTION – RESOLVED UNANIMOUSLY on the motion of Councillor Rimmer seconded Councillor D Brown that -

1 Council notes the success of the 2018-2019 Renew our Libraries campaign and formally support the Public Libraries Association campaign to secure a sustainable funding model for NSW Public Libraries in perpetuity.

2 Council make representation to local State Members in relation to the need for a sustainable State funding model for the ongoing provision of public library services.

3 Council write to the Hon Don Harwin MLC, Minister for the Arts, and the Hon Walt Secord MLC, Shadow Minister for the Arts, calling for bi-partisan support for Consumer Price Index (CPI) indexation of State funding for NSW Public Libraries, as well as legislation of all elements of the 2019-20 to 2022-23 NSW State funding model.

ITEM 3 - AMENDMENT TO COUNCIL MEETING DATES

The following staff recommendation was adopted as part of the Block Adoption of Items (refer Minute Number 337).

COUNCIL'S RESOLUTION - RESOLVED UNANIMOUSLY on the motion of Councillor D Brown seconded Councillor Figliomeni that Council adopt the amended 2020 Council Meeting Cycle as shown in the attachment to this report.

ITEM 4 - LEAVE OF ABSENCE - COUNCILLOR KING - FEBRUARY 2020

The following staff recommendation was adopted as part of the Block Adoption of Items (refer Minute Number 337).

COUNCIL'S RESOLUTION - RESOLVED UNANIMOUSLY on the motion of Councillor D Brown seconded Councillor Figliomeni that a Leave of Absence be granted to Councillor King for the period of 22 January to 15 February 2020 which includes a Council Meeting on 3 February 2020 and a Councillor Briefing on 10 February 2020.

ITEM 5 - TENDER T19/44 - PROPOSED BRIDGE BEARING REPLACEMENT AND STRUCTURAL REHABILITATION OF THE BRIDGE AT URALBA STREET, FIGTREE

The following staff recommendation was adopted as part of the Block Adoption of Items (refer Minute Number 337).

COUNCIL'S RESOLUTION - RESOLVED UNANIMOUSLY on the motion of Councillor D Brown seconded Councillor Figliomeni that -

1 a In accordance with clause 178(1)(b) of the Local Government (General) Regulation 2005, Council decline to accept any of the tenders received for the bearing replacement and structural rehabilitation of the bridge at Uralba Street, Figtree and resolve to enter into negotiations with one or all of the tenderers or any other party with a view to entering into a contract in relation to the subject matter of the tender.

b In accordance with clause 178(4) of the Local Government (General) Regulation 2005, the reason for Council hereby resolving to enter into negotiations with one or all of the tenderers or any other party and not inviting fresh tenders is that it is anticipated that a satisfactory outcome can be achieved with one of those parties who demonstrate a capacity and ability to undertake the works.

2 Council delegate to the General Manager the authority to undertake and finalise the negotiations, firstly with the tenderers, and, in the event of failure of negotiations with those tenderers, any other party, with a view to entering into a contract in relation to the subject matter of the tender.

3 Council grant authority for the use of the Common Seal of Council on the contract and any other documentation, should it be required, to give effect to this resolution.

ITEM 6 - DECEMBER 2019 FINANCIALS

The following staff recommendation was adopted as part of the Block Adoption of Items (refer Minute Number 337).

COUNCIL'S RESOLUTION - RESOLVED UNANIMOUSLY on the motion of Councillor D Brown seconded Councillor Figliomeni that -

1 The financials be received and noted.

2 Council approves the proposed changes to the Capital Budget.

ITEM 7 - STATEMENT OF INVESTMENT - NOVEMBER AND DECEMBER 2019

The following staff recommendation was adopted as part of the Block Adoption of Items (refer Minute Number 337).

COUNCIL'S RESOLUTION - RESOLVED UNANIMOUSLY on the motion of Councillor D Brown seconded Councillor Figliomeni that Council receive the Statement of Investment for November and December 2019.

ITEM 8 - BI-MONTHLY RETURNS OF DISCLOSURES OF PECUNIARY INTERESTS AND OTHER MATTERS - FEBRUARY 2020

The following staff recommendation was adopted as part of the Block Adoption of Items (refer Minute Number 337).

COUNCIL'S RESOLUTION - RESOLVED UNANIMOUSLY on the motion of Councillor D Brown seconded Councillor Figliomeni that Council note the tabling of the Returns of Disclosures of Interest as required by Part 4 of the Model Code of Conduct.

ITEM 9 - NOTICE OF MOTION - COUNCILLOR COX - RAIN GARDENS

343 COUNCIL'S RESOLUTION - RESOLVED UNANIMOUSLY on the motion of Councillor Cox seconded Councillor Martin that

1 Wollongong City Council develop technical guidelines for the construction of Rain Gardens, so that these can be used in addition to existing stormwater treatments on public and private land in our city.

2 Wollongong City Council with the Rural Fire Service investigate the feasibility of water harvesting and retention including underground water tanks in strategic locations for firefighting and the irrigation of public sporting facilities, parks and gardens.

Variation *The variation moved by Councillor Bradbery (the addition of Wollongong City Council with the Rural Fire Service investigate the feasibility of water harvesting and retention including underground water tanks in strategic locations for firefighting and the irrigation of public sporting facilities, parks and gardens) was accepted by the mover and seconder.*

THE MEETING CONCLUDED AT 9.00 PM

Confirmed as a correct record of proceedings at the Ordinary Meeting of the Council of the City of Wollongong held on Monday 24 February 2020.

File: LM-914.002 Doc: IC20/53

ITEM A LORD MAYORAL MINUTE - INVESTIGATE OPPORTUNITIES TO HOUSE BEEHIVES ON APPROPRIATE LAND MANAGED BY WOLLONGONG CITY COUNCIL

The NSW Apiarists Association have said that thousands of hives, housing many millions of bees, have been destroyed in the bushfires.

It could take between five and 20 years for some flowering gums to fully recover and to produce enough nectar and pollen to feed bees.

It is estimated that fires will lower NSW honey production by about 30 per cent for at least the next 10 years. NSW is largest honey-producing state in Australia. Bee pollinating is also a vital to other agricultural industries in regional NSW.

Industry groups and amateur associations are calling for access to more NSW national parks to feed and strengthen bees. Wollongong City Council should investigate whether any green spaces within our local government areas could be accessed by approved apiarists to help maintain bee numbers.

The Illawarra Beekeepers Association supports this proposal.

RECOMMENDATION

I recommend that Wollongong City Council:

1. Acknowledges the ongoing impact of recent bushfires on honey production and bee pollination due to the loss of habitat on which bees rely.
2. Explore opportunities for approved apiarists affected by bushfires to safely locate beehives in appropriate parks and green spaces managed by WCC.
3. Encourage other Government agencies to make greenspace that is under their management available to locate beehives.

ATTACHMENTS

There are no attachments for this report.

File: CST-100.03.062 Doc: IC19/352

ITEM 1 WOLLONGONG CITY CENTRE PLANNING REVIEW

In May 2016, Council endorsed the Vision for Wollongong City Centre, defined by *A City for People*. The next stage of the project was a comprehensive City Centre Planning Review, reviewing the built form controls to guide development in the city centre aligned with its Vision.

In 2018 work commenced on the Planning Review, with an Urban Design Framework and Economic Analysis commissioned to understand how the current suite of planning policy aligns with the City Centre Vision. The objective of the project was to seek to undertake planning, urban design, open space and economic analysis to inform appropriate distribution of height and scale of buildings across the city centre, including refinement of the city centre boundary and associated planning policy amendments.

This report seeks Council resolution to engage with the community on the suite of technical investigations to inform final refinement of a draft Planning Proposal and Development Control Plan.

RECOMMENDATION

1 Community and stakeholder feedback be sought on the Wollongong City Centre Urban Design Framework and Economic Analysis.

2 Following the consultation period and review of submissions, the draft Planning Proposal and draft Development Control Plan amendments be finalised and reported to Council for consideration.

REPORT AUTHORISATIONS

Report of: Chris Stewart, Manager City Strategy
Authorised by: Linda Davis, Director Planning + Environment - Future City + Neighbourhoods

ATTACHMENTS

1 Site Identification Plan
2 Wollongong City Centre Urban Design Framework
3 Wollongong City Centre Economic Analysis

BACKGROUND

In 2007, Council endorsed the Revitalising Wollongong City Centre Plan (2007), also known as the City Centre Revitalisation Strategy, which had been prepared by the (then) NSW Department of Planning. The Strategy is a suite of four documents setting the strategic framework for the City Centre: (1) City Centre Vision, (2) Wollongong City Centre Local Environmental Plan (LEP), (3) Wollongong City Centre Development Control Plan (DCP), and (4) Wollongong City Centre Civic Improvement Plan. It works to inform and guide the delivery of a revitalised City Centre.

The 2007 Vision set a 25 year strategic framework for the City Centre aimed at attracting 6,000 new residents and 10,000 new jobs. In 2009, Council integrated the Wollongong City Centre LEP 2007 into the Wollongong LEP 2009 (WLEP). This was part of a comprehensive LEP Review for the Wollongong Local Government Area. This was a direct translation of controls into the Wollongong LEP 2009.

In 2010 Council prepared the Wollongong CBD Action Plan (retired in 2016).

Reviewing the City Centre Vision

In March 2014, Council engaged Gehl Architects to partner in developing Wollongong Public Spaces Public Life. The partnership enabled staff to learn the methodology developed by Jan Gehl over the past 40 years. Gehl Architects is based in Denmark and have extensive experience working with cities around the world to convert high level liveability aspirations to on-the-ground, practical and tangible City change. The Gehl philosophy is based on encouraging life in a City, improving the public spaces, which will lead to improved building stock. If more people are using the City, the economics and life of the City will increase.

The approach is based on gathering data about our City to enable Council and the community to inform future planning of the City; strengthen a data driven approach to decision making and infrastructure delivery; and allow change in the City to be measured over time.

To inform the analysis, Council officers worked with Gehl Architects to gather a range of data about our City. A team of students and Council officers collected data about how people use the Wollongong City Centre. Pedestrian counts recorded the number of people moving through our streets and where people spent time and enjoyed the City.

Through field work and desktop research, over 60 data sets were collected and analysed, including quality assessments of City streets and buildings, data on traffic planning, urban planning, parks, recreation, and community, cultural and economic development. In February 2015 additional pedestrian counts were taken as a comparative exercise. These counts reinforced pedestrian patterns recorded in 2014 with minor variations. This information has been considered in the refinement of the analysis in the draft report.

Setting a renewed Vision for Wollongong City Centre - A City for People 2016

On 30 May 2016 Council endorsed A City for People, presenting an aspirational vision for the City Centre and key strategies and outcomes aspired to be achieved in the short, medium and long term.

Council also resolved to retire the Revitalising Wollongong City Centre Vision (2007), Civic Improvement Plan (2007) and Wollongong CBD Action Plan (2010) as policy documents.

The City Centre Vision

The vision presented in A City for People 2016 is about what Wollongong City Centre aspires to become. It is intended to set a clear direction to guide decision making and priorities in the city centre over time.

In the 21st century Wollongong City Centre will be a people orientated, sustainable and liveable city.

Wollongong City Centre is a thriving and unique Regional City, delivering a diverse economy and offering a high quality lifestyle. The city centre is nationally recognised as a liveable city and is the place where people want to live, learn, work and visit.

The Vision is underpinned by twelve aspirational goals for delivering the Wollongong City Centre of the future. These are themed as follows -

- Celebrate the uniqueness
- Develop a human scale City
- Grow a living City
- Create an accessible, pedestrian friendly City.

Implementing the Vision: City Centre Planning Review

A City for People identified a disconnect between our current City Centre planning controls and the Vision the community helped to define.

The next stage of the project was a comprehensive City Centre Planning Review. The purpose of this work was to test the building controls which guide development in the City Centre to establish alignment with A City for People.

The objective of the project was to undertake planning, urban design, open space and economic analysis to inform appropriate distribution of height and scale of buildings across the City Centre, including refinement of the City Centre boundary and associated planning policy amendments.

Wollongong City Centre Urban Design Framework

In 2018, Architectus and Andrew Burns Architects were commissioned to prepare an Urban Design Framework, as the next step in implementing A City for People. The objectives of the urban design framework are to -

- Provide Council with strong recommendations in order to develop a suite of clear and consistent planning controls and guidelines that facilitate better design outcomes as well as economically feasible development in the City Centre
- Strengthen the way that design excellence is taken into account when Council examines places and reviews proposals
- Set the foundations that enable council to develop a stronger design culture within Council and the community.

The Urban Design Framework undertakes detailed testing of existing planning policy and urban design analysis of the City to precinct scale. This work is supported by economic analysis and forecasting prepared by SGS Economics and Planning.

Key findings include -

Land Use:

- Current land use controls could result in a City filled with residential development, compromising long term employment growth
- The retail core is spread out too far, which results in empty shopfronts and creates inactive streets
- The City's cultural identity is diversifying to support City life.

Built Form:

- General development controls don't respond to the character and historic qualities of places in the City
- The planning controls do not provide clear guidance for development to deliver the intended built outcomes for the city.
- The city's development controls do not promote development that defines a city skyline or enhances the unique natural setting
- Developments favour maximising building development controls over design quality, producing a less attractive City

Public Domain and Connections:

- The City lacks clear physical and visual connections to key places which makes wayfinding difficult and discourages walking.
- Arrival into the City Centre is confusing and provides an underwhelming first impression of Wollongong
- Public open spaces are valued but do not yet realise their full potential.
- Key public spaces are at risk of overshadowing by surrounding buildings
- Tree canopy cover in the city centre is inadequate

The Urban Design Framework defines clear Objectives for policy change across the themes of Land Use, Built Form and City Structure. These objectives are supported by Directions and Strategies which start to detail how policy can change to deliver A City for People.

PROPOSAL

A refreshed Planning Strategy

Wollongong City Centre is the economic and cultural heart of the Region. Future economic prosperity of the Region will be built on the potential for the City Centre to generate more jobs and to establish itself as a diverse city with a unique offer.

The City Centre Planning Strategy aims to deliver -

- **Jobs** – Defining a CBD that prioritises jobs growth by safe-guarding appropriate land for commercial development; and defining key retail streets that support a range of uses both day and night
- **Housing** – Promoting a variety of housing types in the right locations to support the City Core and improve affordability
- **Lifestyle** - Strengthening the structure of the City through a permeable grid that prioritises pedestrians; Creating a green network of open spaces for a sustainable, healthy and attractive city; and Protecting sunlight to key public spaces
- **Planning Controls** – Undertaking the right analysis to inform how we strengthen and simplify planning controls to ensure they respond to precinct character and future desired built form outcomes; and Improve clarity processes give clear expectations to the development industry
- **Good Design** - Elevating our design culture and commitment to delivering good design outcomes in the built environment

The Urban Design Framework, accompanied by detailed Economic Analysis, defines clear Objectives for policy change across the themes of Land Use, built form and City Structure. These objectives are supported by Strategies and Directions which start to detail how policy can change to deliver A City for People.

Land Use Strategy - To deliver a vibrant and growing Regional City

Planning controls promote land-use diversity to encourage a vibrant mix of offers throughout the City Centre, day and night. Jobs and population growth support Wollongong's role as a Regional City. Wollongong is an attractive place to live, work, visit and invest. Directions are -

1 Prioritise employment growth and establish a resilient commercial core

2 Define a thriving retail network that responds to character and supports a range of offers

3 Plan for a variety of housing to support a vibrant city.

Built Form Strategy - An attractive and diverse city in a unique natural setting

Clear planning controls preserve the unique character of Wollongong's precincts. Renewal at all scales is encouraged and this creates an interesting built fabric. Built form variety creates a recognisable city skyline that celebrates the natural setting and responds to human scale. Directions are -

1 Strengthen and simplify planning controls to promote built form diversity in response to people and place

2 Grow a legible city that supports a distinctive and evolving character

3 Elevate the importance of design quality in the City Centre.

The Public Domain and connections Strategy - A green and walkable city

A significant increase to the City's tree canopy contributes to a green, walkable and sustainable city. Attractive and revitalised public spaces support an active and healthy community and are a catalyst for growth in the city. The city grid is clear and permeable and facilitates walkability. Directions are -

1 Strengthen the structure of the City through a permeable grid that prioritises pedestrians

2 Create a green network of open spaces for a sustainable, healthy and attractive city

3 Improve the functionality and amenity of the street for pedestrians.

Implementation – draft Planning Controls

To implement the recommendations of the Urban Design Framework, a draft Planning Proposal and draft Development Control Plan chapter are being prepared. A review of Affordable Housing opportunities is also in preparation.

On 14 June 2019, the draft Planning Proposal was reviewed by the Wollongong Local Planning Panel, for strategic merit. The Panel concluded that:

> *The Wollongong Local Planning Panel has reviewed and supports the proposed Planning Proposal for the Wollongong City Centre. The Planning Proposal has strategic merit as it is supported by an Urban Design Framework, an Economic Study, a 3D model and thorough analysis, and implements Council's 2016 Vision for the City.*

The draft DCP chapter has also been reviewed by Council's Urban Design Panel.

To assist with the finalisation of the draft Planning Proposal and draft DCP chapter, it is proposed that community feedback be sought on the overall strategies and directions contained in the Urban Design Framework and Economic Analysis. The community and stakeholder input will enable the draft planning controls to be confirmed and finalised, prior to being considered by Council. If endorsed by Council, the draft Planning Proposal will be submitted to the NSW Department of Planning, Industry and Environment for the issuing of Gateway Determination, and formal exhibition.

CONSULTATION AND COMMUNICATION

Community Consultation

The Urban Design Framework is underpinned by the approved strategic direction developed by A City for People which was heavily influence by community engagement. It is with this comprehensive backing that the planning proposal amendments are made.

The draft report "A City for People, Wollongong Public Spaces Public Life 2015" was exhibited between 14 November 2015 to 11 March 2016. A comprehensive engagement program gathered thousands of ideas from the community across a broad range of forums with 1,060 survey responses, 19 submissions and over 100 online comments received from a range of students, community groups, business, residents, government agencies and visitors.

This feedback was overwhelmingly positive with the community indicating a readiness for action.

Commentary received informed the refinement of the final report A City for People 2016, and influenced priorities in accompanying Implementation Plan.

A City for People 2016 – The Engagement Report, details the range of feedback received from various engagement activities. Overwhelmingly, the community confirmed support for the draft City Centre Vision and the focus across the six nominated Public Life Projects. No formal objections were received.

Highlights from the engagement included -

- Hundreds of conversations about the draft Plan (with community members, businesses, land owners and school students)
- 9,000 promotional postcards distributed in hard copy and sent to residents and landowners in the Wollongong suburb

- 1,060 people completed the online survey
- 1,120 views of the online project page
- 14 participants posting on the online discussion forum, producing 18 forum posts
- 19 written submissions received from 15 residents and agencies
- 150 students offered comments and ideas for the future of Wollongong City Centre.
- 1,200 people reached through Social Media (Facebook, Instagram & twitter) and online forum.

Community and stakeholder feedback expressed support for the Vision, revitalisation and investment in the City's public spaces and streets. Significantly, there were no submissions that directly opposed A City for People.

The Community are invited to inform the process by way of providing comment on the Urban Design Framework during the exhibition period.

Councillor Input

Councillor workshops have been held to keep Councillors informed and communicate key findings and to hear Councillor Commentary.

- Councillor Workshop – 23 August 2018
- Councillor Workshop – 13 September 2018
- Ward 2 Councillor Briefing – 3 June 2019
- Councillor Briefing – 7 November 2019
- Councillor Briefing – 10 February 2020

Department of Planning and Environment Engagement

An open dialogue has been maintained with the Department of Planning, Industry and Environment (Regional Office) with a series of working sessions / meetings held.

Public Consultation arrangements

The initial non-statutory community consultation of the strategy documents is proposed to occur over 5 weeks, concluding prior to Easter / School Holidays. The exhibition will include -

- Mail-outs
- Council Website – Have your say page
- Social media
- Stakeholder forum, meetings
- Hard copies will be available at Customer Service and the libraries
- Hold a Shop-front (or Mall market) stand
- Release a Video.

Following the consultation period, submissions will be reviewed and any required amendments will be made to the strategy documents. The implementation draft planning documents will be finalised and the Planning Proposal package reported to Council. If endorsed by Council, the draft Planning Proposal will be referred to the NSW Department of Planning, Industry and Environment for a Gateway Determination, which will enable formal exhibition.

PLANNING AND POLICY IMPACT

This report contributes to the delivery of Our Wollongong 2028 goal "We have an innovative and sustainable economy". It specifically delivers on the following:

Community Strategic Plan	Delivery Program 2018-2021	Operational Plan 2019-20
Strategy	**3 Year Action**	**Operational Plan Actions**
2.1.2 Grow the national competitiveness of Metro Wollongong to drive economic growth, employment and diversification of the region's economy	2.1.2.2 Progress implementation of a City for People and its accompanying Implementation Plan	Undertake the City Centre Planning Review and Design Review arising from the Wollongong City Centre – Public Spaces Public Life Implementation Plan

This work is a direct delivery of A City for People, aligning directly with Council's Operational Plan.

Economic Development Strategy (2019-2029)

On 23 September 2019 Council adopted the draft Economic Development Strategy following exhibition. The draft City Centre Planning and Economic Review is consistent with the Economic Development Strategy. Importantly, strategies such as the Jobs Target are aligned to strategies such as identifying commercial only precincts.

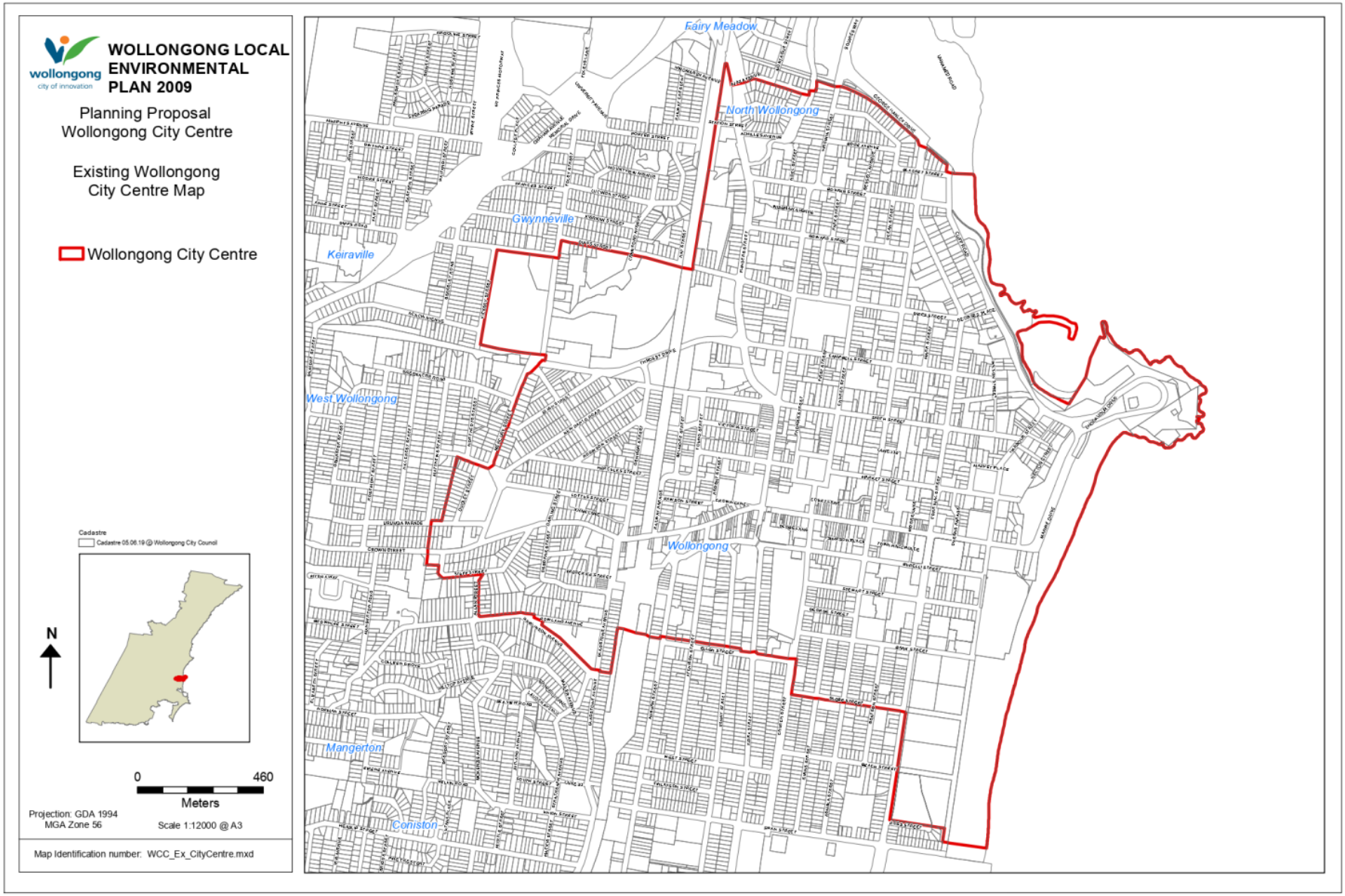
Draft Wollongong City Centre Access and Movement Strategy

The preparation of the draft Wollongong City Centre Access and Movement Strategy will commence community engagement in February 2020, aligned with the exhibition of the Urban Design Framework. Some preliminary traffic and parking data has been used to inform the Urban Design Framework, however, the development of the Access and Movement Strategy will continue to inform future planning policy.

CONCLUSION

The Vision for Wollongong City Centre, defined by *A City for People*, was endorsed by Council in May 2016. Based on community input and the direction of this Vision, Council has developed an Urban Design Framework and Economic Analysis to understand how the current suite of planning policy aligns with the City Centre Vision.

The Urban Design Framework provides recommended Objectives and Directions to inform policy recommendations across land use, built form and City Structure. Council is seeking community feedback on the Wollongong City Centre Urban Design Framework, and Economic Analysis. Community and Stakeholder feedback will be used to finalise the preparation of the draft Planning Proposal and draft DCP chapter, prior to those documents being reported to Council and exhibited.


WOLLONGONG LOCAL ENVIRONMENTAL PLAN 2009
Planning Proposal
Wollongong City Centre
Existing Wollongong City Centre Map
Wollongong City Centre
Cadastre
Cadastre 05.06.19 @ Wollongong City Council
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Fairy Meadow
North Wollongong
Gwynneville
Keiraville
West Wollongong
Wollongong
Mangerton
Coniston

wollongong city of innovation
architectus™ Andrew Burns Architecture

Wollongong City Centre Urban Design Framework

Draft

Project and report	Wollongong City Centre Urban Design Framework
Version and date issued	February 2020 - Draft reported to Council

Wollongong City Council would like to show its respect and acknowledge the Traditional Custodians of the Land to which this Strategy applies, of Elders past and present, and extend that respect to other Aboriginal and Torres Strait Islander people.

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city of innovation

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Andrew Burns Architecture

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Executive Summary

In the 21st century Wollongong City Centre will be a people orientated, sustainable and liveable city.

Wollongong City Centre is a thriving and unique regional city, delivering a diverse economy and offering a high quality lifestyle. The City Centre is nationally recognised as a liveable city and is the place where people want to live, learn, work and play.

A City for People

In 2014, Council committed to commence a review of the Re*vitalising Wollongong City Centre Strategy (2007)* and its associated suite of planning controls. The resulting study, *A City for People* by Gehl Architects and McGregor Coxall, sets a vision for the future - a people-oriented, sustainable and liveable city.

A City for People identified four themes to support growth towards this vision:

1. Celebrate the uniqueness
2. Develop a human scale city
3. Grow a living city
4. Create an accessible, pedestrian friendly city

A key action of A City for People was to undertake a City Centre Planning & Design Review. Two key elements of the Review were Economics and Urban Design analysis and recommendations. The Urban Design Framework brings these two pieces of work together to take the next step in implementing *A City for People*.

The Urban Design Framework is a tool for decision making. It provides a detailed analysis of the current City Centre planning policy and seeks to provide a set of Objectives, Directions and Strategies to inform Planning Policy Change to realign with *A City for People*.

The purpose of the framework is to:

- Provide Council with strong recommendations in order to develop a suite of clear and consistent planning controls and guidelines that facilitate better design outcomes and economically feasible development in the City Centre.
- Strengthen the way that design excellence is taken into account when Council examines places and reviews proposals.
- Set the foundations that enable council to develop a stronger design culture within council and the community

The Urban Design Framework document is broadly divided into two parts:

1. Analysis
2. Urban Design Recommendations

The analysis includes urban design studies and testing by Architectus and Andrew Burns Architects. This is supported by economic analysis and forecasting by SGS Economics and Planning. The outcomes of this analysis work are summarised into 12 key findings.

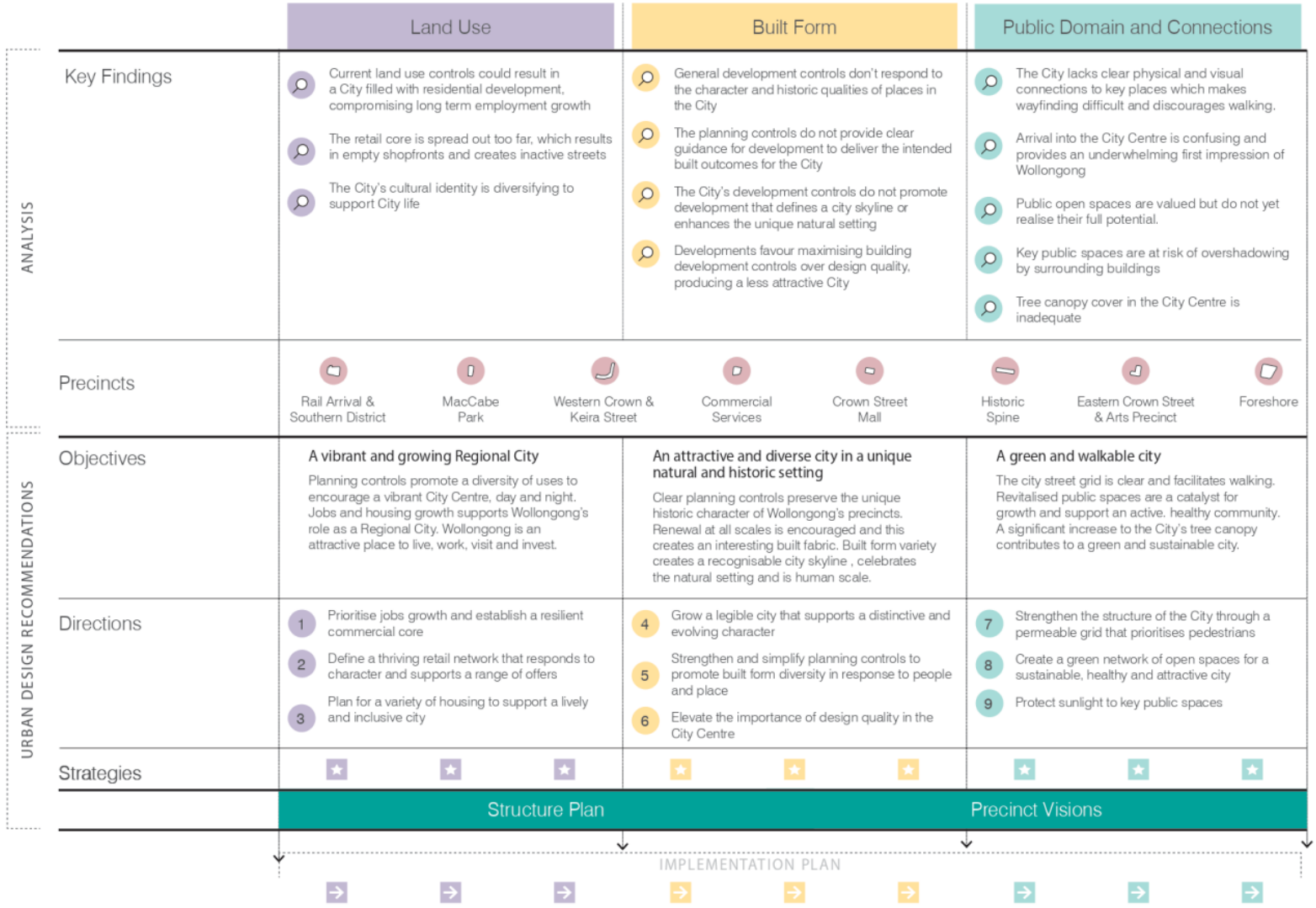
The Objectives, Directions and Strategies which make up the Urban Design Recommendations respond to the challenges raised in the 12 findings. These, along with the key findings, are illustrated in the diagram on the facing page.

Detailed recommendations under each strategy will be refined following public consultation, in order to inform an implementation plan detailing changes to planning and design controls and processes.

A design framework for people and places

Proposed Structure Plan

Proposed desire future character of precincts


ANALYSIS
URBAN DESIGN RECOMMENDATIONS
Land Use
Built Form
Public Domain and Connections
Key Findings
Current land use controls could result in a City filled with residential development, compromising long term employment growth
The retail core is spread out too far, which results in empty shopfronts and creates inactive streets
The City's cultural identity is diversifying to support City life
General development controls don't respond to the character and historic qualities of places in the City
The planning controls do not provide clear guidance for development to deliver the intended built outcomes for the City
The City's development controls do not promote development that defines a city skyline or enhances the unique natural setting
Developments favour maximising building development controls over design quality, producing a less attractive City
The City lacks clear physical and visual connections to key places which makes wayfinding difficult and discourages walking.
Arrival into the City Centre is confusing and provides an underwhelming first impression of Wollongong
Public open spaces are valued but do not yet realise their full potential.
Key public spaces are at risk of overshadowing by surrounding buildings
Tree canopy cover in the City Centre is inadequate
Precincts
Rail Arrival & Southern District
MacCabe Park
Western Crown & Keira Street
Commercial Services
Crown Street Mall
Historic Spine
Eastern Crown Street & Arts Precinct
Foreshore
Objectives
A vibrant and growing Regional City
Planning controls promote a diversity of uses to encourage a vibrant City Centre, day and night. Jobs and housing growth supports Wollongong's role as a Regional City. Wollongong is an attractive place to live, work, visit and invest.
An attractive and diverse city in a unique natural and historic setting
Clear planning controls preserve the unique historic character of Wollongong's precincts. Renewal at all scales is encouraged and this creates an interesting built fabric. Built form variety creates a recognisable city skyline , celebrates the natural setting and is human scale.
A green and walkable city
The city street grid is clear and facilitates walking. Revitalised public spaces are a catalyst for growth and support an active. healthy community. A significant increase to the City's tree canopy contributes to a green and sustainable city.
Directions
1 Prioritise jobs growth and establish a resilient commercial core
2 Define a thriving retail network that responds to character and supports a range of offers
3 Plan for a variety of housing to support a lively and inclusive city
4 Grow a legible city that supports a distinctive and evolving character
5 Strengthen and simplify planning controls to promote built form diversity in response to people and place
6 Elevate the importance of design quality in the City Centre
7 Strengthen the structure of the City through a permeable grid that prioritises pedestrians
8 Create a green network of open spaces for a sustainable, healthy and attractive city
9 Protect sunlight to key public spaces
Strategies
Structure Plan
Precinct Visions
IMPLEMENTATION PLAN

Wollongong City has initiated a visionary process that marks a paradigm shift in the planning culture of the city…putting people at the centre of planning in order to strengthen city life, vibrancy, sustainability and active mobility
A City for People

01 Introduction

This section introduces the Wollongong City Centre Planning and Design Review, the purpose of the Urban Design Framework, and why changes are needed to achieve the Vision as set out in *A City for People*

"In the 21st century Wollongong City Centre will be a people-orientated, sustainable and liveable city."
8
Draft | Wollongong City Centre Urban Design Framework |

A City for People

In 2014 Wollongong City Council partnered with Gehl Architects to deliver a renewed and reframed vision for the Wollongong City Centre - *A City for People.*

The planning approach of *A City for People* focusses on the importance of people and place. It gives priority to the delivery of high-quality streets, buildings and public spaces to support the 'public life' of our community to deliver an extraordinary City Centre.

A City for People was the result of detailed, observation-based analysis of the way our city centre works. It involved intensive community engagement and resulted in a clear vision for the future of our city.

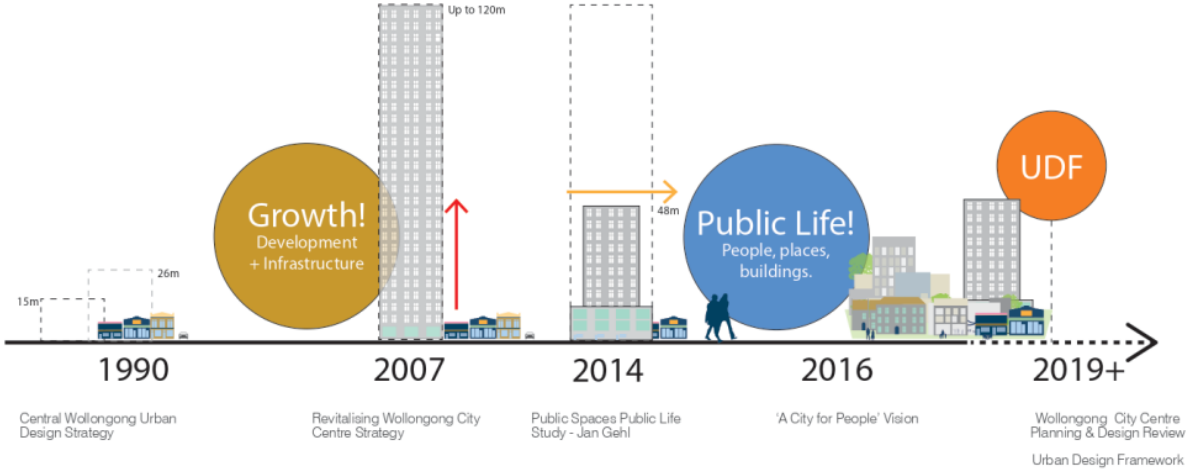
"In the 21st century Wollongong City Centre will be a people-orientated, sustainable and liveable city.

Wollongong City Centre is a thriving and unique regional city, delivering a diverse economy and offering a high quality lifestyle. The City Centre is nationally recognised as a liveable city and is the place where people want to live, learn, work and play."

This study establishes 12 vision statements under 4 themes to support growth towards this vision:

1. Celebrate the uniqueness
2. Develop a human scale city
3. Grow a living city
4. Create an accessible, pedestrian-friendly city

Key to the delivery of this Vision is our planning framework. *A City for People* identified a disconnect between our current City Centre planning controls and the vision, identifying a key action to undertake the City Centre Planning Review (Action 1.1) and the City Centre Design Review (Action 1.6). The objective of these reviews is to establish the basis on which to recommend changes to the existing Wollongong City Centre planning controls, including the Wollongong Local Environmental Plan 2009 (LEP) and the Wollongong Development Control Plan 2009 - Wollongong City Centre Precinct (DCP).



Introducing the Urban Design Framework

The City Centre Planning Review and Design Review (Review) aims to recalibrate the planning controls and processes governing city centre development to align with the vision set out in *A City for People*. Critical to this aim is the desire to enable and require better design in our City.

Although the Review's focus is on planning and design policy, it acknowledges that multiple factors are contributing to poor design outcomes across Wollongong's city centre. Multiple levers must be engaged to enable better outcomes, spanning across policy, process and culture.

The Review's critical supporting document is the Urban Design Framework (UDF). The aim of the UDF is to be the basis for a new suite of planning controls and physical interventions that set clear objectives and enable feasible, high quality development. Its development has involved extensive analysis and testing of the built environment and public spaces of our city.

A focus of this analysis has been to understand and communicate the character precincts that make up the city centre, and develop policy recommendations that encourage a design response to place. In some cases this draws heavily on the existing fabric, and in others, provides guidance towards a new character for the place.

The UDF will inform changes to the planning controls (LEP + DCP) that shape the form and function of the Wollongong City Centre, in order to bring them into alignment with the vision set out in *A City for People*.

The objectives of the urban design framework are to:

- Provide Council with strong recommendations in order to develop a suite of clear and consistent planning controls and guidelines that facilitate better design outcomes as well as economically feasible development in the City Centre
- Strengthen the way that design excellence is taken into account when Council examines places and reviews proposals
- Set the foundations that enable Council to develop a stronger design culture within Council and the community

The UDF provides a detailed analysis of the current state of the city and a design framework that will facilitate:

- a thriving commercial core that attracts investment and maintains Wollongong's role as a regional city;
- vibrant retail streets supported by housing in the right places;
- an improved human experience of the built environment and public open spaces.

Study Area

The focus area for this project is the central business zones in the Wollongong City Centre. These include the entire Commercial Core (B3) and Mixed Use (B4) zones.

Generally speaking the area is defined by the Coast to the East, Ellen street to the South, Denison Street to the West and Smith Street to the North.

What has informed the Urban Design Framework?

The Urban Design Framework document is broadly divided into two parts, Analysis and Urban Design Recommendations:

1. Analysis

The Analysis has been informed by a range of inputs as described below.

Community and Industry engagement sourced primarily through *A City for People (2016)*, the Community Strategic Plan (*Our Wollongong 2028*), the Urban Greening Strategy (2017), and the *Economic Development Strategy* (2019).

A City for People Review to identify the challenges faced in delivering the 12 statements defined under the vision.

Internal Specialist Stakeholders to determine the current issues impacting design quality and the development process. These included Council specialists in traffic, flooding, landscape design, architecture, economic development and development assessment, as well as independant groups such as the Design Review Panel.

Economic analysis by SGS Economics & Planning covering employment patterns, sector growth and decline, floor-space capacity under current controls, impacts on development feasibility and ability to meet forecast growth projection.This economics analysis has been a fundamental piece in informing proposed changes to land use and development envelopes. The method and findings of this analysis are detailed in 02 Analysis.

Urban Design Analysis was undertaken by Architectus and Andrew Burns Architects. An understanding of the physical attributes of the city was established through a series of site visits, photographic recording, desktop review and research and the development of a 3D City Centre model. This analysis included: existing movement activity; environmental conditions; detailed character precinct studies; and built form site studies to determine key design quality issues.

Testing of the existing controls was undertaken to better understand the impact of the existing planning controls (LEP and DCP) on delivering the vision and facilitiating the expected growth of the city. The 3D model was critical to this process. The model excluded sites which were identified as constrained and less likely to redevelop, including recently constructed (within 5 years), heritage and character items, existing residential subject to strata over 5 storeys, existing commercial over 10 storeys, special uses and recreational land, and isolated lots. Remaining lots were modelled under an amalgamated scenario (common ownership) to achieve minimum lot frontage and lot size dimensions.

The detailed character precinct studies defined 8 precincts, which expand on the 6 identified in *A City for People*. Detailed analysis, observation and research was used to establish the unique character of each precinct. Strengths and weaknesses in the current land use, built form and public domain were identified, and the capacity of the existing controls to support the character of each precinct were determined.

Key findings summarise the outcomes of the testing and analysis, and identifiy a series of land use, built form and public domain and connections challenges.

2. Urban Design Recommendations

The recommendations of the UDF are a response to the challenges defined through the analysis. Recommendations are defined through:

Objectives: The Framework is built on three key objectives relating to land use, built form and public domain and connections. These objectives were identified following the analysis and act as a benchmark against which to evaluate actions moving forward.

Directions and strategies: The Framework presents directions to achieve the objectives. The directions are designed to be overarching statements that describe the broad moves made by the Framework. To achieve the directions, the framework outlines a series of strategies which explain in detail the proposed approach to delivering the directions.

Structure plan: A structure plan has been developed for the City which incorporates the strategies for land use, built form and public domain and connections.

Precinct Visions: These proposed future desired character statement and principles for different precincts across the city centre. They seek to celebrate the unique qualities of our city centre and guide future development in line with community values and our role as a Regional City Centre.

Implementation Plan: Following public engagement and exhibition of the UDF, draft recommendations will be refined into an Implementation Plan which will set out the full set of proposed changes to planning and design controls and processes. This will be exhibited with a draft Planning Proposal (proposed changes to LEP controls) and a revised DCP Chapter D13- Wollongong City Centre.

Precincts identified based on character and function

Example of a Precinct Vision sketch. Rail Arrival + Southern District. Looking East from the Station

By guiding city design to reflect a comfortable human scale, priority is given to the delivery of high quality city streets and spaces, inviting people to explore their city and to appreciate the unique and beautiful qualities offered in the City Centre.

A City for People

02 Analysis

This section outlines key findings and opportunities which have been defined as a result of comprehensive analysis of the City Centre

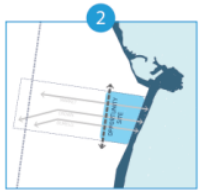
A City for People Learnings

Theme 1 Celebrate the uniqueness

- The natural beauty of the escarpment is seen from City streets and in-between City buildings.
- Nature is an important part of the City street character, providing comfort and connection to the escarpment setting.

Key challenges:

- The need to achieve a seamless transition between the core City and the foreshore, where there are a range of things to see and do.
- Ensure that Wollongong's heritage is reflected in buildings and spaces in between, telling the City's Indigenous, European and industrial story.



- Offering a seamless journey between the City and the sand, the coastal setting underpins city experience and attracts a diverse range of people.
- The foreshore is exciting and there are a range of things to do, see and enjoy.

Key challenges:

- The foreshore feels disconnected from the City Centre.
- Building on the existing entertainment uses and knitting the foreshore back into the centre will be critical.
- Opening up this part of the City at all times of the day, not just for events, will help to activate the foreshore.
- Corrimal Street is a clear delineation between the City core and foreshore - and a new approach to street activation and land uses is required.

- The nostalgia of our past shapes the City identity and tells a story of our rich Indigenous, European and industrial history.
- Heritage is revealed in buildings , street grid and the spaces that exist in-between.

Key challenges:

- Integrating the old with the new is always a challenge.
- Heritage is an important component of the City's character but there must be appropriate controls that balance redevelopment and heritage protection.
- Heritage is just as much about the City's structure, with the history and character of streets, such as Crown Street, having a significant historical influence on the city.
- The structure of the City should reinforce and build on the historic grid that developed in the early 1800's.
- Achieveing conservation of heritage items, appropriate settings and reinforcing aspects of local character in a high-density environment.

Theme 2 Develop a human scale city

- The City Centre is tightly defined, guiding priorities for investment and a growing economy.
- A compact City Centre delivers a more connected CBD, bringing efficiencies and enhancing its regional role.

Key challenges:

- The extent of the commercial core is too large to enable a compact, urban City Centre.
- The B3 area needs to be redefined as a key employment area that prioritises jobs, and is supported by high quality public spaces.
- Allowing shop top housing across the City Centre compromises the commercial core - recent mixed use developments have resulted in high residential yields but limited employment outcomes.

- Buildings are designed to relate to City streets, delivering a comfortable scale and connecting people with street life.
- The character and form of buildings responds to and respects the City's natural setting and spread public life across the City.

Key challenges:

- The current height controls are excessive and do not give sufficient consideration to the streetscape/public domain.
- There is little variation in the built form outcomes being delivered across the City
- The built form should respond to the historic and existing street character and function - this means some streets may have much lower heights than currently permitted.
- Establishing a strong and consistent street wall height for the City Centre will be key.
- There must be a diversity of built form and also a diversity of uses to create a fine grain, human scale City.

- Architectural design excellence is celebrated, and a culture of high quality design is evident in the look and feel of the City.
- Street presentation is exceptional, with high quality building edges interacting with the street.

Key challenges:

- High quality design that provides excellent public amenity and addresses the public domain should be the norm - not best practice.
- Design excellence must extend beyond the built form to deliver buildings that provide an excellent street interface, respond to local character and build on local identity.
- The public domain must also exhibit design excellence - a refocus on the public domain and the street edge condition is required.
- The challenge is how to deliver the best design outcomes when physical constraints such as flooding, noise and traffic must be addressed.

Theme 3 Grow a living city

- The City Centre has a strong, growing residential population who enjoy the lifestyle offered by a cosmopolitan City.
- A diverse community that is socially connected and has a shared sense of pride.

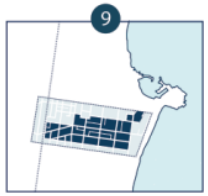
Key challenges:

- There has been a significant increase in the number of people living in the centre over the past 5 years, and this trend it set to continue.
- The challenge now is how to balance increasing residential and mixed use development with more diverse jobs and improved public spaces.
- More people in the centre brings more activity, but residential growth must not compromise the ability of the centre to grow as a major employment centre.

- The City Centre delivers a network of intuitively connected paths and open spaces.
- Unique in character and role, the spaces are well designed offering flexibility in the way they support city life.

Key challenges:

- Further from the City Centre, there are less connections, with a lack of north-south connections particularly along western Crown Street.
- There is a need for new connections, especially between the station and the foreshore, to improve pedestrian access.
- The City has some great open spaces on the edges (MacCabe, Lang), but these parks are underutilised, with inactive edge conditions and don't provide the amenity/ facilities required to support a young, urban population.



- City blocks, streets and sites provide opportunities to live, work, learn and play.
- A range of uses engage with the street deliver vibrancy day and night.

Key challenges:

- The challenge is how to achieve a genuine mix, with a diversity of uses and fine grain streets.
- The dilution of the City Centre with ground floor retail uses on all streets is a real challenge for the City Centre.
- There is currently an oversupply of retail floorspace, with high vacancy rates and empty shop-fronts, compromising the ability to create an active, safe and vibrant streets.

Theme 4 Create an accessible, pedestrian-friendly city

- Streets prioritise walking and cycling, enticing people to weave through the City and discover its offerings.
- Streets are comfortable, enjoyable and safe places. Inviting people of all ages and abilities to meet and socialise, attracting city life day and night.

Key challenges:

- Wollongong suburb has a walk score of 76/100. This means the City is very walkable but is not a "walkers' paradise".
- The walk score increases the closer you get to the centre - the challenge is how to expand the fine grain structure in the core to all of the City Centre.
- Streets that are great for walking have a fine grain structure and have high pedestrian amenity with visual interest, seating and shade.
- The City needs to build on the existing network of lanes, and create additional secondary street connections that are less about cars and more about people.

- Public Transport is the preferred way of accessing the City, seamlessly linking with the pedestrian and cycle network.
- Regular and reliable, bus and train trips conveniently connect to key destinations (e.g., hospital and university).

Key challenges:

- Despite high active transport and public transport use in the centre, private car remains the dominant form of transport.
- Improving direct, safe and attractive connections to the station is required.
- The City did not initially develop around the station - although Crown Street remains the key spine connecting the City and the station, the station feels disconnected from the City Centre.
- The challenge is how to activate the area around the station - improved public space around the station, a direct high quality pedestrian connection, along with improved way-finding is required.

- Vehicle movements and car parking support City Centre functions while prioritising pedestrian comfort.
- There is a sense of pedestrian priority on City streets with through traffic redirected and cars encouraged to slow down.

Key challenges:

- Crown Street and Keira Street carry high traffic volumes, creating a barrier through the centre.
- The challenge is how to create a more pedestrian friendly environment along an arterial road.
- The challenge with Gehl's vision is that is relies on a City Centre bypass - this is a long term vision.
- Until such time as there is a bypass, or the declassification of Crown and Keira Streets, the pedestrianisation of these streets will remain a challenge.

Economic Analysis

Wollongong - A Regional City

The UDF recognises the Wollongong City Centre's role as the vibrant capital of the Illawarra-Shoalhaven, with diverse employment, services and recreational uses. Metro Wollongong is the economic and cultural core of that region and is a nationally significant city.

There are several regionally significant economic clusters within, or in close proximity to the Wollongong City Centre. These clusters, including Wollongong Hospital and health precinct, University of Wollongong and Wollongong Innovation Campus, exert a substantial influence on the LGA's economy, and represent key growth areas which could be leveraged to create continued growth across the Wollongong LGA.

The City Centre has intrinsic assets that offer significant potential to stimulate economic growth, however, with excellent proximity to Sydney, a key issue for jobs growth in the City Centre is significant job leakage with residents commuting to Sydney for highly skilled jobs. As Wollongong transitions to a higher order knowledge-based centre, there is a need to prioritise office and commercial jobs in the City Centre.

Wollongong City Centre has all the foundations for a successful regional city: Economic analysis by SGS Economics and Planning supports the UDF. Wollongong City Council engaged SGS to undertake an economic analysis of the City Centre including theoretical capacity testing, development feasibility testing, forecasting and testing of potential feasibility levers.

The economic assessment undertaken by SGS highlights that the Wollongong City Centre has all the foundations for a successful regional city, however these need to be better leveraged to attract commercial development and employment.

Wollongong has much to offer: The amenity and lifestyle of Wollongong City Centre are part of its unique offer, and its nearby hospitals and university campuses are seen as key economic assets. 27% of jobs in the Local Government Area are found in the City Centre. Health Care, Social Assistance.Public Administration and Safety continue to be our largest established industries.

Our jobs growth is not occurring across the full spectrum of sectors expected for a regional city: Recent employment growth in emerging industries has been mainly linked to population serving industries including accommodation and food services and education and training. These industries tend to grow when a population grows. As a Regional City, we are aspiring for growth in jobs across a full range of business, government, retail, cultural, entertainment and recreational industries. However, Wollongong is experiencing a decline in key 'city' sectors including professional services, administrative services, retail and information management and technology.

Wollongong continues to lose skilled labour to Sydney: The number of the Local Government Areas 2016 working population employed outside the LGA continues to increase (30% in 2016 up from 26% 2011). Of those who have moved to the LGA from Sydney in the last 5 years, more than 50% are still employed in Sydney. The lack of employment in professional services in comparison with Sydney will continue to draw employment away from the City Centre. Our employment offer is not increasing in line with population growth.

Commercial development needs to be more feasible if we are to meet the demand for commercial floorspace and contribute to the economic development of the city: Key to delivering a regional city is attracting commercial investment and improving amenity. More needs to be done to focus jobs and employment growth in these key industries now and into the future. Upgrades to infrastructure, public domain and planning processes will assist in meeting growth projections.

The UDF looks at how the city can physically support this growth and explores levers to unlock commercial feasibility in the City.

2,000 new residents

There are over 19,000 people living within the City Centre. It is forecast an additional 2,000 people will live in the City Centre over the next 20 years. This will result in an additional 1,200 dwellings in the City Centre over the next 20 years. (SGS 2019)

21,290 jobs

Of the 83,730 jobs in the LGA, 27% of jobs are located within, or adjacent to the City Centre. There has been an increase of 2,200 additional jobs over the past 10 years. SGS forecast an additional 5,300 jobs will need to be accommodated in the City Centre over the next 20 years.

40% of jobs in top 3

Jobs in health care and social assistance (16%), education and training (13%), and accommodation and food services (12%) comprise 40% of jobs in the city centre and immediate surrounds.

29% travel outside the

Job numbers in the City Centre are increasing, but the proportion of residents working outside the LGA remains significant. The largest proportion of workers who leave the LGA for work travel to Greater Sydney (21%)

15% walk or cycle

Within the City Centre 14% of residents walk and 1.2% cycle to work. Combined with 11% of residents who catch public transport to work, there is a much lower reliance on private vehicles in the city centre than in the outer suburbs of the LGA.

32% lone person

One third of households are lone person households in the City Centre. This is a much higher proportion than the Wollongong LGA at 24%.

2.1 average household size

The average household size is relatively small at 2.1 people per household. This reflects the high number of lone person households and low proportion of family households in the City Centre. Only 12.5% of households comprise couples with children.

37% aged 20-34 yrs

There is a very young population with over a third of residents aged 20-34 years. The median age of 34 years is much younger than that of the Wollongong LGA at 39 years.

20% currently studying

There is a high proportion of university students living in the centre (18%). Combined with TAFE students this number increases to almost 20% of the population.

29% have a university

The population is young, and highly educated with almost a third of residents having a Bachelor's degree. This correlates with a high number of professionals (30%), and managers (10%) who live in the City Centre. (source: ABS)

Key findings

Under the existing planning controls there is significant capacity (1.3 million sqm) for development within the City Centre. However, limited feasibility of commercial development is a significant barrier for commercial growth. Based on SGS findings, forecast demand for commercial floor space significantly exceeds feasible capacity.

Over the next 20 years, SGS has projected demand for:

- An additional 120,000 sqm of commercial floor space
- An additional 195,000 sqm of residential floor space
- An additional 3,000 – 18,000 sqm of retail floor space

Currently only 34,000sqm of commercial floor space in the City Centre is feasible. This is likely to result in an estimated shortfall of 86,000 sqm of commercial floor space by 2036 (based on forecast demand for 120,000 sqm floor space). Conversely, the capacity for residential development significantly exceeds projected demand.

Using the residual land value (RLV) model to test feasibility, SGS found that residential shop top housing is the most feasible development type in the City Centre business zones. This results in residential and mixed use development being the predominant development type in the City Centre, which has potential to constrain future commercial development.

RLV modelling showed that commercial development requires a significant (70%) cross subsidation with residential to become feasible. SGS found that barriers to feasibility include a lack of market depth, increased construction cost associated with taller buildings, estimated land acquisition costs, high construction costs associated with basement car-parking and the risk in the development approval process.

SGS has determined that if the dominant mixed use development scenario was to continue unheeded, there would be a net loss of 45,000 sqm of commercial floor space in the City Centre by 2036. This is under the assumption that existing commercial would be redeveloped to shop-top housing, in line with the dominant trend and permissibility of shop top housing in the B3 Commercial Core and B4 Mixed Use zones. This is a significant issue as commercial floor space is required to support the economic role and employment offer of Wollongong.

SGS identified that retail demand is relatively low in the City Centre. The requirement for active ground floor uses across the City Centre has the potential to result in an oversupply of retail floorspace.

Recommendationed Actions

The feasibility of commercial development is a significant barrier for Wollongong City Centre to realise its full economic potential as the regional city for the Illawarra Region. There are a number of potential actions that could be introduced to address this issue. The objective of implementing any actions is to:

- promote commercial development in the City Centre in line with the vision
- support economic potential of the City Centre
- address feasibility issues

Recommended Actions

1. Introduce a commercial core precinct where residential development is prohibited.
2. Develop an economic vision for the Wollongong City Centre through the economic development strategy update.
3. Continue to implement the bike lane program and investigate opportunities to expand the Wollongong Shuttle network.
4. Continue to implement existing public domain investment projects which increase the amenity of the Wollongong City Centre.
5. Advocate for improvements to Wollongong railway station to improve physical connectivity between the railway station and commercial core.
6. Undertake an assessment of the value that existing industry and industry targets place on public domain improvements and use these to prioritise investment.
7. Investigate alternative development contribution rates or mechanisms to fund future public domain investment in the Wollongong City Centre.
8. Market test a reduced on-site car parking rate with developers and prospective commercial tenants to understand market for this and potential impact on rents.
9. Reduce risk for developers and increase certainty for development by providing clearer guidance to commercial landowners and developers across key sites within the commercial core of the City Centre. This includes a consistent process, speed of response and clearer planning controls.
10. Undertake an updated LGA-wide retail centres study to provide a more accurate estimation of retail demand and better inform recommendations of potential growth in retail floorspace.

Urban Design Analysis

Finding: *Current land use controls could result in a City filled with residential development, compromising long term employment growth*

The existing Commercial Core is not well defined and does not have sufficient protection or incentives to support the development of commercial land.

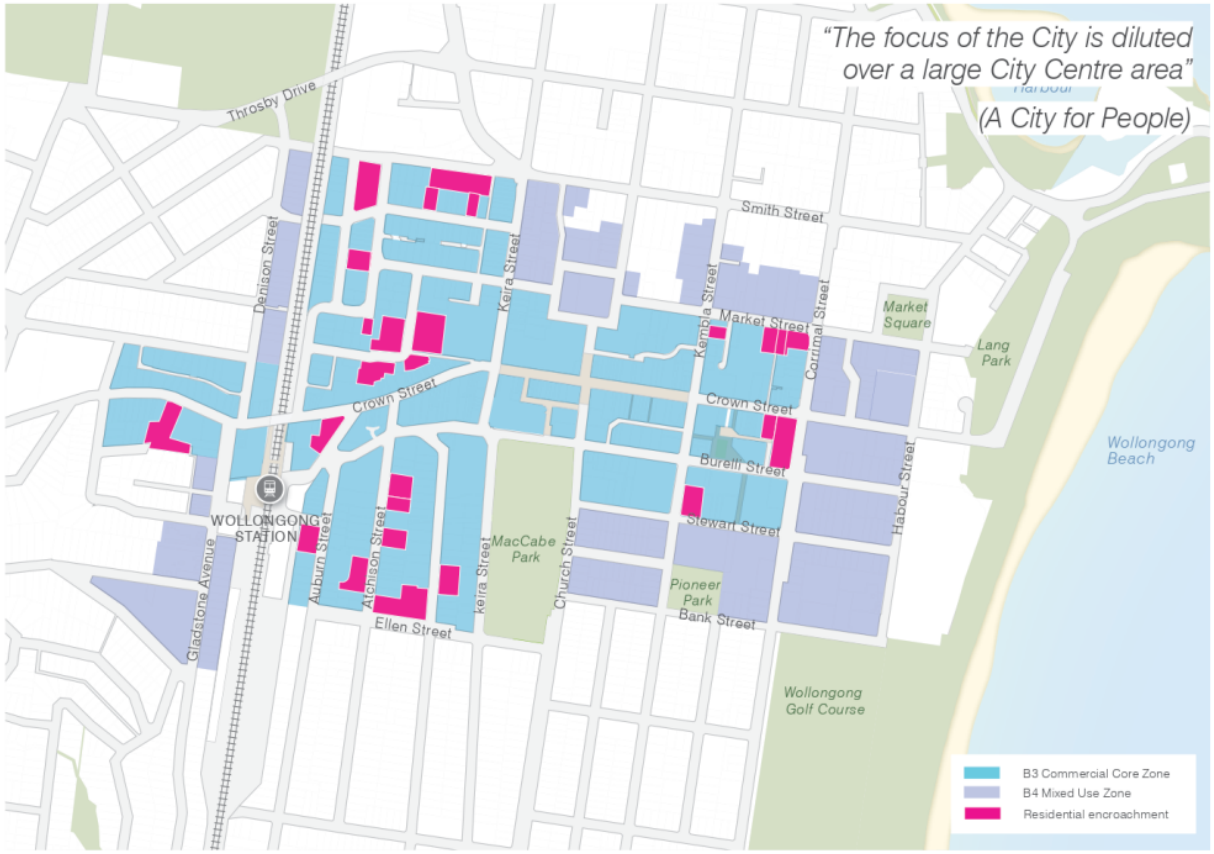
The current permissibility and feasibility of residential shop-top development across the centre threatens its role as a Regional City.

There is no clear Commercial Core

- There is no clear guidance on the preferred or appropriate land use, and the B3 Commercial Core and B4 mixed use zones permit very similar uses and built form outcomes.
- The City lacks diversity. Controls do not stipulate a land use mix. This is resulting in minimal commercial development and maximum residential development.
- The current B3 Commercial Core zone is too large, lacks definition, and does not provide sufficient protection for commercial land, by allowing residential development throughout the city centre.

The existing land use zoning discourages commercial development because:

- The B3 zone which permits shop top housing raises the land value and impacts feasibility for commercial uses.
- There is no concentrated core with a commercial street address.
- A-grade office tenants prefer to locate in commercial-only zones where large land parcels are available.



Existing and potential future developments that would resulting in residential encroachment in the B3 Commercial Core (As of December 2018)

Land Use

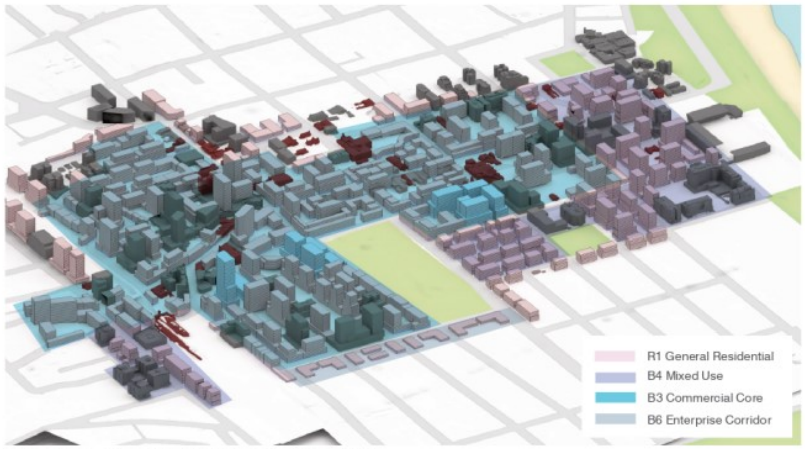
Residential encroachment is a threat to long term employment growth in the City

- Residential development adds significant vibrancy to the City Centre, however it must be balanced with commercial growth. Under the current 'business as usual' development scenario, there could be a loss of commercial floorspace in the city centre.
- Permissibility of residential uses in all land use zones in the centre (including the B3 Commercial Core which is non-standard) is resulting in a homogeneous outcome for the centre. As developments with residential uses are currently the most feasible and therefore the most likely development outcome.
- Encroachment of shop top housing throughout the centre is a risk for availability of commercial space in the future.

Economics

- SGS' Economic Study (2019) has found that commercial development in the city centre is only marginally feasible, requiring significant cross subsidisation with residential development (70%) to achieve a viable development outcome. Residential is currently permissible within the B3 Commercial Core, and as a result there is a high proportion of residential development in the City.
- Over the last 10 years the number of jobs in the city centre has increased, however, job leakage to Sydney has remained significant.
- Without intervention, there is a risk that Wollongong will not be able to improve prospects for commercial development or achieve its status as a major regional city. A new direction for the city centre is required.
- If the current land use controls are maintained, there is not likely to be capacity for the forecast demand of 120,000sqm of additional commercial floorspace that will be required by 2036.

The same land use outcome in both the B3 and B4 zones either side of Corrimal Street with similar shop-top housing developments



Complying scenario model view of the centre (land use overlay)

The Opportunity

Creating distinct land use areas in the City will enable specific character areas to develop, get the balance right and enable the City to grow at a human scale.

Safeguarding space in the centre for commercial only development will ensure residential development does not compete with commercial development and will assist in making commercial development more feasible.

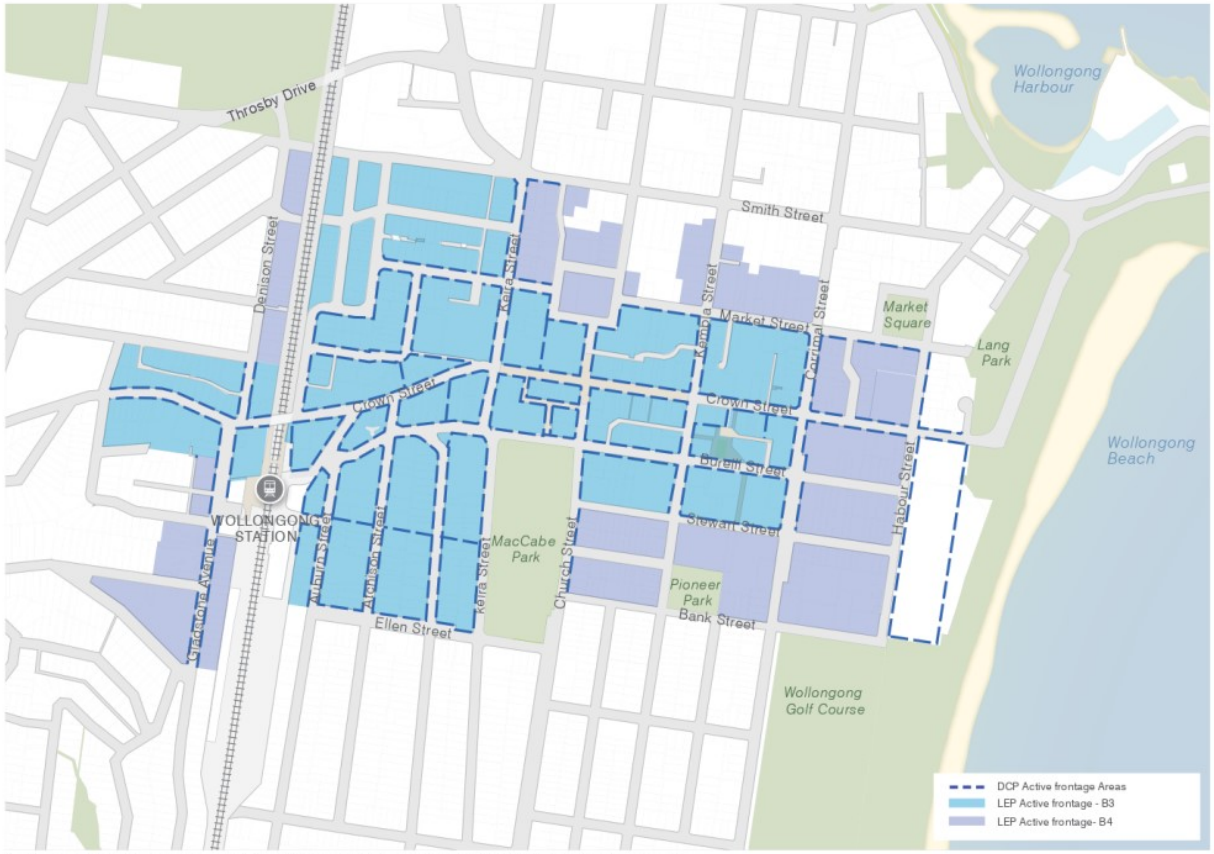
Key drivers of economic growth are located outside the City Centre – including the University of Wollongong, TAFE, Innovation Campus and the hospitals. Connecting and integrating these precincts will be important, but the key focus will be to build on these assets and encourage the location of supporting health, education and business uses within the City Centre.

Urban Design Analysis

Finding: *The retail core is spread out too far, which results in empty shopfronts and creates inactive streets*

Current policy requires non-residential ground floors throughout the B3 and B4 zones. This results in an oversupply of shopfronts and erodes the significant high-street character and traditional retail of Crown and Keira Streets.

- Crown and Keira Streets are unique in their scale and character. The majority of frontages along Western Crown, Lower Crown Street Mall and Keira Street have a width less than 7 metres and a 2-storey street wall. This results in fine grain streets flanked by relatively narrow, low scale buildings. This should be preserved where possible.
- There is not enough depth in the retail market to support retail offers across the extent of this area, especially with the growth of 'big box' retail centres on Crown and Keira Streets. Numerous ground floor vacancies across the City Centre are evidence fo this.
- Over time the spread of retail has eroded Crown Street's significance as Wollongong's retail high street. While Crown Street continues as the main retail spine, a noticeable increase in ground floor vacancies on the western end of Crown suggests that the retail core is too dispersed across the city.
- Although developments with commercial at ground and residential above protect commercial land use at ground, they do not deliver the built form outcome required by many commercial tenants.
- There is a discrepancy between the LEP and DCP definition of active frontage. The LEP requires non-residential uses at ground (WLEP 7.13) while the DCP Clause 3.3 suggests that residential can also activate the street.



Active frontages required by Wollongong DCP (2009) and Wollongong LEP (2009) results in a diluted retail precinct

Land Use

01

02

03

04

05

The Opportunity

There is a need to establish current and future retail demand in the City, and encourage a vibrant, compact retail core, which reinforces the important role of Crown Street.

The oversupply of retail space in the City Centre suggests a need to re-consider ground floor uses across the City Centre.

Alternative uses such as well-designed ground floor residential apartments and terrace style accommodation at ground floor should be explored as a means of activating streets with uses other than retail.

01 Globe Lane Precinct is an attractive intimate scale retail area
02 An example of a building in the B4 Mixed Use zone with a poor interface between ground floor tenancy and streetscape
03 Cafe culture is successful on Lower Crown Street
04 Crown Street Mall is the primary retail strip
05 The West Keira shopping centre extension has absorbed retail from Crown Street Mall

Urban Design Analysis

Finding: *The City's cultural identity is diversifying to support City life*

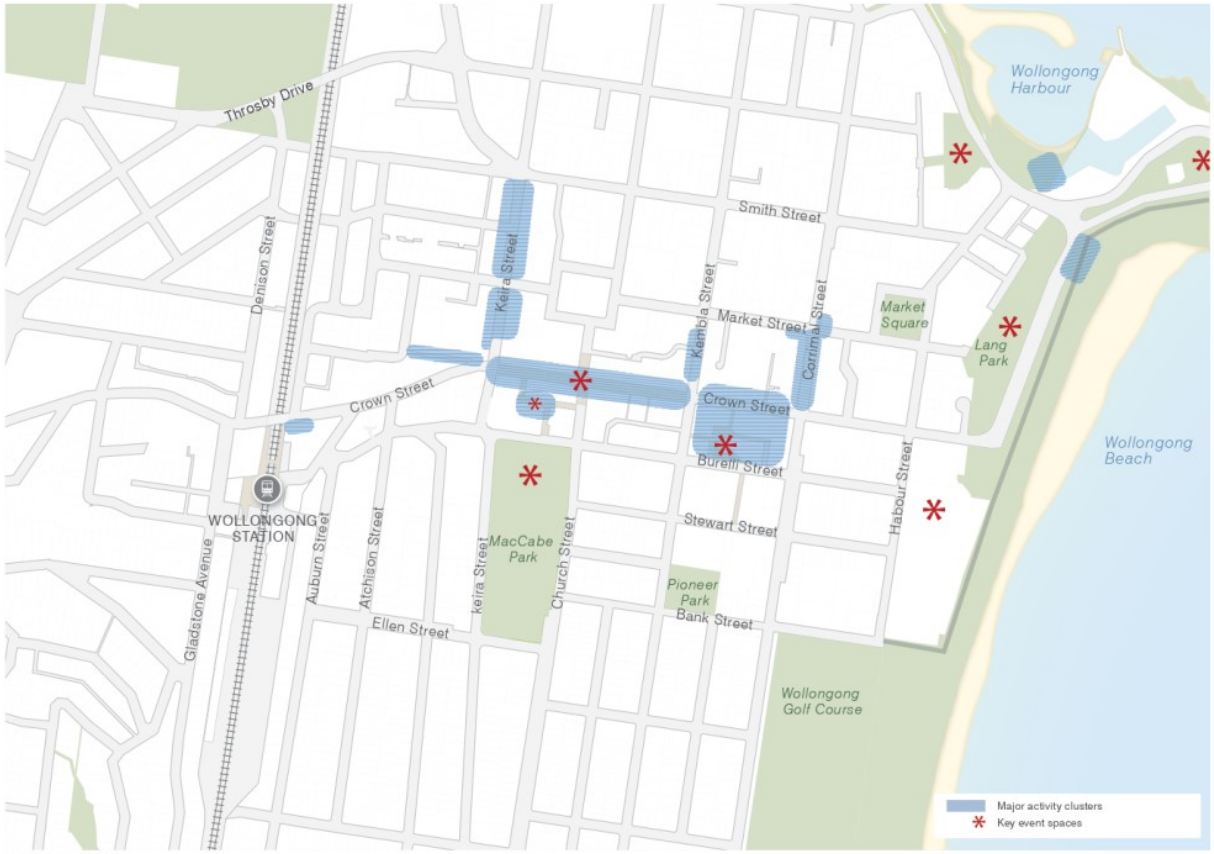
Wollongong's historic and cultural diversity coupled with an increasing young and entrepreneurial population provides a rich foundation for a vibrant city. The City Centre is an attractive place to visit with an array of small bars and cafés, art and culture and pristine recreation areas to enjoy.

In recent years, Wollongong has grown its café, small bar and live music scene. With an influx of new small bars and cafés opening in the past 5 years, the City Centre is well populated with places to eat and drink at most hours of the day.

Wollongong's reputation as a regional live music destination has been strengthened through festivals such as Yours & Owls, Corona Sunsets, and the Wollongong Fringe as well as high profile concerts like Elton John . These attract significant interest from around the Illawarra and beyond.

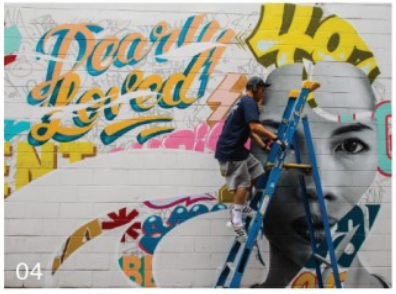
Wollongong is also known for its outdoor and recreational activities for individuals and families. Surrounded by bushland and sea, it is a destination for fans of water sports, sky diving, cycling and hiking.

Wollongong's historic cultural diversity coupled with an ever increasing student and entrepreneurial population is a rich foundation for a vibrant city.



Major activity clusters

Land Use



The Opportunity

Although a popular spot for day trippers, Wollongong is often overlooked by overnight visitors in favour of smaller towns along the coast. With its growing cultural identity as a creative and diverse city, Wollongong is in a unique position to re-define itself.

The City is emerging as both a vibrant regional destination known for its arts, music and food scene and a hotspot for outdoor recreation. There is the opportunity to continue to build on the provision of a wide range of tourist accommodation and entertainment types to support the culture of the city.

Policy provisions to assist in mitigating conflicts between residents, businesses and event spaces will support a strong evening economy in the City.

01 Hey Day on Western Crown
02 Wollongong Art Gallery in the Arts Precinct
03 Live music at the former Rad Bar
04 Street art and murals are prominent on walls throughout the centre
05 Performers in Crown Street Mall
06 Water activities in Wollongong Harbour

Urban Design Analysis

Finding: *General development controls don't respond to the character and historic qualities of places in the City*

The City is fortunate to have a network of heritage and character buildings and places throughout, some which have undergone successful adaptation. However, general built form controls are often in conflict with heritage controls and fail to consider the broader context of heritage items. Stronger guidance is needed to improve development outcomes in the context of heritage items and character precincts.

The City Centre has many notable character buildings and places - some are already protected through a Heritage Listing - others that are not. These form part of our communities memory and experience of the City Centre and it's important that we find a balance between development of new buildings and the preservation of those showcase our cities evolution and history.

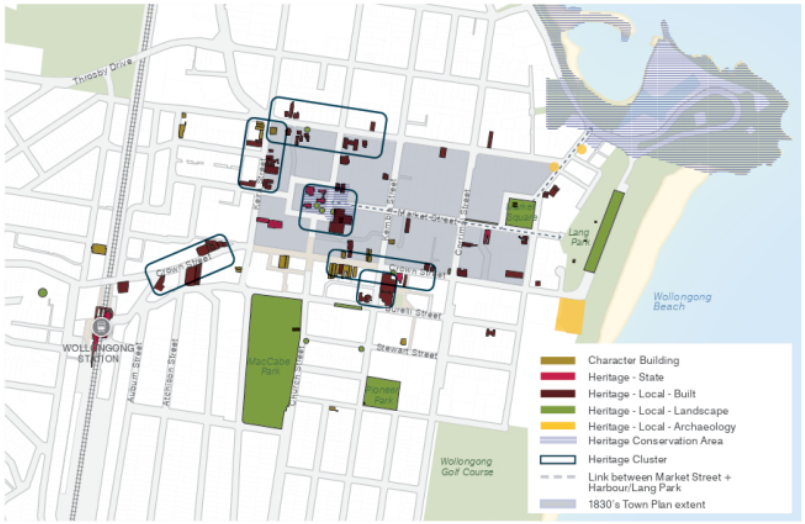
Analysis has identified additional character buildings that play an important role in demonstrating Wollongong's history that should be investigated for potential heritage listings.

As outlined, existing planning controls do not respond to place, or consider the relationship between new buildings and existing heritage and character items. Controls should be improved to protect items where necessary and to always enhance our historic built fabric so it can be enjoyed by generations to come.

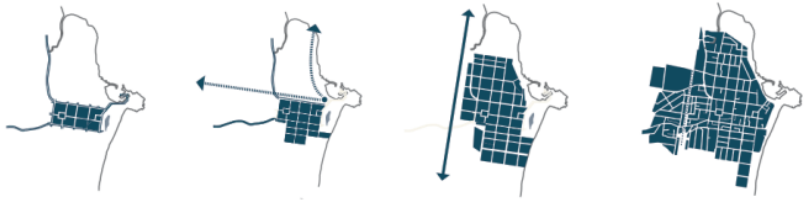
The adaptive re-use and re-development of heritage buildings do not always involve full scale re-development. Most works undertaken in the City Centre have involved low scale modifications and additions that facilitate the gradual adaptation of the building to accommodate changes in existing uses or more extensive modifications to accommodate new ones.

Good examples of recent adaptive re-use projects in heritage buildings within the City Centre include (but are not limited to):

- 87 Crown Street (a former shop) which has undergone sensitive alterations to accommodate two popular and much loved cafés fronting both Crown St and the Arts Precinct. Similarly, 91 Crown Street (the former Wollongong East Post Office) has also been successfully adapted to a commercial office use.
- The re-development of larger, more complex heritage sites such as the University of Wollongong Student Accommodation Building (formerly the Ibis Hotel) on the St. Michael's Cathedral site is a positive example of development within heritage precincts. The development is structured around a 99 year lease agreement with a percentage of the income from the lease being dedicated to the ongoing conservation of the cathedral building and included the removal of several unsympathetic building elements on its grounds to achieve a better urban outcome for the precinct.



Map of Heritage and Character buildings and places (2019)



c. 1830s

Original town plan centred on the Harbour

c. 1860s

The city grows to the south, and mine tramlines are introduced

c. 1880s

Rail link to Sydney. Rapid expansion of the city around Crown Street

c. 1900+

By early 1900 the city has spread to the area recognised today

Built Form

The Opportunity

The provision of a specific design guideline could greatly strengthen council's approach to development in heritage precincts provide land owners with a clear understanding of council's objectives for re-development.

The guidelines may address broad issues such as preferred use and appropriate built form, to more specific issues such as materials selection and façade treatment. The document may also be an opportunity for council to showcase exemplar projects from other regional cities which clearly demonstrate good examples of adaptive re-use of heritage buildings.

The adaptation of the Design Guide for Heritage prepared by Government Architect NSW may be a starting point for the development of such a guideline

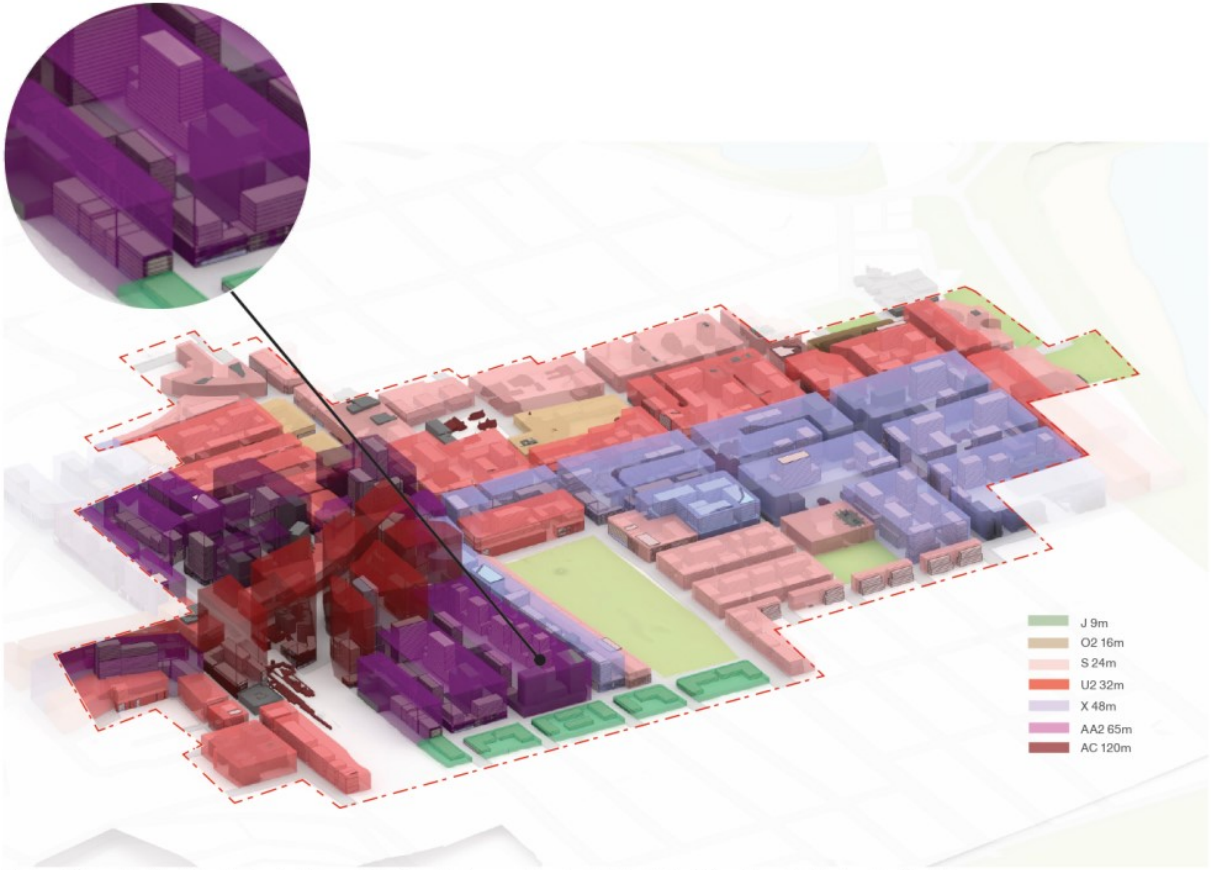
01 Heritage listed former Marcus Clark building that has been stripped of detailing and painted over and is in need of revitalisation.
02 St Michael's Anglican Cathedral marks the historic centre of Wollongong, its steeple is a significant landmark in the city. The University of Wollongong Market View student housing behind St Michael's
03 Wollongong Court House recently upgraded with a sympathetic new extension
04 87 Crown Street, Heritage buildings on Crown Street create a unique character.
05 Masonic Hall adapted into apartments with residential tower set behind.

Urban Design Analysis

Finding: *The planning controls do not provide clear guidance for development to deliver the intended built outcomes for the city.*

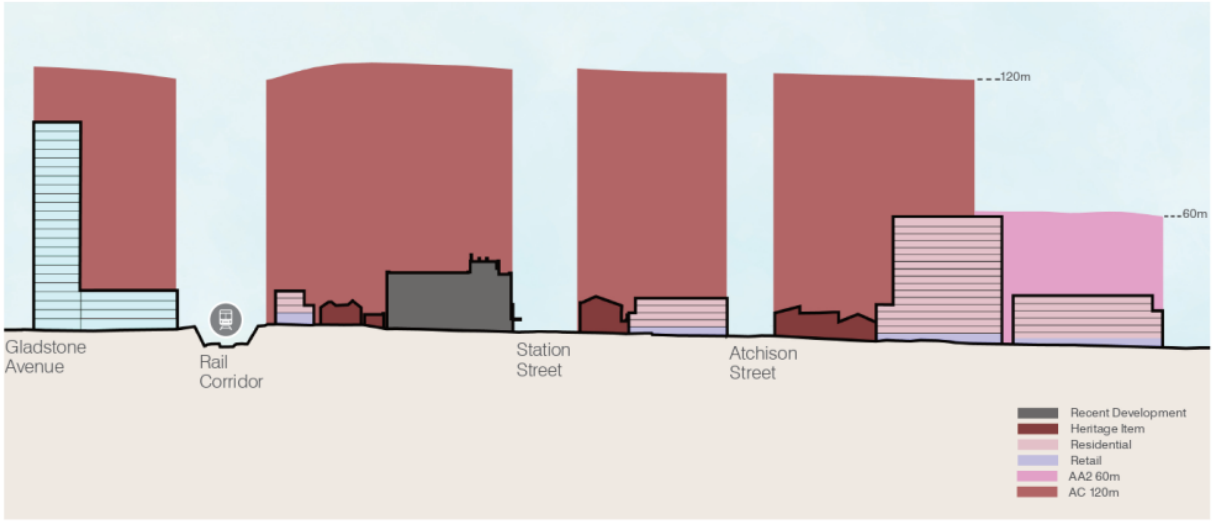
LEP height and floor space controls are at odds with the intended outcomes of the DCP - for a permeable, legible city of distinct precincts. In many cases, permissible height controls are unachievable due to a misalignment with the amount of floor-space permitted. This is confusing for land owners and means that the intended form of the City will not be realised.

- Controls don't respond to the specific place, context or character within the City
- The outcomes permissible under the controls can result in very different buildings, depending on land-use, which results in uncertainty. There are also cases where building envelope controls are not able to be realised, leading to false expectations and inflated land values.
- FSR is confusing to calculate. The current sliding scale FSR is dependent on land use and site size.
- FSR is calculated solely on site area and land uses, rather than being spatially distributed with regard to height controls and character.
- The sliding scale does not incentivise development on small sites, which could provide valuable infill opportunities and create fine grain streets.
- The incentives for commercial including as an increased FSR of up to 6:1 for large sites, have had limited take-up. Shop-top housing continues to be the preferred development outcome.
- There are inconsistencies between built form controls in the LEP and DCP, such as continuous street walls versus side setback controls in the B4 Mixed Use zone.



Maximum FSR overlaid with existing height controls demonstrates that not all sites can achieve their height within the FSR control, particularly above the 48m limit.

Built Form



East-west section through the City showing maximum developable FSR within permissible height controls.
On a range of sites the maximum FSR is reached before height limits are achieved.

The Opportunity

There is an opportunity to simplify FSR calculations to better align the character, land use, typology and heights with the achievable FSR.

Revised controls should consider design quality and the character of specific precincts within the city.

Urban Design Analysis

Finding: *Developments favour maximising building development controls over design quality, producing a less attractive City*

Some planning controls contribute to poorly designed buildings and streetscapes which do not respond to a precinct's character or human scale principles. Design quality is compromised by buildings that seek to maximise yield with little consideration to the broader impact or quality of the development

In looking at the City Centre as a whole, a number of streets were at risk from the development of large, bulky street wall buildings of varying heights.

1. This is particularly true of areas within the B3 commercial core where testing of the existing controls resulted in street walls that exceeded 100 metres in length with no provision for through site links.

   The 12-24 metre range in heights for the B3 commercial core creates ambiguity in the controls and an inconsistency of built form across the zone.

2. In addition, side setbacks, when applied to the same B3 commercial core for towers in the DCP, when combined with the Apartment Design Guideline setbacks resulted in an undesirable 'wedding cake' effect.

3. There was found to be no designated street wall height in the B4 mixed use zone and R1 general residential zone resulting in a lack of consistency in streets where buildings varied greatly in height without due consideration for a transition in scale.

Built Form

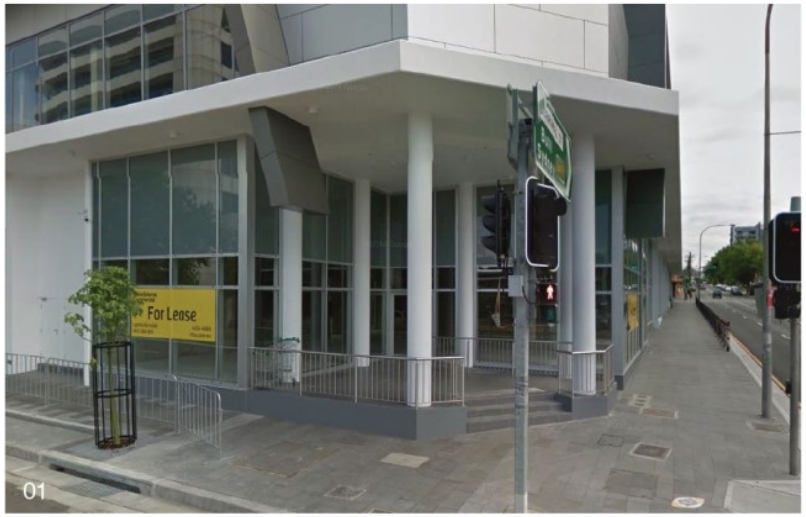
The Wollongong LEP currently includes design excellence provisions which apply to the whole city centre and to key sites. There is no distinction between the provisions applied to the Centre as a whole and to the specific sites. While these provide good principles, they give little guidance to outcomes for specific character precincts and result in an over-reliance on Council's design review panel.

In looking at recently completed projects within the City Centre, it is clear that the existing built form controls create a street interface which is difficult to navigate and detracts from the public domain.

An example of this may be seen in photograph 01 which applies both the 6x6m corner splay control at ground floor and raises the ground floor level of the development approximately 600mm above street level to mitigate the risk of flood.

Without specific design based controls within the Council's DCP to address the issues of flooding and access, prominent corner sites (for example Corrimal and Crown Streets) become compromised resulting in a poor urban design and aesthetic outcome.

It is important to recognise the value of good design outcomes, by prioritising the human experience, both in flood and non-flood conditions. Through a more considered integration of engineered flooding solutions with built form it will be possible to create interfaces that are both functional and liveable.



The Opportunity

A new design-lead approach to built form and streetscape needs to be developed to enable more positive urban outcomes to be realised.

The approach should seek to balance development to locate density appropriately across different precincts and consider particular urban conditions such as heritage areas, environmental areas or other prevailing factors.

In addition, the new approach to building controls should achieve the best possible design quality for the City. Controls should enable built form which responds to human scale while addressing the impacts of climate change, including improved built form responses to flooding in low lying areas, while also celebrating the City's unique coastal climate.

01 Long ramps and stairs provide universal accessibility but lack access legibility and compromise safety. Railing associated with level changes at thresholds and on footpaths detract from the street experience,
02 Some overland flow grates have an open appearance and detract from streets.
03 Crown Wollongong Development has an unnecessarily raised entry off Crown Street and a street wall exceeding 70 metres, with no break for through site linkages.

Urban Design Analysis

Finding: *The city's development controls do not promote development that defines a city skyline or enhances the unique natural setting*

Wollongong's natural setting is an identifiable part of its character. Views connecting the City to the escarpment and foreshore are not well protected and are under threat of being lost. Tall residential buildings and areas of blanket height limits do not give reference to important precincts within the City. Development controls that influence building height and bulk need to change to improve the design quality and legibility of the city.

Topography plays an important role in Wollongong. The City Centre is located on an undulating plane between the ocean and the Illawarra escarpment. These natural features offer a striking and distinctive backdrop to the city and are key to Wollongong's identity as a truly coastal city as well as being critical to wayfinding.

The challenge for Wollongong is to balance the effects of growth with the need to retain the existing character of its place. This includes the need to establish a scale of development which is appropriate to its existing environmental context, in particular to its views to the coast and escarpment.

A number of developments both approved and constructed impact on the surrounding natural and urban context, leading to the partial or complete loss of views to the escarpment, coast or key vistas in the City Centre.

This loss of amenity, coupled with poorly designed and constructed buildings actively detracts from the qualities that give Wollongong its original appeal making it a less desirable place to live and visit.

01 Distant view to the steelworks from Church Street
02 Market Street provides a great vista to the ocean flanked by large trees. (protected view under current controls)
03 View up Church Street to St Michael's is obstructed by the shade structures in Crown Street Mall
04 The view of the escarpment from Flagstaff Hill is compromised by the height limits allowed by the Local Environmental Plan

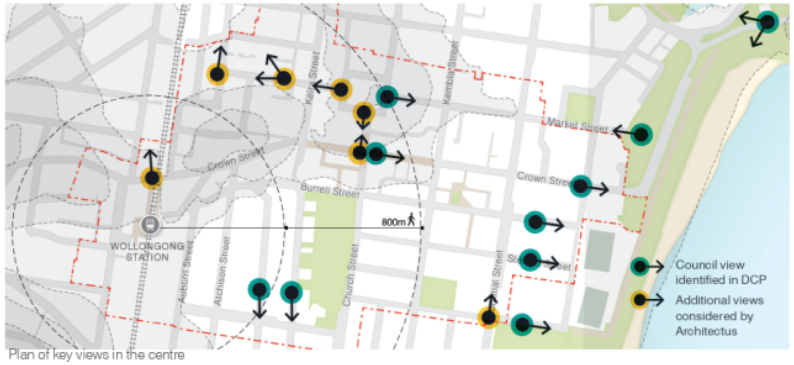
Built Form

Permitted building heights and bulk have the potential to impact views to the escarpment and ocean.

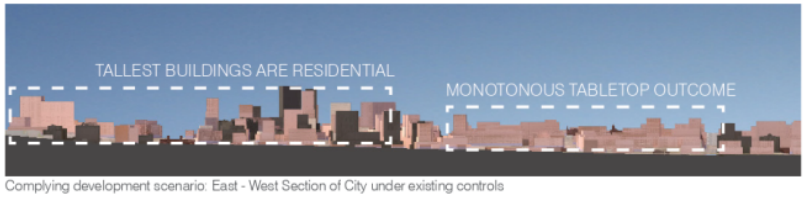
- Controls promote low wide bulky forms which don't respond to the character of particular precincts, or to the topography.
- The monotonous' table-top' outcome, seen in the image of a complying City development scenario, does not provide legibility about uses, character or precincts within the City, and does not assist with way-finding in the way that a varied city skyline with towers in key locations, slender towers, and appropriate building separation can.
- Sleeved podium parking is creating bulky podiums, limiting through site permeability and resulting in poor built form relationships with adjacent sites.
- Height controls do not consider and protect the fine grain low scale character of Keira and Crown Streets.
- Height is concentrated west of Keira Street around the station and height is limited in the existing office core. The City's highest buildings are located on highest topographic point, impacting views to the escarpment and giving the impression that these buildings are the centre of the city, rather than the existing office or retail core.

Testing built form controls using the 3D model of the City revealed the following potential impacts on views within the city and to the natural setting:

- Current protected views are being compromised by poor compliance with and enforcement of view controls.
- Several significant views are not protected under the current planning controls
- The panoramic view from the lighthouse provides views to the escarpment and should be protected.
- Views along streets are easier to protect than oblique views, however, even these are obstructed in key locations. For instance, the ocean views along Market Street and Crown Street are retained. However the vista along Burelli Street and Stewart Street terminates at the existing entertainment uses, which prevent views to the foreshore.
- Western views to and from St Michael's are not considered a protected view in the DCP and while special area controls protect the immediate surrounds, they do not protect views outside this area.
- Recently approved DAs negatively impact the view of the sky against the St Michael's spire.



Plan of key views in the centre



Complying development scenario: East - West Section of City under existing controls

The Opportunity

Revisions to land-use and built form controls provide the opportunity to plan for a variety of precincts within the City. Each can develop with its unique character and a built form that will provide variety and legibility to the City skyline.

New vistas to the foreshore can be considered in conjunction with redevelopment opportunities in the entertainment precinct. Vistas to the escarpment can be protected with the right built form controls.

Views along key streets can be preserved to enhance character and protect significant natural and built heritage.

Urban Design Analysis

Finding: *The City lacks clear physical and visual connections to key places which makes wayfinding difficult and discourages walking.*

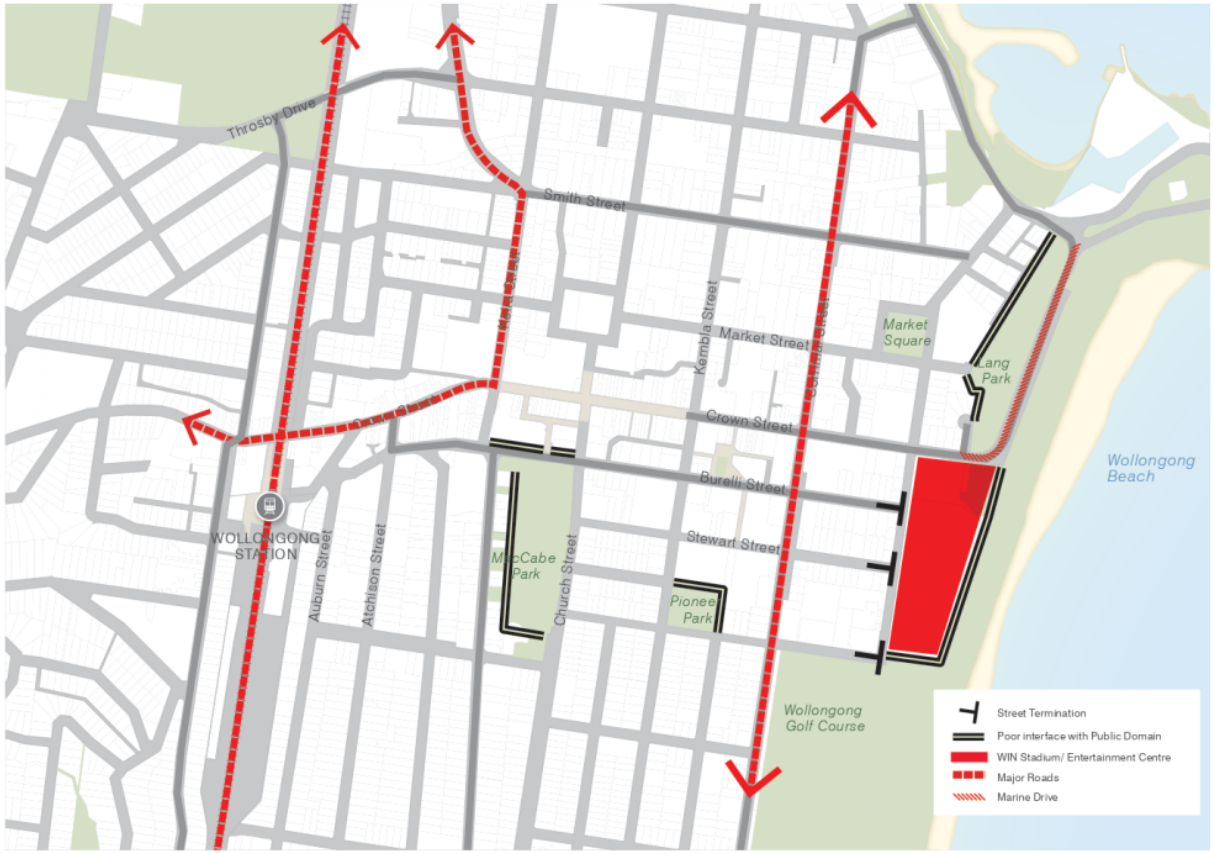
Long street blocks and major infrastructure barriers limit permeability by prioritising vehicles over pedestrians. The City Centre is divided by the Railway line and State Roads. Direct access to the foreshore is limited, the interfacing built form is inactive and key views are blocked by bulky buildings.

Major infrastructure barriers slice the city and offer limited paths of travel for pedestrians.

- The rail line creates a significant disconnect between the western side of the railway and the eastern City side.
- Keira and Western Crown Street are currently State goverened roads, linking to the Princes Highway. This limits public space opportunities such as outdoor fining and planting and results in cars using City Core streets as a bypass, rather than a destination.

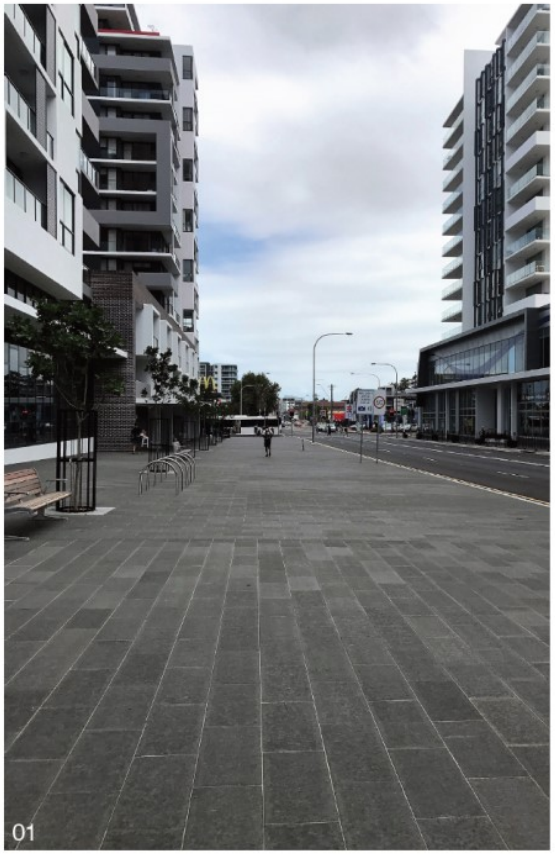
As identified in A City for People, the foreshore feels disconnected from the City Centre. Factors which have weakened the connection between the City and the coast, include local public domain factors as well as structural city-wide challenges:

- The WIN Stadium and Entertainment Centre and the Wollongong well golf course acts as barriers
- Marine Drive severs Langs Park's connection with the foreshore
- Corrimal Street is a clear point of delineation between the City core and foreshore
- Smith, Market, Burelli, Stewart, Bank, Glebe, and Beach Streets do not connect with the foreshore
- The Crown Street link to the foreshore is underwhelming



Main infrastructure barriers

Public Domain and Connections



The Opportunity

There is an opportunity to plan for multiple connections from the City to the Beach- not only via Crown Street- providing a permeable network of vistas and links.

Consider the interface of built form with the foreshore and public domain to ensure active frontages and passive surveillance to improve the safety and attractiveness of the precinct.

Treat the coastal protection zone sensitively to protect and enhance Wollongong's natural coastal heritage as the City grows.

There is an opportunity to renew the station precinct to better connect with Crown Street up to the hospital and city core.

The introduction of the Denison-Throsby by-pass would minimise the use of Western Crown and Keira Sts as major thoroughfares for through traffic.

01 Future road widening on Corrimal Street results in excessively wide footpaths. Spaces need to be desegned for comfort and activation.
02 The Souther end of the Blue Mile walking track is currently isolated by the WIN stadium and entertainment centre and lacks surveillance
03 Andrew Lysaght Park (former cemetery) is fenced off and has a limited public interface
04 There is a poor sense of arrival at the foreshore

Urban Design Analysis

Finding: *Arrival into the City Centre is confusing and provides an underwhelming first impression of Wollongong*

Arrival by car, bus and train provides a poor first impression of Wollongong. A lack of transition between surrounding residential and the CBD gives little sense that you have entered a Regional City.

For those arriving by rail, views of the spectacular coastline are suddenly replaced by an inland urban interface. This leaves visitors disoriented and struggling to identify whether they have arrived in Wollongong, and whether the City is to the east or west.
There are a number of issues which are common across all points of entries into the City. These include:

1. No clear point of transition marking the edge of the City Centre from the periphery making it unclear to visitors whether they have arrived.
2. A poor public domain interface which fails to promote walkability into the City Centre.
3. A lack of way-finding and visual connections making it difficult for visitors to orientate themselves in relation to the City Centre, coast and escarpment.
4. Lack of a legible skyline or built form to signal precincts and hubs within the city.
5. Sunken topography and poor connectivity of train station.

Approach and arrival to the Wollongong City Centre.

Public Domain and Connections

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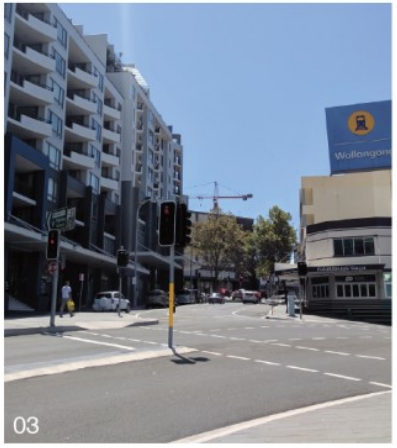

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The Opportunity

An opportunity exists to develop strategies which draw on potential circulation and public domain improvements. These include street re-alignment to maximise access and visibility and take advantage of flatter topography and public domain improvements such as way finding, footpath upgrades and street planting. The intent should be to mark a clear point of arrival into the City and enhance the visual appeal of these key gateways.

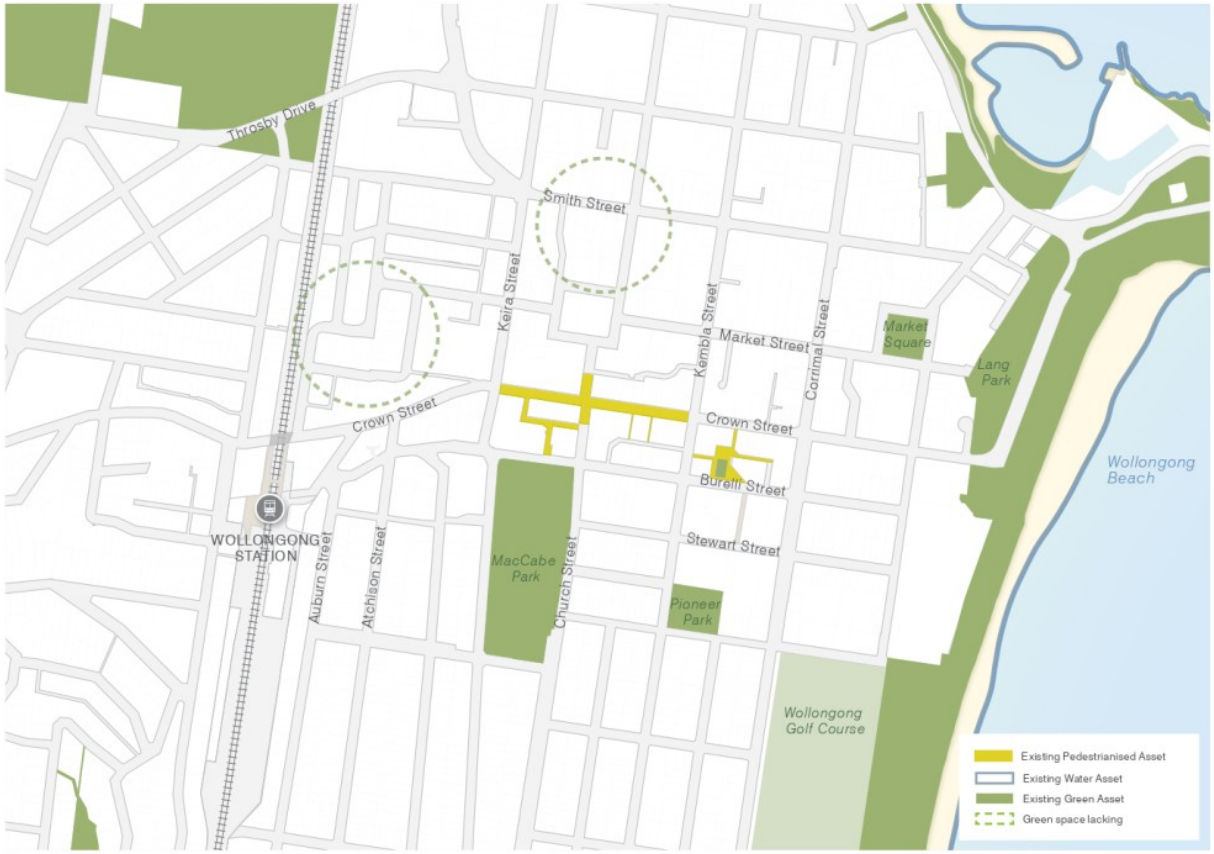
01 Corrimal Street is a heavily trafficked gateway to the City.
02 The Flinders Street arrival experience, approaching Keira Street provides a sudden transition from a Highway character to a City Centre character
03 Way finding to the centre from Station Street is not legible
04 Station Street prioritises vehicles and buses over pedestrian connections with winding and narrow footpaths.

Urban Design Analysis

Finding: *Public open spaces are valued but do not yet realise their full potential*

Public spaces are generally well located, however they are underutilised and lack a clear identity. As the city's population increases, high quality green spaces are needed to deliver a healthy and liveable city and support community well-being.

There has been significant investment in the Crown St Mall upgrade and the Blue Mile, as the City densifies the need for further investment in key spaces will be a catalyst for change.



City Centre open space assets

Public Domain and Connections

- **Lang park** hosts large festivals, gatherings and passive recreation. A number of physical limitations include, Marine Drive which inhibits pedestrian access between Lang Park and the beach-front; the bus terminus and roundabout are an impediment to pedestrians. Boundaries adjoining the park often present back fences; and topography and vegetation limit the opportunity for views of the ocean from the park.
- **MacCabe Park** is centrally located however under-utilised, largely due to the poor interface with surrounding streets and built form. Existing buildings in the park limit views and access to and from the park, as well as impacting on passive surveillance and the sense of safety.
- **Crown Street Mall** and surrounding laneways provide paved pedestrian-only space in the City Centre. The mall provides a venue for weekly markets and laneways provide important pedestrian cross-block connections and currently cultivate a creative City culture with vibrant public art murals and emerging retail and food and beverage operators.
- **The Arts Precinct** enables a creative City culture with vibrant public art murals, cultural venues and intimate spaces for retail and food and beverage operators.

The Opportunity

Investment in public domain will signal renewal for the City. Not only will it offer benefits to residents and visitors to the City, but will also encourage commercial tenants who desire a high quality public domain.

Recent investment in the public domain in Crown Street Mall and the Blue Mile foreshore walk signals positive renewal for the Centre. Improvements to other existing open space assets including MacCabe Park, Lang Park and the Arts Precinct will increase the amenity the Centre has to offer to workers, residents and visitors. Infrastructure investment in the public domain also sends a clear signal to the investor market that a place is highly valued.

As the population of City Centre densifies and diversifies, quality public green space within walking distance to peoples' homes and workplaces will be needed.

01 Existing buildings along western edge of MacCabe Park provide cluttered and unsafe interface.
02 Crown Street Mall has recently been upgraded
03 Residential properties with fences fronting Lang Park do not provide a public interface
04 Street art in the laneways off the Arts Precinct.

Urban Design Analysis

Finding: *Key public spaces are at risk of overshadowing by surrounding buildings*

Although solar protection controls exist for selected open spaces in the City, there is no protection for Crown Street Mall or the Arts Precinct Lawn. Without strong and clear controls, these key public spaces are at risk of losing their natural sunlight and being overshadowed by new developments.

Sun access controls currently protect these spaces between 11-3pm:

1. MacCabe Park
2. Market Square
3. Civic Square
4. Pioneer Park has solar-access controls over lots to the North, however existing and recent developments are not compliant with these controls, resulting in overshadowing of the open space between 12-2pm.

There are no sun access controls for key east west streets (Burelli Street, Crown Street, Market Street) or for the following key public spaces:

5. Crown Street Mall
6. Arts Precinct lawn

Public Domain and Connections

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The Opportunity

Delivery and protection of high quality public domain should be supported by appropriate sun access controls. This will become increasingly important as the City redevelops and density intensifies.

Built form controls should encourage slender towers and physical breaks in form to minimise overshadowing and maximise views to the sky.

03

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01 Civic Square is currently protected by LEP solar protection controls on site to the north only
02 Existing overshadowing of Crown Street Mall by Wollongong Central Shopping Centre
03 The Arts Precinct Lawn is an important public space to be considered for future solar protection
04 Existing solar access protection of MacCabe Park offers amenity to users

Urban Design Analysis

Finding: *Tree canopy cover in the City Centre is inadequate*

The overall canopy coverage in the City Centre is minimal. This results in increased urban heat, poor streetscapes and a loss in amenity. Mature trees are part of the City's character and should be preserved and increased with new plantings along key walking routes. Canopy cover and vegetation supports ecosystem services, trees provide other health, social, economic, and aesthetic benefits.

A City for People sets out a clear vision for the City Centre which places a specific emphasis on the importance of public spaces and a desire to connect the natural setting and foreshore to the city.

Urban tree canopy is important in the City Centre to mitigate the urban heat island effect, support cleaner air and water and provide local habitat. Trees remove fine particles from the air and help insulate against urban noise pollution, particularly along busy roads. Trees are valued by residents and contribute to the streetscapes, character and amenity of the City, so preserving and expanding the urban tree canopy in public places will become even more important for supporting a sustainable and liveable City into the future.

The City's first Urban Greening Strategy builds on this ambition, targeting an overall increase in canopy cover to 35% by 2046 across the entire LGA. The City Centre is currently one of eight suburbs with less than 10% existing canopy cover, with 63% of total canopy on private land.

The absence of tree canopy cover within the City Centre is most evident at street level, where the frequency and density of street planting can best be described as sparse. While most major streets such as Corrimal, Stewart and Burelli all have areas of street planting, the density and frequency of planting varies greatly from one street block to the next. This is due to the limited opportunity for street tree planting in the current road reserves due to relatively narrow road reserves, and extensive services located under footpaths meaning that the only opportunities for increased tree planting are currently on setbacks to private land or between kerbs, which is problematic for traffic and parking movements.

Less than 10%
Canopy Cover

Existing tree canopy (Source: LIDAR image supplied by Wollongong City Council, 2013)

Public Domain and Connections

The Opportunity

As the most densely populated urban area in the Wollongong LGA, the City Centre has a unique opportunity to make a significant contribution to achieving the targets outlined in the Urban Greening Strategy, while connecting the City with its beach and escarpment setting.

New public domain projects will address some of the need for additional tree canopy, to provide increased amenity and liveability to residents now and into the future. There are opportunities to alter setbacks and footpath alignments in coordination with existing services locations to identify locations for new street trees. Where there is limited space to plant new trees there may be opportunities to plant other forms of vegetation such as garden beds and hedges, that can help improve amenity and air quality.

Green cover can also include rain gardens, green roofs and green walls, all of which can help slow and store storm water and improve water quality, filtering pollution before it reaches waterways.

01 There is a lack of tree coverage on streets around the station south of Burelli Street.
02 Market Street is flanked by large trees which frame the view to the ocean.
03 Crown Street has narrow footpaths and awnings with no space for trees resulting in a harsh pedestrian environment.
04 Eastern Crown Street has great tree coverage and is a very successful outdoor dining area.
05 Large trees exist in MacCabe Park and provide good shade for this public space
06 Corrimal Street and Crown Street, towards the foreshore, have limited tree coverage and little shade, reducing the amenity of the walk to the beach.

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Draft | Wollongong City Centre Urban Design Framework

Precinct Analysis

In order for the City to develop richness and diversity, key public domain moves and built form controls need to enable the existing character of the City to emerge and strengthen. The City was divided into 8 precincts, which expand on the 6 identified in A City for People.

Each precinct was examined through detailed analysis, observation and research into place, environment, land use, movement, heritage, open space, and public domain to establish its unique character. Strengths and weaknesses were identified, and the capacity of the existing controls to support the character of each precinct as it renews were determined.

Precinct Analysis

Precinct *Rail Arrival and Southern District*

Start your day at the gym, have breakfast at a trendy café, drop your car at the mechanics, drop your kids at childcare, donate unwanted clothes to charity, do your grocery shopping, learn martial arts, window shop expensive bicycles, and furnish your house…all within a stone's throw of each other.

What characterises this precinct?

- **Arrival:** This precinct is part of the entry to the City. The built form and the placement of the station are important in the history of the City and the shifting focus of the City Centre.
- **Topography:** Crown Street follows the ridge line and crosses the rail line in this precinct.
- **Proximity:** The light industrial area is located close to the City Centre and commercial core in the low-lying flood prone area south of the station.
- **Mixed commercial on large lots:** The area is characterised by large lots which run east-west on long, north-south streets. These lots generally feature a diverse mix of low density industrial warehouses and commercial shop-front buildings 1-2 storeys in height.
- **Distinct character:** The combination of low and high densities in the area along with a patchwork of inconsistent building types make it a place which is distinct from other precincts within the City Centre.

01 The approach into the City Centre from Station Street is an underwhelming experience.
02 Long blocks running north-south make east-west circulation between rail and city difficult
03 The grain of the rail arrival precinct is characterised by low rise, single storey semi-industrial buildings on large lots.

What's great about it now?

- **A key Transport Hub:** The station and bus services are an important point of arrival and a hub for travel mode shift.
- **An important midway point:** There is significant pedestrian traffic along Western Crown Street traveling between the hospital, station and retail core.
- **Services for the people:** Owing to its location between the City Centre and the hospital, a range of services including medical, food and retail uses and services are well patronised.
- **Opportunities for renewal:** To the south of Station Street and west of the rail line there are sites which provide opportunities for significant renewal.
- **Ease of access:** The land area to the east of the station precinct is relatively flat, offering accessible opportunities for active transport along Burelli Street and through MacCabe Park.

What's missing?

- **Finding your way is difficult:** For passengers arriving at Wollongong Train station, orientation to the City Centre is unclear. There is no direct line of sight to Crown Street from Station Street, so it is not immediately apparent where the City Centre is, nor how to get there.
- **An underwhelming public domain:** Station Street is the main connection to the civic and retail core, but has poor public domain. Station Street is wide and barren with the street radius and kerbs designed for traffic rather than pedestrians. The footpaths are narrow, there is no consistent street wall edge, there are very few trees or shade, and the gradient is steep.
- **A station disconnected from its city:** The City did not initially develop around the station. Although Crown Street remains the key spine connecting the city and station, the location of the station, away from the City Centre and with no entries from Crown Street makes it feel disconnected from the city.
- **Street level activation:** Due to the mix of uses including car based warehousing and depots, pedestrian amenity is limited in the southern part of the precinct

01 The approach to the rail precinct is marked by an intersection of four streets and can be a disorientating place to locate the City Centre from.
02 There are multiple development opportunity sites on the western side of the rail corridor along Crown and Gladstone Streets.
03 A recent increase in development in the City has seen the emergence of larger medium density residential and commercial developments in the precinct.

Precinct Analysis

Precinct *MacCabe Park*

MacCabe Park is the City Centre's largest park and is located centrally between the train station and the commercial core. The Park's renewal has the potential to transform the entire City around it providing a revitalised open space which can be enjoyed by everyone.

What characterises this precinct?

- **Civic Life:** The park is significant within the civic life of the Wollongong community playing host to numerous cultural events, including fairs, indigenous celebrations, concerts and commemorative occasions such as Viva la Gong and ANZAC Day services.
- **Flat topography:** Located at a low point in the City, the Park and its surrounding areas are particularly susceptible to flooding as it was historically swamp-land which has been filled in. There is a very low grade of 1-2% from Tom Thumb Lagoon.
- **Built elements:** The Keira St edge is lined with a series of low-rise semi-industrial buildings within the park, leaving the park's western edge largely concealed from the street. The Centennial Hall and Carpark off Church Street and the Council office building on the corner of Burelli and Church Streets encroach on the green space.
- **Youth Centre:** A well used youth centre on the northern edge of the park at the corner of Burelli and Keira Streets is a community draw-card, however it turns its back on the park and like the industrial buildings along the Keira Street edge, conceals the park from Burelli Street.
- **Variety of spaces:** within the park there are a variety of spaces for different uses- memorials and places of reflection, heritage listed date palms through the middle, and a sculpture visible from the Burelli Street entrance.

01 MacCabe Park is a well vegetated open space, centrally located in the City.
02 The playground is well used by the community and has undergone several upgrades.
03 The park plays host to a number of important Civic events including ANZAC Day dawn services

What's great about it now?

- **Civic life:** The Park was and continues to be a place for everyone. The Park, including a youth centre, is frequently utilised.
- **Council investment:** Since the 1980s Council has been actively investing in the Park through the progressive acquisition of sites along Keira Street with the intention of converting these sites to parkland. The Park is also home to the Council run youth centre located at the northern end fronting Burelli Street.
- **Proximity to railway station:** The Park is the closest green space to the railway station, and the gradient is flat, making access to it relatively easy
- **Flexible open space**: Large public open space is able to accommodate a variety of uses, including concerts and festivals.
- **Connection to Burelli Street:** Located directly off Burelli Street, the northern end of the Park is central to the City and well connected to the Burelli Street civic core, as well as to the retail core.

What's missing?

- **Activation at the edges:** Existing development within the Park conceals the park from the street, does not activate the area is an issue for surveillance and safety.
- **Good access to the Park**: A number of existing buildings with light industrial uses currently occupy the Park, particularly along the Keira St edge, and limit views and access to and from the park. Council has been acquiring these properties progressively.
- **A safer welcoming environment after hours**: Despite its extensive use during the day, the Park lacks adequate lighting, visibility and security measures to ensure that it is a safe place to be after hours.
- **Greater diversity of use:** Despite the numerous uses and events, further opportunities exist to provide active uses including ball courts and cycling paths to provide a transition of uses for workers in the day and residents after work.

01 A number of public events and festivals take place in the park transforming it into a large gathering space.
02 Space for sitting and reflection
03 The existing line of retail buildings that flank the eastern edge of Keira Street turn their back to the park posing a security issue.
04 An mural painted on Centennial Hall facing the park improves the building's poor rear interface

Precinct Analysis

Precinct *Western Crown & Keira Street*

The gateway to Wollongong's commercial and civic heart, Western Crown Precinct is a place where the City's top restaurants sit side by side with long established watering holes, historic landmarks and contemporary retail outlets.

What characterises this precinct?

- **A historical record of the city's urban life:** Historically, Keira and Crown Streets have been the cultural, commercial and retail lifeblood of the city, bustling with street life and busy shop-fronts.

  Although its role as a cultural, commercial and retail high street has been gradually diminished over the years, a number of historically significant buildings that mark this period in its history still remain. This includes grand buildings like the Regent Cinema or Hotel Illawarra on Keira Street.
- **Variety:** The built form along Crown and Keira Streets is reflective of the traditional high street, and transitions from fine dining and office on Keira Street to the retail and office character of Western Crown Street. The fine grain tenancies and local offers play and important role in supporting the small employment uses and foot traffic generated by the station and health precinct further west along Crown Street.
- **Major point of arrival:** Like the Rail Arrival Western Crown Precinct includes the two key points of vehicular entry into the Wollongong City Centre (Western Crown Street from the west and Keira Street from the north)

  The precinct is defined largely by its role as a busy multi-lane classified road flanked by tightly knit, small scale retail and commercial buildings 2-3 storeys in height with awnings and narrow frontages which have changed little throughout its history.

01 Despite its intimate scale, the northern approach into the City Centre from Keira Street is an underwhelming experience.

02 The approach into the City Centre from Western Crown Street is flanked by a series of small scale shops and retail buildings that do not present a clear sense of arrival into a regional city.

What's great about it now?

- **Gateway to the City Centre:** Despite its underwhelming sense of arrival, this precinct plays a pivotal in delivering many visitors into to the City Centre. An opportunity exists to enhance the arrival experience for many visitors and residents alike.
- **The Eat Street Dining Legacy:** Both Keira and Crown Streets have long had a tradition of being a destination for socialising and dining. This is currently reflected by the multitude of restaurants, catering to a broad range of tastes, despite the development of new mall buildings offering a wide range of dining alternatives.
- **A proud past with buildings to match:** Despite the changes to the City over a long period of time, the streets and a significant number of original buildings remain largely intact. The mixture of contemporary buildings and older style heritage buildings from different eras are opportunities to develop new and innovative uses for the future.
- **A catalyst site with a potential for real change**: The site between Crown, Keira, Burelli and Atchison Street is a significant land holding within the precinct which represents a rare and unique opportunity to re-imagine Western Crown as a destination that could incorporate a unique mix of uses which could include hotel accommodation, residential, food and retail uses at a range of scales.

What's missing?

- **A clear point of arrival into the city:** The arrival to the City Centre by car from the north along the Princes Highway and west along Crown Street are both sudden with little or no indication to signal your arrival and transition into the City Centre.
- **An alternative to the 'rat run' through the city:** The sequence of the highway abruptly turning into Keira Street in the City Centre means that large volumes of through traffic are being forced through the City Centre in what should be a pedestrian focused retail and civic area.
- **A safe people oriented walking environment:** The City needs to build on the existing network of lanes within the Centre to create additional secondary street connections that focus more on the local movement of people within the City Centre. This includes the removal of overhead bridges and passage ways between buildings to keep people circulating at grade and activating the City's streets and laneways.
- What's proposed: In order to reduce through traffic it is proposed that Keira and Crown Streets be designated as local roads and through traffic diverted via Throsby Drive and Denison Street.

01 Wollongong Central, West Keira is the newest retail addition to the precinct.
02 The Regent Theatre is a cultural institution on Keira Street.
03 The western side of Keira Street features an impressive variety of restaurants ranging from fine dining to everyday eats.
04 The southern end of Keira Street is a much quieter place with little or no activation.
05 The lack of street activation is not helped by sky bridges which remove foot traffic from the street.

Precinct Analysis

Precinct *Commercial Services*

Home to Wollongong's smaller scale professional service sector, close to the Mall, Courthouse and Keira Street dining precinct. You can eat and shop, while waiting for your tax return

What characterises this precinct?

- **Topography:** The precinct sits on a high point of the City. It is characterised by long inclined streets which make pedestrian movement a challenge.
- **Location:** Tucked away on the north-west edge of the City Centre, the area is characterised by smaller buildings a mix of small tenancy serviced based local businesses, homes and non-government organisations mixed into a varied streetscape.
- **Building typology:** The precinct is characterised by smaller buildings including single houses (turned offices), residential flat buildings and office buildings up to 8 storeys in height. These house a range of uses including service based local businesses, homes, retail and non-government organisations.
- **Roads:** The precinct is characterised by several long, continuous street frontages which are in excess of 250 metres making pedestrian permeability challenging.

01

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01 Market Street, is the primary entry into the Commercial Services precinct.
02 A number of small cafés and restaurants operate along Keira Street.
03 The Illawarra Hotel is a live music and night club venue which is a popular night spot.

What's great about it now?

- **Between two great precincts:** Located north-west of the Western Crown Precinct and just north of the Rail Arrival precinct, it is close to the railway station, shops, restaurants and bars.
- **Views to the escarpment:** The precinct is located on the high side of the City and currently has uninterrupted views west to the escarpment.
- **Centre for local commerce:** The precinct is a balance of small, trade and service based businesses, shared office spaces and non-government institutions. There is a clear demand for small commercial tenancies in the City, currently being met by this precinct.
- **Market Street:** Is the major point of entry into the precinct and is flanked by a number of restaurants, bike shops and small businesses, including the heritage listed Illawarra Hotel on the corner of Keira and Market Streets.

What's missing?

- **Local connections within the precinct:** This precinct is physically and visually disconnected from the City Centre. Despite its proximity to Crown Street and the Station, the lack of connections to Crown Street combined with the steep topography make the precinct difficult to locate and access.
- **Connections to other precincts:** While the area is ideally geared for significant increases in densities, the precinct's lack of active and vehicular transport connections to the railway station and Crown Street inhibits this area's potential for further growth.
- **Protection of commercial uses:** The precinct contains a mix of uses, which is primarily commercial at its centre and residential at the fringes to the west and north. Keeping land primarily for commercial uses will be a priority.
- **Lack of open space:** Despite the great views of the escarpment, a lack of open space and tree cover reduces the amenity for residents and workers within the precinct.

01 The Rawson Street Car-park provides great vistas west to the escarpment
02 Residential development on the top of the hill has shifted the city skyline and increased population density significantly in short period of time.
03 An example of the mix of densities which characterise the area - a converted two storey house alongside a 3 storey commercial strata building is reflective of the varied scale of built form and mix of densities in the precinct.

Precinct Analysis

Precinct *Crown Street Mall*

Wollongong City's premier and historic retail high-street. A shopper's paradise that has a rich history and continues to be a place that attracts people from all walks of life.

Week night food markets bring life and music, Friday markets provide access to the region's best produce.

What characterises this precinct?

- **Location:** Situated in the geographic centre of Wollongong, the retail core is the heart of merchant activity in the City .
- **Pedestrian Mall:** Flanked by low scale retail, the buildings on both sides of the street are generally characterised by narrow frontages and street awnings to give the precinct a human scale. The open pedestrian mall provides flexible space for activity with high-quality landscaping, street furniture and public art.
- **Building typology:** The retail centre comprises two distinct and contrasting halves. The first is a shopping mall at the western end of Crown Street Mall. This cluster of large, multi-storey, mono-functional buildings is linked by sky-bridges and offers little in the way of pedestrian amenity or street-scape benefits. East of the shopping centre, is a series of low scale, single shop buildings providing an attractive fine grained streetscape. Residential uses above ground, offer passive surveillance and after hours activation to the mall.

01 An aerial view of the retail core reveals a recently updated landscape treatment with new art installations in the mall flanked by low rise shop fronts.

02 The inclusion of a new performance space at the heart of the mall is a focal point for community performances, but impacts views to St. Michael's Spire from some vantage points.

What's great about it now?

- **A meeting place:** The mall is host to produce, craft and 'Eat Street' markets making it an important focal point for formal and informal community gathering.
- **Pedestrian mobility:** The retail core and the surrounding lane-ways provide a highly permeable pedestrian friendly network of open space and lanes in the heart of the city.
- **The fine grain:** The lots oriented north-south create a fine grain of development characterised by deep buildings with narrow frontages and side setbacks which facilitate pedestrian only lane-ways, creating a tightly knit, but highly permeable series of retail shops and buildings. Successful fine grain precincts are emerging, particularly in the lane-ways between Crown and Burelli Streets, where small tenancies create important nodes and an element of surprise within the pedestrian network.
- **Heritage rich:** The mall is dotted with a number of heritage buildings including the Wesley Uniting Church and a group of heritage listed shop-fronts on the south-eastern side of the mall.
- **Public art:** The lane-ways provide important pedestrian cross-block connections and currently cultivate a creative city culture with vibrant public art murals.
- **Breaking down the box:** Large format shopping centres tend to present to the street as 'big boxes' with a single entry, however some effort has been made to sleeve smaller retail tenancies along the street frontage of the Crown Street Mall.
- **Proximity to Historic Spine:** In contrast, the area north of the retail centre including St Michael's Cathedral, Market Street and Wollongong Local Court serve as a strong reminder of the City's past, with local heritage items along Market Street serving as strong reminders of the effort to protect Wollongong's built heritage.

What's missing?

- **A concentrated retail core:** The dilution of the City Centre with ground floor uses on all streets is a real challenge for the City Centre
- **Activation of Crown St Mall:** From the train station to the beach-front Crown Street covers a length of nearly 3km, with 400m length of mall. Along this length, the predominant ground floor use is retail, however vacant tenancies, particularly at the fringes, contribute to a lack of vibrancy.
- **Shopping malls are competing with the street:** Much of the retail activity is being directed into internalised shopping centres, which negatively impact on the vibrancy of the street and the viability of tenancies on the street.
- **The right mix:** A mixed-use City Centre with a range of uses including community, retail, commercial and residential is required to create a vibrant centre. The challenge is how to achieve a genuine mix, with a diversity and fine grain streets.
- **Active and unobstructed streetscapes:** Pedestrian Overpasses negatively impact protected views along Crown Street and reduce pedestrian activation at street level.

01 The western end of Crown Street Mall is occupied by the multi-storey Wollongong Central shopping centre which includes a number of large retail stores
02 Artwork in the lanes are a feature of the City Centre. Globe Lane features several works in a setting with bars and restaurants
03 A view from the block behind the Crown Street mall reveals the extent of parking on rooftops.
04 Globe Lane and Globe Way link Crown Street Mall to MacCabe Park
05 Crown Street Mall is host to a variety of markets and events and plays an important role in enabling Wollongong's residents to meet formally and informally

Precinct Analysis

1 Precinct *Historic Spine*

The Historic Spine is a fantastic place to take a quiet moment from the hustle and bustle of the retail core below.

Sweeping views of the city combined with grand Victorian buildings connect visitors with the historic beginning of the City.

What characterises this precinct?

- **Heritage:** With the highest concentration of historically significant buildings in the Wollongong City Centre, the precinct was outlined in the 1834 town plan for Wollongong and is important to the earliest history of the township.
- **Composition:** A precinct of two parts: The precinct can be described best as two separate but connected portions.

  The first is the hill on which St Michael's Cathedral sits. This area includes a cluster of heritage listed civic buildings including the law courts, which forms the centre of the old town.

  The second is Market Street, which is arranged symmetrically on an east-west axis with the Cathedral. This street comprises a mixture of commercial, residential and mixed use buildings and forms a strong view corridor in both directions, with views to the ocean from the top of the hill towards St Michael's Spire and the escarpment beyond. Market Street is terminated by Market Square where the street alignment pulls the focus to the North-East, towards the historic harbour.
- **Vistas:** This high point is one of the few places in the City Centre from which the ocean, escarpment and the traditional steelwork heritage of Port Kembla can be seen.

01 Street view of St Michael's Cathedral (1859)- a Victorian Gothic sandstone building in a green setting and significant trees.
02 The view down Market Street from the Cathedral affords the precinct views of the ocean.
03 The view south down Church Street provides a vista down to Port Kembla.

What's great about it now?

- **Location:** The hill is the topographical high point of the area and at one time in the City's history, was the City's Centre.
- **Market Street Axis:** Market Street runs east-west from Langs Park extending all the way to the rail corridor. The street is split by St Michael's at the top of the Hill.It was the road which connected the original Market place (now Market Square) with the harbour.
- **St Michael's Cathedral:** The old sandstone Cathedral is the focal point of the precinct. Located at the top of the hill, St Michael's Cathedral overlooks the entire city and can be seen from the eastern end of Market Street.
- **The old civic core:** The St Michael's Spire and Courthouse Clock tower are important and identifiable markers of the old City. The 1834 town plan grid still remains today linking through the Market Square and the Harbour. The memory of the old town through heritage buildings civic institutions clustered around the precinct.
- **Student life:** The University of Wollongong have a limited number of student housing beds in a development immediately behind the Cathedral, which are extremely popular.

What's missing?

- **Green streets:** Heritage hill is relatively green with the church grounds and large trees. Market Street however lacks tree canopy coverage to provide pedestrians with amenity and shelter.
- **Activation on Market Street (east):** The eastern portion of Market Street is dominated by medium density residential dwellings with poor commercial interfaces at ground floor which do little to activate the street.
- **Wollongong Central Interface:** The northern edge of the Wollongong Central Shopping Centre backs onto the precinct, resulting in an undesirable interface made up of on-grade car parks. The gradient change and lack of connection through the large footprints impact pedestrian accessibility of heritage hill.

01 The Wollongong Law Courts have recently undergone a facelift and extension.
02 Market Square and Market Street are key to the historical significance of the Wollongong City Centre.
03 The view south reveals significant views to Port Kembla and escarpment which should be protected.
04 The lower portion of Market Street east is dominated by medium density residential dwellings with poor commercial interfaces at ground floor.
05 Entry to the on-grade car park which backs onto Wollongong Central results in a poor interface opposite the Cathedral.

Precinct Analysis

Precinct *Eastern Crown Street & Arts Precinct*

Wollongong's arts and civic heart converge around the generous public domain of Eastern Crown and Burelli Streets. Here theatre, music and art co-exist with Council Chambers, Government offices, Wollongong Central Library and mid-rise commercial buildings. A rich network of lane-ways and open spaces connect, this part of Wollongong is key to the city's café and small bar scene.

What characterises this precinct?

- **Varied built form character:** Bookended by the retail and entertainment districts, the Eastern Crown Street and Arts Precinct is slow and green, a true mixed use precinct with a balance of residents, workers and civic facilities. It is a compact area which features a mixture of development types ranging from small 1-2 storey shop fronts facing Crown Street to larger multi-storey commercial strata office buildings lining Burelli and Stewart Streets.
- **Civic Uses:** The precinct is home to the key civic functions of the City including the town hall, performing arts centre, regional gallery, central library and Council chambers.
- **Pedestrian friendly:** These public landmarks are well served by a strong network of generous footpaths, pedestrian lane-ways and squares with extensive street planting, on a relatively flat gradient.
- **Commercial Cluster:** The result is a precinct that is highly permeable and easily accessible and invites a broad range of commercial enterprises to co-exist, from small lane-way bars and restaurant start-ups to large private companies, in large floor-plate tenancies. The proximity to civic uses and clustering of existing commercial business give the precinct a prestigious commercial address.

01 Illawarra Performing Arts Centre (IPAC) is a respected venue for the performing arts.
02 Council Chambers and the Library overlook the Arts Precinct lawn.

What's great about it now?

- **It is the civic heart of Wollongong:** The Eastern Crown Arts Precinct has all of the ingredients of a great regional city in two compact, walk-able street blocks. This includes the town hall, performing arts centre, regional gallery, central library and Council chambers, which are located either side of Burelli Street between Kembla and Corrimal Streets.
- **Great cafés and Bars:** Eastern Crown and Kembla Streets have a variety of fine grain food and beverage offers conveniently located for commercial office workers and nearby residents alike.
- **A network of pedestrian connections:** There is a network of north- south pedestrian lane-ways connecting Crown, Burelli Street buses, Kembla Street, the Library, Crown Street Mall and the foreshore, making it a permeable and walk-able precinct. The pedestrian link through Ethel Hayton lane and the Arts Precinct Lawn includes consistent planting providing a green vista and canopy cover.
- **Safe, slow and convenient streets:** On Eastern Crown Street blisters contribute to generous footpaths which give pedestrians a sense of priority, and make crossing the road easy. Half hour parking makes it a convenient destination for shoppers and cafe-goers.
- **Open Space:** The Illawarra Performing Arts Centre and Wollongong Art Gallery are located around a generous landscaped square which provides relief along the street, a green outlook from the office towers and open space amenity in the City. The precinct has a higher percentage of tree canopy than most of the City.
- **Public art is a dominant feature** in the form of discrete light boxes, large format murals and sculpture.
- **Varied built form:** Eastern Crown Street is characterised by portions of fine grain and collections of period buildings. The two storey street wall and awnings create a successful street-scape. On the northern side of Burelli Street the arts precinct comprises buildings in the round with generous setbacks, on the southern side the mid-rise commercial buildings are clustered

What's missing?

- **Civic presence:** In spite of having all of the ingredients of a great regional city in this compact area, the precinct lacks a strong civic character. The precinct does not announce itself as the civic heart of the City.
- **Commercial and civic built form:** Although commercial office buildings are clustered in what has the potential to become a prestigious commercial precinct, the buildings themselves are dated. The arts and civic buildings have a poor interface with the public domain. The art gallery and town hall both present their rear facade to the landscaped square.
- **Mixed public domain experience:** Burelli Street has generous footpath setbacks, but limited and inconsistent street tree planting result in a poor public domain experience.
- **Distance to rail:** It is important for the arts and commercial uses to be easily accessible by public transport. The distance from the station and the topography at the western end of Burelli Street and Station Streets negatively impact the connectivity to rail. New active and public transport connections with rail will be important.

01 There is a good network of open spaces and connections.
02 The Art Gallery presents a predominantly inactive wall to the square.
03 The public domain has a rich food and beverage offer where public art is a dominant feature.
04 There is a consistent street tree canopy on Eastern Crown Street for the block between Kembla and Corrimal Streets.

Precinct Analysis

Precinct *Foreshore*

The foreshore is one of the City's greatest assets, a destination to celebrate, be entertained and enjoy the natural beauty of our coastal setting. People from every walk come together at the WIN Sports and Entertainment Centres in support of their local team or to enjoy local and international live shows. The recently upgraded 'Blue Mile' links the precinct to the Harbour and the popular North Beach.

What characterises this precinct?

- **Sports and recreation:** Located next to the beach this precinct offers many opportunities for both active and passive recreation.
- The precinct is home to a number of the city's key sporting and public open spaces including City Beach, Lang Park, WIN Stadium, Wollongong Entertainment and Sports Centre and Steelers' Leagues Club.
- **Higher density residential:** The recently completed residential developments along Corrimal, Crown and Harbour Streets mark a dramatic shift in the precinct's character from low density 3 storey walk-up apartments with front lawns, small school buildings on church lands, to large scale multi-unit developments in excess of 11 storeys with 3-4 storey street walls.
- **The City Centres backyard:** While this precinct is popular during major sporting events, it presents a larger opportunity to provide residents and workers of the City Centre better access to their coastline and major public spaces on a day by day basis. This will be increasingly important as higher density residential development increases in he City Centre.

01 City Beach is one of Wollongong's greatest natural assets, yet is underutilised.
02 The Wollongong Entertainment and Sports Centre and Stadium occupy prime beach-front position
03 Recently completed residential development characterises the changing face of the foreshore.

What's great about it now?

- **Home to the City's beach:** The City is in the privileged position of having a beach on the door-step of the entrainment, arts and business precincts, just short a walk for a lunch-time surf or an after-work swim.
- **Lang Park is a key event space:** Major sporting events and festivals take advantage of the beach-front location and unencumbered open space that Lang Park offers. This is a place of choice for boot-camps and fitness.
- **Scenic walking and cycling:** The attractive Blue Mile walking track follows the coastline, connecting City Beach to Wollongong Harbour and North Wollongong Beach.
- **A sports and entertainment hub:** The Stadium and Entertainment and Sports Centre are regional attractors for the City.
- **An attractive place to live:** New residential developments in the area have access to good views and amenity, and are fast becoming prestigious addresses.
- **Ease of access:** The precinct is on the free green bus loop and being relatively flat, has good active transport connections to the retail core, arts and cultural precinct and North Wollongong.

What's missing?

- **The Foreshore is disconnected from the City:** The large lots of the stadium, entertainment centre and golf course are barriers between the City Centre and the foreshore. These occupy a long stretch of the foreshore, block views of the beach and ocean from the city and limit opportunities for connections. The Stadium loading dock and service road on the eastern side of the complex are in a location which is incompatible with the beach-front address and create a poor public domain experience.
- **Crown Street is the only street connecting city and beach:** Market, Burelli, Stewart, Bank, Glebe, and Beach Streets do not connect with the beach-front.
- **There is a poor pedestrian approach to the beach:** On the Crown Street approach to the beach, the sand and water are difficult to see due to dune and road conditions. The roundabout and bus terminus prioritise vehicular movement make pedestrian access to the beach unclear and unpleasant.
- **There are limited attractors at the beach:** For those wanting to enjoy the beach over a meal or drink, there are few options. The spectacular setting has the opportunity to offer a variety of destinations for an early morning coffee, a scenic lunch or an after-work cocktail. The existing bar is compromised by a poor interface with Andrew Lysaght Park and the loading dock
- **Lang Park interface is compromised:** Whilst Lang Park has the opportunity to provide an excellent interface between the city and the beach, Marine Drive is a barrier between the two, and a result Lang Park is under-utilised. On the western edge of Lang Park, the inactive property frontages provide a privatised, poor interface with the park.

01 The beach is difficult to see from Crown Street, and the large roundabout and bus terminus prioritise vehicles over pedestrians.
02 The stadium loading dock and service road are located along the beach-front, creating a poor pedestrian experience
03 Private properties back on to the Western edge of Lang Park with inactive frontages and limited opportunity for passive surveillance.

Summary of key findings

Findings identified through urban design analysis and testing of the existing planning controls, and supported by economic analysis and forecasting, can be broadly summarised under the themes of land use; built form; and public domain and connections

These findings underpin the thinking behind the directions and strategies outlined in the Urban Design Framework.

Land Use

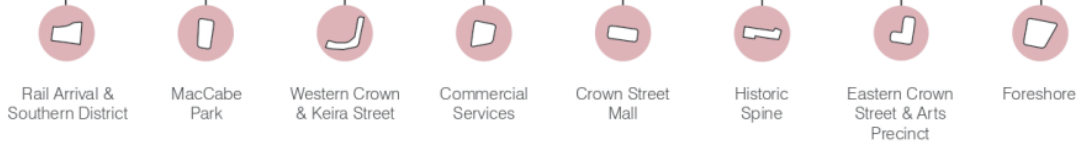
- Current land use controls could result in a City filled with residential development, compromising long term employment growth
- The retail core is spread out too far, which results in empty shopfronts and creates inactive streets
- The City's cultural identity is diversifying to support City life

Built Form

- General development controls don't respond to the character and historic qualities of places in the City
- The planning controls do not provide clear guidance for development to deliver the intended built outcomes for the city
- The City's development controls do not promote development that defines a city skyline or enhances the unique natural setting
- Developments favour maximising building development controls over design quality, producing a less attractive City

Public Domain and Connections

- The City lacks clear physical and visual connections to key places which makes wayfinding difficult and discourages walking.
- Arrival into the City Centre is confusing and provides an underwhelming first impression of Wollongong
- Public open spaces are valued but do not yet realise their full potential.
- Key public spaces are at risk of overshadowing by surrounding buildings
- Tree canopy in the City Centre is inadequate



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PROPERTY SETTLEMENTS

03 Recommendations

Based on our analysis and key findings, recommendations to inform planning policy change are defined in the form of Objectives, Directions and Strategies. These have been broadly categorised into 3 key areas - built form, land use and public domain and connections.

Urban Design Framework

A design framework to deliver *A City for People*

The Urban Design Framework consists of objectives, directions and strategies for development, which form a framework to deliver the Vision of *A City for People*.

Objectives

The objectives express a high-level aim for each key area - land use, built form, and public domain & connections. These objectives were identified following the city-wide and precinct-wide analysis and respond to the key findings in each area.

The objectives should guide future decision making, specifically the refinement of planning and design controls.

Directions

The directions describe the key moves required to achieve the objectives.

Strategies

The strategies begin to explain in detail the mechanisms required to deliver the directions. The strategies range in their scope, with some relating to the Wollongong City Centre as a whole and others being precinct-specific.

OBJECTIVE

DIRECTIONS & STRATEGIES

Land use

A vibrant and growing Regional City

Planning controls promote a diversity of uses to encourage a vibrant City Centre, day and night. Jobs and housing growth supports Wollongong's role as a Regional City. Wollongong is an attractive place to live, work, visit and invest.

1. Prioritise jobs growth and establish a resilient commercial core
   - *Define and strengthen the role of the B3 Commercial Core for employment*
   - *Investigate incentives for commercial development*
2. Define a thriving retail network that responds to character and supports a range of offers
   - *Protect the character and role of key retail streets and precincts*
   - *Only require non-residential ground floors on key retail streets*
   - *Develop planning controls that support a balance between night-time economy and residential city living.*
3. Plan for a variety of housing to support a lively and inclusive city
   - *Guide residential development in the City Centre in the right locations*
   - *Leverage opportunities for public benefit improvements through development*
   - *Encourage a diversity of housing in the City including Affordable Rental Housing and Student Housing*

Built form

An attractive and diverse city in a unique natural and historic setting

Clear planning controls preserve the unique historic character of Wollongong's precincts. Renewal at all scales is encouraged and this creates an interesting built fabric. Built form variety creates a recognisable city skyline , celebrates the natural setting and is human scale.

4. Grow a legible city that supports a distinctive and evolving character
   - *Plan for diversity in form and renewal at all scales*
   - *Plan for building envelopes that preserve amenity and support the desired future character*
   - *Preserve buildings and places of significant character values for the enjoyment of future generations*
   - *Preserve views to the escarpment, ocean, natural and built heritage*
5. Strengthen and simplify planning controls to promote built form diversity in response to people and place.
   - *Develop controls that ensure slender tower forms, appropriate separation and consistent setbacks*
   - *Develop controls for floor to ceiling heights that ensure good amenity and adaptability*
   - *Develop controls and provide guidance on site amalgamation and isolation*
   - *Develop controls for fine grain frontages to ensure human-scale development*
   - *Develop ground setback controls that provide attractive interfaces and functional streetscapes*
   - *Develop street wall controls that respond to character and human scale*
6. Elevate the importance of design quality in the City Centre
   - *Strengthen the commitment to design excellence*
   - *Encourage innovation and design quality in the local design and development industry*
   - *Provide clarity and improve outcomes through a strong assessment process*
   - *Prepare design guidelines that communicate better design outcomes*
   - *Develop specific design guidelines that demonstrate better built form outcomes on flood prone lands*

Public domain and connections

A green and walkable city

The city street grid is clear and facilitates walking. Revitalised public spaces are a catalyst for growth and support an active. healthy community. A significant increase to the City's tree canopy contributes to a green and sustainable city.

7. Strengthen the structure of the City through a permeable grid that prioritises pedestrians
   - *Define the role and function of streets in the City*
   - *Create a permeable city grid for pedestrians*
   - *Deliver active transport infrastructure*
   - *Enable the mode shift from cars to public transport*
   - *Identify roads for vehicular traffic and servicing*
8. Create a green network of open spaces for a sustainable, healthy and attractive city
   - *Reinforce the character of key streets and precincts with appropriate tree planting*
   - *Define and implement a 35% minimum canopy target on key walking streets by 2037*
   - *Prepare a City Centre Street Tree Masterplan*
   - *Establish a tree-centric approach to deliver greening in response to existing constraints*
   - *Leverage new development to offset the cost of greening*
   - *Identify and prioritise public domain projects to catalyse renewal and encourage investment in the City*
9. Protect sunlight to key public spaces
   - *Protect solar access to key public spaces to maximise amenity*

Land Use - A vibrant and growing Regional City

The Economic and Cultiral Heart of the City

As defined by the Illawarra-Shoalhaven Regional Plan, Wollongong City Centre is the economic and cultural heart of the Illawarra, and is a nationally significant City. In accordance with the Regional Plan, much of the future prosperity of the Region will be built on the potential to generate jobs from the integration of education, health care, business and tourism precincts in Metro Wollongong. The City Centre is key to achieving this.

The land use strategies for the City Centre focus around getting the balance of land uses right: encouraging commercial investment; containing a vibrant retail core; and supporting City life with residents.

Shaping land use across the City Centre

Cities are more than commercial business districts. There is a fine balance in understanding how commercial, retail and residential markets interact to deliver liveable cities. Economic analysis, growth forecasts and capacity testing was undertaken to understand how we can plan for our changing economy and growing City.

What the testing revealed:

Commercial lands need to be protected

It is critical for a Regional City like Wollongong, that housing in the City Centre does not inhibit commercial growth. The city is losing commercial land to residential development and therefore needs to define adequate zoned land and support commercial uses into the future.

Retail uses need to be concentrated

There is a need to establish current and future retail demand in the City and encourage a vibrant, compact retail core, which reinforces the important role of the traditional high-streets of Crown and Keira Streets.

Residential needs to support City growth

Well designed residential uses in mixed use areas support the vitality and resilience of a city. Increasing the city's residential population will bring significant benefits; a more diverse night-time economy; increased pedestrian activity; passive surveillance; and more people living within walking distance of all the services and amenities they need.

Housing must be in the right location, and provide the right mix to meet the needs of a growing population. Variety in dwelling type and size will contribute to, and support a diverse community.

Objective

A vibrant and growing Regional City

Planning controls promote a diversity of uses to encourage a vibrant City Centre, day and night. Jobs and housing growth supports Wollongong's role as a Regional City. Wollongong is an attractive place to live, work, visit and invest.

Directions

1. Prioritise jobs growth and establish a resilient commercial core
2. Define a thriving retail network that responds to character and supports a range of offers
3. Plan for a variety of housing to support a lively and inclusive city

Urban Design Framework

1 Direction: *Prioritise jobs growth and establish a resilient commercial core*

The analysis has found that the current land use strategy is compromising diversity and long term commercial growth opportunities due to a lack of distinction between land use zones. Supporting the growth and function of higher-grade commercial uses, with a range of complementary mixed uses, is an important part of Wollongong's role as a regional metropolitan city.

This direction aims to ensure that the City Centre has adequate zoned land for commercial uses into the future. The direction also aims to ensure that sites are attractive to commercial tenancies, which aligns with the *Economic Development Strategy.*

★ STRATEGY 1.1

Define and strengthen the role of the B3 Commercial Core for employment

This strategy recommends redefining the boundary and range of land uses permissible in the B3 Commercial Core zone.

Quarantined commercial core areas where residential development is prohibited has the potential to manage land use competition and stop degradation of the commercial function of the City. Areas have been identified based on current and desired future character through the precinct analysis, lot and amalgamaition patterns as well as locational assets that support a strong office market.

The creation of defined commercial areas is a signal to the market that the City remains a business core. These commercial areas comfortably accommodate the forecast demand for commercial floor space beyond 2036.

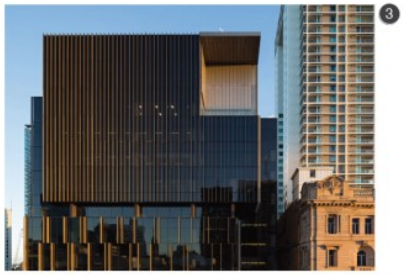
No land use changes are proposed for areas outside the B3 and B4 zones of the Wollongong City Centre.

The proposed B3 Commercial Core is broken into smaller areas, each playing their own role in achieving an attractive central business district.

1. The Burelli Street Precinct is intended to attract A-Grade office development. It will be a premium commercial street serviced by its proximity to the train station, retail core and MacCabe park.
2. To the north, the Market Street West precinct is intended to support a boutique office character with smaller tenancies and shared working spaces well connected to Keira Street and the station.

Commercial land use strategy diagram

Land Use

1


2

4

3 The Retail Core is intended to consolidate retail and mixed commercial uses and further support the objective of strengthening the commercial core. It is proposed that a defined active frontage control be applied. Residential development in this area will be limited to promote retail and commercial outcomes within this precinct.

The removal of shop-top housing from the B3 commercial only zones (1 & 2 in the adjacent diagram), along with limiting residential floor space in the remaining area, will ensure that commercial and retail land uses are prioritised in key locations.

While the commercial only precinct should prohibit residential uses, there is the opportunity to consider allowing a range of temporary non-strata development options including student housing and other accommodation services.

Outside of the defined commercial only precincts, shop-top housing will remain permissable in the Commercial Core. The intent is that residential uses support City Centre vibrancy, however the City function for jobs growth is a priority. Full commercial development is permitted and promoted, with mixed use development in the Commercial Core zone requried to retain a minimum 30% commercial floor space or retain the net commercial floor space existing on the site (whichever is greater). This means that the net commercial floor space on the site is retained as a minimum.

4 The B4 Mixed Use zone should deliver a truely mixed use development outcome to support the Commercial and Retail core.

The objectives of the B4 Mixed Use zone is to deliver a suitable mix of business, office, residential and retail land uses to support the vibrancy and success of the Commercial Core.
The surrounding Mixed Use zone is intended to function as a city support area, providing the right balance and flexibility of uses for the future.
Residential and commercial development will be permitted throughout this zone, delivering a true mixed use outcome. Horizontal mix of uses will see residential and commercial buildings side by side, and vertical mix of uses will see a range of land uses in the one building.
Ground floor residential uses should be permitted in the B4 Mixed Use zone excluding areas with an active frontage requirement.

★ STRATEGY 1.2

Investigate incentives for commercial development

Council should consider undertaking market testing of reduced on-site car parking for development in the Commercial Core to determine whether a reduction in the parking requirement would incentivise development.

What is a Land Use Zone?

Land Use Zones define the legally permitted and prohibited uses of a piece of land, determining if a lot can be used for commercial, industrial, residential or other purposes. In other words, it defines what development land can, and cannot, be used for.

Urban Design Framework

2 Direction: *Define a thriving retail network that responds to character and supports a range of offers*

The analysis has found that retail uses are dispersed across the City Centre and that there is, overall, an oversupply of retail uses resulting in vacancies and inactive pockets in the City.

There is a need to establish current and future retail demand in the City and encourage a vibrant, compact retail core, which reinforces the important role of the traditional high-street of Crown and Keira Streets. The direction aims to conserve the historic fine-grain retail area on Crown and Keira Streets and around the existing large format centres where there is good foot-fall.

There are five key retail precincts within the retail core which should be encouraged to continue to develop as the primary retail focal points of the City. Each have individual characteristics, critical to the vibrancy of the city, hosting some of Wollongong's favourite offers both during the day and night.

The areas can be defined as:

1. 'Western Crown' Street offering affordable, alternative retail and emerging businesses.
2. Large format shopping centres at the intersection of Keira and Crown Street.
3. Crown Street Mall offering a pedestrianised retail, commercial and event space.
4. Eastern Crown and Kembla Street as a food, beverage and entertainment cluster closely linked to Burelli Street commercial and civic uses.
5. The Keira Street evening precinct with its existing collection of quality restaurants which are destination attractors for the City Centre.

Retail strategy diagram

Land Use

STRATEGY 2.1

Protect the character and role of key retail streets and precincts

Implement built form strategies to protect the fine grain character, function, streetscape and solar access to what is the existing retail heart of the City.

Implementation of this strategy should consider defining the retail areas through the active frontage control in the LEP and the character precincts in the DCP. Controls should encourage focus on large format retail at the intersection of Keira and Crown, and a high street character with a focus on fine grain on Crown, Keira and Kembla Streets.

It should be clear that even large format retail must address and activate any street frontages.

STRATEGY 2.2

Only require non-residential ground floors on key retail streets

Allow a diverse mix of uses which supports and balances the need for commercial, retail and residential growth in the centre today and in the future.

Currently the WLEP requires development within the B4 Mixed Use zone and B3 Commercial Core zone to provide a non-residential ground floor use. It is recommended that this approach is replaced with an identification of key retail streets on an 'active frontage map' for the City Centre, requiring a non-residential ground floor use that activates the street in these locations. This should be supported by examples of well-designed active frontages in the DCP or design guidelines.

The strategy will ensure that non-residential uses are appropriately located and support a retail street, rather than being dispersed across the City.

STRATEGY 2.3

Develop planning controls that support a balance between night-time economy and residential city living.

In alignment with the *Economic Development Strategy* and *Creative Wollongong: Cultural Plan*, provide clear policy guidance to City Centre living to assist in mitigation of real and perceived conflicts between residents and city noise.

Traditional fine grain shop-top tenancies on Keira Street

Residential interfaces with the public street, managed with planting, a setback, and a raised private open space

Late night food offers on Kembla Street

Urban Design Framework

3 Direction: *Plan for a variety of housing to support a lively and inclusive City*

Well designed residential uses in mixed use areas support the vitality and resilience of a city. When balanced with other uses, housing in the city can bring vibrancy, support local businesses and create an urban lifestyle desired by a diverse population.

Increasing the City's residential population will bring significant benefits; a more diverse night-time economy; increased pedestrian activity; passive surveillance; and more people living within walking distance of all the services and amenities they need.

It is critical for a Regional City like Wollongong, that housing in the City Centre does not inhibit commercial growth. Housing must be in the right location, and provide the right mix to meet the needs of a growing population. Variety in dwelling type, size and location will support a diverse community

Key objectives of designing residential for the City Centre should be the activation of key city streets and management of land use conflicts.

STRATEGY 3.1

Guide residential development in the right locations

Promote a diverse mix of uses which support and balance the need for commercial, retail and residential growth in the Centre today and in the future. Permit residential uses at ground floor level, in nominated areas across the Mixed Use zone.

Ground floor residential needs to provide privacy for residents as well as ensure streetscape amenity.

STRATEGY 3.2

Leverage opportunities for public benefit improvements through development

The strength of the residential market is a key opportunity to leverage significant public benefits for the City Centre, including local infrastructure such as affordable housing, new parks, walking and cycling connections, and new community facilities.

Private development particularly residential development should contrbute to an improved public domain experience can be an effective mechanism to deliver these benefits. Without residential development, the ability to deliver local infrastructure and community facilities is significantly reduced.

This presents an exciting opportunity to make the most of residential in the City, and to leverage development contributions to deliver public domain improvements, new connections and open space.

STRATEGY 3.3

Encourage a diversity of housing including Affordable Rental Housing and Student Housing

The City Centre is well serviced and well placed to assist in the delivery of housing offers.

Affordable rental housing for low and very low income residents has been identified as a key need. Offering a range of affordable housing in the City Centre, close to key services will improve housing outcomes in our Local Government Area.

It is recommended that Council prepare an Affordable Housing Contributions Scheme. This work will identify Affordable housing needs and define how a scheme could be applied in the City Centre.

The City has a young population, and high proportion of small households, but there is a lack of student housing in the City Centre. Only 5% of student housing is located in the City Centre. Providing more student housing in the City Centre would bring more students into the City, helping to create a more diverse resident population.

Land Use

Double height apartments at ground with fences maintain privacy while offering visual interest.

Individual entries contributes to life on street and continues fine-grain rhythm.

Medium and high density housing is appropriate in the City Centre

Improvement to public spaces such as parks and community facilities creates public benefit around developments.

Built Form - An attractive and diverse city in a unique natural & historic setting

Grow a City Centre with exceptional built form

The design of individual buildings and the spaces they create shapes our City Centre and influences its character and function. Every building and public space must be designed to reflect its context and to enrich the quality of the City for people.

Built form controls play an important role in setting expectations for the way a building 'fits' into the City. Setbacks, building height and seperation and floor space ratio controls work together to guide building envelopes. However, they don't work alone. To deliver a high quality City, building envelope controls need to be met with high quality design, tailoring each building design to its unique circumstance.

Shaping new built form controls for the City Centre

Built form testing was carried out based on identified Character Precincts. Building envelopes were developed across a range of site sizes, and different lot patterns, including small and infill sites. The process revealed how controls guiding building envelopes need to better respond to, and respect, the distinctive and evolving character of places across the City Centre.

What the testing revealed:

Building envelopes need to respond to context, including character and heritage

Testing developed appropriate variations in building height, floor space ratios, street wall heights and setbacks by precinct to better reflect the existing character. These changes establish the baseline for recommended changes to planning controls across the City Centre.

Not all sites will achieve maximum height and floor space

There is significant variation in lot configuration with some 45% of sites across the City Centre having narrow frontages. Testing shows how sites of varying scales will sit in the City context. In many circumstances, sites which are smaller or have a narrow frontage are unable to achieve maximum height and floor space ratio outcomes. This is particularly evident where lot configurations are typically narrow and long.

There is an opportunity for a more flexible approach to 'unlock' narrow sites

Narrow sites present an opportunity across the City Centre. They should be 'unlocked' to allow for creative and innovative responses to renewal. While planning controls (maximum building heights and floor space ratio) should not be 'as of right', flexibility should be provided where high quality design processes are in place, to facilitate appropriate development outcomes.

There is sufficient capacity for growth

Testing demonstrated that the ability for the City Centre to grow and deliver projected commercial and residential development to support our growing community can be accommodated within proposed planning control changes.

Processes for considering outcomes on larger sites across the City Centre are not differentiated. Bespoke site planning and building envelope requirements will allow appropriate flexibility and deliver design excellence and city benefit

As sites become larger, there is a disconnect between how a floor space ratio can predict building envelopes.

Site planning may require new streets and public spaces and there is increased capacity to configure floor space in different ways – tall and slender towers or lower, wider buildings.

A tailored design approach is required.

Owners or proponents of sites greater than 5,000 square metres should be encouraged to engage with Council to discuss a tailored planning pathway to access appropriate height and density through a site specific planning proposal.

Proponents using this process will need to demonstrate that a proposal can deliver community benefit, design excellence, and alignment with the strategic direction as set by Council. This will need to be documented clearly in a City Centre Planning Strategy.

- Key Public Views
- Solar access protected
- Low-scale street wall
- Heritage + Character buildings
- Topographic high points
- Flooding extent (2015)
- Coastal Management SEPP
- Spine of tall buildings through commercial office precinct
- Taller mixed use buildings
- Building scale reduces through the City support area as the city transitions towards the coast and surrounding residential

Objective

An attractive and diverse city in a unique natural and historic setting

Clear planning controls preserve the unique historic character of Wollongong's precincts. Renewal at all scales is encouraged and this creates an interesting built fabric. Built form variety creates a recognisable city skyline, celebrates the natural setting and is human scale.

Directions

4 Grow a legible city that supports a distinctive and evolving character

5 Strengthen and simplify planning controls to promote built form diversity in response to people and place

6 Elevate the importance of design quality in the City Centre

4 Direction: *Grow a legible city that supports a distinctive and evolving character*

STRATEGY 4.1

Plan for diversity in form and renewal at all scales

Floor Space Ratio (FSR) is recognised as an important regulator for development.

FSR guides building envelopes in partnership with many factors including building height, street wall, setbacks, and landscape controls. Only through a high quality design process that considers all these factors can the appropriate yield of a site be established with any certainty.

Floor Space Ratio is not 'as of right'. It is expressed as a maximum, however, it is not an upper limit achievable on all sites. Complexities around the context of the site, its orientation, lot width, size and unique site characteristics, such as heritage significance, mean that a development will not always achieve the maximum FSR.

To grow a legible city that supports the character of Wollongong, the floor space ratio controls should be revised to:

Map maximum FSR controls across the City Centre that respond to 'place'

Through detailed precinct planning, building envelope testing and an appreciation of local character, a series of floor space ratio controls are being developed to respond to place. This marks a significant shift in the FSR strategy for the City Centre. It is recommended that the requirement to derive FSR from land use and site size is removed to enable a more strategic, place-based approach to guiding scale in the City.

Protect and incentivise commercial capacity

Generous FSR controls should be maintained in selected commercial areas, and be aligned with approriate height controls. This is to incentivise development, particualry in the proposed new A-grade commercial precinct to emerge along Burelli Street, where the urban structure supports taller buildings with larger floorplates.

Unlock development potential on narrow sites to allow renewal when high quality design outcomes can be demonstrated

Narrow Sites – site frontage less than 20 metres

Nearly half of sites across the City Centre have narrow frontages (frontages of less than 20m). Under the current controls these sites must be amalgamated in order to access height and floor space controls for redevelopment. This has key implications on delivering change and promoting smaller scale renewal.

Building envelope testing demonstrated that appropriate built form outcomes can be achieved on smaller sites when designed well.

It is recommended that narrow sites be 'unlocked' to allow for redevelopment where it can be demonstrated that a high quality design can be achieved and key amenity criteria can be meet for the site and its neighbours.

Residential flat buildings on narrow sites – site frontage less than 24 metres

Testing demonstrated that residential flat buildings in the urban city context can be delivered on sites less than 24m site width. A series of built form envelopes identified potential small site renewal for residential on sites as narrow as 14 metres. Delivering residential on sites less than 24 metre site widths is challenging. In some instances, site orientation and site context will make it unachievable.

For sites with a width less than 20 metres, and for sites with a width less than 24 metres proposing a residential flat building - it is proposed that a base FSR be applied and potential height be capped at the recommended Street Wall height. Consideration may be given to allowing additional FSR and height above this base in accordance with the proposed maximum FSR and Building Height in exceptional circumstances.

What is Floor Space Ratio (FSR)?

FSR is used to calculate the maximum developable floor area (m^2) relative to the total size of a site.

The purpose of FSR is to provide an appropriate relationship between the size of a site and the amount of development on that site.

It sets a maximum development density and intensity of land use, and seeks to encourage a consistent building scale within an area.

For example: You have a site that is 1000m^2 and a maximum FSR of 3:1.

Your developable floor area is calculated by multiplying the site area by the FSR provided.

3x1000m^2=3000m^2.

You could deliver this 3000m^2 in many ways, dependant on context and the requirements set by other planning controls that guide maximum building envelopes e.g. height, street-wall, setbacks and floorplates.

Built Form

STRATEGY 4.2

Plan for building envelopes that preserve amenity and support the desired future character

Protect the amenity of key public places

Introduce new solar access planes to inform reduced street wall heights and increased setbacks above street wall on Crown Street Mall, and reduced heights in the Arts Precinct.

Limit residential capacity in flood prone areas

Proposed changes to land use permissibility (allowing residential at ground) will result in an increase to residential floor space permitted in flood affected areas. This is not permitted under Section 9.1 Ministerial Direction for flood prone land. Heights should be reduced in these areas to limit any increase in residential capacity, in alignment with the Ministerial Direction.

Create a legible city skyline that concentrates height around the office core

Introduce an east-west spine of height along Burelli Street, between the station, MacCabe Park and the Arts Precinct, denoting the commercial and civic core of the city. Ensure heights on the City Centre fringes step down to maintain views to key natural features and transition to low scale areas.

Height clearly defines CBD with a transition to lower forms as you move out of the City Centre.

Ensure heights reflect character of precincts

Define appropriate street wall heights on Crown Street and Keira Street to protect the fine grain, human scale character.

Ensure consistancy across the Market Street commercial services precinct where some existing sites have controls permitting significantly taller heights than those in-keeping with the character of the smaller office buildings in this area.

Align heights with the desired future character of Burelli St A-Grade commercial precinct, which is suitable for larger footprint, taller office towers.

Align heights to development potential

Ensure height controls on sites around the station are aligned with the achievable development envelope. This will ensure the controls better reflect likely development outcomes and prevents the inflation of land values based on unachievable heights.

Built form testing found that in several areas with taller height limits maximum FSR was achieved well before the height control was reached

Height strategy diagram

1:10,000 0 100 200 300 400 500M

- Solar access protected
- Low-scale street wall
- Heritage + Character buildings
- Flooding extent (2015)
- Spine of tall buildings through commercial office precinct
- Taller mixed use buildings

What is a Height Limit?

Height limits are one of the controls used to define the maximum size of a building. Heights limits are given in metres and determine how tall a building can be.

Height limits are important because they help shape the character of an area and define the city skyline, with the tallest buildings normally denoting the centre of the City.

Urban Design Framework

STRATEGY 4.3

Preserve buildings and places of significant character values for the enjoyment of future generations

Improve planning controls to respond to place and celebrate the character of Wollongong

Wollongong has many character buildings and places that provide an interesting streetscape, rich fabric and host many of our community's local businesses and civic functions. It's important to strengthen planning controls to protect these places and facilitate good design outcomes in and around them for the future.

Protect signficant buildings and places

The identification and management of historic places is an essential part of ensuring we continue to 'celebrate the uniqueness' of the built environment and character of Wollongong City Centre.

Ensure significant buildings are listed and managed in alignment with community values and legislative direction. The Heritage Schedule and Heritage Map in the Wollongong LEP 2009 should be updated to include relevant additional buildings.

Encourage the adaptive reuse of character and heritage buildings through the promotion of the Heritage incentive clause in the LEP, supported by Heritage Guidelines.

STRATEGY 4.4

Preserve views to the escarpment, ocean, natural and built heritage.

Views towards the escarpment and ocean are what give Wollongong its unique character and appreciation of its natural setting. Views also help people using the City orient themselves, and connect with the wider context.

Many views towards the escarpment and ocean have already been obscured by development, or are difficult to achieve in low-lying areas of the City Centre. Views along streets can be more easily preserved. Care should be taken when developing at the terminus of streets, to preserve views to significant landscape beyond.

Ensure the form of development in the city centre preserves views to the escarpment from the foreshore

Maximise continuous views of the ridge-line of the escarpment from Flagstaff Hill.

Preserve views along street corridors

Give access to potential new views that may be made available with redevelopment. This is particularly relevant to the WIN stadium and WIN Entertainment Centre, with the potential opportunity to extend Burelli and Stewart Street view corridors to reveal a visual connection to the foreshore.

Ensure built form controls create a permeable skyline

Amend built form controls including side setbacks and setbacks above street wall preserve views between buildings to significant natural landscape and built form.

Improve views to St Michael's spire and Courthouse

Preserve views to the Cathedral and Courthouse and its silhouette against the sky. Ensure structures within Crown Street Mall and Church street assist with opening up views towards St Michael's spire.

Recommended key views

Built Form

5 Direction: *Strengthen and simplify planning controls to promote built form diversity in response to people and place*

STRATEGY 5.1

Develop controls that ensure slender tower forms, appropriate separation and consistent setbacks

Achieve an attractive city skyline sympathetic to the topography, natural setting and character

Minimise building profiles to maximise the opportunity for shared amenity and views to the sky and as specified in key views map.

Preserve and open up public views of significant built form, open spaces and natural features available from and around the site.

Promote tower slenderness

Provide a consistent control for maximum floor plate sizes above street wall height:

① Retain existing maximum floor plate sizes for commercial (1,200m² GFA) but increase maximum building depth to 30m to allow for greater variety of tower forms.

② Decrease maximum floor plate size for residential development to 750m² GFA to ensure tower slenderness. Increase maximum building depth to 21m to allow for a typical residential apartment layout.

Where the unique circumstances of a site demonstrates that a more skilful design can achieve improved outcomes for public domain views and amenity, variation from strict application of this control, where appropriately justified may be possible.

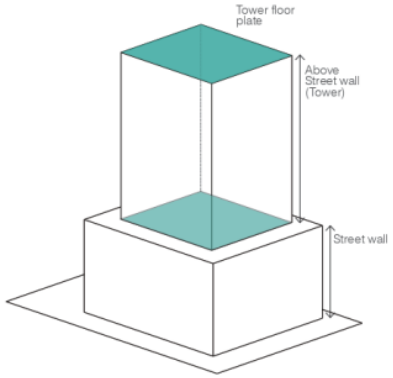
Attractive and diverse tower forms

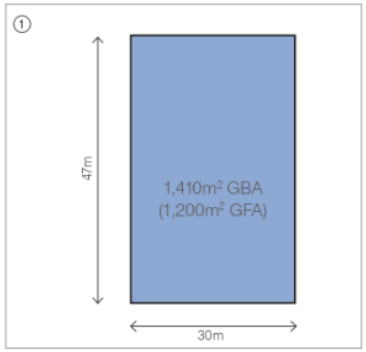
To avoid stepped building forms, a single setback should be provided above street wall. For taller buildings this means the greatest side and rear setbacks should be applied from street wall height.

Ensure well separated towers

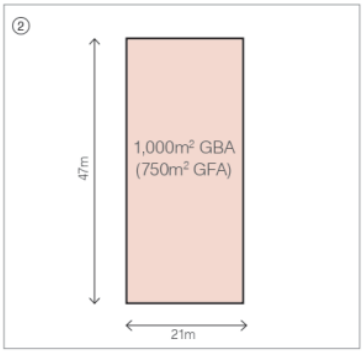
Building separation as per *Apartment Design Guide* for residential and a minimum 6m from side and rear boundaries for commercial uses above street wall height in the commercial core.

Apartments blocks with habitable spaces directly opposite each other should be avoided and increased separation be provided where possible.





Example of max floor plate and depth for commercial development (assuming GFA efficiency is 85% of GBA)



Example of max floor plate and depth for residential development (assuming GFA efficiency is 75% of GBA)

Urban Design Framework

STRATEGY 5.2

Develop controls for floor to ceiling heights that ensure good amenity and adaptability

The following floor-to-ceiling heights are recommended as a minimum to achieve a high level of internal and external amenity:

- Ground: minimum 4m for all ground floor uses in active frontage areas. 3.3m for all other areas. As per ADG for residential.
- Level 1 and above: 3.3m for commercial. As per ADG for residential.

Note: Residential at ground should generally be raised to provide visual privacy. In flood prone areas ground requires raising up to 1.5m. See Design Quality section for good design of ground floor built form interfaces.

STRATEGY 5.3

Develop controls that provide guidance on site amalgamation and isolation.

Isolation should be discouraged. Where a site will unavoidably be isolated, joined basements and 0-setback podiums should be provided to allow the neighbour to develop to an appropriate potential under the controls.

STRATEGY 5.4

Develop controls for fine grain frontages to ensure human-scale development.

Wollongong has been successful in developing a fine grain along its pedestrian spine of Crown Street Mall and Crown Street and Keira Street. The traditional shop-front pattern of 6-12m should be maintained and enhanced and fine grain buildings should be required through the entire centre. New developments should relate to the existing fine grain of shop-fronts, even where the typology may include taller buildings.

What is Human-scale development?

We use the term human scale to refer to people as pedestrians and their experience of a City.

In its simplest definition, creating a human scale environment means making sure that the buildings that we interact with are of a scale that is comfortable for an average person to be around.

Built Form

Strengthen and simplify planning controls to promote built form diversity in response to people and place

STRATEGY 5.5

Develop ground setback controls that provide attractive interfaces and functional streetscapes.

Promote walk-able urban retail streets

Retain zero setbacks for active frontages on key streets, where awnings can be provided. For key large sites which are able to achieve greater setbacks and currently have narrow footpaths, an additional setback is recommended.

Protect views

Ensure that views along streets to the city's natural setting can be maintained. (Refer to views section for more detail).

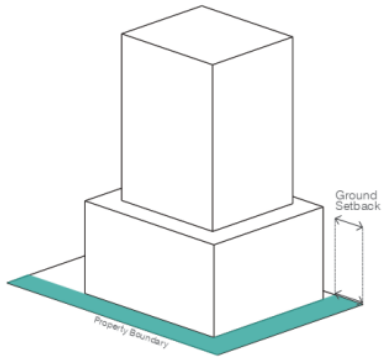
Set the tone for prestigious commercial precincts

Provide a generous dedicated setback on the southern side of Burelli Street between the station and Corrimal Street to allow for a significant public domain and planting zone, and wider setbacks on the northern side to allow for tree planting.

Provide wider setbacks along Market Street West to allow for greater public domain space and street tree planting on this key street of the urban services precinct.

Get the mixed use interface right

Require 3m ground setback in mixed use zones outside the retail core this will allow for flexibility in ground floor uses whether it be commercial or retail uses with space for outdoor seating, or residential requiring a transition zone with landscaping and amenity for residents.



STRATEGY 5.6

Develop street wall controls that respond to character and human scale.

Protect and enhance the character and heritage quality of Crown Street Mall, Crown Street and Keira Street

- Establish a 2 storey street wall height (9m), which aligns with prevailing heritage parapet heights.
- At Crown Street Mall establish a 2 storey street wall height (8.5m) generous 10m setback above the street wall to protect the unique low scale character of this key public space. In doing so this will improve solar access to the mall from the north, allow the heritage to breathe, the fine grain character to be read. The setbacks are equal on both northern and southern sides to ensure generous views to the sky from the mall.
- On Crown Street (between Darling and Keira and Kembla and Corrimal Streets) and Keira Street (north of Crown Street) establish 6m setbacks above street wall to protect the heritage and fine grain character of the streets.

Promote the civic character of the Burelli Street commercial spine

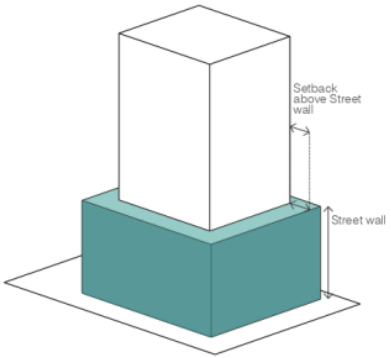
Establish street wall heights of 6 storeys (22m) along Burelli Street. Permit a variety of setback typologies including tower to ground.

Ensure a human-scale interface with MacCabe Park and a transition to low scale areas.

Provide a consistent treatment of park edges where land uses change through consistent 4 storey street wall height (15m) and 4m podium setbacks. Transition street wall heights from the core to the city fringe where they interface with low density residential.

Deliver strong and well articulated street walls

- Permit continuous street walls along Crown Street Mall, Crown Street and Keira Street to retain existing shop-front character.
- In all other areas require a maximum street wall length of no more than 55m (approximately mid-block) before which an articulation break is required to ensure human scale development and physical relief in the streetscape.



Urban Design Framework

6 Direction: *Elevate the importance of design quality in the City Centre*

The analysis indicates that a higher standard of design quality in the City Centre is required to deliver improved outcomes in both built form and public domain.

Design quality does not necessarily mean a more expensive design. Good design achieves functional, attractive and sustainable solutions to a range of issues. In Wollongong City Centre some of the key issues which required an improved design response are:

- building modulation to manage bulk and scale and respond to context
- the resolution of flooding and accessibility requirements without compromising the streetscape
- establishing a positive relationship to heritage and character places, the natural environment, and the public domain.

STRATEGY 6.1

Strengthen the commitment to design excellence

Ensure that the size of the development and its potential to deliver great urban outcomes, including the potential to deliver more public domain, is linked to a more rigorous design process.

- Very narrow sites should be required to undertake a Design Review Panel pre-lodgement process prior to DA submission. This will ensure that developments on these challenging sites are appropriately reviewed and evaluated at and early staged.
- Large or key sites should be subject to a master planning process and design excellence competition. Council should consider in the development of a design excellence competition process, the cost that this may add for developers.

STRATEGY 6.2

Encourage innovation and design quality in the local design and development industry

Identify design talent based in the Wollongong LGA and more widely and endeavour to provide opportunities for small public projects; public space projects, community building refurbishment etc.

Consider an ideas competition for a key component of Wollongong, to stimulate Sydney and nation-wide interest in Wollongong from the architectural, urban design and planning community.

Recommended Key Sites Map

An example of a design competition outcome: Sutherland Entertainment Centre - winning entry (CHROFI)

Hyde Park cafe - Andrew Burns Architecture

Built Form

STRATEGY 6.3

Provide clarity and improve outcomes through a strong assessment process

Continue to develop a more design focused Council through the creation of a dedicated City Centre team, to support City Centre development.

Require development applications to provide clear site analysis and explicit explanation of how the proposed design outcomes respond to the site analysis.

Incorporate a requirement in the DA assessment process to provide wall sections and detailed elevations to clearly indicate materiality and key details. Incorporate adherence to these details as a condition of consent, to avoid the dilution of architectural concepts and materiality as projects progress through documentation.

STRATEGY 6.4

Prepare design guidelines that communicate better design outcomes

Develop design guidelines to improve the design quality of typologies that are developed most frequently. For example guidelines for shop top housing, designing in the vicinity of heritage structures, incorporation of fine grain retail, design for flooding, and ground floor residential.

Guidelines should make a more tangible link between existing character, desired future character and how architectural design can achieve it. Guidelines could leverage the design quality policies prepared by Government Architects NSW, either by adapting the guidelines to make them specific to Wollongong City Centre or incorporating them in the guidance offered to developers.

STRATEGY 6.5

Develop specific design guidelines that demonstrate better built form outcomes on flood prone lands

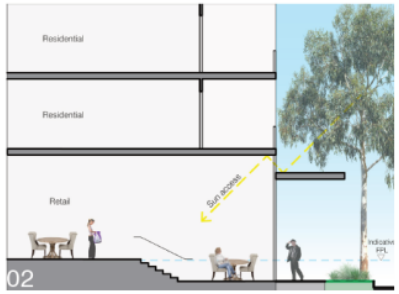
Develop a series of built form controls in the Development Control Plan that promote good design outcomes for the City in flood prone areas. This includes integrated resistance and impermanence for both residential and commercial/retail situations.

For residential developments, design principles should include:

- Retaining walls and landscaping
- Promote surveillance of the street from ground floor apartments
- Raised ground floor levels for privacy
- Provide individual residential entries to ground floor apartments
- Locate access stairs perpendicular to the footpath
- Locate ramps behind low scale walls and/or planting to limit their visual impact and extent of blank walls and balustrades.

For retail and commercial developments it is critical to ensure that finished floor levels are as close to street level as possible. This will ensure that streets are active and that commercial tenancies are visible. This may need to allow for flooding of some part of commercial tenancies where appropriate and subject to Council requirements. Design principles should include:

- Include an upper level transition and circulation zone for activation along the street and easy access
- Enable the capacity to link circulation zones between property to potentially contribute to a wider circulation network above flood level
- Split the overall change in level between indoor and outdoor to maintain human scale
- Include active temporary uses such as outdoor dining at lower levels to reinforce street life.



01 Functional solutions can achieve high quality urban design outcomes. This Waterloo building has highly detailed stair and ramp access to its ground floor retail frontage. Source: http://www.sjb.com.au/projects/casba-dank-street

02 Designing for flooding for sacrificial retail uses fronting onto the ground floor.

Public Domain and Connections - A green & walkable City

Wollongong is an accessible, pedestrian-friendly city

City streets, lanes and spaces create the structure of the city. These elements make up the public domain are central to our experience of place. Successful pedestrian streets and spaces are important to the amenity and economic vitality of a city.

The structure of the City was tested alongside an understanding of land use and built form outcomes.

What the testing revealed:

The City needs to promote active transport

A proactive approach is required to create connections between buildings and enhnce pedestrian movement along city streets. Long blocks with continuous street walls and no through sitel inks have resulted in limited permeability making the City unfriendly for pedestrians.

Streets need to be designed as places with high amenity

Delivering quality tree canopy, awnings, freedom of movement and minimal conflict with cars.

The traditional grid from the 1830s is being eroded

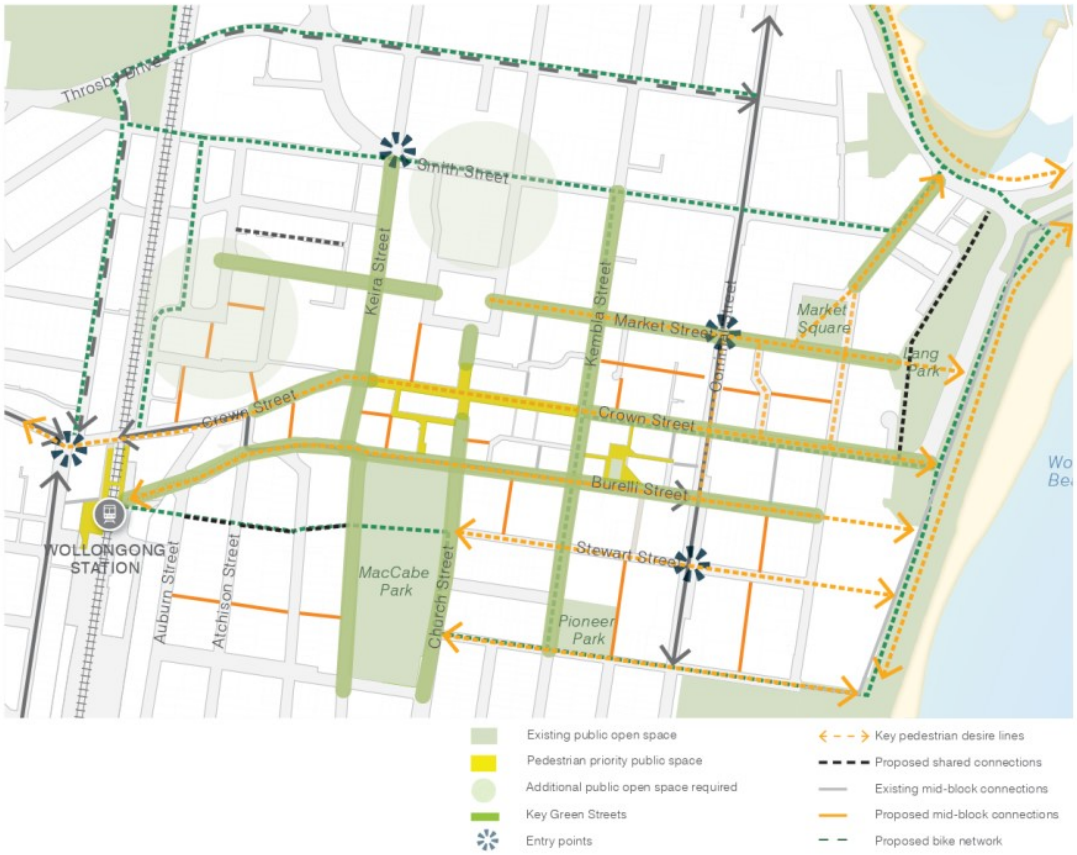
The grid and structure of the City needs to be reinforced with increased permeability, active transport and to contribute to precinct character.

Sunlight to important public spaces needs to be protected

Important public spaces, like the Mall, need to have clear sun protection controls.

Important public domain projects need to be identified to act as catalysts for change.

A structure plan needs to be developed for the City incorporating the strategies for land use, built form and public domain and connections as outlined in the Urban Design Framework.



Objective

A green and walkable City

A significant increase to the City's tree canopy contributes to a green, walk able and sustainable city. Attractive and revitalised public spaces support an active and healthy community and are a catalyst for economic growth in the city. The city grid is clear and permeable and facilitates walkability

Directions

7 Strengthen the structure of the City through a permeable grid that prioritises pedestrians

8 Create a green network of open spaces for a sustainable, healthy and attractive city

9 Protect sunlight to key public spaces

7 Direction *Strengthen the structure of the City through a permeable grid that prioritises pedestrians*

This section sets out the strategies required to reinforce the grid and structure of the City, increase permeability, and contribute to precinct character.

These strategies are being reinforced and tested through the development of the *Access and Movement Strategy* for the City Centre, utilising the Movement and Place framework in keeping with the guidelines under the *Future Transport 2056*.

STRATEGY 7.1

Define the role and function of streets in the City

A defined street hierarchy that reinforces precinct character and the role of each street should be implemented. The strategy for key streets is:

- Burelli Street: Civic and premier A-grade office street defined by tall towers, key cultural destinations, large trees and generous public domain.
- Market Street West: Secondary office street with street tree planting and wide footpaths.
- Crown Street Mall: pedestrian only street with primary retail, high quality public domain connected via a series of lane ways.
- Crown and Keira Streets: Secondary retail & commercial high streets. These streets have increased pedestrian amenity through landscaping and footpaths.
- Keira and Kembla Streets: Established after-hours dining streets with outdoor seating.

STRATEGY 7.2

Create a permeable city grid for pedestrians

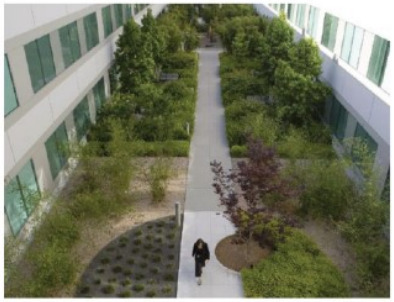
- Deliver a new east-west street between the station and MacCabe Park to break down blocks, provide new connections and improve legibility and accessibility between key destinations in the centre.
- Improve legibility of the arrival experience into Wollongong, with pedestrian connections to the centre through upgrades to Lowden Square; Crown Street and the hospital through a new station forecourt over the railway to Crown Street.
- Reinforce the laneway network with additional mid-block connections.
- Consider formalising the public/private threshold between Lang Park and the adjacent private properties by linking the disconnected streets along the park's western edge.
- Consider how Marine Drive could be modified to improve the connection between Lang Park and the foreshore for people. Include the removal of the roundabout and relocation of the bus layover in this work.
- Investigate slowing down vehicular speeds within the City to 40km/h on low traffic streets.
- Continue the Blue Mile link along the foreshore south to Bank Street. Work with Venues NSW to ensure public domain is activated increasing public access, safety and enjoyment of the beach. Discuss the opportunity of additional east-west pedestrian links through the venues to connect the foreshore to the City via Burelli and Stewart Streets.

STRATEGY 7.3

Deliver active transport infrastructure

Provide the infrastructure for safe active transport by delivering the proposed cycle network and complete the city loop from the station by considering new routes:

- Along the new east-west street in the rail arrival and southern precinct, through MacCabe Park and continuing along Stewart Street to connect to the extended Blue Mile link.
- Provide a safe active link north from the station along Railway Parade through the Commercial Services precinct to connect to Smith Street.



Increased pedestrian permeability between buildings.

Generous public domain and tree plantings. Passeig de Sant Joan Boulevard, Barcelona, Spain

A road transformed into a shared way with high quality public domain and day and night activation. New Road, Brighton, UK

Cycleways integrated into existing streetscape. Bourke Street Upgrade Sydney

Public Domain and Connections

STRATEGY 7.4

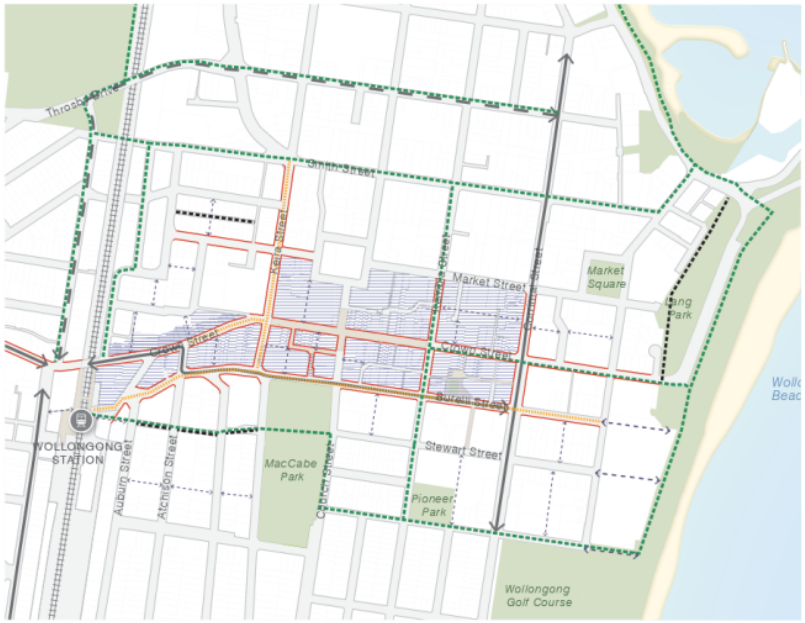
Enable the mode shift from cars to public transport

- Prioritise bus movements at the station to provide a more efficient service for passengers and promote public transport over cars.
- Collaborate with State Government and Federal Agencies to deliver significant public transport improvements to Wollongong City Centre.
- Improve existing public transport to deliver more frequent servicing from outside the City Centre
- Link public and active transport to improve their attractiveness to users
- Dis-incentivise car parking in the City Centre

STRATEGY 7.5

Identify roads for vehicular traffic and servicing

- Denison Street by-pass provides the opportunity to funnel through traffic around the centre, calmin traffic and discouragng cars in the core.
- Corrimal Street is a key north-south connector through the centre and subject to existing road widening conditions.
- Burelli Street is an important vehicular and bus street providing the primary east - west connection through the Centre, and will need to manage pedestrian priority with traffic needs.
- Manage vehicular movements to priortise pedestrians by limiting driveways, vehicular and service access to key pedestrian streets including Crown Street, Burelli Street and Keira Street.



Recommended streets and movement strategy

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Recommended interventions

- Vehicular Corridors
- Throsby Denison Bypass
- no additional vehicular entrances
- Pedestrian priority core
- Bike network
- Road/Laneway upgrades
- Pedestrian Connections
- Shared Connections

8 **Direction:** *Create a green network of open spaces for a sustainable, healthy and attractive city*

Street Tree Planting

We know that urban tree canopy is important to control urban heat, support cleaner air and water and provide local habitat. Analysis has found that tree canopy in the City is below target levels. Extensive underground services in streets present design and technical challenges to maximising planting opportunities.

This section sets out the actions required to increase greening in the City and thereby improve sustainability, comfort and character.

STRATEGY 8.1

Reinforce the character of key streets and precincts with appropriate tree planting

- Improve the visual and physical amenity of streets with a consistent street tree canopy providing shade and visual continuity
- Encourage trees, shrubs and grasses for their inherent value to support coastal identity and for the environmental and ecological benefits that tree canopy offers.
- Key streets are identified for street tree planting within lot boundary set-backs- a green boulevard along Burelli Street and Market Street and Crown Street south.

STRATEGY 8.2

Define and implement a 35% minimum canopy target on key walking streets by 2037

- Support the creation of a City Centre Street Tree Master Plan aligned with the *Urban Greening Strategy (UGS).*
- Work towards a canopy target of 35% as supported by the UGS

STRATEGY 8.3

Prepare a City Centre Street Tree Masterplan

- Inform planting program and renewal
- Specify technical standards and species
- Identify appropriate locations for urban greening including street trees and green walls / roofs.
- Identify key locations and opportunities for statements planting to assist with the legibility and walkability of the City Centre.
- Include strategies for education in greening within private lands and in dense urban environments such as green walls, terraces, planter boxes and roofs consistent with *Urban Greening Technical Guidelines*. Align with WSUD objectives to ensure 'green', 'blue' and 'grey' infrastructure are complementary and co-designed.

Recommended focus streets for urban greening

Public Domain and Connections

STRATEGY 8.4

Establish a tree-centric approach to deliver greening in response to existing constraints

Review street services conditions in relation to tree planting. Provide the opportunity for greater tree planting along key pedestrian streets in the Centre, through either ground setbacks or blister parking and plantings:

- Identify services locations in the street which prevent tee planting.
- Where services in streets prevent street tree planting, the front building set-back has been increased to allow for tree planting.
- Where there are services in streets as well as a distinct existing street wall typology and heritage character, and where road width permits, trees are proposed in blisters between parking bays in the outside lanes of streets.
- Provide space, soil and water for canopy trees.

STRATEGY 8.5

Leverage new development to offset the cost of greening

Redevelopment can be leveraged to deliver new greening, but can also impact on existing greening. The strategy is to:

- Use the opportunity that redevelopment presents to deliver new planting on public and private land
- Introduce Tree Amenity Valuation (see City of Melbourne) via guidelines and the DCP.
- Require developers to fund the cost associated with tree removal and replacement of trees impacted by development.

Canopy and vegetation planting in blisters

Mature trees provide canopy over and frame the street

Planter boxes with potted colour in areas that are constrained

Urban Design Framework

Create a green network of open spaces for a sustainable, healthy and attractive city

Open space

As the residential and worker population densify in the City Centre, the need for additional open space increases. Analysis has found that parts of the City are blessed with generous public open spaces, but that many are in need of renewal, and that other part of the City will need new green space as the City densifies.

This section sets out the actions required to achieve the open space required to support the vision for *A City for People*.

STRATEGY 8.6

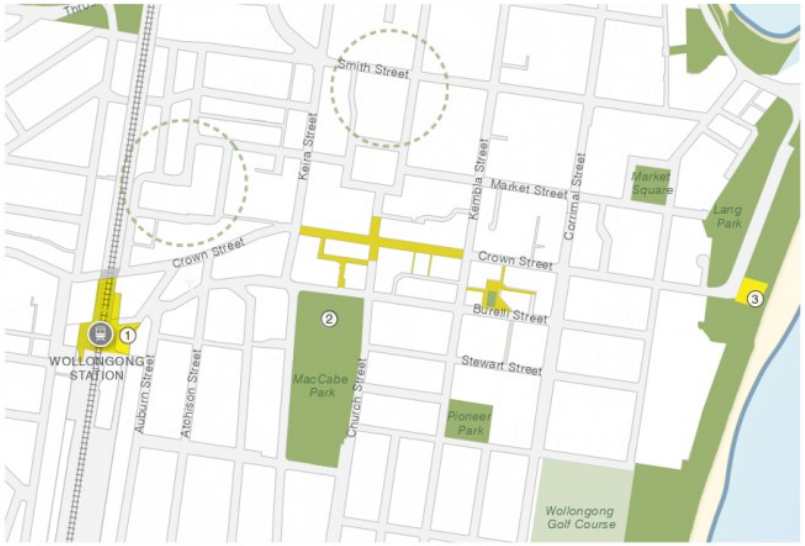
Identify and prioritise public domain projects to catalyse renewal and encourage investment in the city

Public open spaces provide for a wide variety of opportunities for recreational, social and cultural activities, as well as promoting healthy lifestyle and opportunities for casual and formal interaction.

The strategy is to:

- Renew the City with accessible parks and open spaces to make it attractive, safe and liveable to its residents, workers and visitors.
- Link landmark sites to public domain delivery.
- Plan for future additional open space needs by nominating land in appropriate locations and sourcing funding.
- Prioritise the following 3 catalyst projects:

  ① Station Upgrade including Lowden Square
  ② MacCabe Park
  ③ Foreshore Plaza



Public open space strategy

Stage space in the Mall

Sitting space in the Arts Precinct

Urban Design Framework

9 Direction: *Protect sunlight to key public spaces*

Solar access

Solar access is the ability to receive sun light to a space. Provisions are put in place to assure exposure of public spaces to the sun during a desired period of the year.

Good solar access is a key contributor to the amenity of public spaces and streets, particularly during winter. Solar access controls should ensure sufficient sunlight to new and existing public spaces at all times of the year.

Analysis has shown that existing solar controls successfully protect most of the key public open spaces within the City Centre. However, there are currently no solar access controls for Crown Street Mall or the Arts Precinct.

STRATEGY 9.1

Protect solar access to key public spaces to maximise amenity

Clear sun access controls should be in place for key open spaces. These must be rigorously tested to maximise protection of spaces while minimising impact on development potential.

Solar access controls should relate to key times of the day when spaces are most used by the public. This will differ for different spaces.

The cumulative overshadowing impact of multiple developments should be prevented through built form controls and considered design response to where a building is placed in the City Centre.

Controls should take into account the impact of solar protection on the strategic development potential of the Centre.

Recommended solar access

Arts Precinct
May 2019
9:30am

Structure Plan

A structure plan has been developed for the City which incorporates the strategies for land use, built form and public domain and connections outlined in the Urban Design Framework. The structure plan is high level and summarises the strategies into a single plan.

- Public open space
- Additional public open space required
- Important interface
- Key Green Streets
- Streetscape upgrade
- Vehicular network
- Bike path network
- Entry points
- Pedestrian connections
- Pedestrian priority areas
- Active frontages
- Key Sites - Masterplan
- Commercial Core
- Public urban open spaces
- Heritage +Character buildings
- Shared connections

Structure plan

Precinct Visions

The structure plan for the city is further developed at precinct scale. Reflective of the desired future character of each precinct, specific strategies are proposed to support the delivery of the vision for the City.

Precinct Visions

Precinct *Rail Arrival and Southern District*

Future Character

The City will offer an inviting, high quality and well connected rail arrival, with strong pedestrian links to the City Centre, coast and hospital. Burelli Street will provide a prestigious front door to the office core of the city. An important new east-west laneway will connect the station to MacCabe Park and provide a buffer between the new office core and the southern district.

The gritty character of the southern district, which is manifested through its built form - large buildings with a semi industrial feel, is retained and enhanced.

- New, green and civic spaces at the station will provide a new front door to the City and be a safe place with improved access and legibility for commuters on both sides of the rail line.
- The station will form a gateway into the City framed by a newly defined Burelli Street as a civic street with a commercial street-scape, offering A-grade offices close to the station.
- A thriving and edgy neighbourhood filled with a great mix of places to live, off-beat places to eat and shop, with easy access to transport and open space, all on the doorstep of the commercial district.

Lowden Square and the new street connection provide a strong connection, and a sense of arrival into the CBD

Public Domain improvements create an enjoyable space to wait at the station

Small, light manufacturing remains in warehouse space throughout South Wollongong

Residential development mixed with existing buildings create a unique city experience

Precinct *MacCabe Park*

Future Character

The City's central urban park is a green lung for the City providing breakout areas for office workers, urban sports opportunities, activities for all ages and a place for festivals and events.

- Following the planned acquistion of private properties, the entire Park is publically owned and operated for the benefit of the community
- Surrounding the Park, low scale street wall buildings with development above set back to maximise solar access
- Street and building design facing the Park is active day and night, with cafés, ground floor apartments and commercial offers
- The impact of flooding is addressed through landscape and water sensitive urban design
- A range of active and passive recreation is on offer
- The Park is celebrated as an identifiable City asset - a well utilised, high quality green space

MacCabe Park will be a focal point for the City on the Burelli Commercial Spine linking rail to foreshore

A variety of usable spaces in the park optimise water sensitive urban design.

Opportunities for community facilities to be integrated into the park

The City will develop around this key open space

Precinct Visions

Precinct *Western Crown & Keira Street*

Future Character

Western Crown has the potential to be a major green link which connects the City Centre with its railway station.

Crown and Keira Streets will offer increased pedestrian amenity with street trees, widened footpaths and reduced traffic.

- Restoration and adaption of heritage buildings within this precinct will contribute to the mixed land use and has the potential to create a new destination to reinvigorate Western Crown
- Crown Street will be a highly walk-able, safer green street which extends the arrival experience from the station to the City Centre.
- A precinct full of shops and restaurants which preserves the fine scale and historic role of Crown and Keira Streets as a great place to socialise, eat and shop.
- The Façades Program which initiated the restoration of the Western Crown cluster of heritage buildings should be encouraged to continue

Western Crown Street will become a pedestrian friendly active high street with mixed use development set back behind fine grain retail street walls.

Heritage buildings will continue to contribute to the character of the precinct

Increased building setbacks and footpath widening will allow for outdoor dining

Increased building setbacks and footpath widening will allow for outdoor dining

Precinct *Commercial Services*

Future Character

The precinct will continue to serve an important role as a place of local commerce with enhanced amenity and fine grain connections to enable better pedestrian movement.

- A walk-able commercial precinct with great views to the escarpment and connections to the Keira St dining strip.
- New parks, pedestrian connections and lane-ways will ensure it is a more desirable place to live and work.
- A second commercial centre which is well located near the railway station and continues to be a bustling place of commerce and a great place to live.

Market Street will continue to develop as a vibrant commercial services precinct with new open space and improved public domain

A new open space will be a welcome relief for the busy office worker population

New mid-scale small suite commercial buildings will sit side by side with existing built form

A focus on creative working spaces will continue

Precinct Visions

Precinct *Crown Street Mall*

Future Character

Crown Street Mall has been the retail heart of the City for over a century and continues to be a significant contributor to the social life of the city.

It is important to protect the amenity of this part of the City and encourage day and night activity through a complementary mix of uses.

- The character of the low rise commercial and retail buildings on Crown Street is protected.
- Fine grain retail and commercial is integrated with dining, entertainment and leisure.
- A true after hours Centre which operates beyond the hours of nine-to-five, reflecting the needs of a cosmopolitan city.
- A multi-service precinct where you can get your groceries, have dinner and collect the dry-cleaning on your way to the railway station and home.
- A high amenity pedestrian precinct well connected via character filled laneways to adjacent commercial and civic clusters on Burelli and Market Streets.
- The solar amenity of the Mall is protected all year round.

New development on Crown Street will be set back to protect the fine grain character of Crown Street Mall, and preserve solar access to the open space

Streets are active at night time creating a safe city

Laneway uses contribute to the thriving character of the precinct

Small tenancies support the fine grain character

Precinct *Historic Spine*

Future Character

The Historic Spine will continue to be the historical heart of Wollongong City.

Enhancing Market Street through minor public domain improvements and connecting it to active transport links will ensure that the precinct continues to be valued and loved by the community.

- The Law Courts and St Michael's Cathedral will continue to serve their key civic functions.
- The Historic Spine is the only place that allows visitors to the City Centre vistas to the escarpment, ocean and Port Kembla. It is important these are preserved.

Sensitive adaptive reuse and additions to the heritage fabric of the precinct will ensure that the character is preserved and supported.

New built form can complement existing heritage fabric

Streetscape improvements will support the heritage character

Precinct Visions

Precinct *Eastern Crown Street & Arts Precinct*

Future Character

This precinct is the City's cosmopolitan civic and office core. The Arts Precinct is a welcoming and active city plaza with high amenity and a range of offers for city workers, residents and visitors. Venues including bars, live performance venues and restaurants activate the area at night.

- Interconnected laneways, streets and buildings celebrate art music and culture through the installation of public art.
- The Arts Precinct lawn provides a key passive recreation and event space, activated by surrounding cultural institutions such as the Town Hall, Gallery and IPAC.
- Lower Crown Street is defined by clusters of heritage listed civic and commercial buildings. The high quality form and materiality of the building façades is complemented by the amenity of the public domain.
- Mature trees line Burelli and Crown Streets and the Arts Precinct, and are integral to its public character.

Burelli Street will be a bustling and prestigious commercial centre

Slender towers will announce the A grade precinct on the skyline

Generous setbacks on Burelli Street provide relief in the City

New tower lobbies will complement the existing built form

Precinct *Foreshore*

Future Character

The foreshore is blessed with the natural asset of its beach-front location. Re-enforcing the City street grid through new links will ensure that the beach becomes visually and physically connected to the City.

Simple public domain measures to enhance public accessibility for residents, workers and visitors to the City alike, will activate the precinct day and night.

Promoting residential alongside the entertainment uses will ensure day and night activation.

- A sparkling ocean front destination which puts Wollongong on the map. Attend a beach-side event only a 2 minute walk from Wollongong's CBD
- The precinct where City meets ocean will provide an exciting urban destination for an ocean-front business lunch, or a sundowner with a view. The interface between Crown Street and beach is improved.
- Lang Park, the Stadium and the entertainment centre will continue to be major regional attractors activating the precinct all weekend.

The foreshore will become an important gathering place with a variety of active and passive uses

The beach arrival will be a focal point of the precinct

There is potential to increase active edges to major public domain in the precinct

Lang Park could improve its activation and connection to the beach

The City needs to be flexible, open to new approaches and understand that over time, incremental changes will shape the City Centre's continuous journey of revitalisation.

SGS Economics & Planning

WOLLONGONG CITY CENTRE PLANNING REVIEW: ECONOMIC ANALYSIS

FINAL V2.1
JUNE 2019

Prepared for
Wollongong City Council

Independent insight.

Certified B Corporation

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EXECUTIVE SUMMARY

Wollongong City Council is undertaking a review of the Wollongong City Centre to implement the vision of *A City for People*. The Wollongong City Centre Planning and Design review aims to inform appropriate distribution of height and scale of buildings across the city centre with planning, urban design, open space and economic analysis.

SGS Economics and Planning has been commissioned by Wollongong City Council to undertake economic analysis to inform this review. This study has involved:

- review of development capacity under the existing controls,
- feasibility analysis to better understand the commercial and non-commercial development feasibility within the City Centre,
- identification of growth forecasts for both commercial and non-commercial development, and
- identification of levers that could potentially be used to incentivise the delivery of the right development growth in the City Centre.

Strategic context

Wollongong is the regional capital of the Illawarra-Shoalhaven. It is the civic and economic heart of the Illawarra region. Proximity to Sydney provides opportunities for residents and potential connections for local businesses. However, there is significant job leakage with residents commuting to Sydney for work and self-containment has declined from 74 per cent in 2011 to 71 per cent in 2016.

There are several economic nodes across Wollongong including Wollongong Hospital and health precinct, University of Wollongong and Wollongong Innovation Campus. Greater physical and economic links between these economic anchors will be important in driving economic growth across the Wollongong local government area (LGA). It is important that the role of Wollongong City Centre in the context of these nodes is clear and a strong vision will assist in promoting this.

As of 2016, Wollongong City Centre contains over 21,000 jobs, which is 27 per cent of jobs across the Wollongong LGA. The four largest industries of employment are health care (26 per cent), public administration (16 per cent), accommodation (11 per cent) and retail (9 per cent).

Employment is forecast to grow from 25,000 jobs in 2016 to 32,000 jobs by 2036[1]. Forecast growth is primarily across population-serving industries such as health and education. These are industries which generally forecast to grow across NSW. There is limited local specialisation or competitive advantage driving growth which is a significant barrier to Wollongong City Centre become a strategic employment centre. These issues should be addressed by the updated EDS.

Residential is the most active property market in the Wollongong City Centre. Where both residential and commercial development are allowed, this has the potential to constrain future commercial development if majority of sites have been developed as residential strata with multiple owners (which would make acquisition and redevelopment difficult) or if residential development 'prices' out commercial development. This highlights the need to understand development capacity, particularly feasible development capacity.

[1] The variation in employment numbers in 2016 is due to the data source. TPA forecasts for 2016 are higher than the ABS Census figure for 2016.

The trends observed highlight the need for the role of the Wollongong City Centre to be clearly articulated, particularly its economic role and function. The City Centre continues to play a strong role as the administrative and civic centre for the Illawarra-Shoalhaven region. However, action is required to change the trajectory of the City Centre, to attract commercial investment and grow strategic employment as well as population-serving industries.

A broad assessment of Wollongong City Centre has been conducted against the 10 success factors identified above (refer to Table 3). This assessment highlights that Wollongong City Centre has all the foundations for a successful regional city, however these need to be better leveraged to attract commercial investment and employment.

TABLE 1: ASSESSMENT OF WOLLONGONG CITY CENTRE AGAINST KEY SUCCESS FACTORS

Success factors	Broad assessment
A strategic location within a growing economy	▪ Population of Wollongong LGA is growing which has resulted in strong growth in population serving industries ▪ Located in close proximity to Greater Sydney which has led to increase in population but a significant proportion of residents travel to Greater Sydney for employment
Pre-existing business locations occupied by successful firms	▪ Wollongong City Centre over 21,000 jobs within several other major employment anchors located in close proximity ▪ A significant gap is large-scale professional and financial services firms
A supply of quality, skilled labour	▪ There is a supply of quality skilled labour, however the majority of these workers are employed in Greater Sydney and not locally
Infrastructure that binds the centre internally and links it externally	▪ Links externally include rail, road, bus and cycling infrastructure ▪ Links internally could be improved, particularly physical connectivity between major nodes within the Wollongong City Centre
Competitive place-based assets	▪ Access to waterfront and open space is a significant asset for Wollongong City Centre
Local and external customer bases to ensure robust supply chains	▪ There appears to be a concentration of local population serving industries and businesses ▪ Port Kembla plays a significant role in supporting regional, national and international supply chains
Business support for the centre	▪ Some business support but majority of investment has been residential.
Government support for the centre	▪ NSW Government and Wollongong City Council jointly support the growth of Wollongong as a major commercial centre
Strong links between the regional centre and its civic/cultural life	▪ Some existing foundations. This has not been reviewed in detailed as part of this study.
A spatial metaphor to drive the regional centre forwards.	▪ A City of People provides the foundation for a spatial metaphor

Source: SGS Economics and Planning, 2018

Initial capacity assessment

Capacity modelling was conducted as part of this project, this examined capacity under the existing controls and is summarised in the paragraphs below.

There is significant capacity for development within the study area based on the existing planning controls. However, feasibility analysis has highlighted that only a small proportion of this capacity is feasible based on the current market, being 41 per cent of uplift for residential floorspace or four per cent of uplift for commercial floorspace.

The planning controls allow for a built form which is much greater than the current market is delivering. Given that the maximum theoretical capacity is determined overwhelmingly by the FSR control, the maximum building height controls are in excess of this level by another

significant margin. Planning controls are not a constraint on capacity as significant capacity exists.

Under the maximum capital yield scenario (likely development outcome), a net loss of 45,000 sqm of commercial floorspace is observed. This is a significant issue as commercial floorspace is required to support the economic role of the Wollongong City Centre.

Commercial development is only marginally feasible, requiring significant cross subsidisation with residential development.

The net increase in commercial floorspace which could be attainable (34,000 sqm) under the maximum commercial yield scenario is limited and will be unable to meet forecast increases in demand over the medium term. Intervention is required to promote growth and highlights the need for potential incentives or levers to be considered that could address these feasibility constraints.

The significant increase in residential activity risks detracting from the character of the Wollongong City Centre as a business area, and by extension making it more difficult to attract commercial activity. Competition between commercial and residential development is a significant issue. Land values have potentially been inflated by the permissibility of residential development making straight commercial development unfeasible. These trends may warrant consideration of a commercial core zone in which residential development is prohibited or restricted.

Growth forecasts

Across the study area, there is projected to be demand for:

- An additional 120,000 sqm of commercial floorspace
- An additional 195,000 sqm of residential floorspace
- An additional 3,000 – 18,000 sqm of retail floorspace.

Table 9 below displays the forecast growth in demand in comparison to the two feasible capacity scenarios above, with a forecast gap in provision displayed for each scenario.

TABLE 2: FORECAST FLOORSPACE SUPPLY/DEMAND RELATIONSHIP (2036)

Land Use	Projected Demand	Change under Maximum Capital Yield Scenario	Gap *(Oversupply / Undersupply)*	Change Under Maximum Commercial Yield Scenario	Gap *(Oversupply / Undersupply)*
Residential	195,000 m²	265,000 m²	70,000 m²	213,000 m²	18,000 m²
Commercial	120,000 m²	- 45,000 m²	- 165,000 m²	34,000 m²	- 86,000 m²
Retail (high)	18,000 m²	83,000 m²	65,000 m²	83,000 m²	65,000 m²
Retail (low)	3,000 m²	83,000 m²	80,000 m²	83,000 m²	80,000 m²

Source: SGS Economics and Planning, 2018

Demand for commercial floorspace significantly exceeds feasible capacity (under the current market conditions). It is anticipated that feasible capacity will be equal to demand within the medium-term. Under the maximum commercial scenario, there is estimated to be a shortfall of 86,000 sqm of commercial floorspace by 2036. Under the maximum capital yield scenario, identified as the most likely outcome given, there is projected to be an undersupply of 165,000 sqm.

Both scenarios will likely result in increased commercial rents within the study area, and potentially displacement of jobs growth to other areas (e.g. the Innovation Campus). This requires actions to improve feasibility for these base growth projections to be achieved.

Conversely, the feasible capacity for residential development is significantly higher than projected demand (under current market conditions). The profitability of residential development under current market conditions means that this is a likely outcome. This could potentially result in the 'crowding-out' of commercial uses, highlighting the potential need for a commercial core zone where residential development is restricted.

Identified retail demand is relatively low. There is potential for an oversupply of inadequate retail floorspace with the provision of ground-floor retail across the B3/B4 zones under the current active frontage policy. A retail study is required to more accurately estimate demand and supply across the local retail system.

Development feasibility

The site-specific feasibility testing has echoed the results of the precinct scale feasibility assessment. Development which contains a low amount of (or no) commercial floorspace is feasible.

The delivery of commercial floorspace requires significant cross-subsidisation with residential development, and the amount of commercial floorspace which can be feasibly delivered on sites under current conditions is likely to be small.

The increased construction costs associated with taller buildings significantly decreases the feasibility of all types of development. The higher returns realisable on residential floorspace allow for a greater tolerance to these cost increases, however over twenty storeys this dramatically impacts on the ability to generate a profit. As noted within the capacity assessment, planning capacity is not a barrier to development.

Estimated current land acquisition costs present a significant constraint on a range of sites and can be prohibitive for redevelopment, particularly in high value areas of the study area, and/or where the current use of land is valuable. However, commercial development without residential is unfeasible even before land acquisition costs are taken into consideration.

Council's influence extends to planning controls, car parking requirements, development contributions and the planning process, as well as providing certainty for the market through clear policy and planning controls. Of these only a small number can be tested quantitatively.

The high construction costs associated with basement carparking inhibits the feasibility of development across all sites. While adjustments to the provision of parking within a development can exert a significant impact on its feasibility, any actions would require careful consideration of broader implications for transport, built form and property values.

Reducing the allowance for developers' profit and risk has a moderate impact on development feasibility. This would need to be facilitated by changes to the DA process to reduce the risk. The extent to which changes to the DA process are likely to reduce risk should be tested with developers.

A reduction in the development contributions levy provides a marginal increase to development feasibility. However, such a reduction would reduce the revenues available to Council.

None of the potential levers tested result in a feasible outcome in isolation. The development of any substantial commercial floorspace in the study area will likely require a combination of actions by Council to increase development feasibility in conjunction with realisable commercial rents increasing over time, which is likely if the supply-side tightens and the City Centre maintains a strong competitive position relative to other competing locations.

Recommendations

With feasibility of development being a major barrier to growth within Wollongong City Centre, it will be important that any future opportunities for commercial development are protected and encouraged.

The objective of implementing any actions is to:

- promote commercial development in the City Centre in line with the vision
- support economic potential of the City Centre
- address feasibility issues.

Feasibility can be improved through either improving (or increasing) the market for commercial development or reducing the cost of development.

This study has identified 11 recommendations for Council to implement to increase the feasibility of commercial development in Wollongong City Centre.

1. Develop an economic vision for the Wollongong City Centre through the economic development strategy update.
2. Continue to implement the bike lane program and investigate opportunities to expand the Wollongong Shuttle network.
3. Continue to implement existing public domain investment projects which increase the amenity of the Wollongong City Centre.
4. Advocate for improvements to Wollongong railway station to improve physical connectivity between the railway station and commercial core.
5. Undertake an assessment of the value that existing industry and industry targets place on public domain improvements and use these to prioritise investment.
6. Investigate alternative development contribution rates or mechanisms to fund future public domain investment in the Wollongong City Centre.
7. Introduce a commercial core where residential development is prohibited in close proximity to Wollongong railway station, Crown Street Mall and public open space.
8. Market test a reduced on-site car parking rate with developers and prospective commercial tenants to understand market for this and potential impact on rents.
9. Test feasibility of developing multi-storey car park against the contribution rate for offsite provision of parking for development.
10. Reduce risk for developers and increase certainty for development by providing clearer guidance to commercial landowners and developers across key sites within the commercial core of the City Centre. This includes a consistent process, speed of response and clearer planning controls.
11. Undertake an updated LGA-wide retail centres study to provide a more accurate estimation of retail demand and better inform recommendations of potential growth in retail floorspace.

These recommendations (or actions) are important to promote commercial development in line with the economic vision of Wollongong City Centre and its roles as a regional city for the Illawarra. No single action will be able to increase commercial feasibility and therefore it is important that this suite of actions is implemented.

These actions recognise the substantial investment Council has made in the Wollongong City Centre to date and the importance of continuing these programmes. A number of these recommendations (or actions) are well-aligned with the upcoming economic development strategy update and should be implemented as part of this process. The Wollongong City Centre does not operate in isolation, and the outcomes of the future LGA-wide economic development and employment lands studies may require the review of these actions in the future to ensure that these are aligned.

The most significant action will be the introduction of a designated commercial core where residential development is prohibited. This is a long-term strategy and there are a number of risks associated with this. The commercial only area should be large enough to be coherent but also align with the demand to ensure it is not at risk of being stagnant.

The condensed commercial core should be located:

- in proximity to Wollongong railway station to ensure accessibility to public transport
- in proximity to Crown Street Mall to ensure accessibility to retail, hospitality and other services for workers
- proximity to public open space e.g. MacCabe Park and/or waterfront.

The commercial core will need to be sufficient to accommodate up to 120,000 sqm of floorspace but allow sufficient flexibility depending on the market. A transition area could be established which keeps the long-term intention of greater commercial focus without jeopardising activity in the core in the interim, this includes allowing temporary uses in the short to medium term. This strategy is considered to be crucial to ensuring the long-term economic success of the City Centre and ensuring that there is capacity for a significant commercial function.

1. INTRODUCTION

1.1 Project background

Wollongong City Council is undertaking a review of the Wollongong City Centre to implement the vision of *A City for People*. The Wollongong City Centre Planning and Design review aims to inform appropriate distribution of height and scale of buildings across the city centre with planning, urban design, open space and economic analysis.

SGS Economics and Planning has been commissioned by Wollongong City Council to undertake economic analysis to inform this review.

1.2 Project scope

The objective of this analysis is to investigate a range of economic matters which will inform the detailed investigations into City Centre design and planning policy review. In particular, this project seeks to:

- better understand the commercial and non-commercial development capacity of the City Centre,
- better understand the commercial and non-commercial development feasibility within the City Centre,
- identify aspirational growth targets for the City Centre in terms of both commercial and non-commercial development, and
- gain an understanding into how to incentivise the delivery of the right development growth in the City Centre.

The approach undertaken is outlined in Figure 1. Two workshops were held with Council officers to discuss issues and opportunities and the potential levers to address commercial feasibility issues. The results of these discussions are integrated throughout this report.

FIGURE 1: APPROACH TO STUDY

BACKGROUND REVIEW	CAPACITY REVIEW	HIGH LEVEL FEASIBILITY ANALYSIS	SITE SPECIFIC FEASIBILITY TESTING	GROWTH FORECASTS	RECOMMENDATIONS AND REPORTING
KEY TASKS					
▪ Review of existing strategies and policies ▪ Analysis of demographic and economic trends ▪ Review of current market	▪ Identification of theoretical capacity under the current controls using GIS analysis	▪ High level assessment of development feasibility based on current controls and current market	▪ Assessment of development feasibility of five different commercial development forms across five sites using Residual Land Value (RLV) model	▪ Calculate residential, commercial and retail floorspace forecasts using current projections for the study area	▪ Identify and assess potential levers to address development feasibility constraints and achieve forecast growth
STAKEHOLDER ENGAGEMENT					
		▪ Consultation with local agents to understand local market context	▪ Workshop 1 with Council staff on issues and opportunities		▪ Workshop 2 with Council staff on potential levers

The study area boundary is shown in Figure 2, along with the City Centre boundary within the Wollongong LEP. Wollongong Hospital is included in the City Centre boundary but is excluded from the study area.

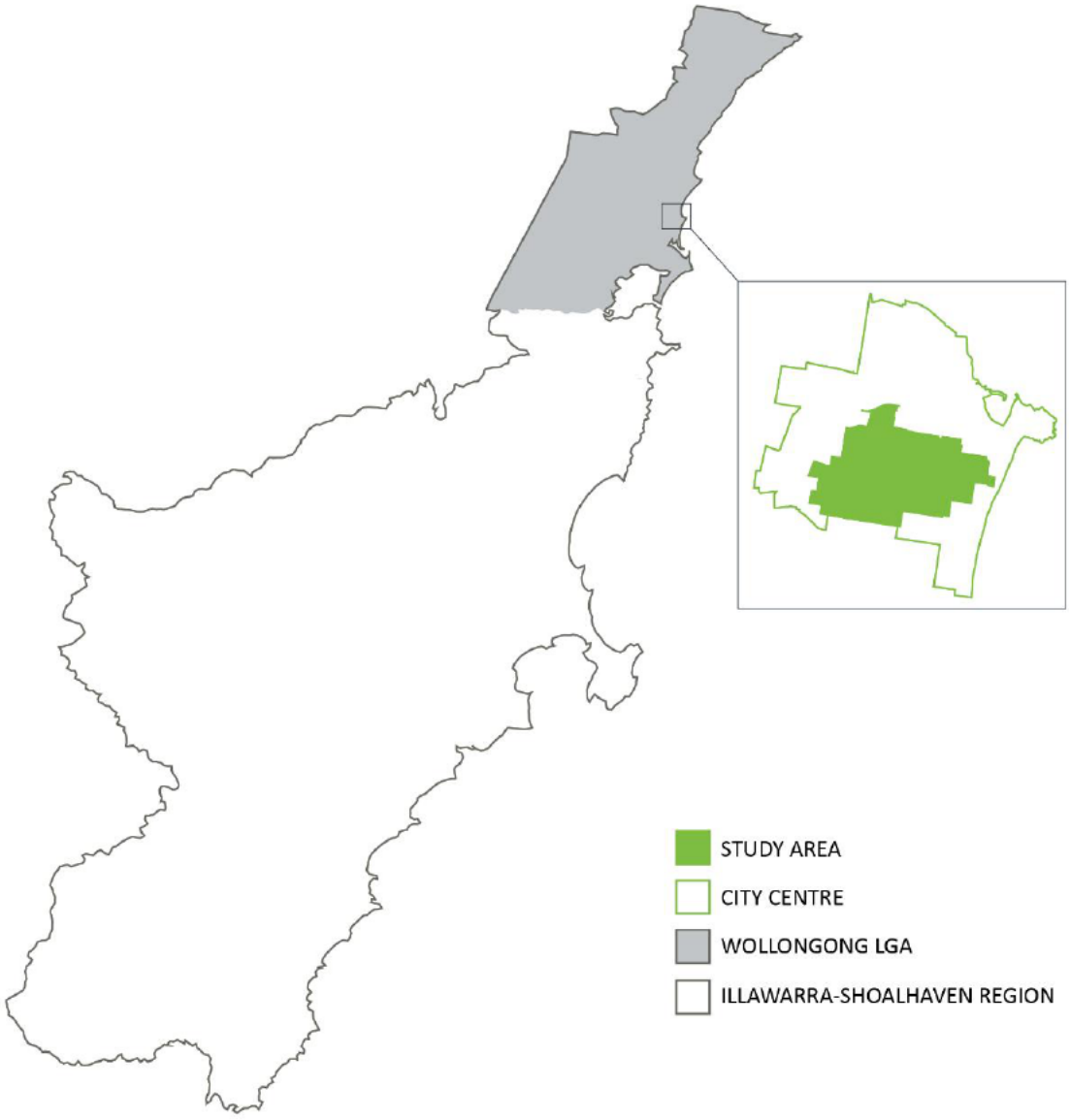
This economic analysis forms part of a larger body of research to inform future planning and design controls for the City Centre. Architectus and Andrews Burns Architecture have been separately commissioned to prepare an Urban Design Framework.

FIGURE 2: WOLLONGONG CITY CENTRE AND STUDY AREA

Source: Nearmap, 2018; SGS Economics and Planning, 2018

Analysis of data has been undertaken at a number of different geographies for the purpose of comparison and benchmarking the study area and Wollongong City Centre against the LGA and the Illawarra-Shoalhaven Region. These boundaries are illustrated in Figure 3. The Illawarra-Shoalhaven region includes Wollongong, Kiama, Shellharbour and Shoalhaven LGAs. The City Centre is LEP boundary and the study area contains the core commercial area of Wollongong. The figures reported throughout the report vary due to the boundaries adopted for the analysis and the data sources used.

FIGURE 3: COMPARISON OF BOUNDARIES



Source: SGS Economics and Planning, 2018

In some instances in this report, Wollongong is compared to Greater Sydney as defined by the Australian Bureau of Statistics (Sydney Greater Capital City Statistical Area) which includes the Greater Sydney and Central Coast regions.

Please note, the data analysis does not extend beyond data collected through the land audit and publicly available data form the Australian Bureau of Statistics and NSW Transport and Performance Analytics. Detailed analysis of recent economic development trends (since the 2016 Census) is outside the scope of this study.

1.3 Report structure

This report is structured as follows:

- **Section 2 – Strategic context:** Outlines the vision for the City Centre, its intended economic functions, and recent economic trends.
- **Section 3 – Capacity assessment:** Contains an initial round of capacity modelling of both maximum theoretical and maximum feasible capacity, which was used to inform the preparation of the Urban Design Framework.
- **Section 4 – Forecast growth:** Details the growth in commercial, residential and retail floorspace forecast for Wollongong City Centre.
- **Section 5 – Development feasibility:** Assesses the feasibility of 5 test sites under existing planning and design controls.
- **Section 6 – Recommendations:** Outlines the key findings of this analysis and recommendations for the City centre's planning and design controls.
- **Appendix A: Capacity and feasibility technical method:** Provides a detailed discussion of the method used for the capacity assessments in this analysis.

2. STRATEGIC CONTEXT

This section discusses the policies and strategies outlining the intended roles and functions of the Wollongong City Centre and their implications for the city's growth.

2.1 Understanding regional economic centres

Regional economic centres operate differently to metropolitan cities. A high-level review of the relevant literature relating to regional centres is provided below including key ingredients for success.

Central Place Theory

This theory envisages towns and cities within a hierarchy of inter-dependent relationships, where higher-order centres sit at the top of a regional hierarchy, with smaller centres focused on convenience goods and low value-add services at the bottom[2]. Lessons from this theory include that:

- Regional centres tend to be monopoly suppliers of higher-order goods/services
- Regional centres build strength from networked relationships with surrounding centres
- The value of consumption in a regional centre is strongly related to the employment conditions and prospects of the labour pool.

This suggests that the Wollongong City Centre should have strong connections to surrounding centres, and access to appropriately skilled labour.

Land or Bid Rent Theory

This theory explains why the most accessible land in urban centres is the most sought-after despite being the most expensive, and shows that revenue advantages come from being in central locations in a city. If the revenue generated justifies the higher rents paid, investments in these locations will continue, and the success of businesses then attracting additional customers which produces a virtuous growth cycle. Key lessons for economic corridors include:

- The pulling power of a regional centre and its employment lands depends on the quality of the firms (and has less to do with the land value on its own),
- Quality retail/industrial/residential activities are reinforcing, in building strong pools of labour/customers, and adding value to land assets and other pre-existing investments in an area, and
- Developing cheap/low density industrial lands in isolation will not create a strong regional centre.

Land uses will be drawn to central city locations, particularly in Sydney. Wollongong City Centre will need to focus on attracting quality firms and activities which are considered to be of high value.

Industrial Agglomerations

Large scale industrial agglomerations take advantage of cheap local energy sources to drive material transformations, with the advantages seen in economies of scale, external

[2] O'Neill & Dimeski 2011, Developing a Penrith Valley Economic Corridor Report, Prepared for the Penrith Business Alliance, Urban Research Centre, University of Western Sydney.

economies and access to large scale infrastructure. While industrial agglomerations have changed significantly over time, some potential lessons for regional centres include:

- Lower costs can come from external relationships with local buyers/sellers, cooperative management or marketing, or access to quality regional infrastructure, and
- The success of production concentrations is enhanced by transport and communication systems, for example in helping to create efficient supply chains, make commuting easier, enhance the internal movement of people and/or goods, and link producers to markets.

Businesses will be attracted to dense economic centres such as the Sydney CBD. This will create significant competition for Wollongong. Wollongong City Centre will need to differentiate itself and focus on increasing connections between people and goods.

Industrial Clusters

Industrial clusters are geographic concentrations of interconnected companies, suppliers and firms in related industries and associated institutions, which create relationships which are both competitive and cooperative, with major examples such as Silicon Valley. The success of industrial clusters depends on enhanced information flows, heightened awareness of firms' marketing, positive responses to peer pressure for innovation, and having competitive local supply conditions. Lessons from industrial clusters include:

- That a successful concentration of firms must be driven through competition and innovation
- That firms within a cluster must look for mutually supporting relationship with others (suppliers, competitors and buyers), and
- Conditions (such as labour, finance) must be based on best practice and the promotion of ongoing innovation and competitiveness.

As noted in a report on the Penrith Valley Economic Corridor, rarely do economies function exactly as depicted in theory, and successful spatial economies, such as economic corridors, often contain elements of each of these theories to varying degrees. The role that government's play, particularly in the provision of infrastructure, is also underplayed in the literature, along with the importance of connections and networks between enterprises. Successful economies require openness and connectedness (e.g. long distances and inter-urban networks), but also local strengths to build on.

Success factors

Ten key ingredients for success in developing regional centres have been identified. These include:

- a strategic location within a growing economy
- pre-existing business locations occupied by successful firms
- a supply of quality, skilled labour
- infrastructure that binds the centre internally and links it externally
- competitive place-based assets
- local and external customer bases to ensure robust supply chains
- business support for the centre
- government support for the centre
- strong links between the regional centre and its civic/cultural life
- a spatial metaphor to drive the regional centre forwards.

While broad, these are likely to be applicable to Wollongong City Centre and vital to ensuring the success of this regional city.

2.2 Vision for Wollongong City Centre

Wollongong City Centre is envisaged to become a vibrant capital of the Illawarra -Shoalhaven with diverse employment, services and recreation uses.

A City for People

A City for People was prepared for Council by Gehl Architects in 2016, in a process designed to put people at the centre of Wollongong's future development. It involved surveying the public space and activity of the city to understand how spaces were used, and to inform the vision for Wollongong to become people-oriented, sustainable and liveable.

The strategy includes 12 key vision statements, aimed at insuring that the city centre is a thriving and unique regional city, with a diverse economy and high-quality lifestyle. The city centre is also intended to be recognised as a place that people will want to be in, whether to live, learn, work or play.

Celebrate the uniqueness

- The natural beauty of the escarpment can be seen from streets, and nature is an important part of Wollongong's street character.
- There is a seamless transition between the core city and the foreshore, where there are a range of things to see and do.
- Wollongong's heritage is reflected in buildings and spaces in between, telling the city's Indigenous, European and industrial story.

Develop a human scale city

- Wollongong has a compact city centre, delivering a connected and efficient CBD.
- Building design is related to streets, delivers a comfortable scale, and connects to the city's natural setting.
- Design excellence is celebrated, evidenced in the look and feel of the city, and with exceptional street presentation.

Grow a living city

- Wollongong has a strong and growing residential population, and a diverse community with a shared sense of pride and social connection.
- The city centre includes a network of connected paths and open spaces, unique in character and supporting city life.
- Blocks and streets in the city centre provide for a range of uses, delivering street vibrancy day and night and opportunities to live, work, learn and play.

Create an accessible, pedestrian-friendly city

- Walking and cycling are prioritised in Wollongong's streets, which are comfortable and enjoyable, and attract a range of people day and night.
- Public transport is the preferred method of accessing the city, linking with the pedestrian and cycling network, and providing regular and reliable trips.
- Car movements and parking are used to support city centre functions while still prioritising comfort for pedestrians.

A City for People defines a series of precincts within the city centre and identifies key projects and outcomes to achieve the above vision statements over the short (1-2 years), medium (5+ years) and long term (10+ years).

Illawarra-Shoalhaven Region Plan

The Illawarra-Shoalhaven Region Plan, prepared by the Department of Planning and Environment (DP&E), provides a clear direction for planning and development over the next 20 years in the Wollongong City centre and surrounding region. This document identifies the Wollongong City Centre as part of a regional Metropolitan City (referred to as Metro Wollongong (see Figure 4).

The Plan envisages Metro Wollongong as the economic and cultural core of the region and a nationally significant city. The importance of growing employment in Metro Wollongong, especially in health, education and knowledge intensive industries, and the delivery of housing in and around the city centre are noted in the Plan as key drivers to increase the national significance of Wollongong.

The study area largely falls in the Commercial Core identified by DPE. The Commercial Core centres on Crown Street as the focus for retail, office, tourism and cultural activity. The Waterfront Precinct to the east is intended to be a focal point for tourism activity, anchored by the stadium, entertainment centre and beaches.

The University of Wollongong and the Innovation Campus are identified as part of Metro Wollongong; however, the Plan does not facilitate or outline approaches to integrate the University's activities with the Commercial Core and study area of this analysis.

A key action within the Region Plan is to create new and innovative opportunities for commercial development in the commercial core by making it more attractive for investment and business (Action 1.1.1). DP&E will work closely with Council to:

- examine opportunities to change planning and development controls to create more flexibility, to attract commercial investment and business activity
- improve the public domain through planning contributions and by investigating other potential funding opportunities.

This highlights a clear focus on attracting commercial investment and improving amenity.

FIGURE 4: METRO WOLLONGONG AND THE ROLE OF THE CITY CENTRE

Source: DPE, 2015

Economic Development Strategy

Wollongong City Council's *Economic Development Strategy* (EDS) outlines Council's key priorities, goals and actions to support economic activity in the LGA. The vision for Wollongong under the EDS includes for the city to:

- Be a global leader innovative and sustainable research, development and new industries, and become renowned for leading the way with green technology and jobs,
- Be established as the Regional Centre, creating hubs of activity with a thriving and resilient local economy, and able to support the establishment of new industries, enterprises and business which attracts people to live and work, and
- Be a student-friendly city, where residents are educated and employed, and there is access to employment and education through a diverse industry base and world-class learning institutions.

The EDS notes that the major economic challenge facing the LGA is to improve employment opportunities, particularly considering structural changes in the economy as it diversifies, and the large number of residents who travel to Sydney for work. As such the central policy focus of the EDS is on jobs, with aims to:

- Reduce unemployment to levels comparable to the State or national average,
- Reduce the number of people commuting outside the LGA, and
- Reduce the 'brain drain' phenomenon where young people leave the LGA after study due to a lack of opportunity.

Actions identified for Council to address the LGA's employment challenges include:

- Ensuring that adequate employment land is provided to support jobs and economic growth,
- Using best practice planning processes to facilitate and encourage investment
- Encourage the use of the city day and night, and
- Continue to lobby for opportunities for jobs growth including the relocation of jobs growth to Wollongong.

The EDS identifies the City Centre as having a vital role as the administrative centre for the city and for the broader Illawarra region, as well as an important role for tourism related businesses. The EDS does not identify a specific industry (or industries) that Council would like to attract to the City Centre. It is understood that the EDS will be shortly reviewed and updated.

2.3 Economic profile

Industries of employment

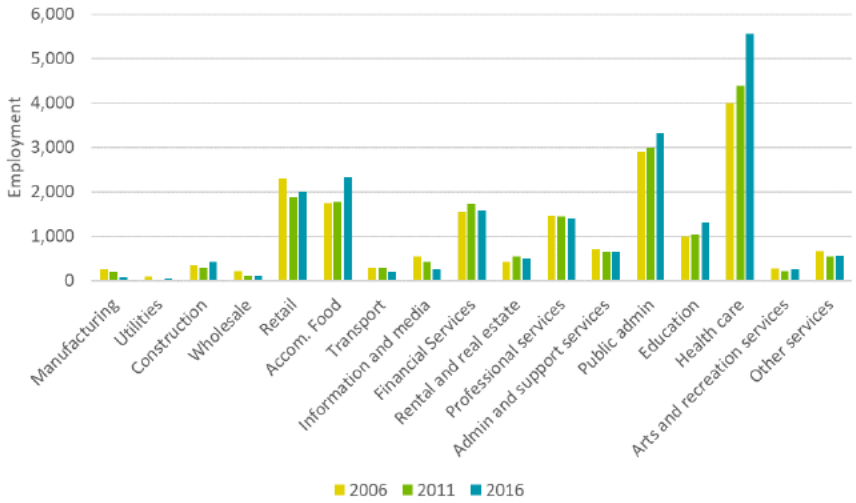
In 2016, Wollongong City Centre[3] contained 21,290 jobs. Representing a 12 per cent increase in jobs over the previous decade and a compounded annual growth rate of 1.1 per cent.

Wollongong City Centre's employment accounts for 27 per cent of all jobs in the Wollongong LGA, 16 per cent of all jobs in the Illawarra-Shoalhaven region and one per cent of jobs in the Greater Sydney and Illawarra-Shoalhaven regions combined.

The major industries of employment in Wollongong City Centre are health care (26 per cent), public administration (16 per cent), accommodation and food services (11 per cent) and retail (nine per cent) (refer to Figure 5). These are population serving industries and reflect the role of Wollongong as a civic centre.

[3] Please note that this boundary corresponds to the one shown as the Wollongong City Centre (dashed blue line) in Figure 2 on page 2 above, as distinct from the Study Area boundary. This boundary has been used in this section to provide context on the economic role of Wollongong as a functional centre, rather than on the narrower definition of the study area.

FIGURE 5: EMPLOYMENT BY INDUSTRY, WOLLONGONG CITY CENTRE, 2006-2016

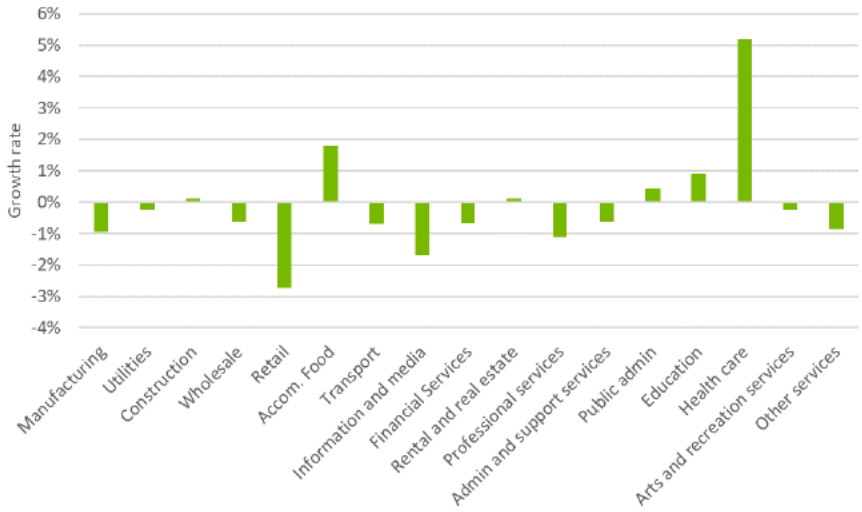


Source: SGS Economics and Planning, 2018 using Australia Bureau of Statistics, 2006, 2011 and 2016. Note: this data relates to the Wollongong City Centre LEP boundary.

Over 50 per cent of growth in employment over the last decade in Wollongong City Centre has been in health care reflecting the presence of Wollongong Hospital the investment in the health precinct including the opening of the Wollongong Private Hospital. Accommodation and food services industries has grown the strongest the last decade behind health care (refer to Figure 6). Public administration has experienced some growth and retail has declined. The decline in retail was focused between 2006 and 2011.

Many industries declined over the last 10 years, including manufacturing, wholesale, transport, information and media, professional services, administration and support services and other services These are industries which Wollongong is reliant on growing to become a regional city.

FIGURE 6: INDUSTRY GROWTH AND DECLINE, WOLLONGONG CITY CENTRE, 2006-2016



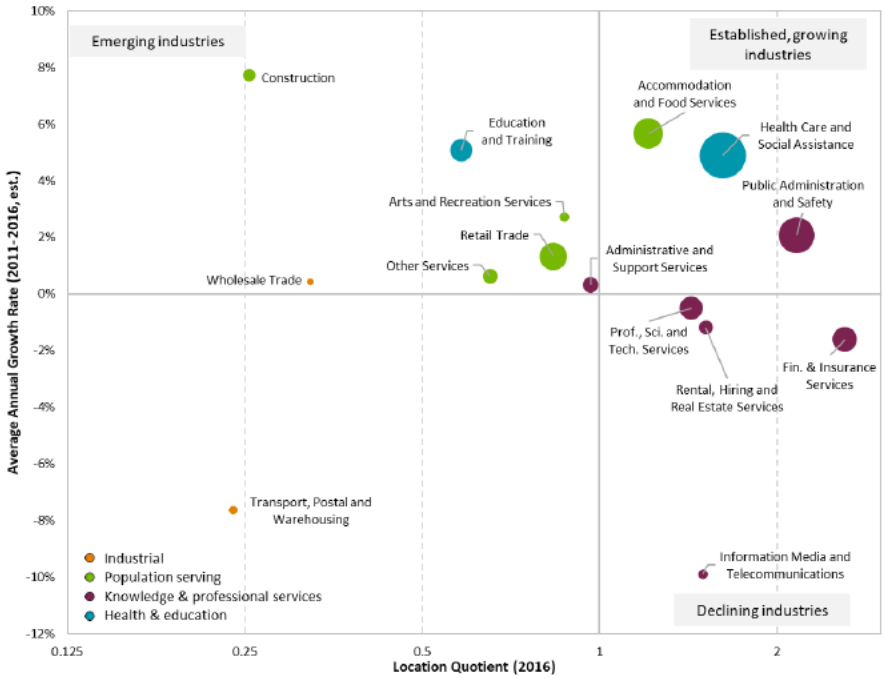
Source: SGS Economics and Planning, 2018 using Australia Bureau of Statistics, 2006, 2011 and 2016. Note: this data relates to the Wollongong City Centre LEP boundary.

Local specialisation

The Wollongong City Centre specialises in population serving industries such as accommodation and food services, health and education, and in professional services. Its industry specialisations are measured by location quotients, which reflect the proportion of employment an industry takes up in one area compared to another. If the location quotient for an industry is greater than one, Wollongong City Centre has a specialisation in that industry compared to the benchmark region. Likewise, if the location quotient is less than one, the study area is relatively unspecialised in that industry. The larger the LQ, the more significant the specialisation.

Figure 7 shows the specialisation of Wollongong's industries relative to Illawarra-Shoalhaven, as well as annualised growth rate and total size. Industries have been categorised into four broad groups: industrial jobs, population serving jobs, knowledge intensive and professional services, and health and education.

FIGURE 7: LOCATION QUOTIENT WOLLONGONG CITY CENTRE VS ILLAWARRA-SHOALHAVEN



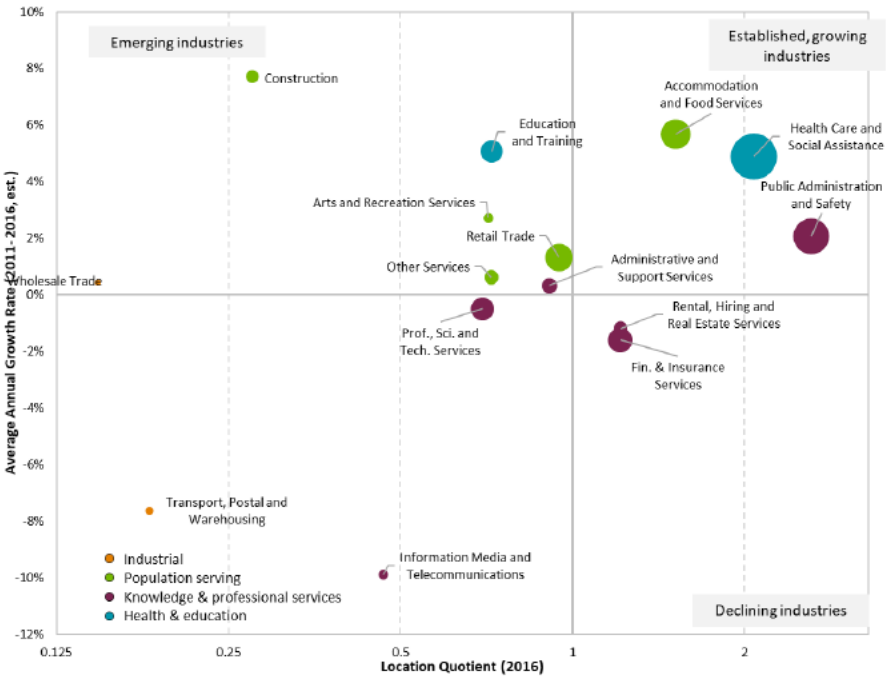
Source: SGS Economics and Planning, 2018 using Australia Bureau of Statistics, 2011 and 2016. Note: this data relates to the Wollongong City Centre LEP boundary and Illawarra-Shoalhaven region boundary.
Please note that some small outlying industries have been excluded from the graph, specifically: Agriculture, Forestry and Fishing; Mining; Manufacturing; and Electricity, Gas, Water and Waste Services.

Industries sitting to the right of the y-axis have location quotients greater than one and are therefore industries in which Wollongong specialises. The chart shows several industries have location quotients greater than one, but that a number of these are in decline. The finance and insurance services industry has the largest location quotient at over 2.5 but has a negative annualised growth rate. Likewise, the rental, hiring and real estate, and information and media industries, with the latter having declined by an average of around 10 per cent year on year.

The chart shows a pattern of decline in knowledge intensive and professional services industries, ones that Wollongong specialises in compared to the Illawarra-Shoalhaven region, but growth and emerging specialisation in health and education and population serving industries, which are the largest employers. There is a general decline in industrial jobs.

Figure 8 shows the specialisation of Wollongong's industries relative to Greater Sydney.

FIGURE 8: LOCATION QUOTIENT WOLLONGONG CITY CENTRE VS GREATER SYDNEY



Source: SGS Economics and Planning, 2018 using Australia Bureau of Statistics, 2011 and 2016. Note: this data relates to the Wollongong City Centre LEP boundary and Sydney GCCSA.
Please note that some small outlying industries have been excluded from the graph, specifically: Agriculture, Forestry and Fishing; Mining; Manufacturing; and Electricity, Gas, Water and Waste Services.

The chart shows that compared to Greater Sydney, Wollongong City Centre has a specialisation in public administration, health care and accommodation and food services. The City Centre also has a minor specialisation in finance and insurance services.

The growth of and specialisation in Wollongong's biggest industries, public administration and safety, health and social services and accommodation and food services, reflect the City Centre 's role as a regional capital – providing civic and health services for the entire Illawarra-Shoalhaven.

Local competitiveness

Shift-share analysis paints a picture of how well the region's current industries are performing by systematically examining the national, local, and industrial components of employment change. It provides a dynamic account of total regional employment growth that is attributable to growth of the national economy, a mix of faster or slower than average growing industries, and the competitive nature of the local industries. This analysis identifies those industries that benefit from local competitive advantages and those that suffer from local growth impediments.

The shift-share analysis includes the following elements:

- Expected Change is the rate of growth of the industry at the regional level. This is the change in a local industry that would be attributable to the growth or decline of the industry at the benchmark area level.

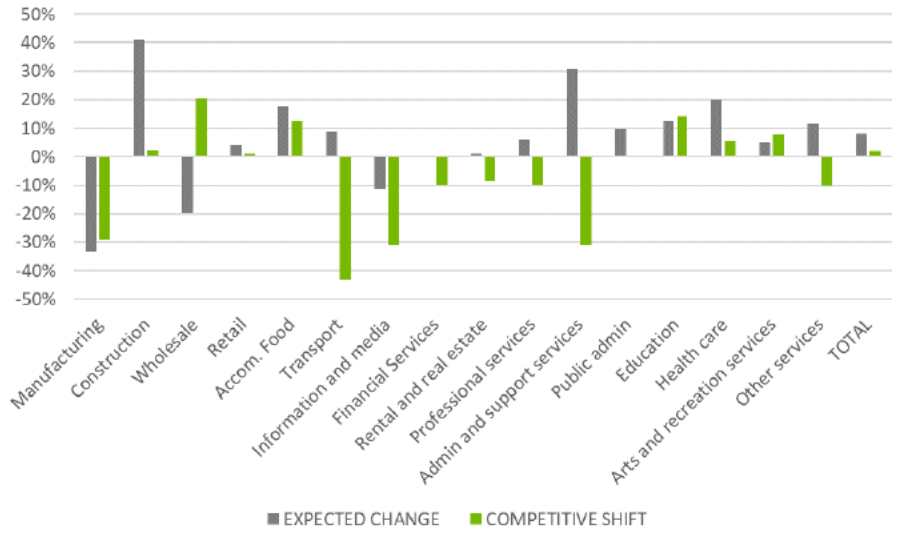
- Regional Competitive Shift explains how much of the change in each industry is due to some unique competitive advantage that the study area possesses, because the growth cannot be explained by broader trends in that industry or the economy as whole. It is the total industry growth in Wollongong City Centre minus the expected change in that industry given the benchmark (Illawarra-Shoalhaven) rates.

A shift-share analysis was conducted for the Wollongong City Centre against the Illawarra-Shoalhaven region to determine the extent to which job growth can be attributed to unique local factors and how much is due to regional trends (see Figure 9).

The shift-share analysis indicates Wollongong City Centre does not have a comparative/competitive advantage in most of its significant industries, including ones identified as industries of specialisation in the location quotient analysis. The area has a slight advantage in manufacturing, which declined less than it was expected to, and in education. It also has an ostensible competitive advantage in utilities and agriculture, but the small proportion of total employment that these industries account for makes it insignificant.

Based on this analysis, Wollongong City Centre is uncompetitive in health – its largest established and growing industry. This suggests there may be local barriers preventing its growth.

FIGURE 9: SHIFT SHARE WOLLONGONG CITY CENTRE VS ILLAWARRA-SHOALHAVEN, 2011-2016



Source: SGS Economics and Planning, 2018 using Australia Bureau of Statistics, 2016. Note: this data relates to the Wollongong City Centre LEP boundary and Illawarra-Shoalhaven region boundary.
Please note that some small outlying industries have been excluded from the graph, specifically: Agriculture, Forestry and Fishing; Mining; and Electricity, Gas, Water and Waste Services.

Self-containment

Wollongong City Centre's employment profile demonstrates its role as the regional city for the Illawarra-Shoalhaven and the civic and health services it provides will ensure this role persists. Nevertheless, despite overall job growth, job self-containment across Wollongong LGA, the percent of people who live and work in the LGA has declined from 74 per cent in 2011 to 71 per cent in 2016 (refer to Figure 10).

Industries with the highest job self-containment:

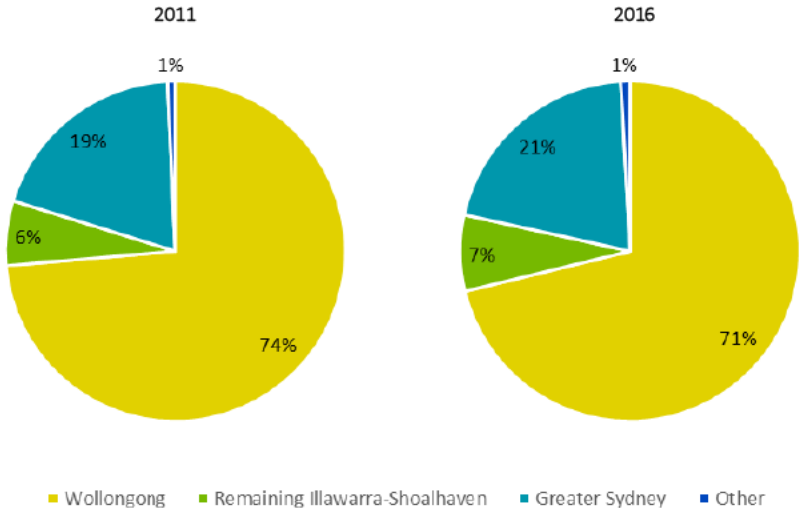
- Accommodation and food services (84.8 per cent)
- Rental and hiring services (78.8 per cent)
- Health care and social assistance (77.5 per cent)

Industries with the lowest job self-containment:

- Mining (47.4 per cent)
- Utilities (52.0 per cent)
- Wholesale trade (56.7 per cent)
- Information media and technology (58.4 per cent)

Mitigating some of the negative effects of job leakage, the industries with the highest self-containment are ones Wollongong specialises in and that account for a significant proportion of its total employment. The industries with the lowest self-containment account for a small amount of total employment, are in decline in the area and, except for media and technology, are low specialisation.

FIGURE 10: SELF-CONTAINMENT 2011 AND 2016

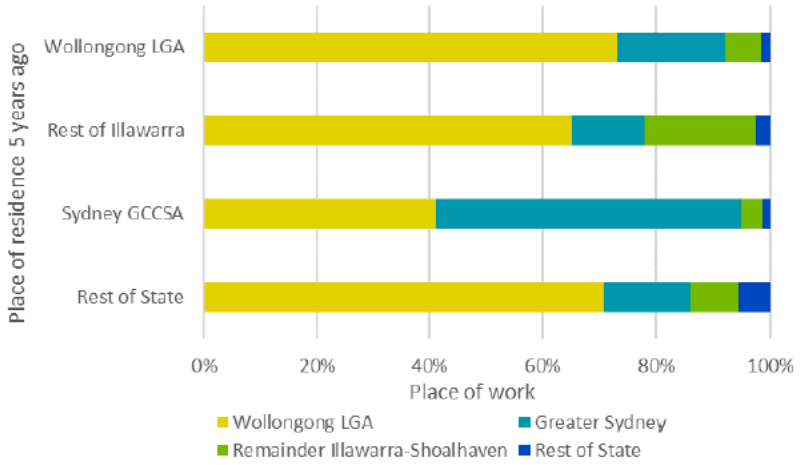


Source: SGS Economics and Planning, 2018 using Australia Bureau of Statistics, 2011 and 2016. Note: this data relates to the Wollongong City Centre LEP boundary.

Figure 11 below shows the proportional split between where Wollongong LGA residents work, arranged by where they lived five years prior (at the time of the 2011 Census). This indicates that nearly 20 per cent of longer-term residents of the Wollongong LGA travel to Greater Sydney for work. In terms of residents who moved to Wollongong from Greater Sydney in the previous 5-years, majority (54 per cent) continued to work in Sydney despite making the move south. This indicates that Wollongong's slight downward shift in self-containment is more likely related to demographics in migration rather than a worsening economic position, particularly given the continued jobs growth observed in the LGA over this time period.

The most common employment destination in Greater Sydney for Wollongong residents are the City of Sydney, Sutherland, Campbelltown and Wollondilly.

FIGURE 11: PLACE OF RESIDENCE IN 2011 AGAINST PLACE OF WORK IN 2016



Source: SGS Economics and Planning, 2018 using Australia Bureau of Statistics, 2011 and 2016. Note: this data relates to the Wollongong LGA boundary. Note: Sydney GCCSA is the Greater Capital City Statistical Areas as defined by the ABS which includes Greater Sydney and Central Coast regions

2.4 Economic drivers

Major employers and economic anchors

There are several regionally significant economic activities within or in proximity to the Wollongong City Centre which exert a substantial influence on the LGA's economy, and these activities represent key growth areas which leveraged to create continued growth.

University of Wollongong (UoW)

Aside from being an important source of knowledge and skill development, the University of Wollongong (UoW) also generates a substantial volume of economic activity in its own right, providing 4,800 full-time equivalent jobs and contributing approximately $660 million to Wollongong's economic output. The Illawarra and Shoalhaven Regional Plan (2015) identifies a continuing need to assess and manage the provision of student housing in order to facilitate its continued growth.

UoW's Innovation Campus, was established in 2006, plays host to a range of research facilities within a business park style development approximately three km north of the Wollongong City Centre. The Innovation Campus contains financial services such as the Commonwealth Bank and AMP, or civil society groups such as The Benevolent Society and the Cancer Council of NSW. It appears that the supply of commercial office floorspace within the Innovation Campus is diverting demand away from the Wollongong City Centre.

Wollongong Hospital and health precinct

The Wollongong Hospital and its surrounding uses are a significant employer both within Wollongong and the LGA. The hospital recently underwent expansion works with a capital value of over $100m, including the addition of elective surgical facilities, with new retail facilities servicing the hospital to replace those removed as part of its expansion.

The Wollongong Private Hospital was completed in early 2016, situated immediately adjacent and to the west of the public hospital, with plans for further expansion works worth over $45 million having already been submitted by the hospital's owner.

Port Kembla

As identified within the NSW Ports' 30 Year Master Plan, Port Kembla is NSW's largest motor vehicle import hub, largest grain export terminal and second largest coal export port. It is recognised as an economic driver for the Illawarra-Shoalhaven region.

Port Kembla is an area of significant employment within the LGA, with the Wollongong EDS noting in 2013 that it sustains 3,863 full-time jobs directly and indirectly. The port is expected to grow substantially as further redevelopment projects take place, such as the expansion of the port's Outer Harbour, in a $700 million redevelopment which is anticipated to quadruple the port's bulk cargo trade.

Retail and centres hierarchy across the region

Existing hierarchy of centres

The Wollongong City Centre holds the prime position within the Illawarra's hierarchy of urban centres. The presence of major tertiary education and health facilities in conjunction with strong public transport access (compared to the rest of the Illawarra-Shoalhaven region) and infrastructure has reinforced this role, and the continued primacy of the centre is owing in no small part to its role in providing higher order business, civic, recreation, community and entertainment uses.

There are other lower-order centres within the region which still host a significant amount of retail floorspace and other services, such as Shellharbour City Centre, Warrawong and Dapto. While these centres are anticipated to grow, they provide a comparatively lower level of higher order services and uses (outside of retail functions) than the Wollongong City Centre.

Retail offer

The Review of Illawarra Retail Centres (2014) report prepared by SGS identified that there was demand for between 73,000 and 85,000 square metres (sqm) of retail floorspace in Wollongong City Centre by 2031. A large proportion of this demand is provided for by GPT's Wollongong Central shopping mall, being approximately 56,600 sqm of retail GFA. There is are two supermarkets (Woolworths and Aldi) located outside of the Wollongong Central development, with the remaining retail floorspace typically being in main-street retail buildings within the city centre or bulky goods retail within the City Centre fringe areas such as South Wollongong or along the Princes Highway. The study identified around 3,000 sqm of potential under supply of retail floorspace by 2031 under the high demand scenario.

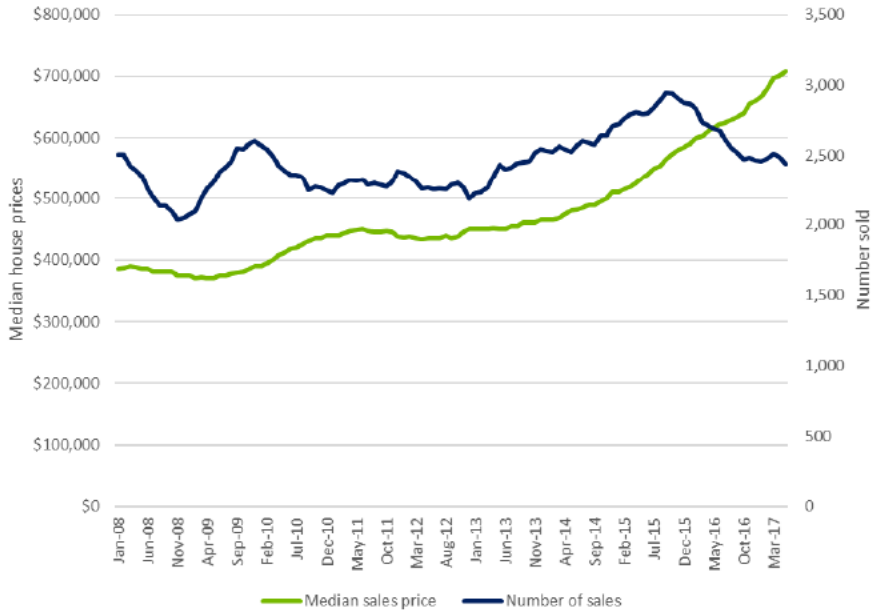
Residential development and revitalising the city centre

Residential development

Several of the strategic documents identify the intention to increase residential densities within the study area. Demand for dwellings within the area is currently high, given its proximity to services, transport, employment, recreation and entertainment. Significant development has been taking place within the study area, with major projects at the eastern end of the City Centre adding a significant supply of dwellings, in addition to the development of residential flat buildings in a dispersed pattern throughout the R1 zoning to the north of the City Centre.

Across Wollongong LGA, median sales prices for houses have continued to rise since 2012, however in the last year sales have declined (refer to Figure 12).

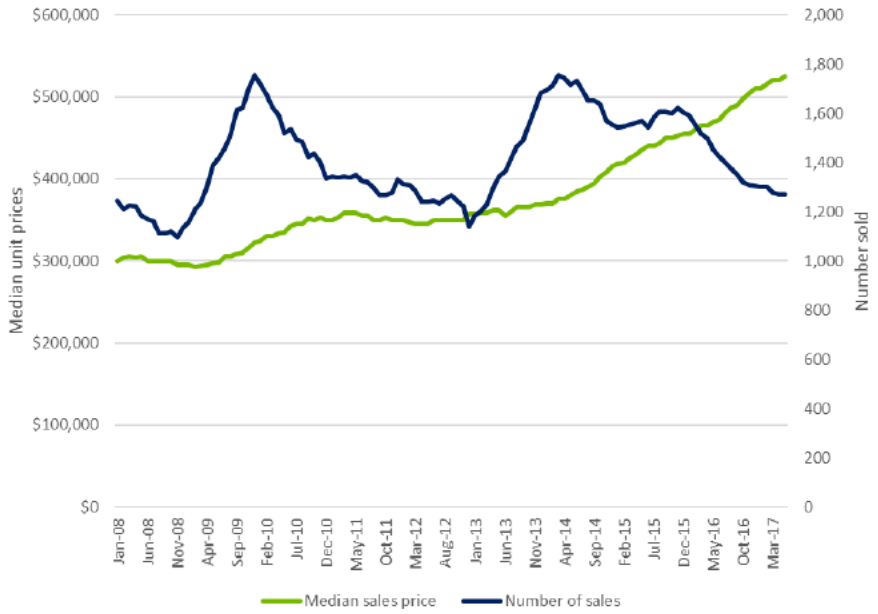
FIGURE 12: MEDIAN SALES PRICES, HOUSES: WOLLONGONG LGA



Source: SGS Economics and Planning, 2018 using custom RP Data, 2017

Unit prices have similarly rise, however sales have fluctuated (refer to Figure 13). This is likely due to timing of new developments being completed.

FIGURE 13: MEDIAN SALES PRICES, UNITS: WOLLONGONG LGA



Source: SGS Economics and Planning, 2018 using custom RP Data, 2017

Sales values within the study area have increased significantly since 2014, with median sales prices for houses sitting at approximately $870,000, or $560,000 for units. These are higher than the median sales values for the whole LGA.

Night time economy

Growth within the night time economy in recent years has seen the addition of new small bars and restaurants, or the extension of trading hours for existing premises; however, several documents note that a lack of residents within the City Centre is contributing to a lack of activity outside of office hours. Whilst increases in residential densities within the city centre will contribute to the population base who utilise the area in the evening, growth should be carefully managed to avoid potential land use conflicts given the inherent sensitivity of residential development.

Potential also exists to accommodate the growth of the University of Wollongong in conjunction with achieving greater activation through providing a greater proportion of the University's student housing within the Wollongong City Centre. The provision of a variety of residential dwellings for students, health workers and seniors within Wollongong City Centre is an objective within the Illawarra-Shoalhaven Region Plan.

Public spaces

Council is also seeking to facilitate growth within the City Centre through the creation of higher quality, walkable spaces which are pedestrian friendly and at a human scale. The development of the city centre should be reflective of the need to concentrate activity within a compact area, at a scale which is comfortable and respects the natural setting of the city and is well connected with a high level of amenity for active and public transport.

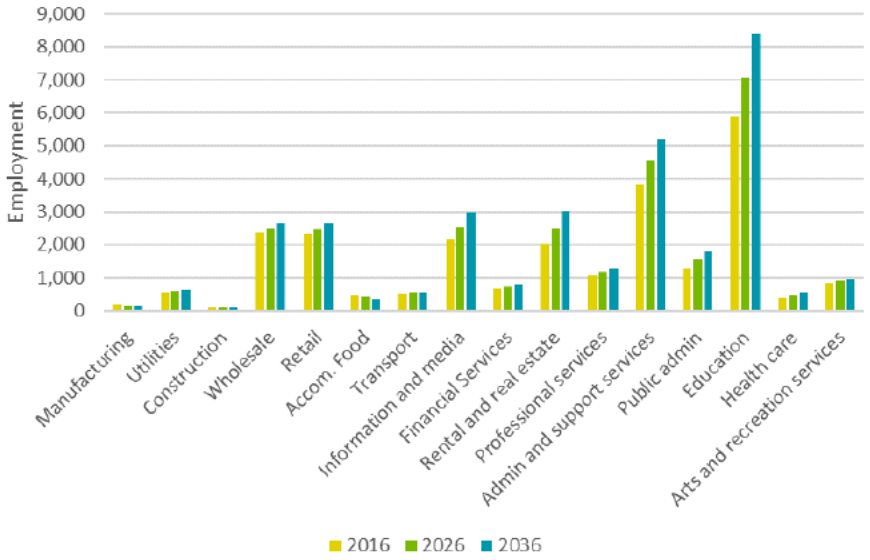
2.5 Forecast growth

According to NSW Transport and Performance Analytics (TPA) Travel Zone Projections (TZP16)[4], employment across the Wollongong City Centre is projected to increase from almost 25,000 jobs in 2016 to over 32,000 jobs by 2036. Employment in education and knowledge and professional services (including administrative and support services, processional services and administrative and support services) is forecast to grow and industrial jobs are forecast to decline (see Figure 14).

Forecasts show that many of Wollongong's current industries of specialisation will continue to grow, including health, public administration, finance, and accommodation and food services. Action will be required to attract industries which have been declining locally such as professional services.

[4] Transport Performance and Analytics (2017), Transport for NSW, https://opendata.transport.nsw.gov.au/dataset/employment-projections

FIGURE 14: FORECAST EMPLOYMENT GROWTH BY INDUSTRY, 2016-36



Source: SGS Economics and Planning, 2018 using NSW Transport and Performance Analytics (TPA) Travel Zone Projections (TZP16)[5]. Note: this data relates to the Wollongong City Centre LEP boundary.

2.6 Key findings and implications

Wollongong is the regional capital of the Illawarra-Shoalhaven. It is the civic and economic heart of the Illawarra region. Proximity to Sydney provides opportunities for residents and potential connections for local businesses. However, there is significant job leakage with residents commuting to Sydney for work and self-containment has declined from 74 per cent in 2011 to 71 per cent in 2016.

There are several economic nodes across Wollongong including Wollongong Hospital and health precinct, University of Wollongong and Wollongong Innovation Campus. Greater physical and economic links between these economic anchors will be important in driving economic growth across the Wollongong LGA. It is important that the role of Wollongong City Centre in the context of these nodes is clear and a strong vision will assist in promoting this.

As of 2016, Wollongong City Centre contains over 21,000 jobs, which is 27 per cent of jobs across the Wollongong LGA. The four largest industries of employment area health care (26 per cent), public administration (16 per cent), accommodation (11 per cent) and retail (9 per cent).

Employment is forecast to grow by an additional 7,000 jobs by 2036[6]. Forecast growth is primarily across population serving industries such as health and education. These are industries which generally forecast to grow across NSW. There is limited local specialisation or competitive advantage driving growth which is a significant barrier to Wollongong City Centre become a strategic employment centre. These issues should be addressed by the updated EDS.

Residential is the most active property market in the Wollongong City Centre. This has the potential to constrain future commercial development if majority of sites have been developed as residential strata with multiple owners (which would make acquisition and

[5] Transport Performance and Analytics (2017), Transport for NSW, https://opendata.transport.nsw.gov.au/dataset/employment-projections
[6] The variation in employment numbers in 2016 is due to the data source. TPA forecasts for 2016 are higher than the ABS Census figure for 2016.

redevelopment difficult) or if residential development 'prices' out commercial development. This highlights the need to understand development capacity, particularly feasible development capacity.

The trends observed highlight the need for the role of the Wollongong City Centre to be clearly articulated, particularly its economic role and function. The City Centre continues to play a strong role as the administrative and civic centre for the Illawarra-Shoalhaven region. However, its action is required to change the trajectory of the City Centre, to attract commercial investment and grow strategic employment as well as population serving industries.

A broad assessment of Wollongong City Centre has been conducted against the 10 success factors identified above (refer to Table 3). This assessment highlights that Wollongong City Centre has all the foundations for a successful regional city, however these need to be better leveraged to attract commercial investment and employment.

TABLE 3: ASSESSMENT OF WOLLONGONG CITY CENTRE AGAINST KEY SUCCESS FACTORS

Success factors	Broad assessment
A strategic location within a growing economy	▪ Population of Wollongong LGA is growing which has resulted in strong growth in population serving industries ▪ Located in close proximity to Greater Sydney which has led to increase in population but significant proportion of residents travel to Greater Sydney for employment
Pre-existing business locations occupied by successful firms	▪ Wollongong City Centre over 21,000 jobs within a number of other major employment anchors located in close proximity ▪ A significant gap is large-scale professional and financial services firms
A supply of quality, skilled labour	▪ There is a supply of quality skilled labour, however the majority of these workers are employed in Greater Sydney and not locally
Infrastructure that binds the centre internally and links it externally	▪ Links externally include rail, road, bus and cycling infrastructure ▪ Links internally could be improved, particularly physical connectivity between major nodes within the Wollongong City Centre
Competitive place-based assets	▪ Access to waterfront and open space is a significant asset for Wollongong City Centre
Local and external customer bases to ensure robust supply chains	▪ There appears to be a concentration of local population serving industries and businesses ▪ Port Kembla plays a significant role in supporting regional, national and international supply chains
Business support for the centre	▪ Some business support but majority of investment has been residential.
Government support for the centre	▪ NSW Government and Wollongong City Council jointly support the growth of Wollongong as a major commercial centre
Strong links between the regional centre and its civic/cultural life	▪ Some existing foundations. This has not been reviewed in detailed as part of this study.
A spatial metaphor to drive the regional centre forwards.	▪ A City of People provides the foundation for a spatial metaphor

Source: SGS Economics and Planning, 2018

3. CAPACITY ASSESSMENT

This section contains analysis of the capacity for development under the current planning controls in the study area, and the feasible capacity for development under current market conditions. This section provides a general overview of the method used, with specific detail on assumptions provided in Appendix A.

3.1 Maximum theoretical capacity

Approach

The first of two measures utilised to determine the existing capacity within the study area, the maximum theoretical capacity is a hypothetical measure which provides an indication of what could be delivered if all available land within the study area was redeveloped to the maximum permissible level under current planning controls. It is important to note that it is highly unlikely to achieve such a high development yields in practice, as such measures does not factor in the feasibility of development nor the functionality of existing improvements.

For example, it is unlikely that a building will be demolished in order to achieve only a 5 per cent uplift in floorspace yield. However, it is necessary to consider capacity at the maximum amount theoretically possible to understand the impact of planning controls on development.

Certain sites within the study area were identified to be constrained and were excluded from the analysis. Further detail on this, as well as other technical aspects of the analysis, can be found in Appendix A: Capacity and feasibility technical method.

Results

The Wollongong LEP 2009 (WLEP 2009) permits residential uses in a wide range of zones present within the study area. Therefore, the maximum theoretical capacity within the study area may look quite different depending on whether residential or commercial floorspace is pursued to a greater extent. Two scenarios have been developed for this analysis:

- The **theoretical maximum residential** scenario
- The **theoretical maximum commercial** scenario

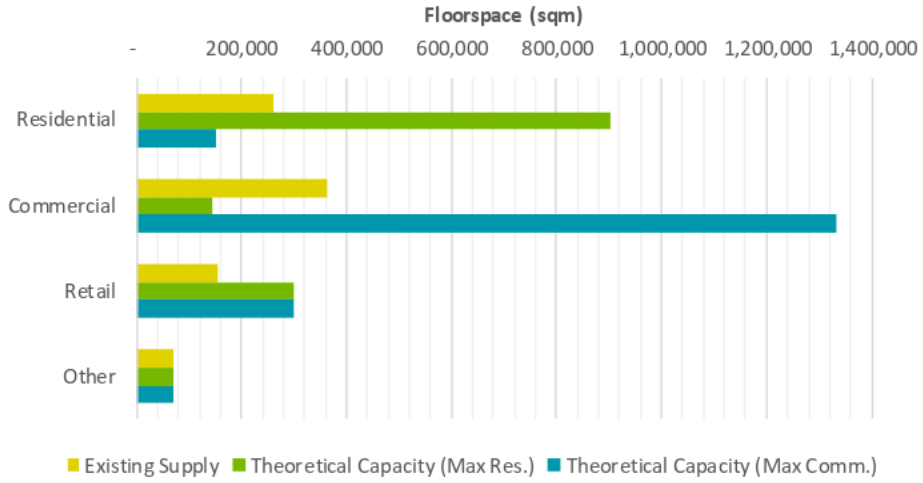
The results of the modelling are displayed in Table 4 and Figure 15.

TABLE 4: MAXIMUM THEORETICAL CAPACITY RESULTS

Land Use	Existing Supply	Theoretical Maximum Residential Scenario	*Difference*	Theoretical Maximum Commercial Scenario	*Difference*
Residential	260,000 m²	904,000 m²	*644,000* m²	151,000 m²	*-109,000 m²*
Commercial	365,000 m²	144,000 m²	*-221,000 m²*	1,332,000 m²	*967,000* m²
Retail	156,000 m²	299,000 m²	*143,000* m²	299,000 m²	*143,000* m²
Other	72,000 m²	70,000 m²	*-2,000 m²*	70,000 m²	*-2,000 m²*

Source: SGS Economics and Planning, 2018

FIGURE 15: MAXIMUM THEORETICAL CAPACITY RESULTS



Source: SGS Economics and Planning, 2018

To put the above floorspace numbers in terms of dwellings and jobs, a high-level conversion has been conducted using an average dwelling size of 100 sqm, and an average job to floor space ratio of 30 sqm and 35 sqm for commercial/other and retail floorspace respectively. The results are displayed below in Table 5.

TABLE 5: MAXIMUM THEORETICAL CAPACITY – JOBS/FLOOR SPACE

Land Use	Average dwelling size/ job to FS ratio	Theoretical Maximum Residential Scenario	Theoretical Maximum Commercial Scenario
Residential (dwellings)	100 m²	9,050	1,500
Commercial (jobs)	30 m²	4,800	44,400
Retail (jobs)	35 m²	8,550	8,550
Other (jobs)	30 m²	2,350	2,350
Total jobs	-	15,700	55,300

Source: SGS Economics and Planning, 2018

Both scenarios display a theoretical capacity figure that is substantially higher than current supply of floorspace, which indicates that the planning controls currently allow for a particularly significant amount of floorspace to be developed.

When testing the maximum theoretical capacity, a mismatch between the maximum FSR and height controls was observed within parts of the study area, with the maximum FSR being reached before the height limit for nearly all sites tested.

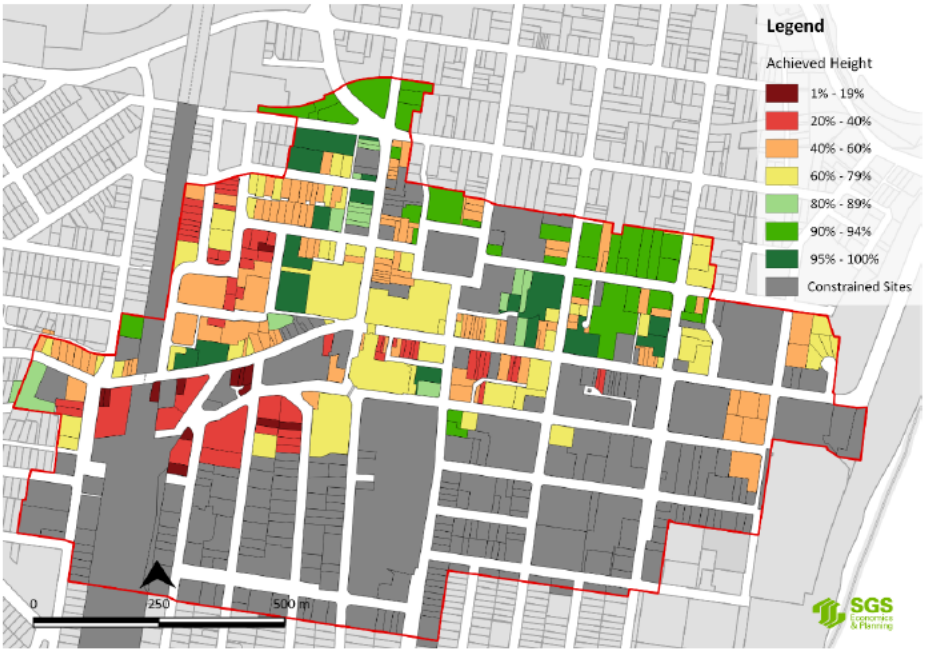
In the theoretical maximum residential scenario, 22 per cent of sites achieved heights within 20 per cent of the maximum allowed under the controls, and a further 22 per cent of sites did not achieve more than 20 per cent of the total height allowed. This distribution is displayed in Figure 16.

Similar results were observed within the theoretical maximum commercial scenario, however the mismatch observed herein was slightly greater[7]. In this scenario, 18 per cent of sites

[7] This is owing to the higher site coverage assumptions used for commercial floorspace (contained in Table 17 on page 44 of this report). For further information, please refer to the technical appendix of this report beginning on page 42.

achieved heights within 20 per cent of the maximum, and 45 per cent of sites did not achieve more than 20 per cent of the total height allowed. This distribution is displayed in Figure 17.

FIGURE 16: MAXIMUM THEORETICAL CAPACITY - PROPORTION OF HOB CONTROL ACHIEVED (THEORETICAL MAXIMUM RESIDENTIAL SCENARIO)



Source: SGS Economics and Planning, 2018

FIGURE 17: MAXIMUM THEORETICAL CAPACITY - PROPORTION OF HOB CONTROL ACHIEVED (THEORETICAL MAXIMUM COMMERCIAL SCENARIO)

Source: SGS Economics and Planning, 2018

3.2 Maximum feasible capacity

Approach

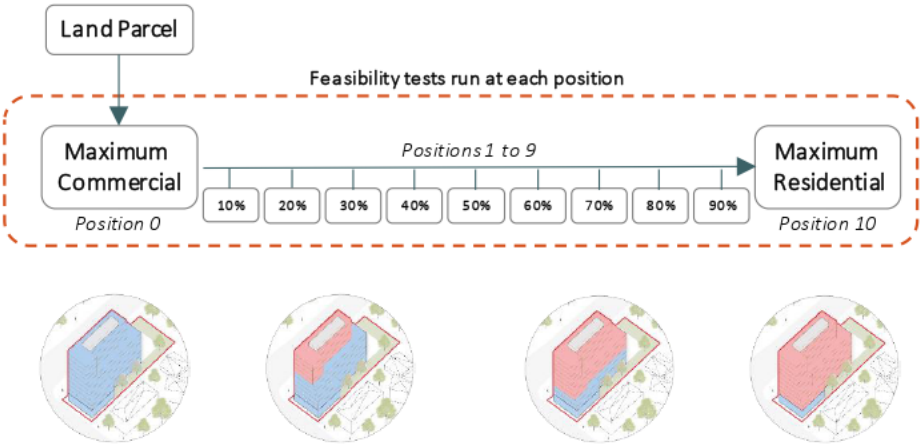
An assessment of feasible capacity was conducted to examine the likelihood that this capacity will be taken up. This requires development to be financially feasible. Refer to Appendix A: Capacity and feasibility technical method, for a more detailed explanation of the assumptions.

Each site within the study area was tested, initially with the built form observed in the maximum commercial scenario above (as under current planning controls), with the mix of residential to non-residential floorspace then being shifted in 10 per cent increments until the split used for the maximum residential scenario was reached. This has allowed to gain an indication of the mix of residential and non-residential floorspace required for the development to be feasible on each site.

Each increment (including the two maximum theoretical scenarios above, for a total of 11) is referred to herein as a position. To clarify:

- A parcel of land at Position 0 has the same floorspace as the **theoretical maximum commercial** scenario outlined above.
- A parcel of land at Position 10 has the same floorspace as the **theoretical maximum residential** scenario outlined above.
- A parcel of land at Position 4 has the same floorspace as the **theoretical maximum commercial** scenario outlined above, *plus/minus* 40 per cent of the difference between the **theoretical maximum commercial** scenario and the **theoretical maximum residential** scenario.

FIGURE 18: CAPACITY ASSESSMENT - MAXIMUM FEASIBLE CAPACITY METHOD (1 OF 2)



Source: SGS Economics and Planning, 2018

Further detail on the technical aspects of this segment of the analysis can be found in Appendix A: Capacity and feasibility technical method.

Results

Similar to the maximum residential and the maximum commercial scenarios above, the maximum feasible capacity has been divided into two scenarios. A site which is feasible at any Position is included in the capacity figure for both scenarios, however the specific scenarios differ on which Position they select based on the criteria:

- The **maximum capital yield** scenario
  This scenario takes the Position for each site which is both financially feasible, and which generates the highest capital return. Given the increased profitability of

residential development, this scenario is comprised entirely of sites in Position 10 (the theoretical maximum residential scenario).

- The **maximum commercial yield** scenario
  This scenario takes the Position on a given site which is both financially feasible, and which yields the highest amount of commercial floorspace. This results in sites being selected at a mixture of Positions based on the specific influences on their feasibility.

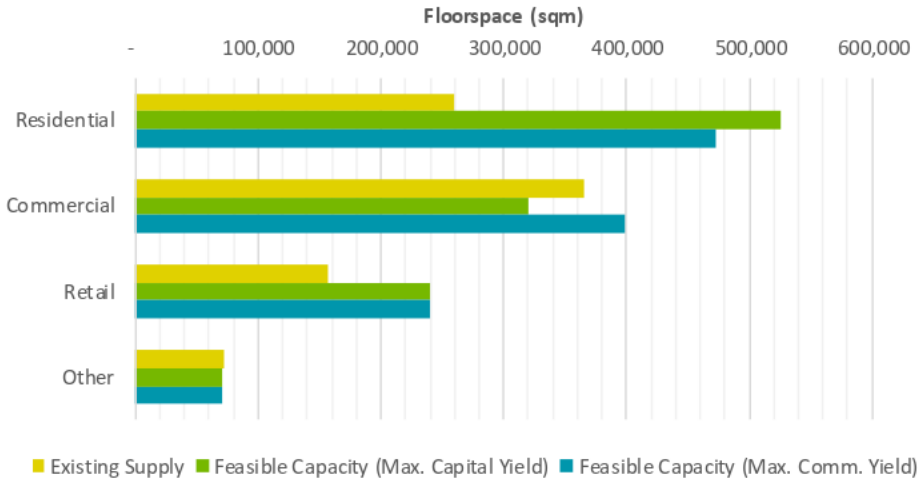
The results of the modelling are displayed below in Table 6 and Figure 19.

TABLE 6: MAXIMUM FEASIBLE CAPACITY RESULTS

Land Use	Existing Supply	Maximum Capital Yield Scenario	*Difference*	Maximum Commercial Yield Scenario	*Difference*
Residential	260,000 m²	525,000 m²	265,000 m²	473,000 m²	213,000 m²
Commercial	365,000 m²	320,000 m²	-45,000 m²	399,000 m²	34,000 m²
Retail	156,000 m²	239,000 m²	83,000 m²	239,000 m²	83,000 m²
Other	72,000 m²	70,000 m²	-2,000 m²	70,000 m²	-2,000 m²

Source: SGS Economics and Planning, 2018

FIGURE 19: MAXIMUM FEASIBLE CAPACITY RESULTS



Source: SGS Economics and Planning, 2018

To put the above floorspace numbers in terms of dwellings and jobs, a high-level conversion has been conducted using an average dwelling size of 100 sqm, and an average job to floor space ratio of 30 sqm and 35 sqm for commercial/other and retail floorspace respectively. The results are displayed below in Table 7.

TABLE 7: MAXIMUM FEASIBLE CAPACITY – JOBS/FLOOR SPACE

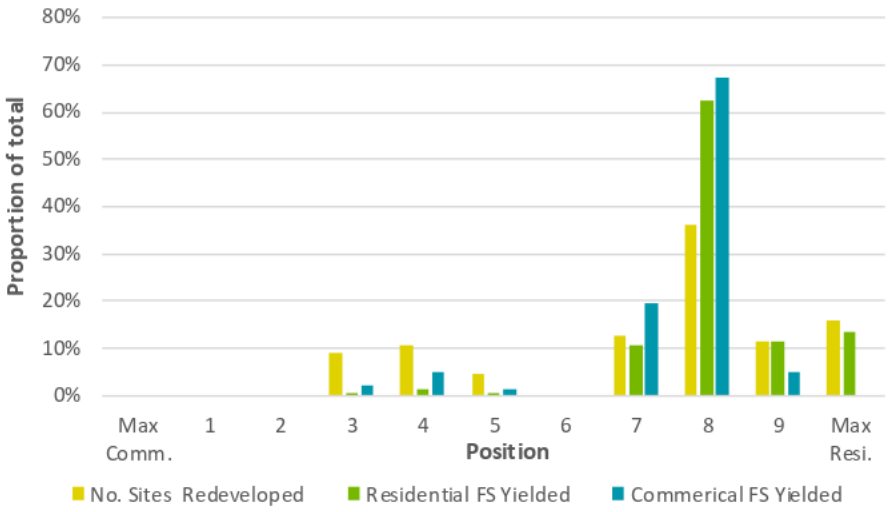
Land Use	Average dwelling size/ job to FS ratio	Maximum Capital Yield Scenario	Maximum Commercial Yield Scenario
Residential (dwellings)	100 m²	5,250	4,750
Commercial (jobs)	30 m²	10,650	13,300
Retail (jobs)	35 m²	6,850	6,850
Other (jobs)	30 m²	2,350	2,350
Total jobs	-	19,850	22,450

Source: SGS Economics and Planning, 2018

The maximum capital yield scenario is more likely to be reflective of the built form outcome pursued by private developers within Wollongong, as they seek to maximise returns on their projects by providing the maximum amount of residential floorspace possible.

Within the maximum commercial yield scenario, the mix of non-residential and residential floorspace varies on a site to site basis. This reflects the estimated amount of residential floorspace that would be required within sites to make them feasible. In cases where development is only marginally feasible, no commercial floorspace is included on the site. Figure 20 displays the distribution of sites and floorspace yield at the position under this scenario. The largest amount of commercial floorspace will be delivered under a high residential scenario ('Position 8'). This indicates that commercial floorspace requires significant cross-subsidisation from residential floorspace.

FIGURE 20: MAXIMUM COMMERCIAL YIELD SCENARIO - DISTRIBUTION OF POSITIONS AND FLOORSPACE YIELD



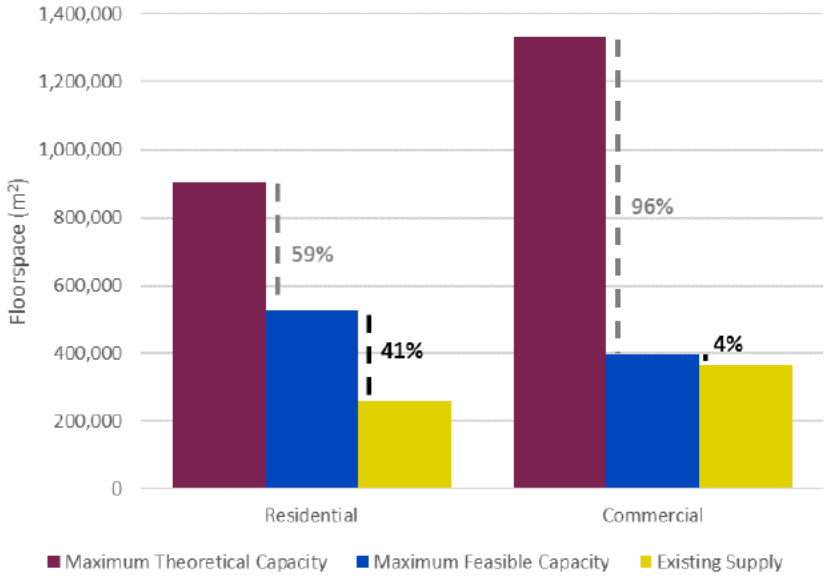
Source: SGS Economics and Planning, 2018

It should be noted that the maximum theoretical capacity produces results which have a dramatically higher yield of floorspace than that which has been assessed as being feasible for development. Only a small proportion of sites tested were identified as being feasible for redevelopment, being 36 per cent of unconstrained sites (or 20 per cent of total sites in the study area).

Figure 21 below displays a comparison between the maximum theoretical capacity and the maximum feasible capacity results. Please note that as two scenarios have been modelled within each assessment, the scenario which has the higher yield for that type of floorspace has been selected, as listed in the table immediately below the figure.

This indicates that the current planning controls within the study area permit a development capacity that is significantly greater than what is likely to be delivered under the current market conditions. This is particularly so for commercial floorspace, wherein only four per cent of the increase in floorspace yield under the maximum theoretical amount is found to be feasible. The 41 per cent achievable for residential floorspace, again indicates that the planning controls permit far more than what is practical for the study area.

FIGURE 21: COMPARISON OF MAXIMUM FEASIBLE CAPACITY AND MAXIMUM THEORETICAL CAPACITY



Land Use	Maximum Theoretical Capacity *(Scenario used in Figure 21 above)*	Maximum Feasible Capacity *(Scenario used in Figure 21 above)*
Residential	'Maximum Residential Capacity' scenario	'Maximum Capital Yield' scenario
Commercial	'Maximum Commercial Capacity' scenario	'Maximum Commercial Yield' scenario

Source: SGS Economics and Planning, 2018

3.3 Key findings and implications

The findings set out below pertain only to the modelling conducted in this section, which was used as an interim step to inform the development of this document and the Urban Design Framework, developed concurrently by Architectus and Andrew Burns Architecture.

There is substantial capacity for development within the study area based on the existing planning controls. However, the feasibility analysis has highlighted that only a small proportion of this capacity is feasible based on the current market, being 41 per cent of uplift for residential floorspace or four per cent of uplift for commercial floorspace.

The planning controls allow for a built form which is much greater than the current market is delivering. Given that the maximum theoretical capacity is determined overwhelmingly by the FSR control, the maximum building height controls are in excess of this level by another significant margin. Planning controls are not identified as a constraint on capacity as a result.

Under the maximum capital yield scenario (likely development outcome), a net loss of 45,000 sqm of commercial floorspace is observed. This is a significant issue as commercial floorspace is required to support the economic role of the Wollongong City Centre.

Commercial development is only marginally feasible, requiring cross subsidisation with residential development, as evidenced by the high proportion of floorspace found to be feasible in 'Position 8' (see Figure 20 above).

The net increase in commercial floorspace which could be attainable (34,000 sqm) under the maximum commercial yield scenario is limited and will be unable to meet forecast increases in demand over the medium term. Intervention is required to promote growth and highlights the need for potential incentives or levers to be considered that could address these feasibility constraints.

The significant increase in residential activity risks detracting from the character of the Wollongong City Centre as a business area, and by extension making it more difficult to attract commercial activity. Competition between commercial and residential development is considered to be an issue. Land values have potentially been inflated by the permissibility of residential development making straight commercial development unfeasible. These trends may warrant consideration of a commercial core zone in which residential development is prohibited or restricted.

4. FORECAST GROWTH

This section provides an overview of the projected growth in commercial, residential and retail in study area between 2016 and 2036.

4.1 Commercial floorspace

NSW TPA projections[8] have been used to identify the growth of employment within the study area, by ANZSIC 1-digit industry classification. Across the study area, there is projected to be demand for an additional 5,300 jobs between 2016 and 2036 (refer to Table 8).

Growth is projected in public administration, professional services, health and finance and insurance services. Action will be required to attract industries which have been declining locally such as professional services.

TABLE 8: EMPLOYMENT FORECASTS: STUDY AREA

Industry	2016	2021	2026	2031	2036	2016-36
Agriculture, Forestry and Fishing	8	7	7	7	7	-1
Mining	22	22	22	22	22	1
Manufacturing	182	157	138	126	121	-61
Electricity, Gas, Water and Waste Services	11	10	10	11	11	0
Construction	506	527	545	566	594	87
Wholesale Trade	128	130	126	122	120	-7
Retail Trade	2,285	2,378	2,416	2,483	2,548	262
Accommodation and Food Services	1,996	2,053	2,106	2,174	2,244	248
Transport, Postal and Warehousing	369	360	339	286	284	-84
Information Media and Telecommunications	529	545	549	555	553	24
Financial and Insurance Services	2,143	2,368	2,546	2,746	2,973	830
Rental, Hiring and Real Estate Services	572	610	639	667	698	126
Professional, Scientific and Technical Services	1,897	2,159	2,340	2,556	2,797	900
Administrative and Support Services	933	990	1,022	1,062	1,108	175
Public Administration and Safety	3,649	4,012	4,330	4,622	4,950	1,302
Education and Training	1,026	1,129	1,233	1,338	1,441	416
Health Care and Social Assistance	1,989	2,192	2,402	2,622	2,852	863
Arts and Recreation Services	285	315	343	373	404	119
Other Services	722	752	769	791	820	97
Total	**19,251**	**20,717**	**21,882**	**23,129**	**24,547**	**5,297**

Source: NSW Transport Performance and Analytics, 2016
Note: Travel Zones included in study area are 5643, 5646, 5647 and 5649

[8] Transport Performance and Analytics (2017), Transport for NSW, https://opendata.transport.nsw.gov.au/dataset/employment-projections

This employment was distributed across broad floorspace categories using the data collected during the land audit (conducted as part of the capacity assessment set out in Section 3). This was then converted into floorspace using typical job to floorspace ratios.

Based on this analysis, there is considered to be demand for an additional 120,000 sqm of commercial floorspace over the next 20 years.

The classification of commercial floorspace is based on the coarse land use categories collected through the land audit includes commercial floorspace within a range of building typologies such as offices above a retail shopfront as well as purpose-built, A-Grade office floorspace. There is likely to be demand for a range of floorspace at different price points.

4.2 Residential floorspace

Residential floorspace forecasts have been derived from demographic forecasting conducted by Forecast.id. According to population projections by Forecast.id, the population of study area will increase by 3,459 people by 2036 and this will drive demand for an additional 1,950 dwellings in the study area by 2036[9]. This equates to a household size of 1.8 persons per dwelling.

At an average dwelling size of 100 sqm per dwelling, there is considered to be demand for an additional 195,000 sqm of residential floorspace. This average dwelling size has been derived from consultation with property agents regarding the typical size of a two-bedroom apartment within the study area.

The forecast increase in demand for residential floorspace of 195,000 sqm may vary depending on the type and size of dwellings provided within new developments within the study area and does not take into account space within the building required to accommodate circulation, parking, common areas, or other such floorspace.

4.3 Retail floorspace

The Wollongong Retail Centres Study, prepared for council in 2004, provided forecasts for retail floorspace out to 2015. As this time period has now passed, this study is considered to be outdated. The most recent, and relevant, retail study was the Review of Illawarra Retail Centres, prepared by SGS for the NSW Department of Planning and Infrastructure in 2014.

The Review of Illawarra Retail Centres included retail modelling for all major centres within the Illawarra, including Wollongong, with forecasts extending to 2031 (refer to Figure 22).

The study forecast a demand for between 73,000 sqm and 98,000 sqm of retail floorspace in Wollongong by 2031. At the time of the study, there was 77,000 sqm of retail floorspace within the centre. The extension to GPT's Wollongong Central shopping mall provided an additional 18,000 sqm of retail floorspace, bringing the total retail floorspace to 95,000 sqm. Therefore, under a high scenario, there was considered to be a potential undersupply of retail floorspace of 3,000 sqm by 2031.

[9] An additional 1,950 dwellings is equivalent to 14 Oxford On Crown Wollongong developments (at 135 apartments each)

FIGURE 22: ILLAWARRA FLOORSPACE DEMAND ESTIMATIONS, 2031

Centre	Demand forecasted – 2031		Current plus planned floorspace	Level of over/under supply if high demand	Centre capacity
	Lower range	Higher range			
Albion Park*	28,000 m²	38,000 m²	37,000 m²	-1,000 m²	38,422 m²
Corrimal	26,000 m²	35,000 m²	28,000 m²	-7,000 m²	45,222 m²
Dapto	34,000 m²	46,000 m²	37,000 m²	-9,000 m²	526,480 m²
Fairy Meadow	34,000 m²	46,000 m²	35,000 m²	-11,000 m²	67,312 m²
Figtree	31,000 m²	41,000 m²	33,000 m²	-8,000 m²	2,047 m²
Gerringong	7,000 m²	9,000 m²	7,000 m²	-2,000 m²	112,028 m²
Helensburgh	7,000 m²	9,000 m²	7,000 m²	-2,000 m²	57,834 m²
Kemblawarra	57,000 m²	76,000 m²	58,000 m²	-18,000 m²	48,642 m²
Kiama	16,000 m²	22,000 m²	17,000 m²	-5,000 m²	231,552 m²
Nowra	53,000 m²	72,000 m²	57,000 m²	-15,000 m²	644,094 m²
Oaks Flat	6,000 m²	8,000 m²	6,000 m²	-2,000 m²	46,339 m²
Shellharbour City Centre	60,000 m²	81,000 m²	100,000 m²	19,000 m²	328,802 m²
Shellharbour Village	5,000 m²	6,000 m²	5,000 m²	-1,000 m²	47,866 m²
South Nowra	20,000 m²	27,000 m²	20,000 m²	-7,000 m²	113,412 m²
Thirroul	10,000 m²	14,000 m²	11,000 m²	-3,000 m²	55,173 m²
Ulladulla	36,000 m²	48,000 m²	38,000 m²	-10,000 m²	297,067 m²
Unanderra	15,000 m²	20,000 m²	16,000 m²	-4,000 m²	85,090 m²
Warilla Grove	23,000 m²	32,000 m²	25,000 m²	-7,000 m²	84,106 m²
Warrawong	51,000 m²	69,000 m²	56,000 m²	-13,000 m²	427,185 m²
Wollongong	73,000 m²	98,000 m²	95,000 m²	-3,000 m²	516,048 m²
Woonona	17,000 m²	23,000 m²	18,000 m²	-5,000 m²	88,823 m²
Total	609,000 m²	820,000 m²	722,000 m²	-114,000 m²	**3,863,044** m²

*Albion Park Rail (including its strips) and Central Business Park at Oak Flats have been added
Source: Cordell Connect, 2013; Shellharbour City Council, 2006; Shellharbour City Council, 2008; Shellharbour City Council, 2011; and Australand, 2013; and SGS Economics and Planning calculations

Source: SGS Economics and Planning, 2014

It is possible that the current retail system is in balance. This means future population growth in the catchment will drive demand for additional floorspace (all other things being equal). In lieu of an updated retail study, a high-level estimation of potential retail demand has been completed.

A retail catchment for Wollongong was estimated. For this catchment, the population forecast was extracted and use to estimate future demand based on current per capita provision of retail floorspace. Within the catchment, there is forecast to be an additional 6,000 residents. There is currently provision of three sqm of retail floorspace per person within this retail catchment. Based on this, there is potentially demand for an additional 18,000 sqm of retail floorspace over the next 20 years.

Therefore, there is forecast to be demand for an additional 3,000 to 18,000 sqm of retail floorspace within the study area over the next 20 years.

Retail forecasts are best produced through modelling that considers population and per capita expenditure change in the context of the local retail system. A retail study would consider demand by type of retail floorspace and identify whether current provision is suitable given the existing and future demand profile. It is recommended that an updated retail study be undertaken to provide a more accurate estimation of retail demand and better inform recommendations of potential growth in floorspace.

4.4 Key findings and implications

Across the study area, there is projected to be demand for:

- An additional 120,000 sqm of commercial floorspace
- An additional 195,000 sqm of residential floorspace
- An additional 3,000 – 18,000 sqm of retail floorspace.

Table 9 below displays the forecast growth in demand in comparison to the two feasible capacity scenarios above, with a forecast gap in provision displayed for each scenario.

TABLE 9: FORECAST FLOORSPACE SUPPLY/DEMAND RELATIONSHIP (2036)

Land Use	Projected Demand	Change under Maximum Capital Yield Scenario	Gap *(Oversupply / Undersupply)*	Change Under Maximum Commercial Yield Scenario	Gap *(Oversupply / Undersupply)*
Residential	195,000 m²	265,000 m²	70,000 m²	213,000 m²	18,000 m²
Commercial	120,000 m²	- 45,000 m²	- 165,000 m²	34,000 m²	- 86,000 m²
Retail (high)	18,000 m²	83,000 m²	65,000 m²	83,000 m²	65,000 m²
Retail (low)	3,000 m²	83,000 m²	80,000 m²	83,000 m²	80,000 m²

Source: SGS Economics and Planning, 2018

Demand for commercial floorspace significantly exceeds feasible capacity (under the current market conditions). It is anticipated that feasible capacity will be equal to demand within the medium-term. Under the maximum commercial scenario, there is estimated to be a shortfall of 86,000 sqm of commercial floorspace by 2036. Under the maximum capital yield scenario, identified as the most likely outcome given its increased profitability, there is projected to be an undersupply of 165,000 sqm.

Both of these scenarios will likely result in increased commercial rents within the study area, and potentially displacement of jobs growth to other areas (e.g. Innovation Campus). This requires actions to improve feasibility in order for these base growth projections to be achieved.

Conversely, the feasible capacity for residential development is significantly higher than projected demand (under current market conditions). The profitability of residential development under current market conditions means that this is a likely outcome. This could potentially result in the 'crowding-out' of commercial uses, highlighting the potential need for a commercial core zone where residential development is restricted.

Identified retail demand is relatively low. There is potential for an oversupply of inadequate retail floorspace with the provision of ground-floor retail across the B3/B4 zones under the current active frontage policy. A retail study is required to more accurately estimate demand and supply across the local retail system.

5. DEVELOPMENT FEASIBILITY

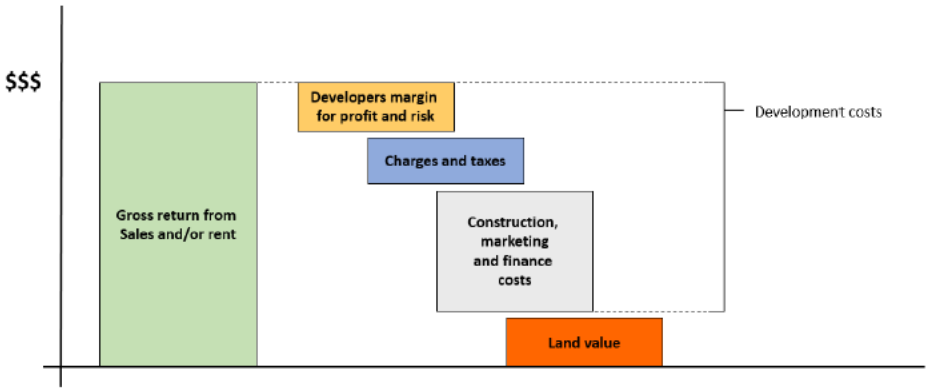
This section considers the feasibility of commercial and residential development in the study area under current market conditions.

5.1 Method

Development feasibility is typically assessed by comparing the residual land value (RLV) to the existing or next highest value for a site. The RLV can be thought of the maximum amount a rational developer would pay for a development site. RLV is estimated by deducting all development costs, including profit and risk, from anticipated revenues. The amount leftover from the equation – the residual – is capitalised into the value of the land. This is shown conceptually in Figure 1.

A hypothetical development is deemed feasible if the RLV is sufficient to entice the current landowner to sell their site for redevelopment. What is deemed 'sufficient' will vary from site to site and from land owner to land owner. The price that is acceptable is a function of the existing use value, market conditions and land seller motivation.

FIGURE 23: RESIDUAL LAND VALUE APPROACH TO VALUING LAND



Source: SGS Economics and Planning, 2018

A number of inputs are 'fed' into the feasibility testing process in order to 'model' the financial cash flows which underpin development's costs and revenues. The inputs and assumptions apply to each development. These assumptions have been included on page 56 in Appendix A: Capacity and feasibility technical method (Table 19 and Table 20). The same assumptions for costs and revenues have been utilised across both the feasible capacity analysis in Section 3.2 above and the site specific development feasibility analysis in this section, however the built form options on each site differ between the two analyses.

It should be noted that the assessment of development feasibility is based on current market conditions, and does not account for changes in the market in the future.

5.2 Site specific feasibility testing

Five sites were selected for detailed examination including built form and feasibility testing. These sites are described in Figure 24.

FIGURE 24: SITE LOCATIONS AND CHARACTERISTICS

	Site details			Council controls		Characteristics							Recommendations	
	Size (m²)	Frontage (m)	Current land use	Zoning	Height (m)	Ownership **	Heritage	Flood prone	Fronts open space	Laneway	Infill	DA activity **	Jan Gehl Precinct	Type ***
❶	3,828	40	Local retail centre and motel	B3 Comm Core	120	Private (strata)	✗	✗	✗	✗	✗	✗	Rail Arrival	Catalyst to rail entry
❷	12,482	188	Retail & commercial	B3 Comm Core	48, 60, 120	Private	✓	✗	✗	✗	✗	✓	Western Crown	Catalyst
❸	3,504	51	Vacant building	B3 Comm Core	16	Private	✓	✗	✓	✓	✗	✓	Crown S: Mall & McCabe Park	Catalyst
❹	2,022	36	Motel and retail	B3 Comm Core	32	Private	✓	✗	✗	✓	✓	✗	Lower Crown St	Typical
❺	2,029	20	Takeaway food premises	B4 Mixed Use	24	Private	✗	✗	✗	✗	✗	✗	Foreshore	Typical/ catalyst

Source: Architectus, 2018

The built form outcomes tested were developed to be compliant with the planning controls, aiming to achieve as close to the permissible heights and FSRs as possible.

Results of the feasibility testing is displayed in Table 10. The built form tested on each site is summarised along with the modelled RLV.

The feasibility ratio contained within the table (second row from the bottom) is utilised to determine whether a project is feasible, being the modelled RLV divided by the estimated acquisition cost of the land. A ratio of 1 or above indicates that the project is feasible, while a ratio below 1 indicates that the project is not feasible.

TABLE 10: SITE SPECIFIC FEASIBILITY TESTS AND RESULTS

Site No.	Site 1	Site 2	Site 3	Site 4	Site 5
Number of storeys	21	26	11	9	10
Office (GFA; sqm)	4,775	24,069	3,240	1,930	-
Retail (GFA; sqm)	4,775	10,450	3,240	1,930	200
Total Dwellings	251	476	142	82	36
1BR Dwellings	68	129	38	22	10
2BR Dwellings	145	276	82	48	21
3BR Dwellings	38	71	21	12	5
Parking Spaces	427	1,027	258	151	44
RLV	$2,922,000	-$29,327,000	$1,442,000	-$1,152,000	$2,265,000
Feasibility Ratio	0.10	-0.38	0.03	-0.19	1.26
Feasible?	No	No	No	No	Yes

Source: SGS Economics and Planning, 2018

The development outcomes tested across sites 1 to 4 are not feasible, however the outcome tested on site 5 is feasible. Sites 2 and 4 both produce a negative RLV, indicating that the development would be making a loss without the direct costs associated with the purchase of land being considered. Sites 1 and 3 produce a positive RLV but are not feasible, which indicates that while the development would return a profit, this amount would not be enough to cover the estimated acquisition costs of the land.

In order for the options tested above to become feasible, shifts within market conditions are required (for example an increase in market rents or sales values). Should such circumstances arise, the costs of land acquisition may present a barrier to the development of these sites, given that the estimated costs are particularly high for sites within the study area, particularly those which host well tenanted buildings.

There is also potential that highly permissive planning controls are artificially inflating the sales price of various items of land, via the perception that yields would be able to be realised (despite development to the full level of the controls being unfeasible on the vast majority of sites). This highlights the potential need for a commercial core to prevent speculation.

5.3 Commercial built form options

Significant demand in commercial floorspace is projected for study area. However, the commercial development options tested above are considered to be unfeasible under the current market conditions.

Architectus has prepared a number of alternative built form options that more closely reflect the vision for the study area. The feasibility of these options has been tested to understand the potential levers or actions that could be introduced to promote a built form that is aligned with the vision.

Three commercial built forms have been tested, having been developed as hypothetical scenarios without reference to the current planning controls:

- Option 1: 6,885 sqm GFA (six storeys with 850 sqm floorplate)
- Option 2: 8,339 sqm GFA (six storeys with 1,085 sqm floorplate)
- Option 3: 5,292 sqm GFA (eight storeys – six storey street wall and two storey setback - with 1,011 sqm and 906 sqm floorplates).

The development outcomes and feasibility results are detailed in Table 11. All three commercial development options are not feasible under the current market conditions. This is expected as there is no residential development incorporated within these options to subsidise the commercial floorspace.

TABLE 11: COMMERCIAL BUILT FORM FEASIBILITY TESTS AND RESULTS

Built form option:	Option 1	Option 2	Option 3
Number of storeys	6	8	6
Office (GFA; sqm)	6,885	8,339	5,292
Retail (GFA; sqm)	-	-	-
Total Dwellings	-	-	-
Parking Spaces	115	139	88
RLV	-$7,121,000	-$8,557,000	-$5,593,000
Feasibility Ratio	-0.58	-0.65	-0.46
Feasible?	No	No	No

Source: SGS Economics and Planning, 2018

5.4 Sensitivity testing

A number of sensitivity tests have been conducted to test feasible outcomes by altering development parameters. Sensitivity tests assist in identifying potential threshold sales prices or yields for feasible development and provide an indication of the market conditions required for development feasibility. It also helps to identify any Council actions that could be introduced to simulate development feasibility.

The following inputs into the feasibility model can be altered:

- Development parameters (i.e. the amount of floorspace and land uses)
- Parking requirements and costs
- Land acquisition costs
- Construction contingency
- Professional fees
- Development contributions
- DA fees
- Finance costs
- Developer profit
- Sales revenue/rents
- Sales commission, marketing and legal fees

However, it is important that adequate justification or evidence is provided for altering these inputs. Nine sensitivity tests have been conducted for each of the new commercial built form options (refer to Table 12). The tests were identified based on what can be influenced or altered by Council and justification has been provided. It is recognised that Council does not require parking to be underground but under the Development Control Plan encourages it to be provided underground where feasible.

Changes in land value were not tested. Changes in land cost do not change the RLV of a project. However, they can change the feasibility ratio if the project has a positive RLV. Since none of the projects have a positive RLV, this was not included as a specific sensitivity test. In addition, if a development had a positive RLV, this would represent the value of the land.

These sensitivity tests do not take account of any reduction in the market value of a property due to a reduced provision of on-site parking. Such a reduction could decrease the value of a property, and the quantification of these impacts would require further study before they can be included. The tests are also limited in that they do not consider design implications or costs, e.g. including parking within the podium levels of a building.

TABLE 12: SENSITIVITY TEST DESCRIPTIONS

	Test	Description	Justification
1	Development contributions	▪ A reduction in the Section 7.12 (formerly 94A) development contributions levy to 1%, down from the current 2%.	▪ Council sets development contribution rates
2	Developer profit	▪ A reduction in the developer's profit margin to 15% (down from 20%) to simulate lower risk associated with a project (through support from council through the DA process).	▪ Council can influence and alter the DA process which could impact risk
3	Car parking	▪ 50% reduction in parking on-site, with a contribution of $25,000 made per space (for provision of public parking off-site).	▪ Council can alter parking requirements for development and contributions
4	Car parking	▪ 50% reduction in parking on-site, with no contribution made.	▪ Council can alter parking requirements for development
5	Car parking	▪ Parking provided at the cost of multi-storey car park (as a proximate measure for parking within the podium of a development).	▪ Council can alter parking requirements for development
6	Car parking	▪ 50% reduction in parking on-site, with a contribution of $25,000 made per space (for provision of public parking off-site). ▪ Parking provided at the cost of multi-storey car park (as a proximate measure for parking within the podium of a development).	▪ Council can alter parking requirements for development and contributions
7	Car parking	▪ 50% reduction in parking on-site, with no contribution made. ▪ Parking provided at the cost of multi-storey car park (as a proximate measure for parking within the podium of a development).	▪ Council can alter parking requirements for development
8	Car parking and reduction in profit	▪ 50% reduction in parking on-site, with no contribution made. ▪ Parking provided at the cost of multi-storey car park (as a proximate measure for parking within the podium of a development). ▪ A reduction in the developer's profit margin to 15% (down from 20%) to simulate lower risk associated with a project (through support from council through the DA process).	▪ Council can alter parking requirements for development ▪ Council can influence and alter the DA process which could impact risk
9	Construction costs	▪ Required reduction in base construction costs to achieve feasibility.	▪ This is out of the control of Council. This was tested to understand the extent to which construction costs are impacting feasibility

Source: SGS Economics and Planning, 2018

The results of the sensitivity testing across the three commercial options is detailed in Table 13. The results include the feasibility ratio, the RLV and the proportional increase in net rents that would be required to achieve a feasible development (for sensitivity test 9 the required decrease in base construction costs is displayed).

TABLE 13: COMMERCIAL BUILT FORM OPTIONS SENSITIVITY TESTS AND RESULTS

Test	Option 1			Option 2			Option 3		
	Feasibility Ratio	RLV ($'000s)	Req'd. value ↑	Feasibility Ratio	RLV ($'000s)	Req'd. value ↑	Feasibility Ratio	RLV ($'000s)	Req'd. value ↑
Base	-0.58	-$7,121	75%	-0.65	-$8,557	69%	-0.46	-$5,593	90%
1	-0.56	-$6,797	73%	-0.62	-$8,165	68%	-0.44	-$5,343	88%
2	-0.49	-$5,991	67%	-0.55	-$7,189	62%	-0.39	-$4,725	81%
3	-0.29	-$3,513	61%	-0.32	-$4,187	56^	-0.23	-$2,820	76%
4	-0.20	-$2,385	56%	-0.21	-$2,821	51%	-0.16	-$1,953	71%
5	-0.17	-$2,117	55%	-0.19	-$2,495	50%	-0.14	-$1,747	70%
6	-0.08	-$1,011	51%	-0.09	-$1,156	46%	-0.07	-$897	66%
7	0.01	$117	47%	0.02	$210	41%	0.00	-$30	61%
8	0.10	$1,246	41%	0.12	$1,578	35%	0.07	$838	55%
Test	Feasibility Ratio	RLV ($'000s)	Req'd cost decr.	Feasibility Ratio	RLV ($'000s)	Req'd cost decr.	Feasibility Ratio	RLV ($'000s)	Req'd cost decr.
9	1.00	$12,240	58%	1.00	$13,214	54%	1.00	$12,220	70%

Source: SGS Economics and Planning, 2018

A reduction in the development contributions levy does not exert a significant impact on development feasibility, given that it comprises a relatively small portion of development costs.

Reducing the profit margin for developers only has a moderate impact on development feasibility. This would represent a reduction in risk for the developer and would need to be facilitated by changes to the DA process to reduce the risk. The extent to which changes to the DA process are likely to reduce risk should be tested with developers.

Of the sensitivity tests conducted, changes to parking provision had the most significant impact development feasibility. Reductions in the total amount provided substantial improvements, whether a contribution was levied to provide public parking or not.

None of the levers tested result in a feasible outcome in isolation of each other. These results demonstrate that the development of any substantial commercial floorspace will likely require a combination of various actions by Council to increase development feasibility in conjunction with realisable commercial rents increasing over time. This will be further discussed in Section 6 of this report.

5.5 Key findings and implications

The site specific feasibility testing has echoed the results of the precinct scale feasibility assessment. Development which contains a low amount of (or no) commercial floorspace are feasible.

The delivery of commercial floorspace requires significant cross-subsidisation with residential development, and the amount of commercial floorspace which can be feasibly delivered on sites under current conditions is likely to be small.

The increased construction costs associated with taller buildings significantly decreases the feasibility of all types of development. The higher returns realisable on residential floorspace allow for a greater tolerance to these cost increases, however over twenty storeys this dramatically impacts on the ability to generate a profit. As noted within the capacity assessment, planning capacity is not a barrier to development.

Estimated current land acquisition costs present a significant constraint on a range of sites and can be prohibitive for redevelopment, particularly in high value areas of the study area, and/or where the current use of land is valuable. However, commercial development without residential is considered to be unfeasible even before land acquisition costs are taken into consideration.

Council's influence extends to planning controls, car parking requirements, development contributions and the planning process, as well as providing certainty for the market through clear policy and planning controls. Of these only a small number can be tested quantitatively.

The high construction costs associated with basement carparking inhibits the feasibility of development across all sites. While adjustments to the provision of parking within a development can exert a significant impact on its feasibility, any actions would require careful consideration of broader implications for transport, built form and property values.

Reducing the allowance for developers' profit and risk has a moderate impact on development feasibility. This would need to be facilitated by changes to the DA process to reduce the risk. The extent to which changes to the DA process are likely to reduce risk should be tested with developers.

A reduction in the development contributions levy provides a marginal increase to development feasibility. However, such a reduction would reduce the revenues available to Council.

None of the potential levers tested result in a feasible outcome in isolation of each other. The development of any substantial commercial floorspace in the study area will likely require a combination of various actions by Council to increase development feasibility in conjunction with realisable commercial rents increasing over time, which is likely if the supply-side tightens and the City Centre maintains a strong competitive position relative to other competing locations.

6. RECOMMENDATIONS

This section of the report discusses the potential actions available to Council to address barriers to the development of commercial feasibility and provides recommendations for Council to implement.

6.1 Introduction

Wollongong City Centre is the civic and economic heart of the Illawarra region. Wollongong City Centre specialises in population serving industries such as accommodation and food services, in health and education and in professional services. Proximity to Sydney provides opportunities for residents and potential connections for local businesses. However, there is significant job leakage with residents commuting to Sydney for work. Without a strong commercial market, this is expected to continue.

The feasibility of commercial development is a significant barrier for Wollongong City Centre to realise its full economic potential as the regional city for the Illawarra Region. There are a number of potential actions that could be introduced to address this issue. The objective of implementing any actions is to:

- promote commercial development in the City Centre in line with the vision
- support economic potential of the City Centre
- address feasibility issues.

Feasibility can be improved through either improving (or increasing) the market for commercial development or reducing the cost of development. The potential actions available to Council are focused on improving commercial feasibility as this is considered to be the main barrier.

The discussion below has been informed by the analysis undertaken throughout this study and stakeholder workshops with Council officers. The impact of these actions has been quantified, where possible, through testing against the feasibility results for the three commercial built form options tested in Section 5.3 of this report.

6.2 Actions to improve the market position of the Wollongong City Centre

Across all sensitivity tests detailed in Section 5.3, an increase in the market value of commercial development is required to increase feasibility of commercial development (with no change other costs). The increases required range from 35 per cent to 90 per cent increase depending on the level of change in development costs. Across all sensitivity tests, an increase in rental/ sales values is required highlighting the importance of the actions discussed below to support this.

Develop a clear economic vision for Wollongong City Centre, building on the strengths of the region and its proximity to other economic anchors.

The vision for Wollongong City Centre under *A City for People* is for a compact city, which is connected and efficient. There is envisaged to be a seamless transition from the core of the city to the foreshore. A range of uses are expected to be accommodated in the City Centre to deliver vibrant streets during the day and at night, and to provide opportunities to live, work, learn and play. The City Centre will be accessible and pedestrian friendly.

The vision has a focus on urban design and liveability. This should be complemented by a clear economic vision which identifies the role of the Wollongong City Centre in the context of the other economic anchors and identifies key industries that Council wants to attract.

The current EDS provides a broad economic vision for the LGA and the City Centre. Building on this, the market position of the CBD and targets for industry attraction should be detailed further as part of further work on Wollongong's Economic Development Strategy. This strategy be supported by a strong evidence base which includes assessment of local value chains, gaps and opportunities for the City Centre given the dynamics of the local and regional economies, and a sound understanding of issues faced by current and prospective City Centres tenants and developers.

The Economic Development Strategy will underpin a strong 'economic vision' for the City Centre. This will provide a clear signal to the market of Council's intentions and give confidence to potential investors who value clear and consistent policy. It will also elevate the economic importance of the Wollongong City Centre. This vision should be translated into an action plan.

Recommendation 1:
Develop an economic vision for the Wollongong City Centre through the economic development strategy update.

It is important that the vision is realistic and capable of delivery.

A pathway should be established which identifies what needs to be achieved in the short to medium term in order to achieve the long term vision. This may include short to medium term goals or targets and may involve the staging of development.

The vision must be somewhat flexible as the economy evolves. For example, the industries of growth may change and there may be new industries which could be accommodated within the precinct which may not be reflected in the original vision

Improve connections between University of Wollongong and Innovation Campus, Wollongong Hospital and health precinct and local residential centres.

Improving physical connections is an overarching theme across a number of the key success factors for regional centres. Improving connections will influence the attractiveness of key employment locations for businesses and local workers, and support supply chain links.

The Urban Design Framework contains a recommendation 'Get the city streets right', which is focused on improving connections from rail to city core to coast prioritising pedestrians and active transport with a high quality public domain.

Improving connections between the economic anchors, being Wollongong City Centre, University of Wollongong and the Innovation Campus and Wollongong Hospital and health precinct will build a network of employment centres. This will also improve business to business connections (supply chain links). Improving connections between the City Centre and residential centres will be important in ensuring that the City Centre is an attractive location for workers but also to promote 24/7 activation.

It is important to recognise that Council's ability to influence any significant investment in rail infrastructure is limited to advocating on behalf of its residents. Council has a much greater influence over bus and bicycle infrastructure. There has already been significant investment in improving bus and bicycle connectivity between the Wollongong Innovation Campus and the City Centre.

Council and University of Wollongong are responsible for funding the Wollongong Shuttle (free bus). Opportunities to expand the route into South Wollongong are being investigated including the potential for an additional route. Council has advised that a new route should incorporate three sites proposed for park and ride development adjacent to the City Centre.

In terms of bicycle access, there is good connectivity via shared paths across Wollongong, however these do not link through the City Centre. The bicycle lane program is now focused on connecting these areas using separated cycleways. It is understood that Council are lobbying state government for funding at this time.

Recommendation 2:
Continue to implement the bike lane program and investigate opportunities to expand the Wollongong Shuttle network.

Invest in public domain and local infrastructure to improve amenity.

Investment in public domain and local infrastructure will improve amenity and attract residents, workers and visitors. It also provides a signal to the market and could increase sales prices/rents. A substantial increase in the market value of development is required and it is considered to be achievable in the long term with investment from Council.

Council has undertaken significant investment in public domain and local infrastructure over the last five years including streetscape improvements and upgrades to Crown Street Mall. Other recent projects include:

- Additional wayfinding improvements and public art
- Wollongong Harbour draft master plan
- WIN Stadium and Entertainment Centre master plan
- Urban Greening Strategy.

It is important to maintain ongoing investment to promote future investment in the City Centre. Areas which have been identified through consultation with Council officers to be lacking investment include MacCabe Park, access to Wollongong railway station and the foreshore along City Beach. Access to Wollongong railway station is particularly important for improving the attractiveness of Wollongong City Centre for commercial tenants. Wollongong railway station is owned and run by NSW Government and Council will need to advocate for improvements.

The Urban Design Framework should form the basis for future investment in public domain. The Urban Design Framework contains recommendations to 'Get the city streets right' and 'Balance growth with green in the city'. These include protecting solar access and vies to and from key streets and public spaces and prioritising key public domain projects and new open space.

Recommendation 3:
Continue to implement existing public domain investment projects which increase the amenity of Wollongong City Centre.

Recommendation 4:
Advocate for improvements to Wollongong railway station to improve physical connectivity between the railway station and commercial core.

A greater understanding of what is most highly valued by existing industry and industry targets in terms of public domain improvements should be identified through the economic development strategy update. Ideally this would put a dollar value on various classes of public domain improvements. Improvements which are considered to have the greatest value to prospective industry targets should then be prioritised.

Recommendation 5:
Undertake an assessment of the value that existing industry and industry targets place on public domain improvements and use these to prioritise investment.

To increase funding for public domain improvements, Council could consider alternative development contribution mechanisms. This includes reverting to Section 7.11 contribution rates as this would likely generate greater income per development. However, this will require a clear nexus between the new development and the infrastructure that it will fund.

Voluntary Planning Agreements (VPAs) are an alternative funding mechanism. Council officers have noted that there appears to be a lack of interest from developers to enter into VPAs. This was identified as probably occurring as a result from:

- A lack of clarity within the VPA process, in regard to questions around what the money will fund, precise amount required to pay, or how long it will take to deliver the services paid for; and
- Circumstances wherein the 'offer' under a VPA simply does not stack up, wherein additional capital costs of works-in-kind exceed the savings in development contributions, or where the additional monetary contributions do exceed the value of reduced capital costs.

A priority is ensuring that there is adequate funding available for investment in public domain and infrastructure to improve the amenity of the study area.

Recommendation 6:
Investigate alternative development contribution rates or mechanisms to fund future public domain investment in the Wollongong City Centre.

Introduce alternative planning controls to promote development activity.

Planning controls, including land use zoning, density and height controls, provide a clear indication to landowners on the use of their land. Planning controls influence land prices. A landowner will pay a base price for land which they calculate by taking account of all construction costs, development costs and risk. This will be based on what use and density is permissible.

This section considers the potential impact of altering the land use zoning and density and height controls on development feasibility.

Permissibility of residential development in commercial zones

Shop-top housing was introduced into the B3 Commercial core zone in the Wollongong City Centre to increase the vitality and safety of the city centre. However, allowing residential development in Wollongong City Centre has potentially driven up land values through speculation and in the process this has reduced the feasibility of commercial development.

The competition between residential and commercial land uses is a recurrent theme across a number of centres in the Sydney GMR including North Sydney, Parramatta, Gosford, Newcastle and Penrith. Planning to promote commercial development is a long term task. Where there is intense short term pressure for residential development and this is allowed in commercial areas, it has tended to 'squeeze' out commercial potential. In centres with scarce opportunities for commercial development, allowing a simple market contest between residential and office will result in residential 'winning', which may undermine long term employment potential and economic competitiveness.

Previous work undertaken by SGS[10] for major employment centres such as Chatswood and North Sydney has identified that the introduction of residential or mixed use development in the commercial core has compromised the commercial character of the centre. Chatswood CBD is now seen as more of a retail centre that than a commercial centre. The commercial prospects are limited due to the impact of substantial residential development on the amenity and outlook and therefore commercial address of Chatswood. North Sydney is facing similar challenges with residential development encroaching on commercial uses. These centres now suffer from a lack of capacity to accommodate commercial investment. The planning response in Chatswood has been to hold the line and protect the commercial core from further residential encroachment.

Taking a structural and long term view, it is too important to allow short-term imperatives driven by market cycles to undermine the economic potential of Wollongong City Centre.

The challenges of ensuring that sites in Wollongong City Centre provide for longer term employment outcomes, and a critical mass for commercial or office employment activity, while allowing for market responsive outcomes remain. Configuring planning controls and implementing a long term economic development strategy are key to managing this issue.

The historical approach has been to establish commercial only (or non-residential employment) zones to ensure an employment outcome, which may lead to the underutilisation of land in the short term, but ultimately focuses sustainable economic development.

Workshop discussions with Council officers highlighted that prospective commercial tenants prefer a commercial only zone as it indicates a much clearer commercial address and brand for their business. This reiterates the findings from similar studies of Chatswood and North Sydney. In addition, commercial only developments avoid the complexity associated with residential strata. However, this approach should be tested with the market.

Two approaches to reducing the amount of residential development within the commercial core are:

- **Exclude residential development within a portion of the B3 Commercial Core zone.** Given the long term aspirations which Council has for the Wollongong City Centre, it will be important not to lose this land to residential development. There is also likely to be sufficient capacity for residential development across the rest of Wollongong, and more broadly Wollongong LGA. This would provide a clear commercial address which will increase the market for commercial development. It will also likely place downward pressure on land values which will increase the feasibility of development.

- **Restrict residential development within a portion of the B3 Commercial Core Zone** with a requirement that a threshold amount of non-residential floorspace be achieved before residential development can be included in the development proposition. For example this could involve a requirement that a minimum of 10,000 square metres of commercial floorspace to be provided before residential development can be included. This would also require a maximum control on residential floorspace, for example 10-20 per cent.

There is potential for a third approach which allows for a transition to commercial only over the long term. A transition area would allow for temporary uses to be accommodated in the short to medium term (an example being student housing), on the condition that these sites eventually become commercial only sites in the long term in response to the ongoing evolution of the commercial market. This approach would potentially allow for flexibility in responding to an aspirational growth strategy in the long term.

There are a number of clear arguments for excluding residential development within the commercial core which are outlined in Table 14. This action is considered to be politically

[10] Willoughby Economic Development Strategy (2016), North Sydney Economic Development Strategy (2016)

sensitive and it is important that the risks are well understood and tested before being implemented.

TABLE 14: ARGUMENTS FOR AND AGAINST EXCLUDING RESIDENTIAL IN COMMERCIAL CORE

For	Against
▪ The identification of a commercial core reflects the role of the Wollongong City Centre and provides a clear signal to the market. ▪ Provides a clear commercial address which will increase market for commercial development ▪ Provide policy consistency ▪ Provides certainty to developers around controls ▪ Puts downward pressure on land values which may increase feasibility of development ▪ Ensures there is adequate land to accommodate growth in employment in the long term and provide for changes in the market	▪ Political sensitivities around 'downzoning' land ▪ Sites identified as commercial only may sit vacant with limited development in the short to medium term.

Source: SGS Economics and Planning, 2018

Recommendation 7:
Introduce a commercial core where residential development is prohibited.

The condensed commercial core should be located:

- in proximity to Wollongong railway station to ensure accessibility to public transport
- in proximity to Crown Street Mall to ensure accessibility to retail, hospitality and other services for workers
- proximity to public open space e.g. MacCabe Park and/or waterfront.

The commercial core will need to be sufficient to accommodate up to 120,000 sqm of floorspace but allow sufficient flexibility depending on the market.

Sites which have been recently developed for residential purposes should be excluded as these sites are unlikely to be redeveloped.

The Urban Design Framework contains a recommendation 'Preserve employment land with a commercial only core', which protects a corridor along Burelli Street for commercial only development. This is consistent with the above recommendation.

Density and height controls

Heights have been found to be excessive in certain locations within the study, being disconnected from what is either practical/feasible to build or that which is in line with the vision for the city centre. This is likely increasing land values through property speculation.

Increasing height/FSR is likely to only have an impact on residential feasibility. It is important to consider the vision and the desired built form outcomes for the City Centre.

Council should consider adopting density and height controls which reflect the vision and built form objectives of the Wollongong City Centre.

6.3 Actions to reduce the cost of development

Explore alternative car parking arrangements to reduce the cost of construction.

Car parking adds significant costs to construction. As outlined in Section 5.3 of this report, reducing the requirements for car parking can significantly improve feasibility. A 50 per cent reduction in parking rates will increase development feasibility. Through consultation with

Council officers, parking requirements were noted as being broadly in line with other metropolitan and peri-urban centres.

Providing above ground podium parking similarly improves development feasibility. It was noted through consultation with Council officers that parking is often provided above ground, within the podium of a development, rather than in underground basement levels.

However, reducing parking alone does not result in a site becoming feasible and it is important to consider the impact that reducing car parking would have on the market value of development. While theoretical feasibility has been tested, the market appetite for reducing car parking provision has not.

Recommendation 8:
Market test a reduced on-site car parking rate with developers and prospective commercial tenants to understand market for this and potential impact on rents.

There may be opportunities for car parking to be provided off-site. Council has advised that five sites have been identified around the City Centre for the future provision of multi-storey car parks, which are to be largely funded through developer contributions made in-lieu of parking provision. However, this contribution has rarely been taken up by developers. This may be resultant from the cost of contributions being comparable to the cost of constructing the parking spaces on-site, in conjunction with the reduction in value that would result from providing a product without parking. The feasibility of Council delivering off-site parking at targeted sites should be further investigated including the contribution rate. This should be supported by market testing through the economic development strategy update.

Another consideration is traffic impacts. Consultation with Council officers revealed that several sites within the Wollongong City Centre are significantly constrained by level of existing traffic. It was suggested that a reduction in parking provision on these sites could potentially provide benefits to both traffic flows and development feasibility under the right circumstances.

Recommendation 9:
Test feasibility of developing multi-storey car park against the contribution rate for offsite provision of parking for development.

Alternative development contribution rates to reduce costs of construction.

Reducing development contributions has very little impact on feasibility. This revenue for Council can be used for important public works which would likely increase the realisable development values.

The current two per cent development contribution levy imposed for B3 Zones in the Wollongong City Centre was introduced as part of the Civic Improvement Strategy for the City Centre. The time period for the higher levy has now passed. It is possible that the levy may be reduced back down to the standard one per cent in order to incentivise development.

However, it is important to consider that development contributions have not been identified as a barrier to development through this study and reducing the contribution will have a marginal improvement on development feasibility. In addition, any reduction in the levy will reduce the amount of funds available for Council to invest in public domain to improve the market for commercial development.

De-risk development for landowners through providing greater certainty around the development process

Investing in a site which may be marginally feasible is a significant risk for landowners. If there is a lack of certainty regarding the outcome of a development, this may deter a landowner from undertaking development, particularly commercial floorspace which is considered to be largely unfeasible.

Council officers noted that negative impacts on the development process often occur through a lack of engagement by proponents with council expectations, particularly at early stages of development. This often results in delays during the assessment process, particularly relating to the design of the development.

Council consultation with developers/investors has identified that developers consider that Council could improve the development process through:

- Establishing a major projects team
- Providing greater recognition for and understanding of site specific issues (e.g. site by site variance in bedrock/geotechnical issues).
- Providing more clarity within their controls
- Improving the speed of decisions.

While the length of assessment was identified as a concern for developers (given the holding and finance costs associated with such a period), it was noted that a certain amount of time is required to fully undertake the assessment process. Concerns with Council taking too long to assess applications was also complicated by the fact that a range of developments within the City Centre require referral to a range of assessment panels.

As detailed in Section 5.3, reducing the profit margin for developers has a moderate impact on development feasibility. This would represent a reduction in risk for the developer and would need to be facilitated by changes to the DA process to reduce the risk. The effectiveness of this is unknown and there is a need for better engagement with developers to understand the financial implications of these delays.

Clearer planning controls may also assist in providing greater certainty to developers and reducing risks. The Urban Design Framework contains recommendations 'Promote diversity in the city' and 'Grow a legible skyline' which aim to provide greater clarity regarding planning controls.

Recommendation 10:
Reduce risk for developers and increase certainty for development by providing clearer guidance to commercial landowners and developers across key sites within the commercial core of the City Centre. This includes a consistent process, speed of response and clearer planning controls.

6.4 Other actions

Undertake a retail centres study

As identified above, the Wollongong Retail Centres Study, prepared for council in 2004 is now outdated (refer to Section 4.3). Retail forecasts are best produced through modelling that considers population and per capita expenditure change in the context of the local retail system. A retail study would consider demand by type of retail floorspace and identify whether current provision is suitable given the existing and future demand profile. It is recommended that an updated retail study be undertaken to provide a more accurate estimation of retail demand and better inform recommendations of potential growth in floorspace. This work could form part of an LGA-wide employment lands study.

This retail study should be undertaken prior to introducing alternative controls relating to retail floorspace within the City Centre.

Recommendation 11:
Undertake an updated LGA-wide retail centres study to provide a more accurate estimation of retail demand and better inform recommendations of potential growth in retail floorspace.

6.5 Recommendations

This study has identified 11 recommendations for Council to implement to increase the feasibility of commercial development in Wollongong City Centre.

1. Develop an economic vision for the Wollongong City Centre through the economic development strategy update.
2. Continue to implement the bike lane program and investigate opportunities to expand the Wollongong Shuttle network.
3. Continue to implement existing public domain investment projects which increase the amenity of the Wollongong City Centre.
4. Advocate for improvements to Wollongong railway station to improve physical connectivity between the railway station and commercial core.
5. Undertake an assessment of the value that existing industry and industry targets place on public domain improvements and use these to prioritise investment.
6. Investigate alternative development contribution rates or mechanisms to fund future public domain investment in the Wollongong City Centre.
7. Introduce a commercial core where residential development is prohibited in close proximity to Wollongong railway station, Crown Street Mall and public open space.
8. Market test a reduced on-site car parking rate with developers and prospective commercial tenants to understand market for this and potential impact on rents.
9. Test feasibility of developing multi-storey car park against the contribution rate for offsite provision of parking for development.
10. Reduce risk for developers and increase certainty for development by providing clearer guidance to commercial landowners and developers across key sites within the commercial core of the City Centre. This includes a consistent process, speed of response and clearer planning controls.
11. Undertake an updated LGA-wide retail centres study to provide a more accurate estimation of retail demand and better inform recommendations of potential growth in retail floorspace.

These recommendations (or actions) are important to promote commercial development in line with the economic vision of Wollongong City Centre and its roles as a regional city for the Illawarra. No single action will be able to increase commercial feasibility and therefore it is important that this suite of actions is implemented.

These actions recognise the substantial investment Council has made in the Wollongong City Centre to date and the importance of continuing these programmes. A number of these recommendations (or actions) are well-aligned with the upcoming economic development strategy update and should be implemented as part of this process. The Wollongong City Centre does not operate in isolation, and the outcomes of the future LGA-wide economic development and employment lands studies may require the review of these actions in the future to ensure that these are aligned.

The most significant action will be the introduction of a commercial core where residential development is prohibited. This is a long term strategy and there are a number of risks associated with this. The commercial only area should be large enough to be coherent but also align with the demand to ensure it is not at risk of being stagnant. The commercial core will need to be sufficient to accommodate up to 120,000 sqm of floorspace but allow

sufficient flexibility depending on the market. A transition area could be established which keeps the long term intention of greater commercial focus without jeopardising activity in the core in the interim, this includes allowing temporary uses in the short to medium term. This strategy is considered to be crucial to ensuring the long term economic success of the City Centre and ensuring that there is capacity for a significant commercial function.

APPENDIX A: CAPACITY AND FEASIBILITY TECHNICAL METHOD

This appendix provides technical detail on the approach, method and assumptions used to determine capacity within the study area. The results of these analyses are included and discussed above in Section 3 above, and as such have been omitted from this section.

Existing Floorspace

Step 1 – Collect existing floorspace data

The floorspace within buildings in the study area was obtained through a desktop audit conducted by SGS. Building footprints and heights in storeys were provided by Wollongong council, and utilised to derive the total floorspace within individual buildings.

The audit captured floorspace of buildings within the study area, using imagery available on Google Streetview to determine the type of floorspace based on the current use and building typology, organised into ten broad categories:

- Detached dwellings
- Multi-dwelling housing (includes townhouses, villas, etc.)
- Units (includes residential flat buildings and shop top housing)
- Commercial
- Retail
- Hotels/Motels
- Infrastructure
- Light industrial
- Community uses
- Unidentifiable uses

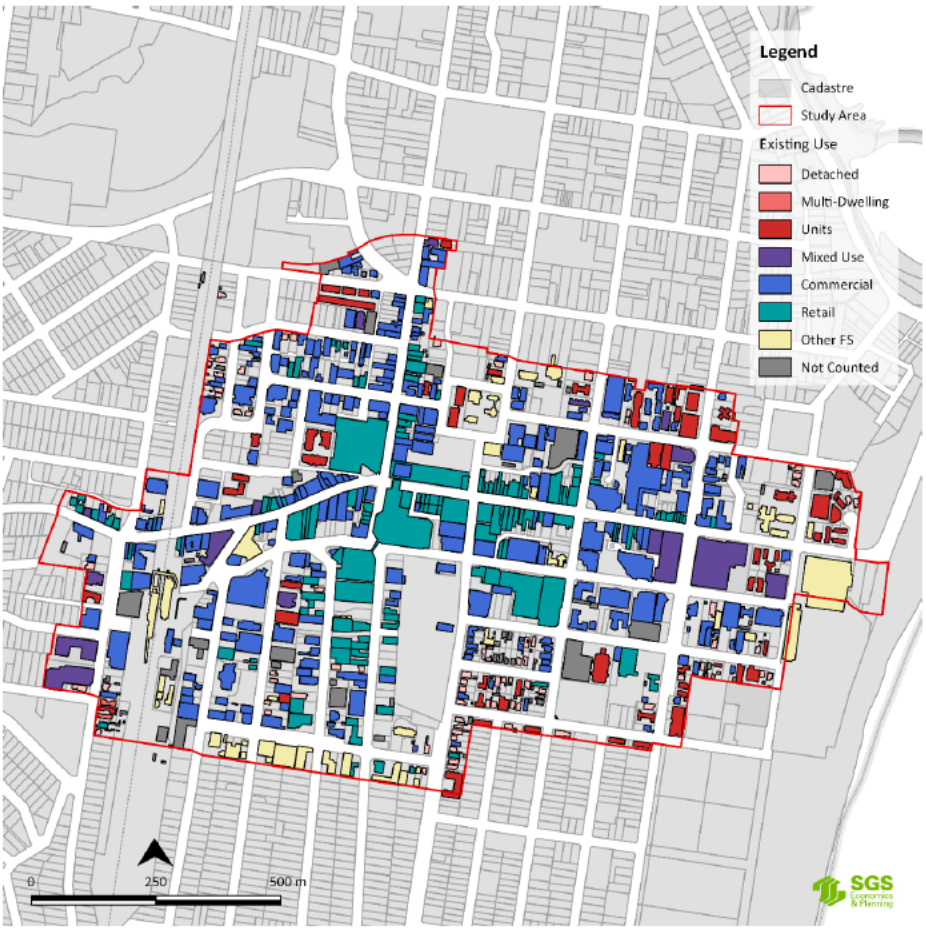
The quantum of floorspace was then utilised within the maximum theoretical and feasible capacity analyses as outlined below. The land audit boundary and results are illustrated in Figure 25.

Maximum theoretical capacity

Step 2 – Land parcels (sites) and attributes

The initial step in the process was to derive a base unit of land (the land parcel, or site) to be utilised in the analysis, along with collecting relevant attributes for the assessment. The cadastre layer within the study area was utilised, with individual lots being merged with other contiguous lots which were listed as having the same owner to create the base layer of land parcels used in the assessment. The length of the longest street frontage for each lot was determined and utilised as an input to calculate the maximum FSR for each site as per cl.4.4A of the Wollongong LEP (WLEP) 2009. Spatial layers for the various attributes for the analysis were then overlaid on the land parcels layer to determine to what extent they intersect with one another. These are outlined in Table 15.

FIGURE 25: LAND AUDIT BOUNDARY AND RESULTS



Source: SGS Economics and Planning, 2018

TABLE 15: DATA SOURCES AND NOTES - LAND PARCELS AND ATTRIBUTES

Item	Source	Notes
Land parcels	Wollongong Council	Based on cadastre layer; Merged contiguous lots under single ownership
Land zoning	Wollongong Council	Zone with highest proportion of area utilised for land parcel
Max FSR	WLEP 2009	Maximum FSR control is taken as per cl.4.4A of the WLEP 2009
Max height	Wollongong Council	Maximum height taken as area-weighted average where multiple height controls exist on a single parcel
Environmental heritage	Wollongong Council	Greater than 5% coverage by all environmental heritage items or areas
Flood risk	Wollongong Council	Greater than 10% coverage at all risk levels; Highest risk level that has above 10% coverage, or the risk level which occupies the highest proportion of area
Street frontages	SGS	GIS analysis used to determine the street frontage lengths of all land parcels

Step 3 – Define capacity parameters and assumptions

To conduct the analysis, it is necessary to develop a typical built form for the area. This was done by the creation of parameters for the:

- Type of floorspace built in each zone
- Building heights by type of floorspace
- Site coverage by type of floorspace
- Floor efficiencies by type of floorspace

Given the permissive nature of the land use controls contained within the WLEP 2009, which allows for the development of shop-top housing within the B3 – Commercial Core and B6 – Enterprise Corridor zones, two development outcomes have been modelled. These outcomes represent either the maximum yield of residential floorspace or commercial floorspace as permitted under the primary controls. The building configurations (floorspace type by position in the building) are set out in Table 16.

TABLE 16: CAPACITY MODELLING - BUILDING CONFIGURATION BY ZONE

Zone	Ground floor (Max. Residential)	Upper floors (Max. Residential)	Ground floor (Max. Commercial)	Upper floors (Max. Commercial)
B3	Retail	Residential	Retail	Commercial
B4	Retail	Residential	Retail	Commercial
B6	Retail	Residential	Retail	Commercial
R1	Residential	Residential	Residential	Residential
All other zones are excluded from redevelopment				

The parameters for building height, site coverage and floor efficiency are applied to the type of floorspace, and as such the same values are applied irrespective of what zone the development is taking place in. The site coverage parameter is expressed as the proportion of land parcel area which is taken up by the footprint of the building (building envelope area). These parameters are set out in Table 17.

TABLE 17: CAPACITY MODELLING - BUILT FORM PARAMETERS

Floorspace type	Building height per storey	Site coverage (building footprint)	Floor efficiency
Retail	4m	80%	90%
Commercial	4m	80%	90%
Residential	3m	40%	75%

Constrained sites were identified by the presence of environmental heritage items, flooding risk or infrastructure land uses, as set out in Table 18. Sites which have been identified as having a low flood risk remain within the modelling process, whilst sites with medium or high flooding risk have been excluded.[11]

[11] Flooding risk levels are allocated to a land parcel where more than 10 per cent of their land area is covered by the flooding overlay at that risk level. Where multiple risk levels cover a single parcel, the highest risk level which covers more than 10 per cent of the parcel's land area is allocated (e.g. a parcel which is covered by both the high and medium flood risk overlays at 14 per cent and 86 per cent respectively will be allocated into the high risk category). Where more than 10 per cent of the total parcel area is covered, but no single risk category is over 10 per cent, the category which occupies the highest proportion of land area is allocated.

TABLE 18: CAPACITY MODELLING - EXCLUSION OF CONSTRAINED SITES

Constraint	Excluded	Note
Environmental heritage	Yes	Sites with more than 5% of their total area covered by an environmental heritage item have been excluded.
High flooding risk	Yes	
Medium flooding risk	Yes	
Low flooding risk	No	
Infrastructure land uses	Yes	Sites which have been identified as containing infrastructure uses (e.g. schools) within the SGS audit have been excluded from redevelopment
Land zoning	Partial	Owing to the high-level nature of the analysis, sites which do not fall within the zones set out above in Table 16 are excluded from the analysis

Step 4 – Determine maximum theoretical capacity

The maximum theoretical capacity for each site was conducted using the above parameters, with parallel versions of the process being run for each of the maximum residential capacity and maximum commercial capacity scenarios.

Constrained sites which have been identified for exclusion were firstly removed the analysis, and the existing floorspace on those sites retained for inclusion in the final capacity figure.

For unconstrained sites, the use on the ground floor was allocated first, followed by allocating upper floors to the building (using the land uses set out in Table 16 and built form parameters set out in Table 17 above) until the maximum height permitted under the WLEP was reached.

At this point (with buildings allocated to the maximum permissible height across all sites), a large number of sites have exceeded the maximum floor space ratio (FSR) permissible under the WLEP 2009. For such sites, the floorspace allocated to the upper floors of the building is reduced until the site is compliant with its maximum FSR.

As cl.4.4A of the WLEP sets out, the maximum FSR control for a site is partially dependent upon the mix of residential and non-residential floorspace to be developed. Within the maximum residential capacity scenario, buildings within the B3, B4 and B6 zones contain a mix of residential and non-residential floorspace. As such, a reduction in the amount of residential floorspace provided in the upper storeys of the building will result in the allocation of a new maximum FSR control, which will be greater than the previous maximum FSR control.

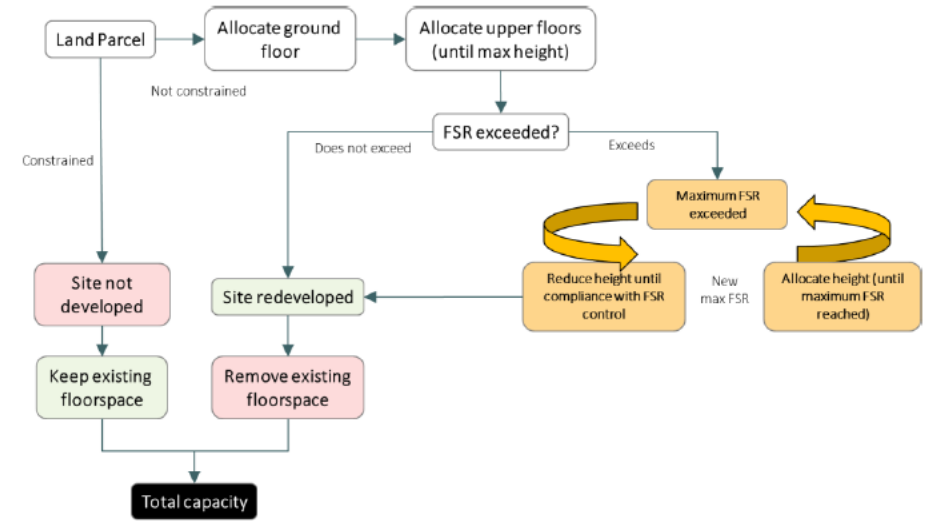
When residential floorspace is re-allocated to the building to meet this control, the mix of residential and non-residential floorspace is changed again, and a third maximum FSR is allocated to the building – being lower than the previous value, with the building again being in breach of this control.

This process of re-allocation is conducted for two iterations, which allows for all sites within the study area to achieve an FSR within 20 sqm of the maximum FSR control at that proportional mix of residential and non-residential floorspace.

Subsequently, the floorspace yield on each site is totalled to derive the yield of new floorspace under either of the maximum theoretical capacity scenarios, and the existing floorspace contained within these land parcels is removed from the total capacity figure.

This process is illustrated in Figure 26.

FIGURE 26: CAPACITY ASSESSMENT - MAXIMUM THEORETICAL CAPACITY PROCESS



Source: SGS Economics and Planning, 2018

At this point, the maximum theoretical capacity has been derived for the study area for each of the two distinct scenarios; the theoretical maximum residential capacity and the theoretical maximum commercial capacity scenarios. These are utilised as the basis of the maximum feasible capacity analysis, as outlined in the section below.

Maximum feasible capacity

The maximum feasible capacity analysis builds upon maximum theoretical capacity scenarios to determine a more realistic capacity figure, in contrast to the purely hypothetical nature of the maximum theoretical capacity analysis. In this analysis, the residual land value (RLV) of a development is compared against the costs of acquisition for the site. Further explanation of RLV modelling is contained above in Section 5.1.

Step 5 – Define feasibility parameters and assumptions

The following tables outline some of these broad inputs and the key assumptions that are made in order to 'model' the financial cash flows which underpin development's costs and revenues. The inputs and assumptions apply to each development.

TABLE 19: FEASIBILITY MODEL COST INPUTS AND ASSUMPTIONS

Input	Source	Value
Construction and demolition costs	Rawlinson's Construction Handbook 2017	Varies
Land acquisition costs	Return on asset method & Underlying Land Values (Valuer General of NSW)[12]	Varies (includes stamp duty)
Construction contingency	Various sources using industry standards	10% of base construction costs
Professional fees	Various sources using industry standards	9.2% of base construction costs and contingency
Development contributions	Wollongong s.94A contributions plan	0%-2% of construction costs
DA Fees	Wollongong Fees and Charges Schedule	Varies
Finance costs	Various sources using industry standards	6% of construction costs, land costs and fees & charges
Developer profit	Various sources using industry standards	20% of all other development costs

TABLE 20: FEASIBILITY MODEL REVENUE INPUTS AND ASSUMPTIONS

Input	Source	Value
Retail rents ($/sqm)	Market assessment and consultation	$450/ sqm
Commercial rents ($/sqm)	Market assessment and consultation	$400/ sqm
Median residential sales values	Market assessment	1BR: $459,100 +GST 2BR: $613,500 +GST 3BR: $1,072,700 +GST
Sales commission, marketing and legal fees	Various sources using industry standards	4% of sales revenues

These assumptions have been reduced down to a per/ sqm rate for inclusion in the maximum feasible capacity analysis.

Step 6 – Derive acquisition costs for all sites

Acquisition costs for each site are derived using two methods, one which captures the current improvements on the land and another which utilises the underlying land value (ULV) measure produced by the Valuer General of NSW.

The audited floorspace on each of the land parcels is capitalised into an estimated purchase using the average observed rents for that type of floorspace and a yield of nine per cent. Whilst this is suitable for the high level nature of the analysis, it should be noted that utilising assumptions that are consistent throughout the study area may not accurately capture site specific variations in rental yields.

An average ULV for each land use zone utilised within the capacity analysis was captured for properties that fall within the study area, being taken as the median of the per/ sqm ULV of properties within each zone.

[12] It is important to note that existing land values of sites have been measured by discounting the amortised returns on existing improvements on site, along with the Underlying Land Value. In practice, sites could potentially be rezoned, which would in turn shift the land value and the cost of acquiring specific sites.

These acquisition costs were also utilised within the site-specific feasibility modelling outlined above in Section 4.

Step 7 – Define built form outcomes to be tested

It is given that the objective of this analysis is to determine not only *if* the built form outcomes contained within either of the maximum theoretical capacity scenarios are feasible, but if so, to determine *at which point* between the two scenarios a project will become feasible.

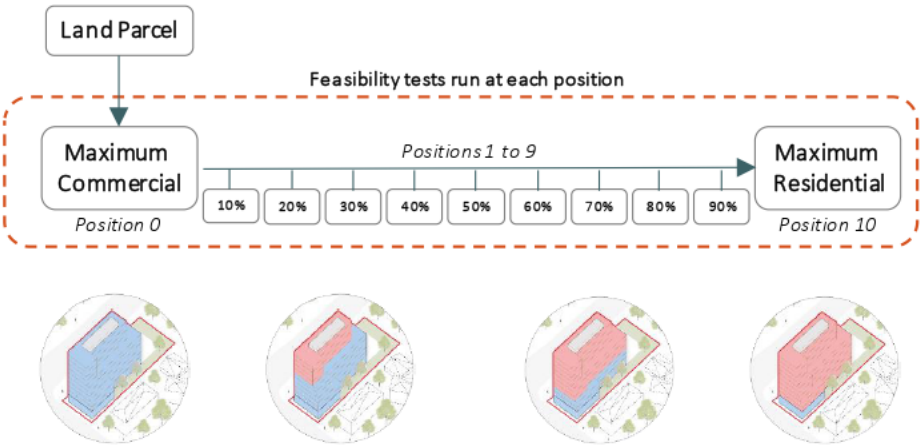
Owing to the modelling constraints posed by attempting to measure two variables (one being the maximum FSR control, based on the proportional mix of residential and non-residential floorspace within a site; the other being the feasibility of the development), it become practical to remove the FSR control as a variable in order to test feasibility as the dependant variable.

As such, a series of incremental shifts from the built form for each site from the maximum commercial capacity scenario was utilised, shifting at 10 per cent intervals until the maximum residential scenario is reached. This results in a total of 11 positions at which feasibility is tested, as shown below in Figure 27.

Each increment (including the two maximum theoretical scenarios above, for a total of 11) is referred to herein as a 'Position'. To clarify:

- A parcel of land at Position 0 has the same floorspace as the maximum commercial scenario outlined above.
- A parcel of land at Position 10 has the same floorspace as the maximum residential scenario outlined above.
- A parcel of land at Position 4 has the same floorspace as the maximum commercial scenario outlined above, *plus/minus* 40 per cent of the difference between the maximum commercial scenario and the maximum residential scenario.

FIGURE 27: CAPACITY ASSESSMENT - MAXIMUM FEASIBLE CAPACITY METHOD (1 OF 2)



Source: SGS Economics and Planning, 2018

Step 8 – Test feasibility at each position and derive total feasible capacity

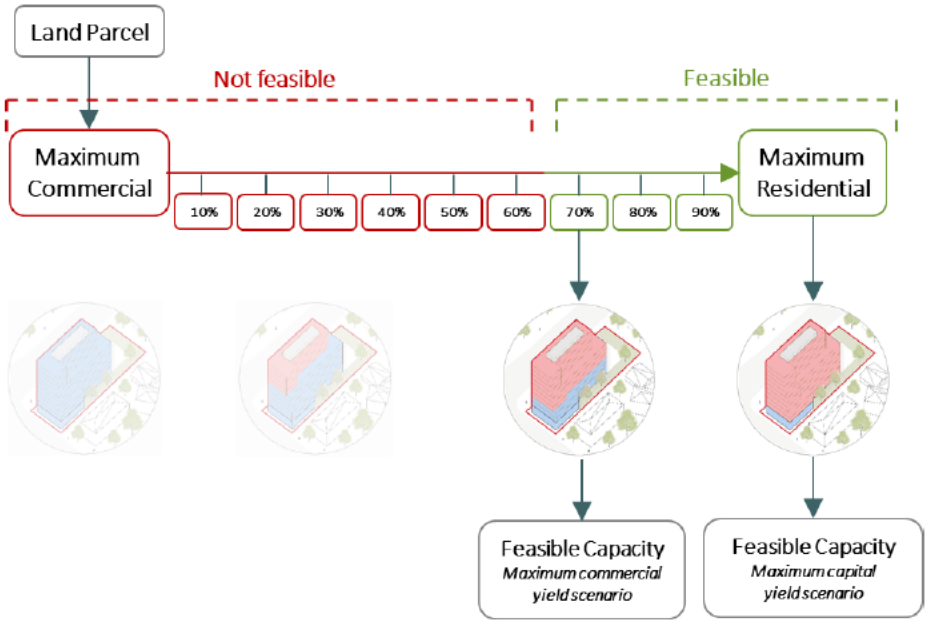
At each of the 11 positions, the quantum of floorspace within the building (including the parking required under the Wollongong DCP 2009) is translated into development costs and the saleable floorspace translated into revenues to derive the RLV across all sites that have not been excluded in the capacity analysis. This is then checked to see whether it exceeds the assumed acquisition cost at each position to determine whether the development is feasible.

Two scenarios have been utilised as outputs of the feasible capacity modelling in a similar fashion to the maximum theoretical capacity. These consist of a maximum capital yield scenario, in which the built form outcome that has the highest RLV is selected for inclusion, and a maximum commercial yield scenario, in which the outcome that yields the highest amount of retail and commercial office floorspace is selected for inclusion. This process is shown below in Figure 28.

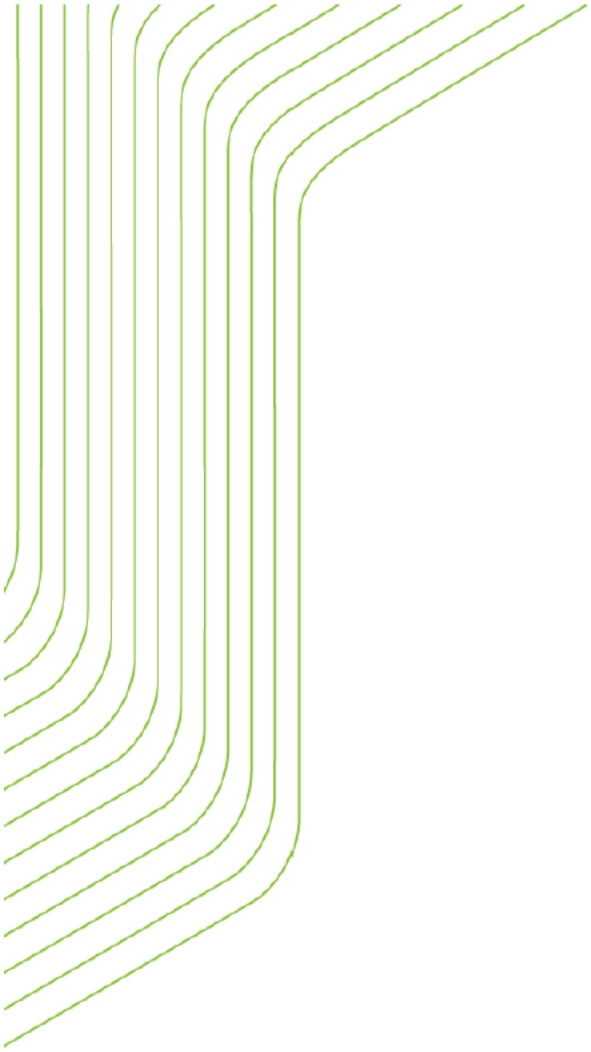
Owing to the increased profitability of developing residential floorspace, the maximum capital yield scenario returned a built form outcome at the maximum residential position in all cases where development was found to be feasible.

If the development is feasible at any position, the existing floorspace occupying that site is removed from the total feasible capacity figure for each scenario.

FIGURE 28: CAPACITY ASSESSMENT - MAXIMUM FEASIBLE CAPACITY METHOD (2 OF 2)



Source: SGS Economics and Planning, 2018



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ITEM 2 DRAFT KEIRAVILLE GWYNNEVILLE ACCESS AND MOVEMENT STUDY

The draft Keiraville - Gwynneville Access and Movement Study has been completed following the community-led development of the Keiraville - Gwynneville Implementation Plan. The study examines issues affecting the traffic and transport system within the precinct through extensive stakeholder engagement, data collection, literature review, site investigations and motor vehicle traffic analysis. It also proposes actions to improve the transport system, reduce impacts on surrounding suburbs, promote the use of sustainable travel modes and ensure that the transport network can adequately accommodate future development.

The draft study has been prepared with significant input from the local community and other key stakeholders. This report recommends public exhibition of the draft Keiraville - Gwynneville Access and Movement Study.

RECOMMENDATION

1 The draft Keiraville - Gwynneville Access and Movement Study Overview and Consultant Report be placed on public exhibition for a period of six weeks.

2 Following the public exhibition period, a final draft Keiraville - Gwynneville Access and Movement Study Overview incorporating community feedback be presented to Council for adoption.

REPORT AUTHORISATIONS

Report of: Mark Roebuck, Manager City Works
Authorised by: Andrew Carfield, Director Infrastructure + Works - Connectivity Assets + Liveable City

ATTACHMENTS

1 Draft Keiraville – Gwynneville Access and Movement Study Overview
2 Keiraville – Gwynneville Access and Movement Study - Consultant Report

BACKGROUND

Neighbourhood Forum 5, with input from the community, University of Wollongong and Council developed the “Keiraville - Gwynneville Community Planning Project Report”, which was considered by Council at its meeting of 28 April 2014. Council endorsed the report’s ten (10) vision statements for the precinct. On 24 August 2015 Council endorsed the subsequent “Keiraville - Gwynneville Implementation Plan” comprised of a number of key actions, in particular:

> *An Access and Movement Study to be prepared to investigate a range of matters relating to traffic in the area, with a focus on:*
>
> - *Traffic capacity in context of key destinations UOW; Hospital; Botanic Gardens; City Centre;*
> - *Parking;*
> - *Pedestrian Access and Safety.*

Council and the University of Wollongong allocated funding to commence a “Keiraville - Gwynneville Access and Movement Study” in 2017. Following a competitive tender process, Cardno (NSW/ACT) Pty. Ltd. were engaged to undertake the study based on the following key objectives:

- Examine and document the existing and future potential operation of the traffic and transport system within the suburbs of Keiraville and Gwynneville; and
- Develop strategies to improve the transport system, reduce impacts on surrounding suburbs, promote the use of sustainable travel modes and ensure that the transport network can adequately accommodate future development.

In order to identify issues affecting the traffic and transport system of Keiraville and Gwynneville, the consultant, with support from Council, carried out significant engagement with the local community and other key stakeholders (refer to the 'Consultation and Communication' section of this report). Furthermore, data was collected from a range of sources including on-site surveys of traffic and parking, site inspections, computer traffic simulations and reviews of other government plans and strategies. The study lists the following key issues relating to each of the transport modes:

Key Pedestrian Issues

- Lack of footpaths in various streets
- Uneven and cracked footpaths in several locations
- Pedestrian signage and wayfinding are limited
- Lack of safe pedestrian crossings
- Existing crossing facilities that don't meet current standards
- Limited connections exist to the east of the UOW campus
- Difficult to access Mount Ousley Area from UOW
- Street lighting is limited in some areas.

Key Cycling Issues

- Missing paths in a number of routes between key destinations
- Missing connection between Mount Ousley and UOW
- Missing connections between east and west of the rail line
- Lack of secure bike parking at key destinations
- Lack of end of trip facilities at UOW
- Wayfinding signs missing on some routes
- Existing roundabouts can be difficult for cyclists to use safely due to topography and vehicle speeds

Key Public Transport Issues

- Infrequent route bus services
- Poor levels of on-time running
- Bus services during peak periods are overcrowded
- Poor integration of bus services with train timetables
- Shuttle services are limited outside of peak and session
- Lack of shelter and accessible infrastructure at bus stops
- Poor connectivity of bus services with surrounding suburbs
- Poor frequency of train services in both directions
- Poor alignment of train services with UOW schedule.

Key Vehicle Network Issues

- There is congestion in various streets within the study area including:
    - Various University Avenue intersections
    - Queuing along Mount Ousley Road in the peak hours

  - The UOW Ring Road
  - Foley Street
- Some drivers use minor streets to avoid congestion
- Vehicles speeds are of concern to community members.

Key Car Parking Issues

- Parking utilisation is very high in the streets south of the UOW campus, including Keiraville village
- Two-hour parking spaces are not long enough for students attending lectures;
- Accessible parking is not provided in the village centres
- Lack of enough pick up/drop off zones at key destinations such as schools, UOW, and Beaton Park
- Parking close to key destinations is often heavily utilised by employees
- Vehicles are often parked over driveways
- High amount of unrestricted parking provided in residential areas near the University
- Poor sightlines at some intersections within the precinct due to vehicles parking too close
- Multi occupancy dwellings and student accommodation generate street parking demand
- Significant numbers of vehicles parking illegally throughout the study area
- A number of residential streets throughout the study area which have been reduced to one lane in each direction due to parking on both sides of the road.

The study identifies a range of actions for the traffic and transport system in order to address the above issues. These actions, categorised by mode of travel, are provided below:

Pedestrian Actions

- Provide compliant pedestrian refuge island at roundabouts.
- Ensure that all crossing facilities comply with Australian Standards (upgrade where needed).
- Provide a direct pedestrian connection towards the north and east of UOW.
- Provide wayfinding to key destinations including train stations, UOW, key centres and recreation facilities.
- Provide increased pedestrian priority within the village centres.
- Provide increased marketing especially in schools, workplaces and town centres to show the benefits of walking and cycling.
- Review street lighting with respect to pedestrian needs
- Include suggested footpath locations in future programs.

Cycling Actions

- Include suggested shared path locations in future programs.
- Work with Transport for NSW (TfNSW) to investigate active transport connection across train line close to Beaton Park.
- Provide improved cycling wayfinding on the key regional cycle routes.
- Provide a widened shared path through Wiseman Park in line with the Fairy Creek Corridor Master Plan.

- Provide increased number of secure and undercover bicycle parking at key land uses such as the UOW, Keiraville and Gwynneville village centres, Beaton Park, the local schools and off-street parking locations.

Motor Vehicle Actions

- Realignment of roundabout at Murphys Avenue and Robsons Road.
- Undertake safety around schools assessments.
- Advocate for implementation of the Mount Ousley Interchange project.
- Investigate traffic calming measures on Robsons Road to manage vehicle speeds, particularly on the north and south downhill sections to the Gipps Rd intersection.
- Investigate intersection improvements
- Investigate traffic calming improvements
- Investigate roundabout installation at Braeside Avenue - Murphys Avenue to reduce vehicle speed
- Investigate safety improvements on University Avenue.

Car Parking Actions

- Investigate the provision of marked parking bays to increase the efficiency of parking spaces within the precinct.
- Review timed parking, pick up and drop off and special parking restrictions surrounding key destinations.
- Review ranger patrols to ensure all vehicles abide by the corresponding parking restrictions.
- Investigate introduction of paid parking in close vicinity of the University.
- Develop a special event parking and traffic management plan for significant events at Beaton Park.
- Monitor school kiss and ride zones to prevent parking and expand as required to support demand.
- Investigate wayfinding opportunities to parking at attractors such as Beaton Park and the Botanic Garden.
- Work with schools to manage parking and safe drop off/pick up.

Public Transport Actions

- Advocate for extension of bus service times and frequency.
- Work with TfNSW to:
    - investigate bus priority infrastructure
    - better integrate bus and train timetables
    - ensure adequate capacity of bus services.
- Provide improved bus stop facilities.
- Advocate for direct bus services between key trip attractors.
- Advocate for retention of local shuttle bus services.

PROPOSAL

It is proposed that Council endorse the draft Keiraville - Gwynneville Access and Movement Study to be placed on public exhibition for a period of six (6) weeks. Following community feedback, a final draft Keiraville - Gwynneville Access and Movement Study Overview incorporating public comments, will be reported to Council for adoption.

CONSULTATION AND COMMUNICATION

Council engaged with a range of stakeholders including residents, businesses and several organisations throughout the completion of this study via:

- Letters to tenants, owners and other stakeholders
- Visits to all businesses in the study area
- Face-to-face meetings with key stakeholders
- The Have Your Say web page which included a mapping tool, FAQ page, feedback form and document library.

Four workshops were also held with representatives from a range of stakeholders including community members at key points in the study process. The purpose of workshop one, was to present an overview of the existing transport network to the community and to capture any specific comments or concerns that the community and key stakeholders had. The key stakeholders were given the opportunity to comment on:

- Expectations for the transport network and the project;
- Any issues with the existing transport network; and
- Potential solutions to mitigate transport issues.

A second workshop provided stakeholders with an update of the project tasks completed, information on key deficiencies of the existing network and potential opportunities. At workshop three, stakeholders were updated on the progress of the project including issues analysis, solutions development, and the prioritisation process. Subsequently, a supplementary workshop was held to review, refine and add value to proposals that were put forward in previous sessions.

Overall, there were 242 issues raised by members of the community, the majority of which concerned car parking.

PLANNING AND POLICY IMPACT

This report contributes to the delivery of Our Wollongong 2028 goal “We have affordable and accessible transport”.

It specifically delivers on core business activities as detailed in the Transport Services Service Plan 2019-20.

FINANCIAL IMPLICATIONS

Costs associated with the public exhibition of the draft study will be funded from an existing operational budget allocation.

Implementation associated with the various actions listed in the study will be considered against city wide priorities through the city-wide annual planning and infrastructure delivery process. Actions may also be eligible for funding under various NSW Government and Australian Government grant programs.

CONCLUSION

The draft Keiraville - Gwynneville Access and Movement Study was undertaken in partnership with Neighbourhood Forum 5, the University of Wollongong and TfNSW and following the development of the community-led Keiraville - Gwynneville Implementation Plan. The study identifies a range of issues facing the various transport modes for the precinct and actions to address them following extensive stakeholder engagement, data collection, literature review, site investigations and motor vehicle traffic analysis. The public exhibition of the draft Plan will generate further valuable input from the community that will be incorporated into the final draft plan and reported to Council for adoption.

DRAFT
Keiraville - Gwynneville Access and Movement Study

Overview

wollongong
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Background

Keiraville and Gwynneville will experience significant growth in the coming decades as a result of expansion of the education and health precinct in Wollongong. This future expansion will increase the number jobs and students in the region, therefore increasing demand for housing, infrastructure and transport.

Wollongong City Council commissioned a Keiraville–Gwynneville Access and Movement Study to improve understanding of existing and future access and transport demand in the area, and to mitigate the impacts of more growth through traffic and transport strategies to encourage sustainable travel behaviour and ease pressure on the transport network. Improvements for pedestrians, cycling, public transport, motor vehicles and car parking are recommended by this study.

Study Objectives

The University of Wollongong, Neighbourhood Forum 5 and Transport for NSW are partners in the study. These partners with Council jointly agreed to the objectives of the study that are to:

- Examine and document the existing and future potential operation of the traffic and transport system within the suburbs of Keiraville and Gwynneville; and
- Develop strategies to improve the transport system, reduce impacts on surrounding suburbs, promote the use of sustainable travel modes and ensure that the transport network can adequately accommodate future development.

Existing Parking Bay Linemarking

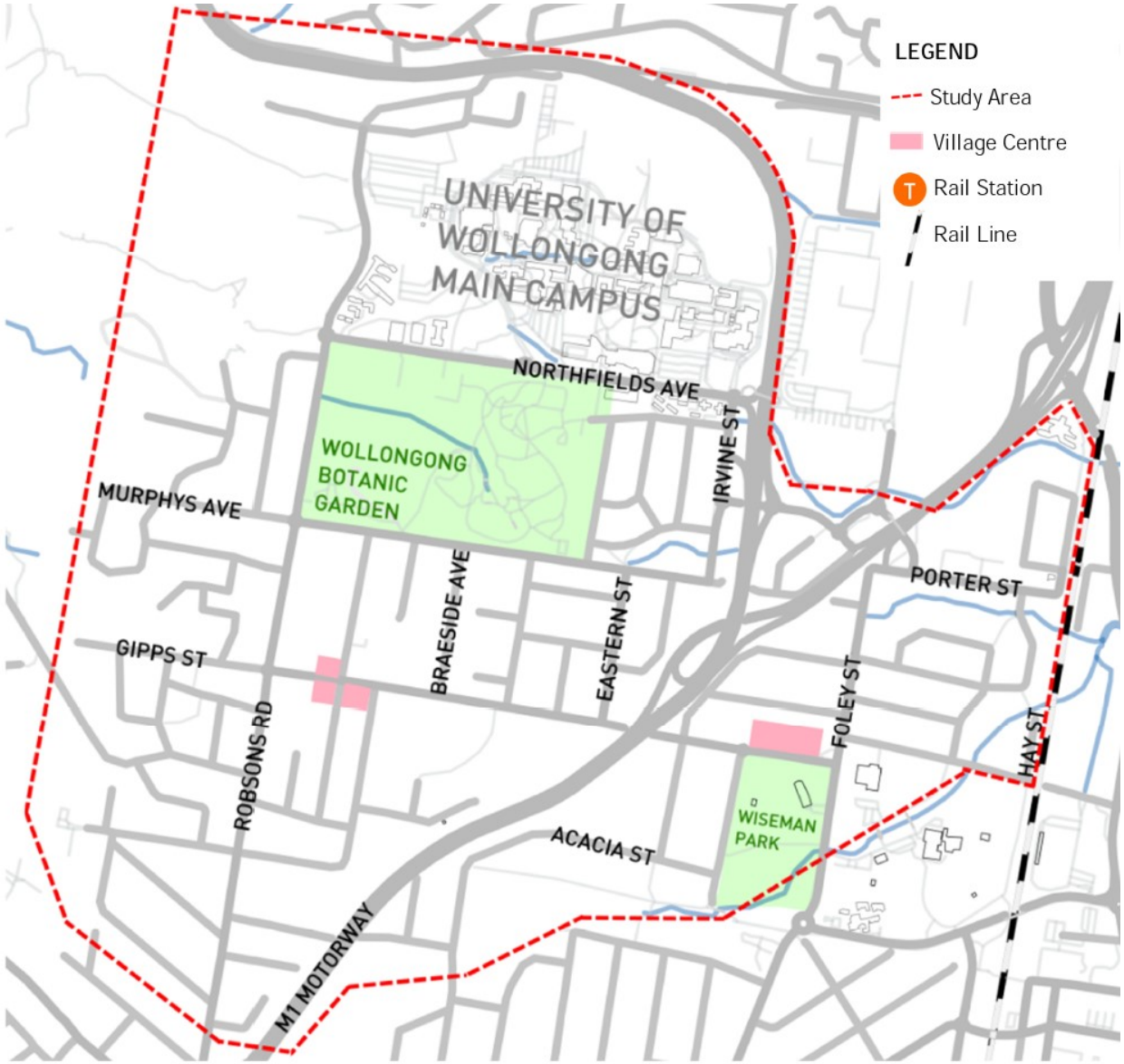
Keiraville Village Centre

Study Area

Keiraville and Gwynneville are located within the City of Wollongong, in the Illawarra region of NSW. The two suburbs lie between the Princes Motorway (M1) to the north and east, the Illawarra Escarpment State Conservation Area to the west, and extend south towards Mount Keira Road.

There are many important land uses that generate a high number of trips each day and influence access, movement demand and behaviour in the study area including:

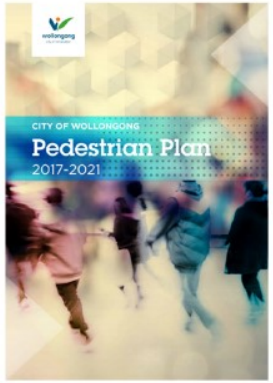
- Keiraville and Gwynneville village centres
- The University of Wollongong (UOW)
- Wollongong CBD
- Wollongong Hospital
- Wollongong Botanic Garden
- North Wollongong Railway Station
- TAFE Illawarra Wollongong Campus
- Mount Ousley residential area
- Local schools
- Sports and recreation facilities

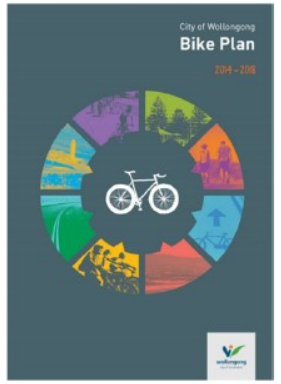


Strategic Context

The Keiraville and Gwynneville Access and Movement study was carried out in the context of planning work done for surrounding metro Wollongong area in order to recommend effective strategies to improve the overall transport network. Various Council and external plans, strategies and projects informed the study including:

- Keiraville – Gwynneville Implementation Plan
- Illawarra Shoalhaven Regional Plan
- Our Wollongong 2028 Community Strategic Plan
- City of Wollongong Bike Plan
- City of Wollongong Pedestrian Plan
- University of Wollongong 2016–2036 Wollongong Campus Master Plan
- Mount Ousley Interchange Project
- Beaton Park Regional Precinct Masterplan
- Fairy Creek Corridor Masterplan
- Wollongong City Centre Access and Movement Strategy





Existing Transport Network and Demand

The range of significant land uses both within and surrounding the study area are serviced by a transport network that includes walking, cycling, public transport and motor vehicle components. The network serves a range of trip purposes and has varying levels of demand.

Pedestrian Network

The footpath network in Keiraville–Gwynneville is limited, particularly away from UOW. The only roads that have footpaths on both sides of the road are Irvine Street, Northfields Avenue and Gipps Road. Most local streets have either a footpath on one side or no footpath at all.

On approach to Gwynneville village centre, footpaths are present on the north side of Gipps Road only. Keiraville village centre has footpaths provided on both sides of Gipps Road.

Pedestrian crossing facilities in the study area include a mixture of pedestrian refuges, zebra crossings, school crossings and signalised crossings. Pedestrian refuges are provided throughout the study area, particularly along Northfields Avenue, Robsons Avenue and Gipps Road. The majority of pedestrian refuges are located at roundabouts within splitter islands.

There are six zebra crossings, three school crossings, and six signalised pedestrian crossings located within the study area, four of which are located within the UOW campus.

Vickery Street Pedestrian Provisions

Public Transport Network

Bus routes servicing Keiraville and Gwynneville include three free shuttle buses and locally run services that provide connections throughout the study area and to nearby suburbs in the Illawarra and as far as Campbelltown and Port Kembla.

The free GK Shuttle bus service is operated by UOW and connects the campus with North Wollongong Station, the Wollongong CBD, Keiraville and Gwynneville. UOW also runs the free North Gong shuttle service which directly connects the UOW Northfields Avenue Bus Interchange with North Wollongong Station. This is the only bus route to service the bus stops on the UOW campus Ring Road; it connects passengers with trains arriving at North Wollongong Station.

The Gong Shuttle bus service is run by Transport for New South Wales, and connects the UOW campus with the Wollongong CBD, the Innovation campus and Fairy Meadow. This service is currently free, however a longer term decision on whether the service will remain free has yet to be made.

Local bus services connecting to Austinmer, Bulli, Campbelltown, Dapto and Shellharbour are provided by the following operators:

- Busabout, providing the 887 service to Campbelltown;
- Dion's Bus Service, providing services to Austinmer and Bulli;
- Premier Illawarra, providing services to the Wollongong CBD, Dapto, and Shellharbour.

Foley Street Gong Shuttle Stop

Road Network

The road network within and surrounding the study area consists of both major arterial and local roads. Local roads provide east–west access, while the Princes Motorway bisects the study area constraining connectivity. Access to the motorway is provided via on/off ramps located to the south east of the University, and to the north of North Wollongong station.

The traffic assessment of existing conditions found identified congestion at:

- Mount Ousley Road / Princes Motorway
- Irvine Street / University Avenue
- Princes Motorway / University Avenue

The impact of future traffic growth and the Mount Ousley Interchange upgrade roughly 10 years in the future was assessed using the AIMSUN computer simulation model. The Mount Ousley Interchange upgrade is predicted to remove congestion at Mount Ousley Road / Princes Motorway while providing a new access to the UOW campus. The modelling also predicts some reduction in traffic in the roads surrounding the University such as Robsons Road and Northfields Avenue. However, the results also indicate there could still be congestion issues at the Princes Motorway / University Avenue and nearby intersections, in future (2027) year with the Mount Ousley Interchange upgrade in place.

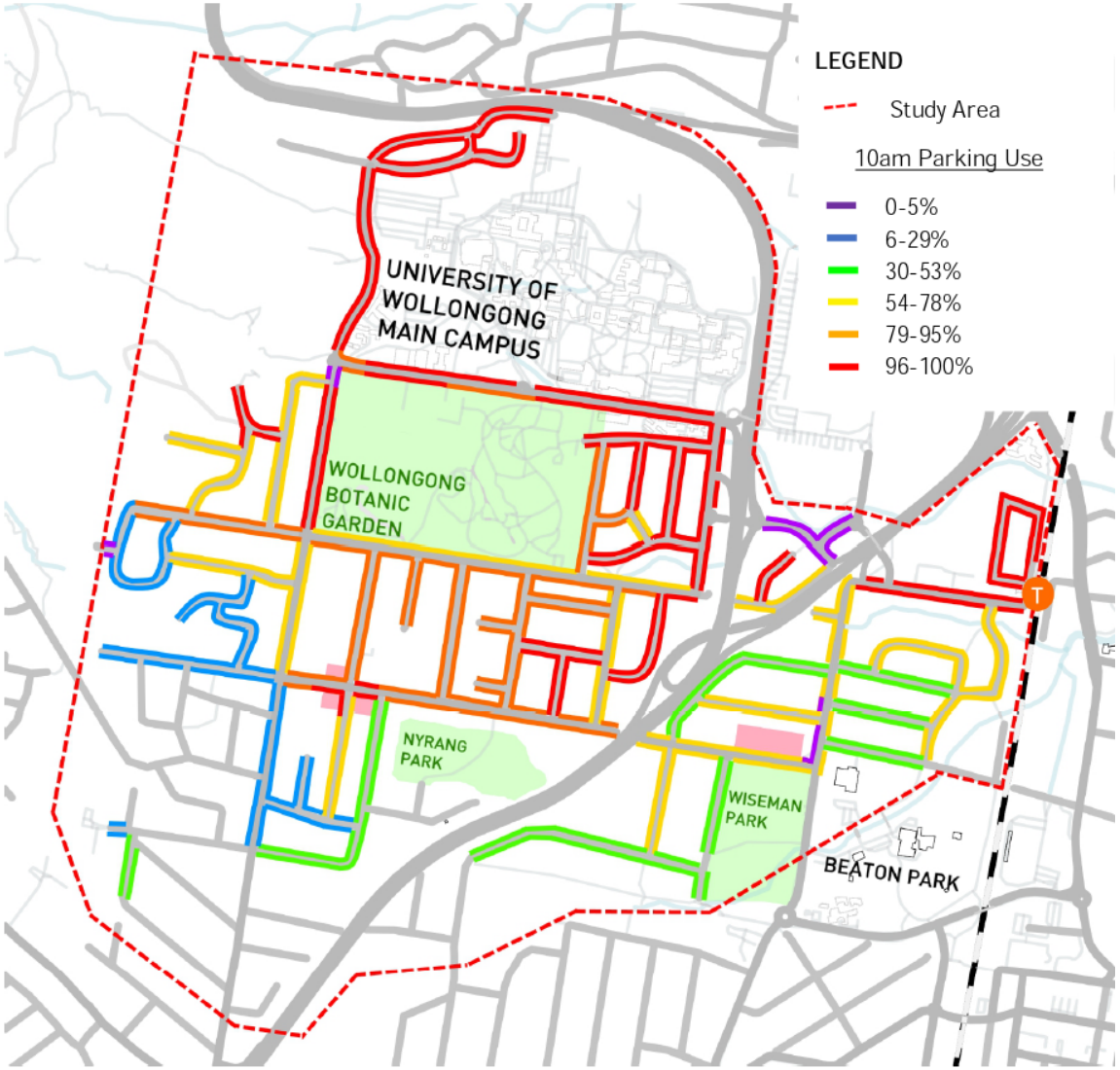
The modelling assessment also indicated that additional capacity is required at the Pacific Motorway / University Avenue and University Avenue / Porter Street intersections. Further investigations are recommended to investigate options to relieve congestion in this area.

University Avenue

Car Parking

High parking generating land uses within the study area include the UOW, Keiraville and Gwynneville village centres. A mixture of on and off-street options are available throughout the study area. Within the Keiraville village centre, one hour parking is available along Grey Street and Gipps Road. The parking situation is similar close to Gwynneville village centre, with one hour parking available along Gipps Road and Foley Street. Unrestricted parking is available further away from both village centres. Within the UOW campus, there are many parking options with varied capacities and parking types.

Surveys completed by UOW found that on average, both the carpool and ticketed car parks reached or exceeded capacity on all days. Reserved parking was found to be under-utilised on campus, with an average of 54% usage throughout the day. At the same time, ticketed, carpooling and permitted parking reached high levels of use.



Carparking Utilisation

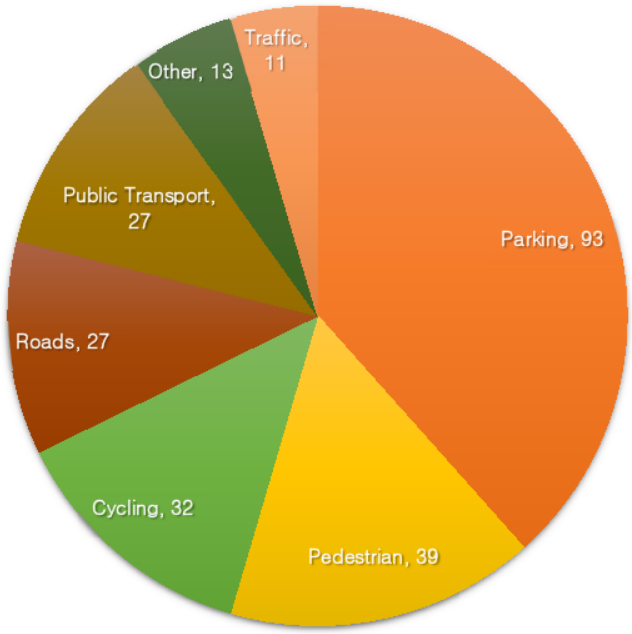
Stakeholder Engagement

Council engaged with a range of stakeholders including residents, businesses and several organisations throughout the completion of this study via:

- Letters to tenants, owners and other stakeholders
- Visits to all businesses in the study area
- Workshops and face-to-face meetings
- The *Have Your Say* web page which included a mapping tool, FAQ page, feedback form and document library.

Overall, there were 242 issues raised by members of the community, the majority of which concerned car parking.

Council, UOW, Transport for NSW, NF5 and other community members have worked together to draft up actions to address the issues identified during the study.



Types of issues raised by stakeholders

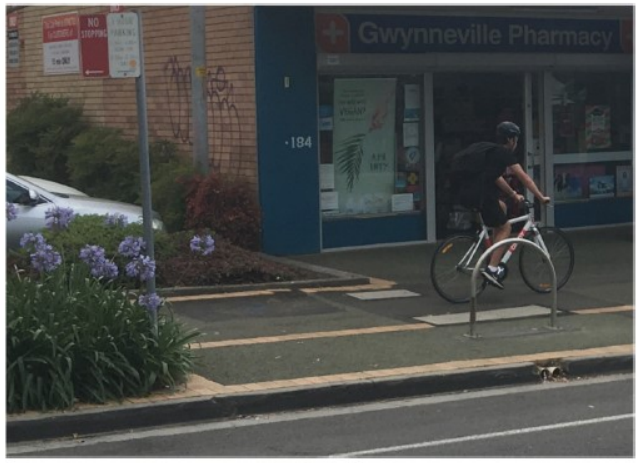
Key Transport Network Issues

In addition to issues raised by the community as part of the stakeholder engagement described above, data collected from a range of sources was used to identify key issues affecting the network including on site surveys of traffic and parking, site inspections, computer traffic simulations and reviews of other plans and strategies. The following sections of this document provide key issues identified.

Key Pedestrian Issues

- Lack of footpaths in various streets
- Uneven and cracked footpaths in several locations
- Pedestrian signage and wayfinding are limited
- Lack of safe pedestrian crossings
- Existing crossing facilities that don't meet current standards
- Limited connections exist to the east of the UOW campus.
- Difficult to access Mount Ousley Area from UOW
- Street lighting is limited in some areas

Gap in traffic island is too small to accommodate wheelchairs, prams or bicycles



Some cyclists ride on the footpath in lieu of a dedicated path or lane

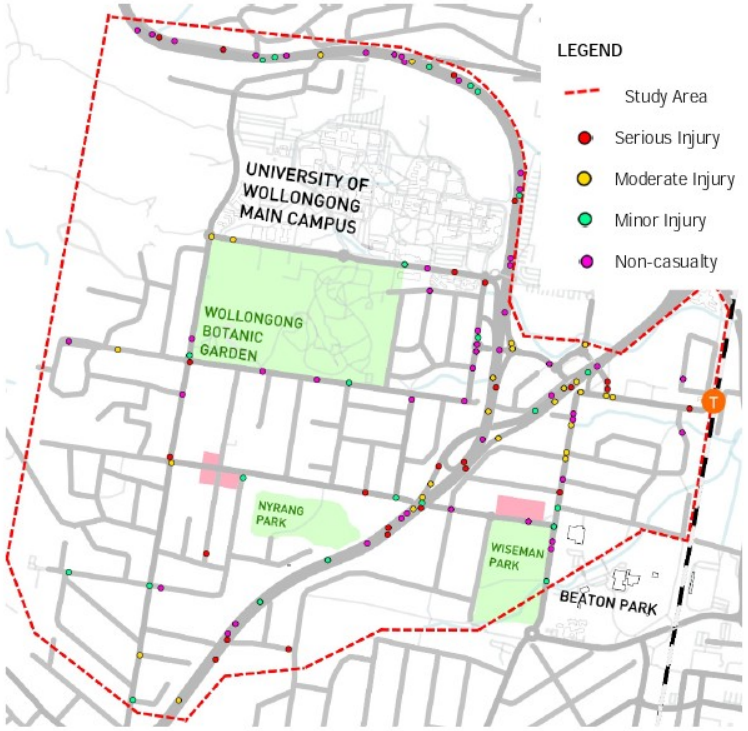
Key Cycling Issues

- Missing paths in a number of routes between key destinations
- Missing connection between Mount Ousley and UOW
- Missing connections between east and west of the rail line
- Lack of secure bike parking at key destinations
- Lack of end of trip facilities at UOW
- Wayfinding signs missing on some routes
- Existing roundabouts can be difficult for cyclists to use safely due to topography and vehicle speeds

Key Public Transport Issues

- Infrequent route bus services
- Poor levels of on–time running
- Bus services during peak periods are overcrowded
- Poor integration of bus services with train timetables
- Shuttle services are limited outside of peak and session
- Lack of shelter and accessible infrastructure at bus stops
- Poor connectivity of bus services with surrounding suburbs
- Poor frequency of train services in both directions
- Poor alignment of train services with UOW schedule

Few bus stops provide a boarding area or path that is accessible, the majority lack bus shelters



Crash data 2014 to 2018

Key Vehicle Network Issues

- There is congestion in various streets within the study area including:
  - Various University Avenue intersections
  - Queuing along Mount Ousley Road in the peak hours
  - The UOW Ring Road
  - Foley Street
- Some drivers use minor streets to avoid congestion
- Vehicles speeds are of concern to community members

Key Car Parking Issues

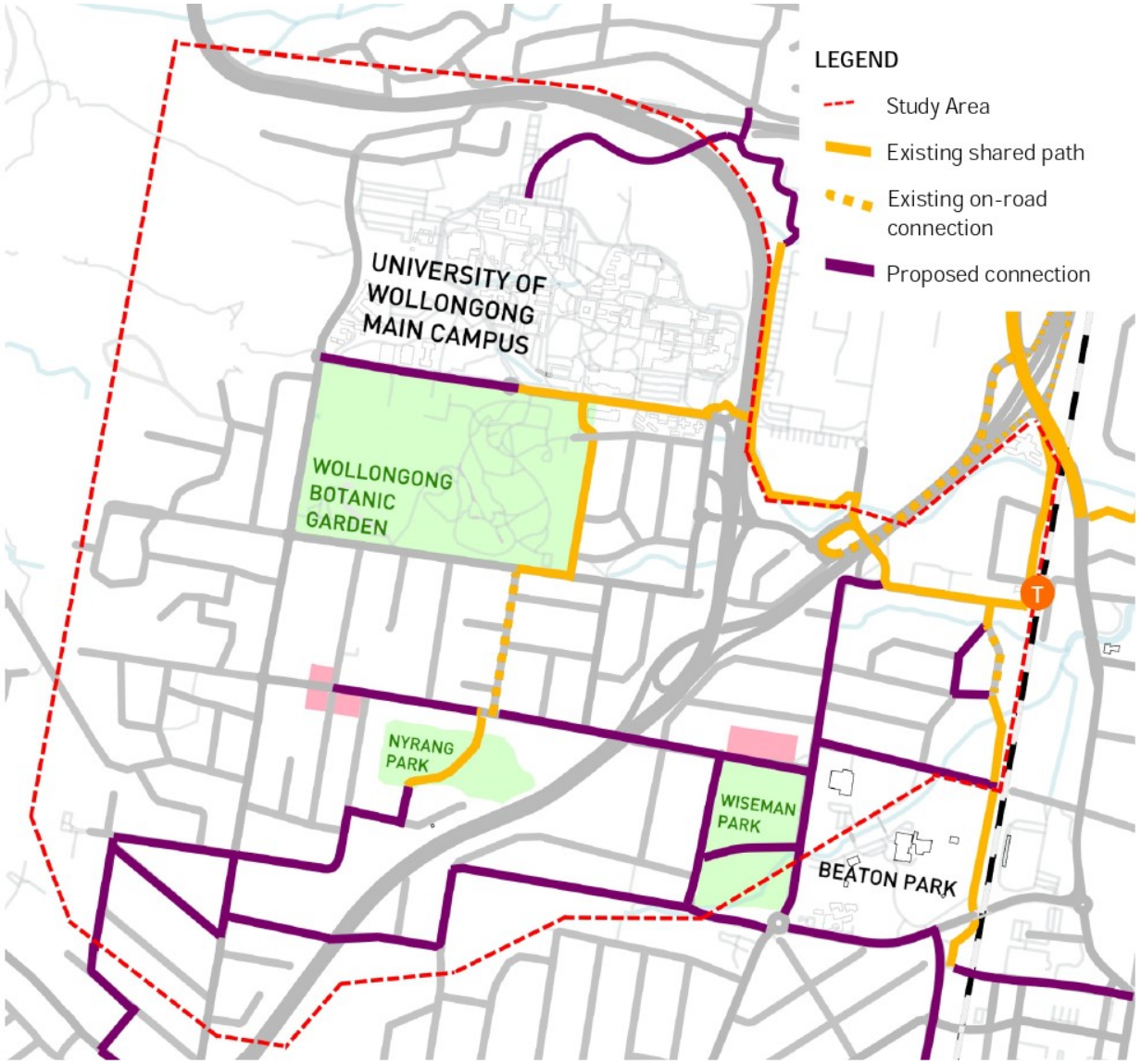
- Parking utilisation is very high in the streets south of the UOW campus, including Keiraville village
- Two-hour parking spaces are not long enough for students attending lectures
- Accessible parking is not provided in the village centres
- Lack of enough pick up/drop off zones at key destinations such as schools, UOW, and Beaton Park
- Parking close to key destinations is often heavily utilised by employees
- Vehicles are often parked over driveways
- High amount of unrestricted parking provided in residential areas near the University
- Poor sightlines at some intersections within the precinct due to vehicles parking too close
- Multi occupancy dwellings and student accommodation generate street parking demand
- Significant numbers of vehicles parking illegally throughout the study area
- Number of residential streets throughout the study area which have been reduced to one lane in each direction due to parking on both sides of the road.

High street parking use associated with key destinations

Transport Network Actions
The study recommends a range of actions to address the identified issues affecting pedestrians, cycling, public transport, motor vehicles and car parking.
2P
8.30 AM - 4.30 PM
MON - FRI
NO STOPPING

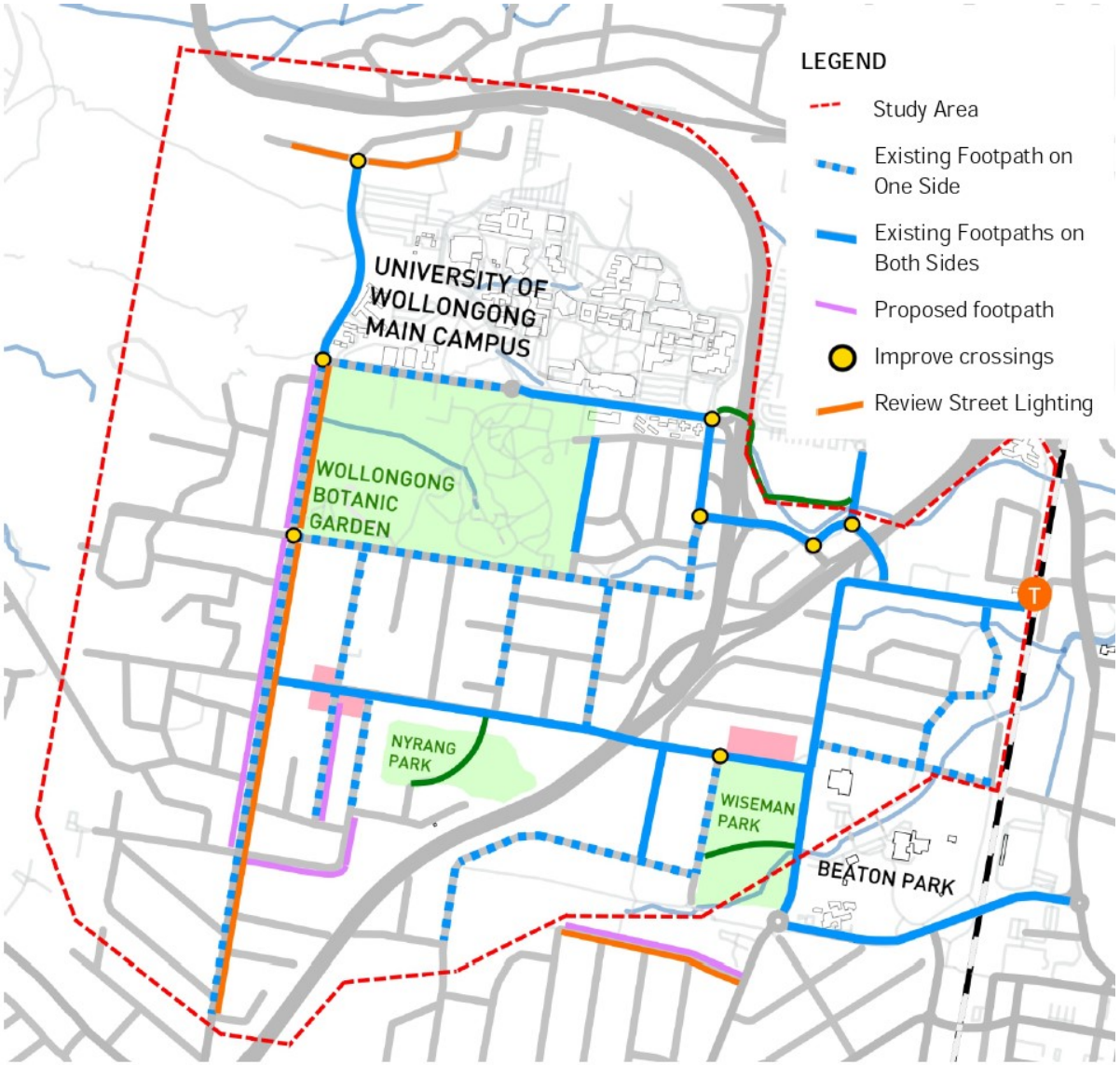
Cycling Actions

- Include suggested shared path locations in future programs.
- Work with TfNSW to investigate active transport connection across train line close to Beaton Park.
- Provide improved cycling wayfinding on the key regional cycle routes.
- Provide a widened shared path through Wiseman Park in line with the Fairy Creek Corridor Master Plan.
- Provide increased number of secure and undercover bicycle parking at key land uses such as the UOW, Keiraville and Gwynneville village centres, Beaton Park, the local schools and off-street parking locations.



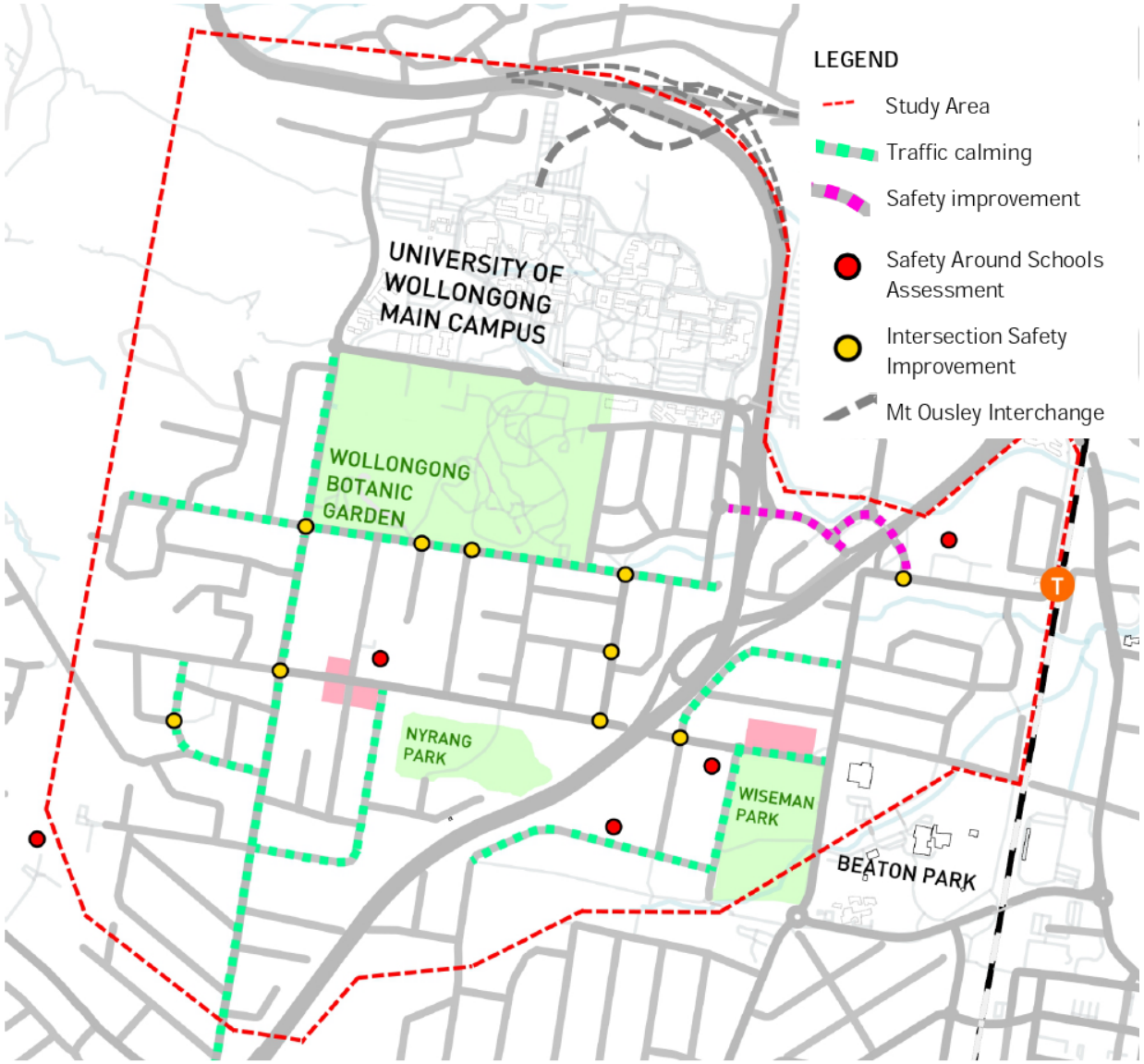
Pedestrian Actions

- Provide compliant pedestrian refuge island at roundabouts.
- Ensure that all crossing facilities comply with Australian Standards (upgrade where needed).
- Provide a direct pedestrian connection towards the north and east of UOW.
- Provide wayfinding to key destinations including train stations, UOW, key centres and recreation facilities.
- Provide increased pedestrian priority within the village centres.
- Provide increased marketing especially in schools, workplaces and town centres to show the benefits of walking and cycling.
- Review street lighting with respect to pedestrian needs
- Include suggested footpath locations in future programs.



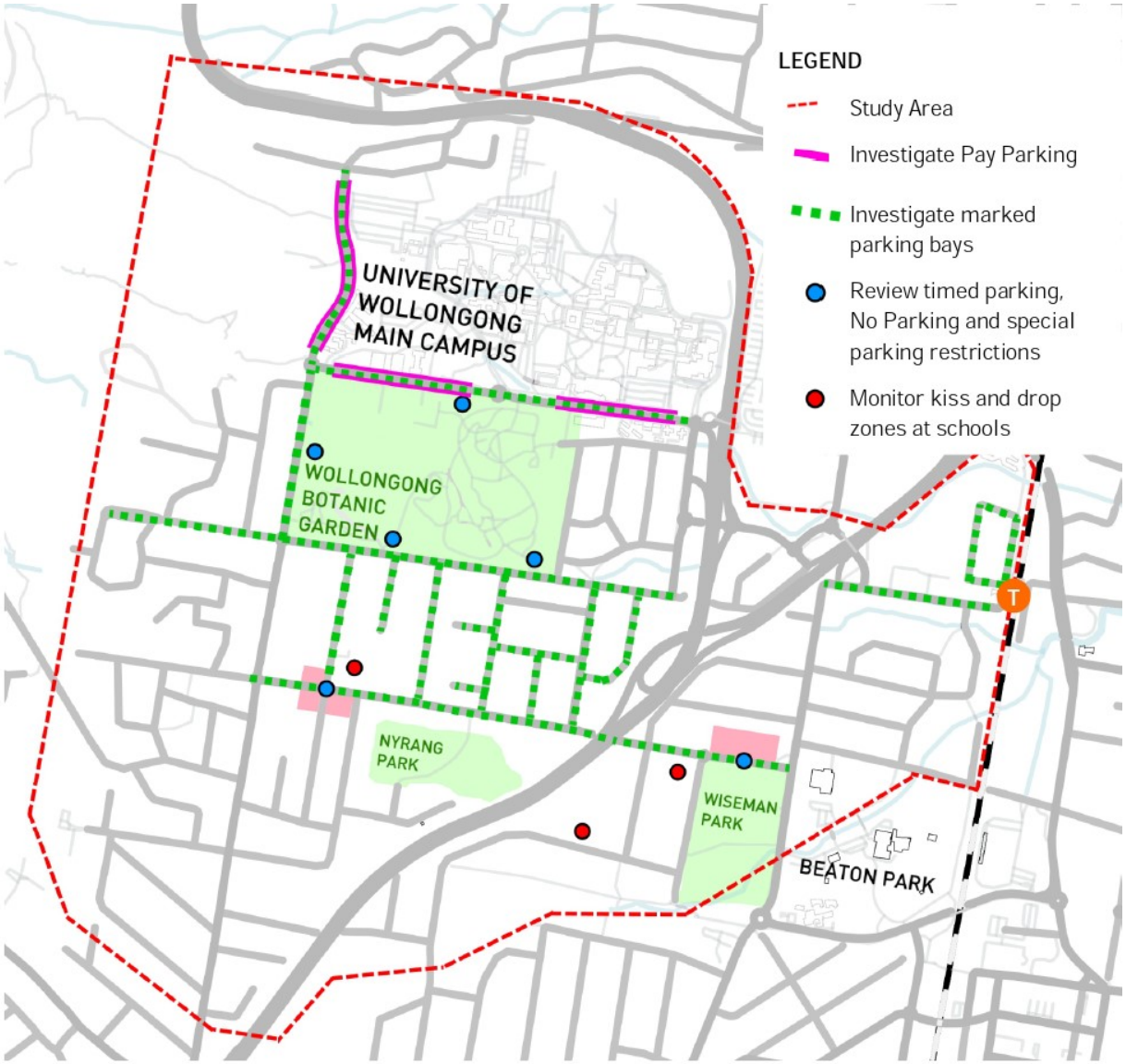
Vehicle Movement Actions

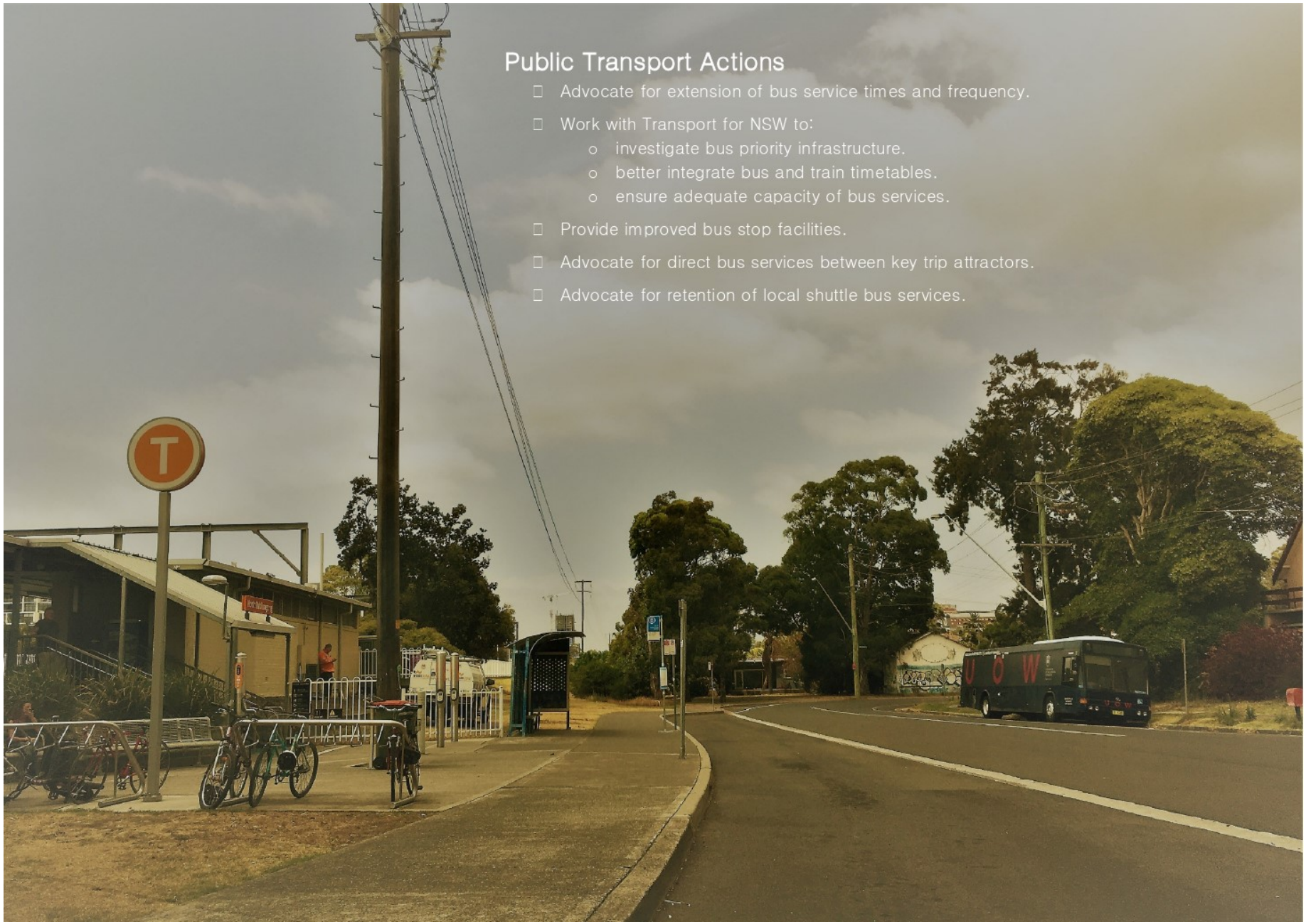
- Realignment of roundabout at Murphys Avenue and Robsons Road.
- Undertake safety around schools assessments.
- Advocate for implementation of the Mount Ousley Interchange project.
- Investigate traffic calming measures on Robsons Road to manage vehicle speeds, particularly on the north and south downhill sections to the Gipps Rd intersection.
- Investigate intersection improvements (refer to map).
- Investigate traffic calming improvements (refer to map).
- Investigate roundabout installation at Braeside Avenue – Murphys Avenue to reduce vehicle speed.
- Investigate safety improvements on University Avenue.



Car Parking Actions

- Investigate the provision of marked parking bays to increase the efficiency of parking spaces within the precinct.
- Review timed parking, pick up and drop off and special parking restrictions surrounding key destinations.
- Review ranger patrols to ensure all vehicles abide by the corresponding parking restrictions.
- Investigate introduction of paid parking in close vicinity of the University.
- Develop a special event parking and traffic management plan for significant events at Beaton Park.
- Monitor school kiss and ride zones to prevent parking and expand as required to support demand.
- Investigate parking wayfinding opportunities to parking at attractors such as Beaton Park and the Botanic Garden.
- Work with schools to manage parking and safe drop off/pick up.




Public Transport Actions
Advocate for extension of bus service times and frequency.
Work with Transport for NSW to:
investigate bus priority infrastructure.
better integrate bus and train timetables.
ensure adequate capacity of bus services.
Provide improved bus stop facilities.
Advocate for direct bus services between key trip attractors.
Advocate for retention of local shuttle bus services.
T
U O W

wollongong
city of innovation

Keiraville-Gwynneville Access and Movement Study

Access and Movement Study
80018018

Prepared for
Wollongong City Council

Cardno

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1 Introduction

1.1 Background and purpose

Keiraville and Gwynneville will experience significant growth in the coming decades as a result of expansion of the education and health precinct in Wollongong. This future expansion will increase the number jobs and students in the region, therefore increasing demand for housing, infrastructure and transport.

Wollongong City Council (WCC) commissioned a Keiraville–Gwynneville Access and Movement Study (the study) to improve their understanding of existing and future access and transport demand in the area, and to mitigate the impacts of more growth. This includes traffic and transport strategies to encourage sustainable travel behaviour and ease pressure on the transport network. Improvements for the pedestrian, cycling, bus, train, private vehicle and parking networks are recommended by this study.

1.2 Project objectives

The key objectives of this study are to:

> Examine and document the existing and future potential operation of the traffic and transport system within the suburbs of Keiraville and Gwynneville; and

> Develop strategies to improve the transport system, reduce impacts on Keiraville and Gwynneville and surrounding suburbs, promote the use of sustainable travel modes and ensure that the transport network can adequately accommodate future development.

1.3 Keiraville and Gwynneville study area

Keiraville and Gwynneville are located within the City of Wollongong, in the Illawarra region of NSW. The two suburbs lie between the Princes Motorway (M1) to the north and east, the Illawarra Escarpment State Conservation Area to the west, and extend south towards Mount Keira Road. The study area is shown in **Figure 1-1**.

There are many important land uses that generate a high number of trips each day and influence access, movement demand and behaviour in the study area. These land uses include:

> Keiraville and Gwynneville village centres;

> The University of Wollongong (UOW) Campus;

> UOW Innovation Campus (iC);

> Wollongong CBD;

> Wollongong Hospital;

> Wollongong Botanic Garden;

> North Wollongong Station;

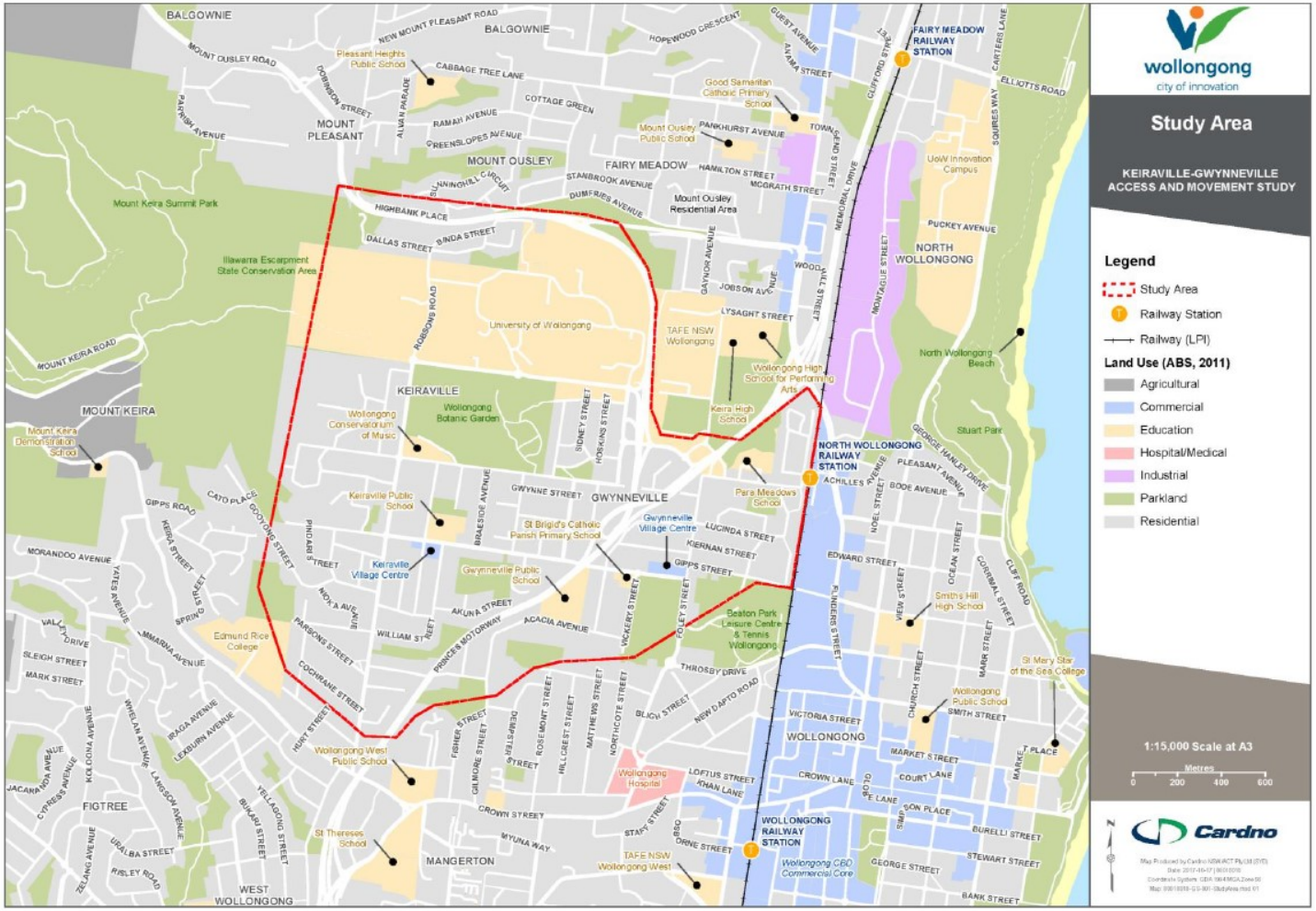
> TAFE Illawarra Wollongong Campus;

> Mount Ousley residential area;

> Local schools; and

> Sports and recreation facilities.

Figure 1-1 Study area



2 Strategic Context

Understanding the position of Keiraville and Gwynneville in the broader context of the greater Wollongong area is essential in order to recommend effective strategies to improve the transport network. This section provides an overview of the broader context, including Council plans, UOW strategies, regional plans and transport projects.

2.1 Regional strategic plans

This section outlines the strategies, policies and plans for the greater Illawarra region that play an important role in the transport network.

2.1.1 Illawarra-Shoalhaven Regional Plan, NSW Department of Planning and Environment, 2015

The Illawarra Shoalhaven Regional Plan provides the strategic policy, planning and decision-making framework to guide the region to sustainable growth over the next 20 years. The key principle of integrating transport and land use, and the support of improvements to the active and public transport networks are important components of the transport element of the plan.

Relevance for Keiraville – Gwynneville Access and Movement Study

The Plan includes a goal to maintain a region with communities that are strong, healthy and well-connected which could be achieved in part by:

- Investigating options to improve public transport service levels which better link centres, corridors and growth areas to Metro Wollongong;
- Improving access to centres, particularly in the northern corridor, to encourage development; and
- Investigating tourism-related transport services in Kiama and Shoalhaven.

2.1.2 Illawarra Draft Regional Growth and Infrastructure Plan, NSW Department of Planning and Environment, 2014

The Regional Growth and Infrastructure Plan for the Illawarra region is a framework that will guide development and growth to 2031, through integration with land use planning and the transport network.

Some of the particular transport challenges facing the Illawarra as it grows include growing demand for freight, the need for improved train travel times, heavy reliance on private vehicles, catering for peak tourism travel demand, pressure to complete road construction in the region, catering for an ageing population, ongoing investment in bus priority and funding regional cycling infrastructure.

Current infrastructure commitments from the NSW Government include upgrades to the Princes Highway, a safety upgrade of the Picton Road/ M1 intersection and slow vehicle climbing lanes on Mount Ousley Road that will also improve freight capacity.

Relevance for Keiraville – Gwynneville Access and Movement Study

Wollongong is classified as a regional city, providing higher order administration, education and health services, cultural and recreational facilities and higher density commercial and residential development for the region. Revitalisation of Wollongong will strengthen its economic and employment significance in the region.

2.1.3 Illawarra Regional Transport Plan, Transport for New South Wales, 2014

The Illawarra Regional Transport Plan 2014 contains a number of programs that may assist in the delivery of new infrastructure, services and information. It states that the population of the Illawarra region is expected to increase by more than 75,000 people in the next 20 years through development of employment, health, education and retail land uses. Some of the initiatives underway in the Illawarra region outlined in this plan are:

> $80 million commitment to maintenance and improvement of safety and reliability of the rail network;

> New timetabling of rail services in 2012 that delivered 7,000 additional seats on Illawarra and South Coast Services;

> Introduction of NSW TransLink, an operating division dedicated to improving regional rail services; and

> Introduction of new bus services in the Illawarra region.

Relevance for Keiraville – Gwynneville Access and Movement Study

The following plans and ideas will directly impact Gwynneville and Keiraville:

- The free shuttle buses and local access buses will continue to operate, with peak frequencies supporting convenient access;
- Providing free public transport will help to increase the mode share of public transport to and from the CBD and local centres will reduce congestion on roads and the pressure placed on parking capacity;
- New developments in the region will contain planning for active and public transport; and
- The improvement of walking and cycling infrastructure at transport interchanges will support mode change.

2.2 Wollongong City Council strategic plans

It is important to incorporate and build upon WCC's existing plans and strategies in the development of this study. Council's relevant transport directions are outlined in this section.

2.2.1 Keiraville Gwynneville Community Planning Project, Neighbourhood Forum 5, 2014

Neighbourhood Forum 5's (NF5) Keiraville Gwynneville Community Planning Project acknowledges population growth in the coming years and captures the community's concerns regarding future development and the transport network. The Project collated community consultation outcomes regarding the future of Keiraville and Gwynneville, for Council to consider in the development of an Implementation Plan.

Community consultation activities isolated four key themes identified as essential in planning for Keiraville and Gwynneville. These themes are parking and access, street safety, village protection and development, and building the community and relationships. The challenges identified by this project are the increasing population and visitors. Future opportunities for the study area include planning ahead for impacts on infrastructure, forecasting future growth, directing development to achieve sustainable outcomes, and working closer with UOW and with the community.

Relevance for Keiraville – Gwynneville Access and Movement Study

Prioritised actions arisen from this community consultation are:

- Construction of a walking track through the Botanic Gardens, TAFE and to the beach;
- Provision of bike parking at the Botanic Gardens;
- Lobby Council for a parking strategy that includes regular enforcement of parking regulations at shops to keep passing trade moving, and the provision of short term parking near shops;
- Lobby Council to provide bike parking and improved pedestrian facilities at shopping centres to improve access;
- Request Council to place more signage indicating availability of parking;
- Request Council to extend the areas with painted parking bays to help with dangerous parking and improve parking efficiency;
- Community liaison group to work on developing a parking strategy for new university accommodation;
- Improve cycling infrastructure to encourage increase in cycling trips;
- Expand shuttle buses to other areas to decrease parking demand;
- Collaboration with UOW, RMS and WCC to address Mount Ousley Road as a barrier to pedestrians and cyclists;
- Request a whole traffic management study beginning at Mt Keira Road and Robson Road, including review of sight lines for parking;
- Investigate traffic calming measures at the Gwynneville village centre; and
- Investigate full audit of footpaths to address safety and connectivity concerns.

2.2.2 Keiraville Gwynneville Implementation Plan, WCC, 2015

Refinement of NF5's Keiraville Gwynneville Community Planning Project led to the production of an Implementation Plan to carry out the visions emerging from the project. This Implementation Plan contains potential timeframes, responsibilities and estimated costs for each recommended action.

Relevance for Keiraville – Gwynneville Access and Movement Study

An implementation plan is provided for each of the actions:

- Commission of an Access and Movement Study, with a focus on traffic capacity in context of key destinations, parking and pedestrian access and safety;
- Regulation and enforcement, focusing on monitoring illegal parking and a review of timed parking at village centres;
- Investigation of bicycle parking, including a plan for bicycle parking facilities in village centres; and
- Investigation of parking signage, including signage and wayfinding at the Keiraville and Gwynneville village centres to ensure current parking supply is beneficial to the community and visitors.

2.2.3 Wollongong 2022 Community Strategic Plan, WCC, 2012

The Community Strategic Plan outlines the Wollongong community's prioritised standards and goals and how they are to be achieved. The relevant goals are to protect the natural environment, cultivate an innovative and sustainable economy, maintain a healthy community in a liveable city, and enjoy a sustainable, affordable and accessible transport network. The main identified issues for transport network are the need for improved public transport services and infrastructure, including a fast train to Sydney, and increased safety.

Relevance for Keiraville – Gwynneville Access and Movement Study

The Plan identifies that to achieve WCC's goal of a sustainable, affordable and accessible transport network, the following strategies must be implemented:

- Establish Wollongong as a bike friendly City;
- Extension of the free Gong Shuttle bus service;
- Delivery of interconnected and accessible cycleways and footpaths;
- Establish a 'Park and Ride' commuter bus network to encourage the community to use alternate transport modes;
- Provide an effective and integrated regional transport system with a focus on road, bus, rail and freight movement;
- Improve rail services and stations across the Local Government Area;
- Investigate opportunities to reduce travel time between Sydney and Wollongong;
- Improve availability of late night transport options; and
- Promote community transport options for people with disabilities.

2.2.4 Wollongong Local Environmental Plan, NSW Government, 2009

The Wollongong Local Environmental Plan (LEP) sets out planning provisions for land in Wollongong in accordance with the relevant zoning and development controls.

Keiraville and Gwynneville are mainly classified as (R2) Low Density Residential land, with areas of (RE1) Public Recreation land, such as the Botanic Gardens. To the east of Keiraville and Gwynneville, the Wollongong CBD is classified as (B3) Commercial Core land, and (B6) Enterprise Corridor, and the Wollongong Hospital precinct is classified as (SP1) Special Activities land. Land to the west of the UOW campus is classified as (E2) Environmental Conservation land, and (E1) National Parks and Nature Reserves land.

Relevance for Keiraville – Gwynneville Access and Movement Study

The transport related requirements for each land zone in the study area are as follows:

- R2 (Low Density Residential) classified land is required to maximise public transport patronage and encourage walking and cycling.
- B3 (Commercial Core) classified land is required to maximise public transport patronage and encourage walking and cycling.
- B6 (Enterprise Corridor) classified land is required to allow some diversity of activities that will not have an adverse impact upon the efficient operation of the surrounding road system.
- The remaining land types do not have transport related requirements.

2.2.5 Wollongong City Council Community Engagement Policy, WCC, 2013

The purpose of the WCC Community Engagement Policy is to show a commitment to engaging with and informing the community with decision-making processes. Council engages with the community via the following processes:

- Council communicates clearly with the community via Council's website and online media channels, Council's newsletters, letters and emails, fact sheets, customer service, events and festivals, kiosks and information sessions.
- Council seeks feedback from the community before final decisions are made through public access forums, ward meetings, community forums, kiosks, surveys and submissions, online engagement, communication channels and independent Hearing and Assessment panels.
- Council involves the community in designing possible solutions via ward meetings, community forums, kiosks, reference and advisory groups, focus groups, workshops, online engagements and communication channels.
- Council collaborates with the community to make decisions through focus groups, workshops, reference and advisory groups, online engagements and communication channels.

Relevance for Keiraville – Gwynneville Access and Movement Study

In this study, Cardno engages with the community via workshops to inform, consult, involve and collaborate, in accordance with Council's Community Engagement policy.

2.2.6 City of Wollongong Pedestrian Plan 2017 – 2021, WCC, 2017

WCC's Pedestrian Plan sets out Council's vision for walking and recommends a range of strategies to address key walking issues facing the City, and to promote walking as the preferred mode for short trips. The Plan identifies pedestrian safety and convenience as a major concern. Some of the main factors deterring people from walking as a key mode of transport are:

- Low pedestrian priority in areas of high pedestrian activity;
- Large distances between key locations and residential areas, as well as steep topography that is unsuitable for footpaths;
- Lack of wayfinding for pedestrians in village centres; and
- Presence of busy roundabouts that hinder safe crossing for pedestrians.

Relevance for Keiraville – Gwynneville Access and Movement Study

The following five goals will assist Council to achieve its vision for walking across the Local Government Area and address associated challenges:

1. Encourage walking;
2. Create pedestrian friendly places;
3. Makes walking safe;
4. Make walking easy and convenient; and
5. Work efficiently to implement the Pedestrian Plan.

2.2.7 City of Wollongong Bike Plan 2014 – 2018, WCC, 2014

The main objectives of the City of Wollongong Bike Plan 2014-2018 are increasing participation in cycling, developing a safe and connected network of bike routes, growing bicycle tourism and improving cycling awareness, safety and proficiency.

The plan identifies the benefits of cycling as health, reduced road congestion, recreation, travel time saving, environmental, financial, tourism and economic. A lack of safe cycling connections between the UOW campus, the Innovation Campus and the Wollongong City Centre is noted. A dramatic increase in cycling mode share is considered achievable in the Wollongong City Centre because of the high employment density and short travel distances between major trip generators. A key missing link in the cycling network was identified as the route between the UOW campus and the suburb of Figtree to the south-west.

Relevance for Keiraville – Gwynneville Access and Movement Study

This plan provides an understanding of:

- Council's vision for the cycling network, including construction of cycle way links on McGrath Street north of campus, Northfields Avenue, and south of the Botanic Gardens;
- The cycling constraints and opportunities that exist within the greater Wollongong area; and
- Council's priorities for proposed works.

2.2.8 Wollongong City Centre Access and Movement Strategy, WCC, 2013

The 2013 Access and Movement Strategy was developed to support the revitalisation of Wollongong's City Centre, as an update to the original 2005 Access and Movement Strategy. This study outlines the land use context, and pedestrian, cycling, vehicular, car parking and public transport access and movement.

This Strategy also outlines the vision for Wollongong Station and the railway precinct to be a fully integrated transport interchange with station access from elevated concourse access off Crown Street. The redevelopment of Piccadilly centre will allow for improved pedestrian access to the station and an interchange with buses, taxis and drop off zones.

Relevance for Keiraville – Gwynneville Access and Movement Study

Many issues regarding the transport network in the Wollongong City Centre are outlined in this report, as well as the following strategies to address these issues:

- Pedestrian strategies include a reduction in traffic speeds in the City Centre, a new footpath program, kerb ramp replacement program, a footpath replacement program, safety hazards program, and pedestrian crossing improvements.
- Key actions proposed to address cycling issues in the City Centre are developing a network of shared paths and road treatments, public bicycle parking in the City Centre and reduction in traffic speeds in the City Centre.
- Traffic management strategies include a road upgrade program with intersection modifications, new traffic signals within the City Centre, an extension to Ajax Avenue, road widening and extensions, City Centre West Precinct traffic calming measures, and parking bay line markings.
- The major elements of the car parking strategy are: encouraging developers to provide parking in consolidated off-street parking locations, improved parking guidance systems, improved pedestrian, cycling and public transport facilities, and a comprehensive on and off-street parking survey to be completed every three years.
- The bus operations strategy includes design modifications to the Wollongong Station interchange, bus priority programs, relocation of the bus terminal at Lang Park, implementation of an integrated ticketing system, installing bus priority measures where appropriate, and extending bus services to South Wollongong.

2.2.9 Beaton Park Precinct Needs Assessment Project, WCC, 2015

The Needs Assessment Project for Beaton Park contains extensive reviews of existing facilities and input from key precinct stakeholders, providing an overall strategic approach for the precinct and enhanced community access. This study arose from population trends that indicate greater local demand on the Beaton Park Precinct facilities.

Transport access related aims for the precinct are to maximise accessibility to the site for all transport modes and minimise conflicts between them, maximise car parking on site in a safe and environmentally friendly manner, and ensure access to the site is safe whilst minimising disruption to the surrounding neighbourhood.

Relevance for Keiraville – Gwynneville Access and Movement Study

WCC meeting minutes from 9 May 2016 indicate that a Beaton Park Traffic Management Plan is to be completed. This plan will include a redeveloped access point and internal road network with linked car parks at key activity nodes. This also may include a new entry and bridge link from Gipps Street and more parking at the Beaton Park Leisure Centre site.

2.2.10 Beaton Park Plan of Management, WCC, 2007

The Beaton Park Plan of Management outlines directions to transform the park into a major regional sporting complex in Gwynneville. However, major concerns for the park include the availability of car parking and transport access. Plans to construct a new car parking area, with 281 spaces, will also eliminate the existing causeway crossing and provide for a more practical vehicular and bus access between Foley Street and Gipps Street. Upgrades to access points are also included in these plans.

Relevance for Keiraville – Gwynneville Access and Movement Study

A number of actions are proposed to achieve the following transport related objectives and performance targets:

- Maximise car parking capacity on site within environmental, recreational and social constraints;
- Maximise site access while reducing congestion and conflict for all users;
- Improve traffic flow in and around the site;
- Improve public transport access to the site; and
- Improve pedestrian access.

2.3 University of Wollongong strategic plans

UOW's location within the study area places it as one of the key destinations influencing travel demand within Keiraville and Gwynneville. Expected growth in student population, expansion of student accommodation and evolving transport behaviour will heavily influence future transport demand for the area. It is crucial to understand and consider this adapting context for the Access and Movement Study.

2.3.1 Draft University of Wollongong Transport Strategy and Survey, Cardno, 2017

The 2017 Draft UOW Transport Strategy and Survey is the most recent edition of the biennial study. The 2017 Draft Transport Strategy aims to increase social and environmental sustainability at the UOW campus through encouraging a modal shift for staff, student and visitor travel towards public and active modes. The process of shifting travel behaviour should include understanding people's decision making processes, addressing their travel needs, and integrating the urban form with their desire lines.

A number of transport actions were recommended to support the achievement of each of the strategic transport objectives, listed in **Appendix A**.

Relevance for Keiraville – Gwynneville Access and Movement Study

A number of actions are proposed to achieve the following transport related objectives and performance targets:

- Improve existing campus access constraints to meet current and future demand;
- Improve active transport as a means of accessing the campus;
- Improve public and shared transport as a means of accessing the campus; and
- Maximise the use of UOW parking to meet current and future demands.

2.3.2 University of Wollongong Campus Master Plan 2016 – 2036, UOW, 2016

The UOW Campus Master Plan provides the vision for the campus from 2016 – 2036, which is due to have a growth in students and learning spaces by 2036. This Master Plan also provided a vision in terms of governance, landscape, access and sustainability which aligned with regional strategies for the area.

Key strategies and actions of this master plan are provided in **Appendix B**.

Relevance for Keiraville – Gwynneville Access and Movement Study

Key strategies from access and sustainability include:

- Introduce pedestrian friendly gateways to provide a welcoming entrance to the campus that connects to the neighbourhood;
- Introduce a series of pedestrian walks and improve pedestrian safety throughout the campus;
- Improve access to the campus for cyclists and upgrade bike infrastructure;
- Consolidate car parking on the periphery, providing easy access to the campus;
- Support the introduction of a new northern entrance to the campus; and
- Reduce car park to 1 space per 5.4 effective student full time load by 2036.

3 Existing transport network and demand

This section of the study outlines the existing and planned active transport, public transport, and road networks, the traffic and travel behaviour, and crash analysis for the study area. It identifies infrastructure and safety issues and opportunities for travel behaviour change.

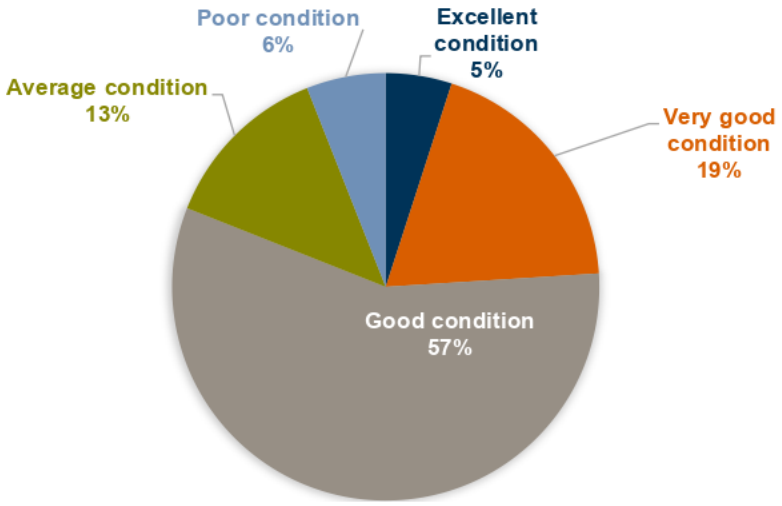
3.1 Pedestrian network

3.1.1 Footpaths

The active transport network within Keiraville-Gwynneville encompasses a combination of shared paths and footpaths.

An audit of the entire Wollongong Local Government Area (LGA), including the study area, completed by WCC identified that 19 per cent of all paths were in very good condition, and 57 per cent were in good condition. Six per cent were in poor condition. The breakdown of path condition is shown in **Figure 3-1**.

Figure 3-1 Condition of footpaths/ shared paths



Source: Draft City of Wollongong Pedestrian Plan, 2017

The footpath network in Keiraville-Gwynneville is limited, particularly away from UOW. The only roads that have footpaths on both sides of the road are Irvine Street, Northfields Avenue and Gipps Road. The majority of local streets have footpaths on one or no sides of the road.

On approach to Gwynneville village centre, footpaths are present on the north side of Gipps Road only. Keiraville village centre has footpaths provided on both sides of Gipps Road.

The locations of all footpaths are shown in **Figure 3-2**.

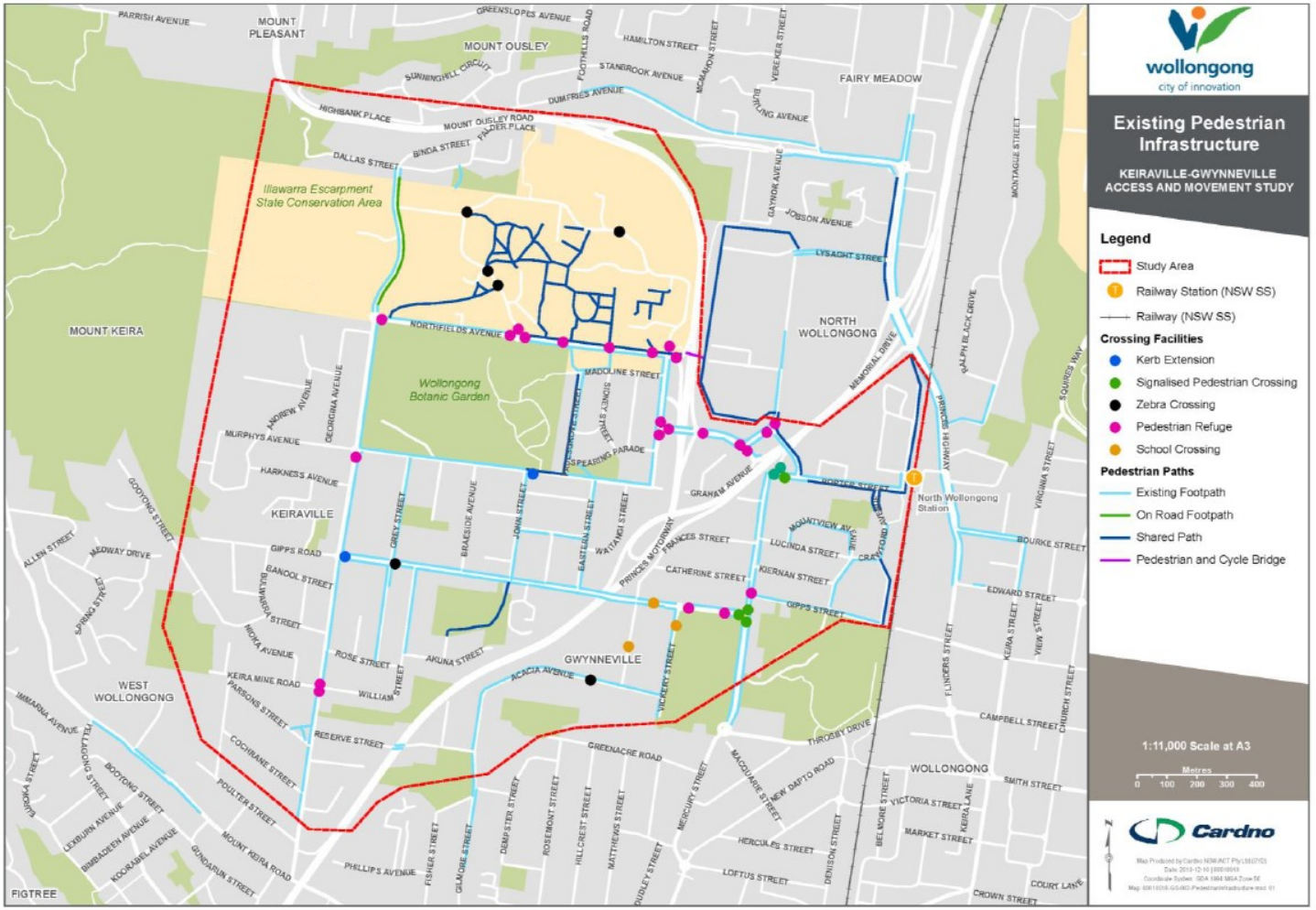
3.1.2 Crossings

Pedestrian crossing facilities in the study area include a mixture of pedestrian refuges, zebra crossings, school crossings and signalised crossing. Pedestrian refuges are provided throughout the study area, particularly along Northfields Avenue, Robsons Avenue and Gipps Road. The majority of pedestrian refuges are located at roundabouts (splitter islands).

There are six zebra crossings, three school crossings, and six signalised pedestrian crossings located within the study area, four of which are located within the UOW campus.

The locations of crossing facilities are shown in **Figure 3-2**.

Figure 3-2 Existing pedestrian infrastructure



3.2 Cycling network

There are a number of shared paths and separated cycleways within the study area. There are also on-road route options nominated as low or moderate difficultly by Roads and Maritime (Cycleway finder).

The majority of off-road cycle routes are located between North Wollongong Station and UOW. Shared paths are generally provided through parks and reserves.

The existing cycling infrastructure is shown in **Figure 3-3**.

Figure 3-3 Existing cycling infrastructure

3.3 Bus network

Bus routes servicing Keiraville and Gwynneville include three free shuttle buses and locally run services that provide connections throughout the study area and to nearby suburbs in the Illawarra and as far as Campbelltown and Port Kembla.

The free GK Shuttle bus service is operated by UOW and connects the campus with North Wollongong Station, the Wollongong CBD, Keiraville and Gwynneville.

UOW also runs the free North Gong shuttle service which directly connects the UOW Northfields Avenue Bus Interchange with North Wollongong Station. This is the only bus route to service the bus stops on the UOW campus Ring Road; it connects passengers with trains arriving at North Wollongong Station.

The Gong Shuttle bus service is run by Transport for New South Wales, and connects the UOW campus with the Wollongong CBD, the Innovation campus, Fairy Meadow, Wollongong TAFE, Wollongong and Keira High Schools, Wollongong Hospital, Wollongong Station, North Wollongong Station (on weekends only), Burelli Street and Wollongong Harbour. This service is currently free, however a longer term decision on whether the service will remain free has yet to be made.

Local bus services connecting to Austinmer, Bulli, Campbelltown, Dapto and Shellharbour are provided by the following operators:

> Busabout, providing the 887 service to Campbelltown;

> Dion's Bus Service, providing services to Austinmer and Bulli; and

> Premier Illawarra, providing services to the Wollongong CBD, Dapto, and Shellharbour.

Bus route destinations and frequencies are summarised in **Table 3-1.**

Table 3-1 Bus routes servicing Keiraville and Gwynneville

Service	Destinations	Frequency
Gwynneville Keiraville Shuttle (clockwise – GK-C and anti-clockwise – GK-A)	UOW to Keiraville, Gwynneville and Wollongong	The GK-C shuttle runs clockwise from 7:45am to 10:45pm on weekdays during session and exam periods. The GK-A shuttle runs anti-clockwise around the route, at peak times (7:30am to 10:15am and 3:45pm to 7:15pm) on weekdays during session and exam periods.
North Gong Shuttle (9/9N)	North Wollongong Station to UOW	Services run on weekdays between 7:30am and 10:00pm approximately every 10 minutes during the morning/ afternoon peaks, and every 15-25 minutes at non peak times. Reduced service on weekdays outside of session time and exam periods. Limited Saturday service during exam periods only.
Gong Shuttle (55A/ 55C)	Wollongong City to UOW (loop service)	Services run approximately every 10 minutes between 7:00am and 6:00pm and every 20 minutes between 6:00pm and 10:00pm on weekdays. On weekends and public holidays services run from 8:00am to 6:00pm approximately every 20 minutes. The route also stops at North Wollongong station on weekends.
887	Campbelltown to UOW and Wollongong via Appin	Services operate every 1-2 hours on weekdays between 6:45am and 6:45pm. No services stop at UOW on weekends or Public Holidays.
1U	Austinmer to UOW via Thirroul, Woonona, Bulli, Corrimal and Fairy Meadow	Services are limited, with 1-2 buses operating during the morning and afternoon peak periods. No services operate on weekends or Public Holidays.
4U	Bulli to UOW via Thirroul, Woonona, Bulli, Corrimal and Fairy Meadow	Weekday services operate every 1-2 hours between 8:45am and 6:00pm. No services operate on weekends or Public Holidays.
11	UOW to Wollongong via Keiraville, Westfield Figtree & Coniston	Services to and from UOW operate hourly between 7:30am and 7:45pm on weekdays, and between 7:30am and 6:00pm on Saturdays. Services run every two hours on Sundays between 8:30am and 6:45pm.

Service	Destinations	Frequency
41	Dapto to UOW via Kembla Grange, Unanderra, Figtree, West Wollongong and Keiraville	Services run on weekdays only, between 7:45am and 8:15pm. Services to UOW run hourly between 7:50am and 9:50am, and from 5:50pm to 6:50pm in the evening. Services from UOW run hourly between 9:40am and 10:40am and then again from 3:40pm to 7:40pm.
53	Stockland Shellharbour to UOW via Flinders, Shell Cove, Shellharbour Beach, Warilla, Primbee, Warrawong & Five Islands Road	Weekday services operate hourly between 8:30am and 9:00pm. Services on Saturday run hourly between 9:30am and 6:00pm. There are no services to UOW on Sundays or public holidays.

In general, across the study area bus stops are located adjacent to the footpath network. In many cases they consist of a shelter to provide weather protection, but they tend not to provide service information. However, on some routes such as along Gipps Road, the bus stop consists only of a yellow sign attached to an existing electrical pole.

The Keiraville and Gwynneville bus network, including bus stops, is shown in **Figure 3-4**.

3.4 Train network

The South Coast Line, operated by NSW TrainLink, links Sydney's CBD with Bomaderry, stopping at both Wollongong Station and North Wollongong Station.

North Wollongong Station is located two kilometres north-east of the Keiraville village centre, and 0.7 kilometres north-east of the Gwynneville village centre. The station is accessed via Station Street to the east and via Porter Street to the west. Bus services to the UOW campus operate from the bus stop outside the station on Porter Street, and pedestrian access to the station is via Porter Street.

Services to Sydney run approximately every 30 minutes during the morning and afternoon peak, and once an hour at other times. Local services stopping at all stations to Waterfall run approximately once an hour. Southbound services run approximately once an hour to Kiama and Port Kembla.

Wollongong Station is located approximately one kilometre south-east of the Gwynneville village centre, and two kilometres south-east of the Keiraville village centre.

The station locations within the study area is shown in **Figure 3-4**.

Figure 3-4 Public transport

3.5 Road network

The road network within and surrounding the study area consists of both major arterial and local roads. Local roads provide east-west access, while the Princes Motorway bisects the study area constraining connectivity. Access to the motorway is provided via on/off ramps located to the south east of the University, and to the north of North Wollongong station.

The key roads in the network are summarised in **Table 3-2**.

Table 3-2 Study area road characteristics

Road	Characteristics
Princes Motorway	Princes Motorway (M1) is a major motorway that connects Sydney to Wollongong through to Albion Park Rail. This route provides key access to destinations in the Wollongong, Illawarra and South Coast regions for tourists. It is also a major freight route from Port Kembla. This corridor is located around the south-west of the model study area, running in a north-south direction to the north-west. The number of lanes vary between two to three lanes in either direction within the study area. The speed limit is 80km/h, however, at the steep downhill grade further north of the motorway, trucks and buses are limited to 40km/h and all other vehicles to 80km/h.
Mount Ousley Road	Mount Ousley Road is an arterial road located in the north of the model study area that connects the Princes Highway and the Princes Motorway. Once the road joins the Princes Motorway through a right turn, the speed limit is 80km/h.
Princes Highway	Princes Highway is a highway that runs in a north-south direction that provides access from Mount Ousley Road, Memorial Drive and Princes Motorway. It runs almost parallel to the Princes Motorway and the coastline in the model study area. There are three lanes in both directions with speed limits that varies from 60km/h to 50km/h.
Memorial Drive	Memorial Drive is a major arterial road that runs in a north-east to south-west direction within the modelled area. Memorial Drive is connected to Princes Highway, Princes Motorway by ramps, which provides access to the Keiraville and Gwynneville area.
Robsons Road	Robsons Road is a collector road which operates as a north-south corridor connecting to the western entrance of University of Wollongong and West Wollongong residential suburbs.
Irvine Street	Irvine Street is a collector road which provides access to Princess Motorway ramps and connection to the University of Wollongong Ring Road, Northfields Avenue and Murphys Avenue.
Gipps Road	Gipps Road runs is a collector road which operates as an east-west corridor connecting to the Keiraville and Gwynneville village centres, the Beaton Park precinct and to Robsons Road.
University Avenue	University Avenue provides east-west road access between North Wollongong Station and Irvine Street. This collector road is one of the main connections between North Wollongong, Keiraville and Gwynneville.
Murphys Avenue	Murphys Avenue is a local road and runs east-west along the southern side of the Botanic Garden, and connects to Irvine Street and Robsons Road.
Northfields Avenue	Northfields Avenue is collector road located on the southern boundary of the UOW campus, running east-west and connecting between Robsons Road and Irvine Street. Two UOW campus access points and the Bus Bay are located on Northfields Avenue.

Traffic surveys of all key intersections in the study area were commissioned as part of the study, and the results are provided in **Appendix C**. These were used to understand peak demand, together with the traffic modelling detailed in **Section 3.8.5**.

3.6 Parking provision

High parking generating land uses within the study area include the UOW, Keiraville and Gwynneville village centres. A mixture of on and off street options are available throughout the study area.

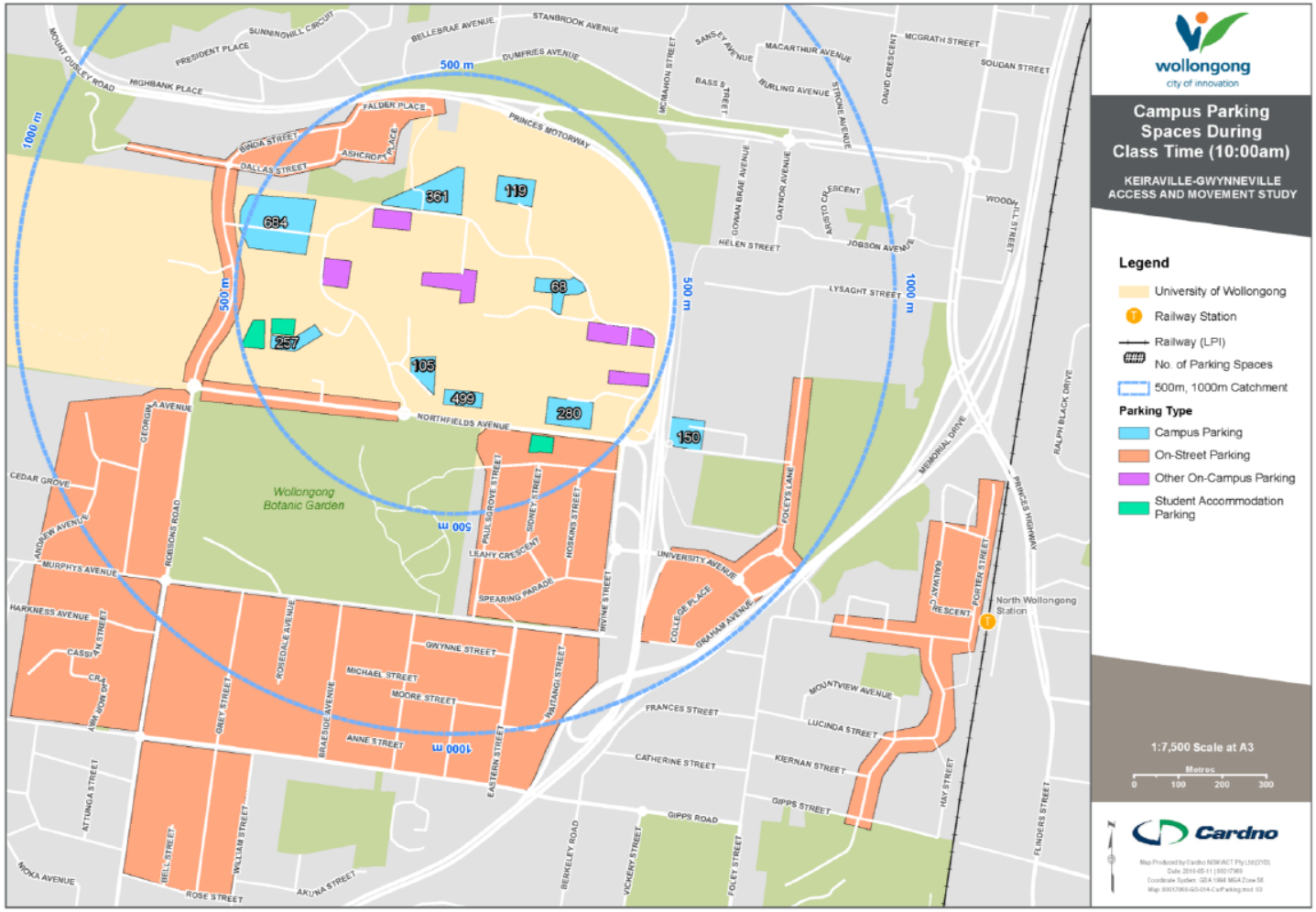
3.6.1.1 Keiraville and Gwynneville village centre parking

Within the Keiraville village centre, one hour parking is available along Grey Street and Gipps Road. The parking situation is similar close to Gwynneville village centre, with one hour parking available along Gipps Road and Foley Street. Unrestricted parking is available further away from both village centres.

3.6.1.2 UOW campus and surrounds parking

Within the UOW campus, there are many parking options with varied capacities and parking types, shown in **Figure 3-5**. In 2016, the ratio of car parking spaces per the Effective Full Time Student Load (EFTSL) was 5.4. Parking status reports for the UOW car parks during the week of 3 April and 7 April 2017 were obtained as part of previous studies. These reports indicated that on average, both the carpool and ticketed car parks reached or exceeded capacity on all days. The status reports showed that reserved parking was under-utilised on campus, with an average of 54 per cent usage throughout the day. Approximately 60% of all parking spaces at UOW are reserved. At the same time, ticketed, carpooling and permitted parking reached high levels of utilisation.

Figure 3-5 UOW parking locations



3.6.1.3 *North Wollongong Station parking*

Unrestricted parking near the North Wollongong Station is available on Railway Crescent, Porter Street, Crawford Avenue, Exeter Avenue, Achilles Avenue, Bourke Street, Wiseman Avenue and Edward Street.

3.6.1.4 *Parking near schools*

Parking arrangements for schools in the Keiraville and Gwynneville study area are shown in **Table 3-3**.

Table 3-3 School parking

School	Location	Parking availability
Keiraville Public School	At the north-eastern side of the intersection of Grey Street and Gipps Road	Parking is prohibited on Grey Street directly outside of Keiraville Public School between 8:30am and 9:00am on weekdays. There is also 1-hour parking on Gipps Road outside of the school between 8:30am and 6:00pm Monday to Friday. There is limited availability for parent drop-off and pick-up, which is provided for through No Parking zones from 8-9:30am and 2:30-4pm. Council works closely with Keiraville Public School to adjust these areas to suit the school's needs.
Keiraville Community Preschool	Gooyong Street	Parking is provided on-site for children to be safely picked up and dropped off. There are no parking restrictions on Gooyong Street outside of Keiraville Community Preschool, however the road is narrow, there is a steep grade and parents are not encouraged to park here.
Gwynneville Public School	At the intersection of Acacia Avenue and Berkeley Road	No parking is allowed on Acacia Avenue directly outside of Gwynneville Public School between 8:00am – 9:30am and 2:30pm – 4:00pm, however a bus zone and accessible parking is provided. Around 100m of the frontage on Acacia Avenue is unrestricted parking.
KU Gwynneville Preschool	Berkeley Road	This is an older preschool and no on-site parking is provided. No stopping is allowed on Berkeley Road directly outside of the KU Gwynneville Preschool between 8:00am – 9:30am and 2:30pm – 4:00pm. The street frontage is narrow and a children's crossing serving Gwynneville Public School is adjacent, so parking opportunities are limited and parents rely on on-street parking away from the entrance.
Tinkerbell Pre School and Long Day Care Centre	Gwynne Street, near the intersection of Eastern Street	There is adequate parking provided on-site. There is also unrestricted parking on Gwynne Street, Eastern Street and other nearby roads.
St Brigid's Catholic Parish Primary School	At the south-western side of the intersection of Vickery Street and Gipps Road	There is no parking on either Vickery Street or Gipps Road directly outside of the St Brigid's Catholic Parish Primary School. However, there is unrestricted parking on Vickery Street further south of the school.
Para Meadows School	Porter Street, near the intersection with University Avenue	All parking demand for students and visitors is accommodated on-site. There is also unrestricted parking is available on both sides of Porter Street directly outside of Para Meadows School, however parking demand is very high.

A summary of the on-street parking restrictions and the number of parking spaces across the study area is shown in **Figure 3-6**.

Figure 3-6 Parking restrictions and number of parking spaces

3.6.2 Parking utilisation

On-street parking utilisation data was analysed from two data sources. In 2017, a sub-contractor collected parking utilisation data at 10am on 14 February, 7 March and 4 April. On 19 September 2017, Cardno's audit team completed the parking utilisation audits for the remaining streets in the study area. The dates all fall within university session timeframes.

Parking audits of the study area reveal that the streets located closer towards the UOW campus reach capacity, such as Northfields Avenue, Robsons Road, Irvine Street, Madoline Street, Hoskins Street, Sidney Street, Spearing Parade, Dallas Street, Binda Street, Falder Place, Ashcroft Place and Waitangi Street.

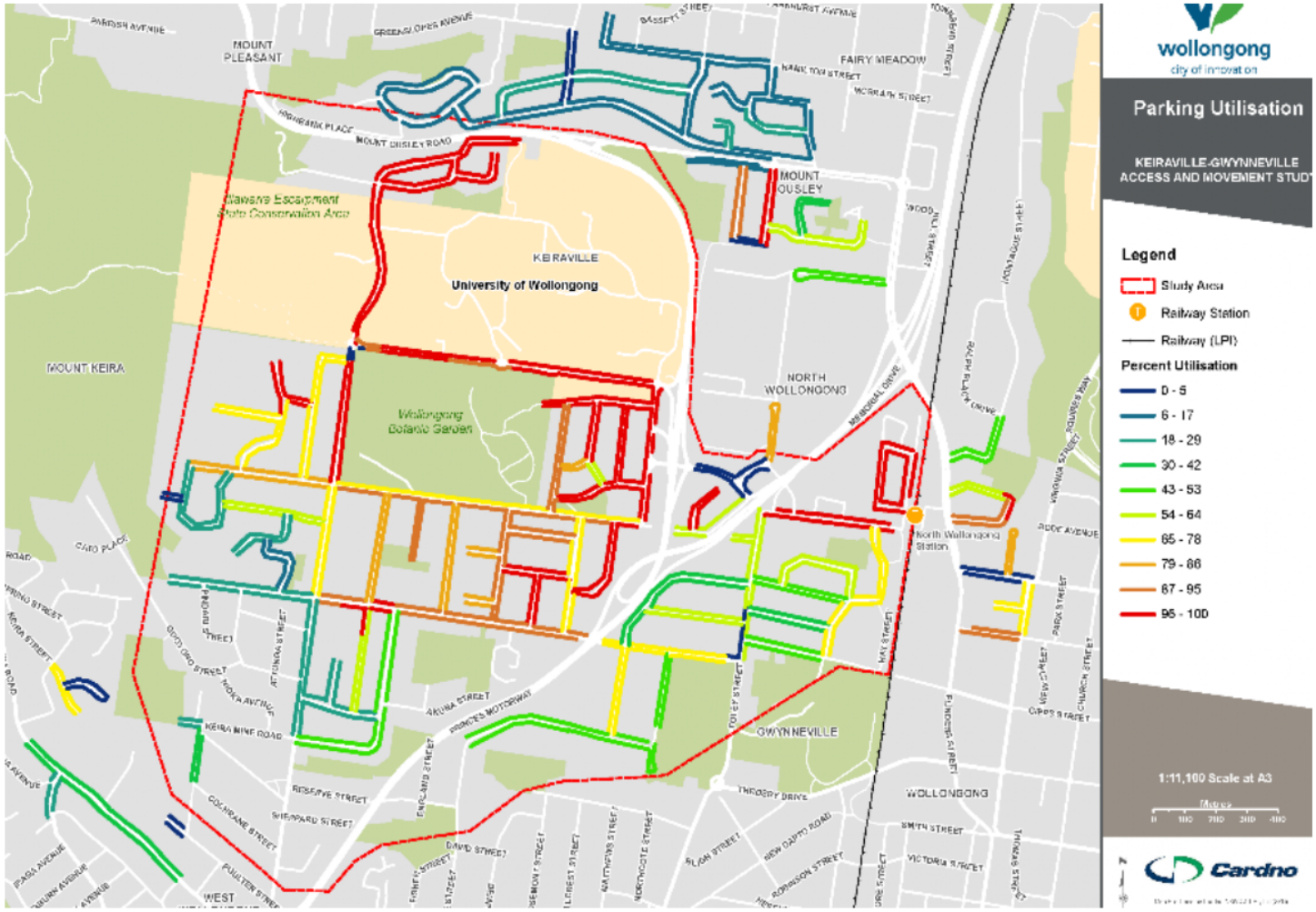
The streets in Mount Ousley, such as Dumfries Avenue and Sunninghill Circuit, achieve a low utilisation of below 20 per cent, despite close proximity to the UOW campus. This is because Mount Ousley Road forms a barrier to pedestrian movements north of the UOW campus.

The 1-hour parking spaces in the Keiraville village centre had high parking utilisation, reaching close to 100 per cent. There was less demand for parking in the Gwynneville village centre. Parking utilisation in the streets near North Wollongong Station was high.

Parking utilisation by street is shown in **Figure 3-7**, with key generators of parking demand discussed in the following sections. The results are based on spot counts generally undertaken on Tuesday 4 April 2017, with some counts undertaken on 19 September 2017 for areas not covered by the initial counts. The utilisation was calculated as the number of parked cars per available parking spaces on each street at the time of the audit. The parking management of these on-street bays does not greatly discourage use by students: nearby, on-street parking is generally unrestricted or reduced to 2-hour parking only within 400m of the campus (as shown in **Figure 3-6**). This parking is also free, in contrast to parking on-campus, which ranges from $3.50 (for up to 4 hours) to $9.60 (for 6+ hours).

Parking utilisation is discussed further in the Parking Analysis Technical Memorandum in **Appendix D**.

Figure 3-7 Parking utilisation for a typical weekday (based on spot counts undertaken at 10am on Tuesday 4 April and 19 September 2017)



3.6.2.2 *Keiraville and Gwynneville village centres*

The Keiraville and Gwynneville village centres are both located approximately one kilometre from the UOW campus, at the periphery of a 12 to 15 minute walking catchment. It is unlikely that there is a great deal of impact from students parking in the villages.

Retail centres generally must consider the needs of visitors and staff. The parking hotspot shown on the parking utilisation map near the Keiraville village centre suggests that this area is heavily used by visitors. It is noted that bays are generally restricted to 1-hour parking in this vicinity.

Additional off-street parking within the village centres is available for use by employees and visitors.

3.6.2.3 *UOW campus and surrounds*

Overall, UOW students make up the largest group for parking demand. Results from studies of other universities, such as the Curtin University Transport Study (2010), have shown that students are generally willing to walk further to obtain free parking, and are willing and able to move their vehicle multiple times to circumvent timing restrictions. Some of the parking demand is satisfied on-site by 1,029 ticket parking bays (plus approximately 350 car pool and 150 specialty bays). This ratio of student parking is significantly lower than that at other universities surveyed in the past, and is generally consistent only with City-Centre campuses at UNSW and University of Sydney (see **Table 3-4** below).

Table 3-4 Parking provision by student population – comparison statistics

University	Student Enrolment (EFTSL)	Total Parking	Students per Bay	Comments
Curtin Bentley	18,000	6,750	2.7	Much of the parking is unavailable to students – actual ratio 4.2 to 4.7
Macquarie	18,000	5,060	3.6	All parking shared with staff
UOW (2010)	13,000	2,700	4.8	Majority of parking unavailable to students – actual ratio 8.8
UOW (2016)	17,080	3,168	5.4	Majority of parking unavailable to students – actual ratio 12 to 16
ANU	13,300	5,870	2.8	Proportion of parking unavailable for students – actual ratio 3.6 to 4.1
USC	4,000	1,025	3.9	From ANU report
LaTrobe	22,900	5,500	4.2	From ANU report
UNSW	29,650	3,000	9.9	From ANU report
USyd	32,250	2,500	12.9	From ANU report
ECU	13,200	4,890	2.7	From ECU integrated transport plan
UWA	15,500	3,400	4.6	Actual ratio available to students - 6.4 to 9.6 (a large quantum of parking is available off-campus)
Murdoch			2.2	From ECU integrated transport plan

Source: Curtin University Transport Study (2010), UOW Campus Master Plan (2016)

3.6.2.4 *North Wollongong Station*

The North Wollongong Station is located at the edge of the study area. There are a small number of formal commuter parking bays immediately adjacent to the station (Porter Street, west of the station), but commuters appear to park on-street along Porter Street and within the local residential neighbourhood (Hindmarsh Avenue, Railway Crescent and Crawford Avenue).

Given that the North Gong Shuttle runs direct from the station to the UOW campus, a portion of these bays may be consumed by students and staff from the University, as well as other commuters taking the train from North Wollongong Station.

3.6.2.5 *Schools*

Demand for school parking is intense and short-lived, restricted to less than an hour in the morning and afternoon. Generally, staff parking is easily retained on-site, leaving only student pick up/drop off activities on-street. The high generation of demand during peak periods can create safety and network operation issues. Effective management requires extensive intervention from both the Local Government and the schools themselves.

There are several schools in the study area, including the Keiraville Public School, Gwynneville Public School, St Brigid's Catholic Parish Primary School, Para Meadows School and Kiera High School.

3.7 Future transport projects

This section highlights the importance of aligning any planned major transport projects with the Access and Movement Study for Keiraville and Gwynneville.

3.7.1 Mount Ousley Interchange

Road and Maritime are planning an interchange on the M1 Princes Motorway at the base of Mount Ousley. The upgrade will address safety concerns and traffic congestion challenges associated with the motorway. An artist's impression of Mount Ousley Interchange is shown in **Figure 3-8**.

Figure 3-8 Artist impression of Mount Ousley Interchange

Source: Roads and Maritime Mount Ousley Interchange (2017)

Planned upgrades to Mount Ousley Road and the M1 Princes Motorway include:

- A new access to the UOW campus;
- Separation of heavy vehicles to access Mount Ousley Road;
- A grade separated interchange on the M1 Princes Motorway at the base of Mount Ousley that replaces the existing intersection;
- An overpass from Mount Ousley Road to the M1 Princes Motorway;
- Pedestrian and cyclist bridges over Mount Ousley Road and the M1 Princes Motorway connecting suburbs to the north with the UOW campus;
- Provision for a future third southbound lane; and

> A preferred design option that provides an exit from the UOW campus onto the M1 Princes Motorway reducing congestion within the campus and surrounding local road network, particularly targeting the afternoon peak times.

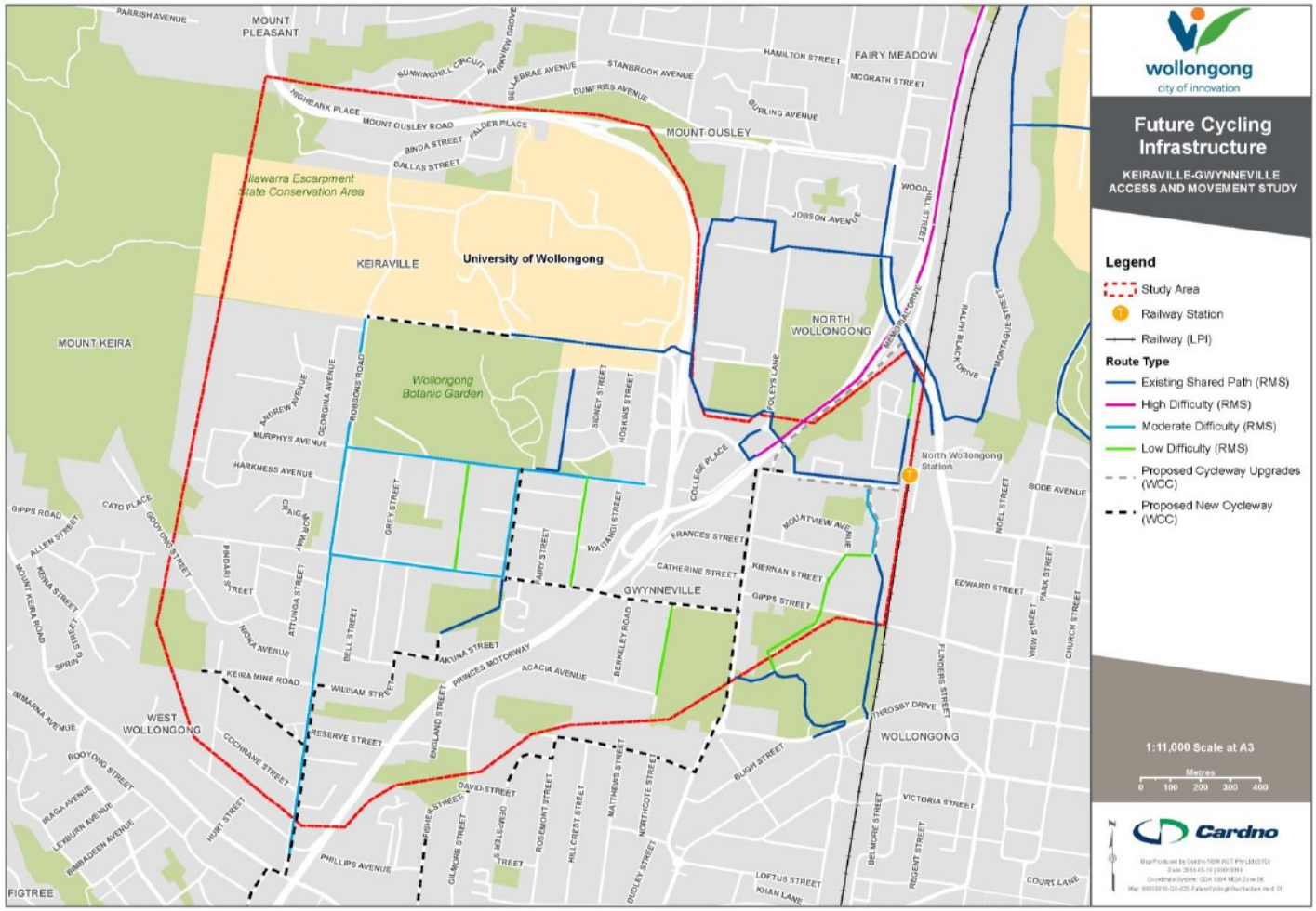
Once the interchange is completed, parking issues may emerge in Mt Pleasant and Mt Ousley due to the increased connectivity created by a pedestrian link to the north. On-street parking utilisation here is currently quite low due to the circuitous walking route to access the UOW, however the Mount Ousley Interchange upgrade will provide an additional link which will increase the walking catchment from the UOW and may increase parking demand on these local roads.

3.7.2 Future cycle network

The 2014 – 2018 Bike Plan recommended a number of infrastructure improvements. This was developed to improve cycling connectivity throughout the region.

Figure 3-9 provides a summary of the key cycleways infrastructure and upgrades that are proposed. The implementation of these cycleways will improve connections to UOW and North Wollongong Station.

Figure 3-9 Future cycling network



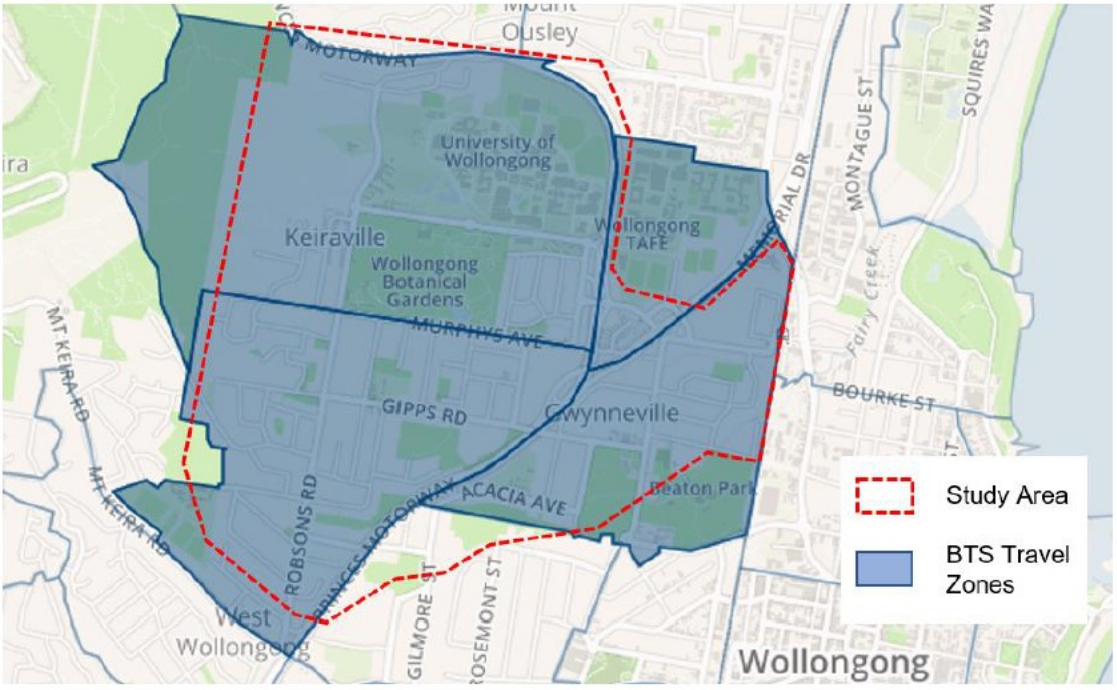
3.8 Travel behaviour

This section provides a summary of the residents and worker characteristics in the precinct to understand the link between population and trip generation. The data used is gathered from the Bureau of Transport Statistics (BTS) and the Census by the Australian Bureau of Statistics (ABS) in 2016.

3.8.1 Population and employment

The BTS travel zones to which the data described in this section applies are shown in **Figure 3-10**. These travel zones closely align with the study area and so are considered to represent the study area, but also include small areas of land outside.

Figure 3-10 BTS travel zones

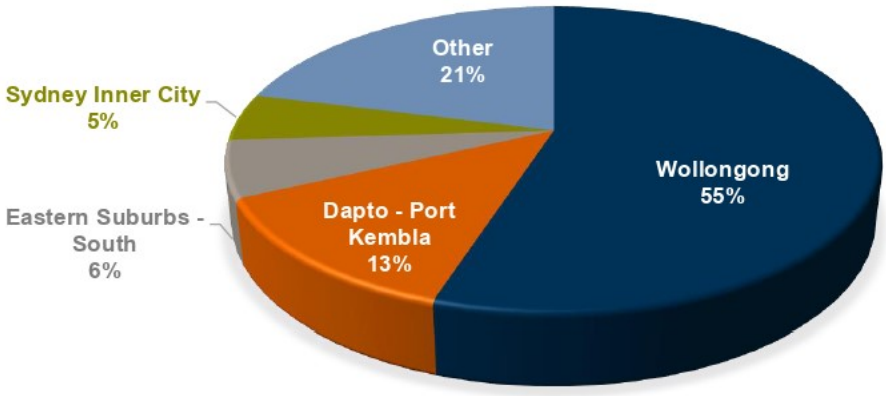


Source: Travel Zone Explorer, BTS

Approximately 8,000 people live within the selected travel zones (the study area) within Keiraville and Gwynneville (including campus accommodation students). Of these 8,000 residents, the workforce consists of 3,178 employed people. The employment location of study area residents shown in **Figure 3-11**.

The number of jobs located within the study area is 5,488.

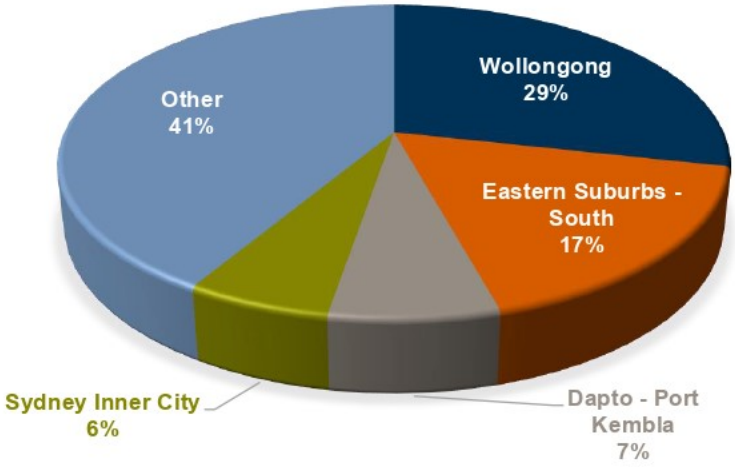
Figure 3-11 Employment location for residents in the study area



Source: Journey to Work, BTS

The home locations of workers who travel to jobs in the study area is shown proportionately in **Figure 3-12**.

Figure 3-12 Location of residence for workers in the study area



Source: Journey to Work, BTS

3.8.2 Dwelling types

The majority of dwellings in the study area are separate houses, followed by flats or apartments and semi-detached dwellings. The number and proportion of each dwelling type is shown in **Table 3-5**. The Illawarra Region dwelling proportions are also listed for comparison; the study area has higher proportions of high density dwellings.

Table 3-5 Dwelling types

Suburb	Separate house	Semi-detached	Flat or apartment	Other
Keiraville	764 (64.3%)	196 (16.5%)	228 (19.2%)	0 (0%)
Gwynneville	563 (55%)	198 (19.3%)	259 (25.3%)	4 (0.4%)
Illawarra Region	73%	13%	13%	1%

Source: ABS, 2016

3.8.3 Motor vehicle ownership

Vehicle ownership gives a good indication of mode share, as households with no vehicles will rely on other transport modes more heavily. The majority of households within the study area own one or two private vehicles, but there is also a high number of households that own no vehicle. This indicates that walking, cycling, and public transport are important modes of transport for many residents in the study area. The number and proportion of household vehicle ownership by households is shown in **Table 3-6**. The Illawarra Region vehicle ownership is also given for comparison.

Table 3-6 Motor vehicle ownership

Suburb	None	1 motor vehicle	2 motor vehicles	3 or more vehicles	Not stated
Keiraville	98 (8.2%)	463 (38.9%)	386 (32.4%)	193 (16.2%)	51 (4.3%)
Gwynneville	164 (16.0%)	431 (42.2%)	253 (24.8%)	141 (13.8%)	33 (3.2%)
Illawarra Region	7.9%	34.4%	35.7%	18.3%	3.7%

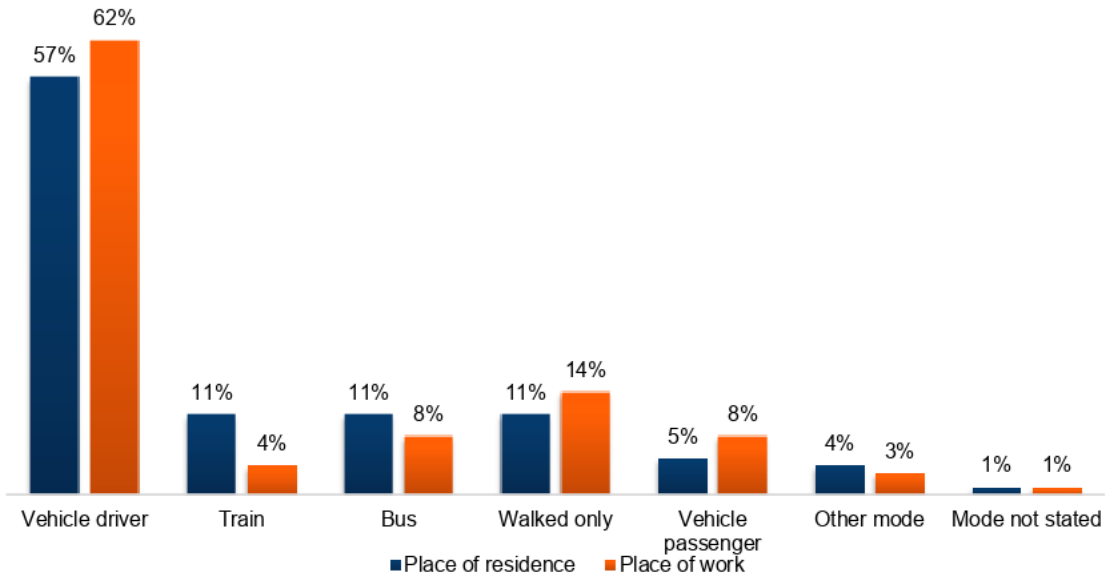
Source: ABS, 2016

3.8.4 Transport mode share

3.8.4.1 Study area

The Journey to Work survey from BTS, based on 2011 census data, shows that over half of the people who both live and work within the selected travel zones use private vehicles to access their workplace. Walking was the second most common mode choice for both residents and workers, followed by public transport. The mode share for both workers and residents of the travel zones is shown in **Figure 3-13**.

Figure 3-13 Transport mode share for people who live and work in the travel zones

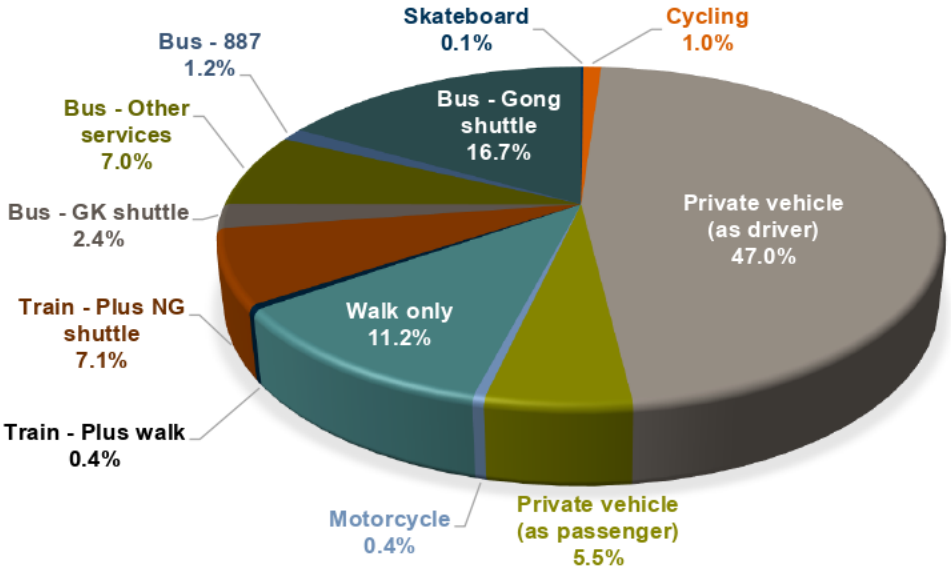


Source: Journey to Work, BTS

3.8.4.2 University of Wollongong

The transport mode share for accessing the UOW campus was calculated in the 2017 Draft UOW Transport Survey and Strategy (Cardno, 2017). A Headcount Access Survey indicated that the majority of people accessed the campus via a private vehicle, either as the driver or as a passenger; this was followed by access via bus services. The UOW campus mode share is shown in **Figure 3-14**.

Figure 3-14 UOW campus mode share



Source: Cardno, 2017

The Draft UOW Transport Survey results show that staff car-as-driver mode share is approximately 43%. In contrast to the student population, university staff have a much higher ratio of available parking, with over 1,500 dedicated staff parking bays located in Permit and Reserved areas, not including car pool and specialty bays, for a staff population of approximately 2,200 FTEs. The mode share result suggests that the existing 900 staff permit parking bays would be sufficient to accommodate this demand, potentially freeing up 600 reserved parking bays.

3.8.5 Traffic modelling

As part of this study, the existing and future operation of the Keiraville-Gwynneville traffic and transport network was examined with a view to developing strategies to reduce congestion and enable greater sustainable transport mode share in the area. The planned future development was assessed to determine the impact on traffic generation and flow, as well as accessibility, parking demand, and the overall operation of the network.

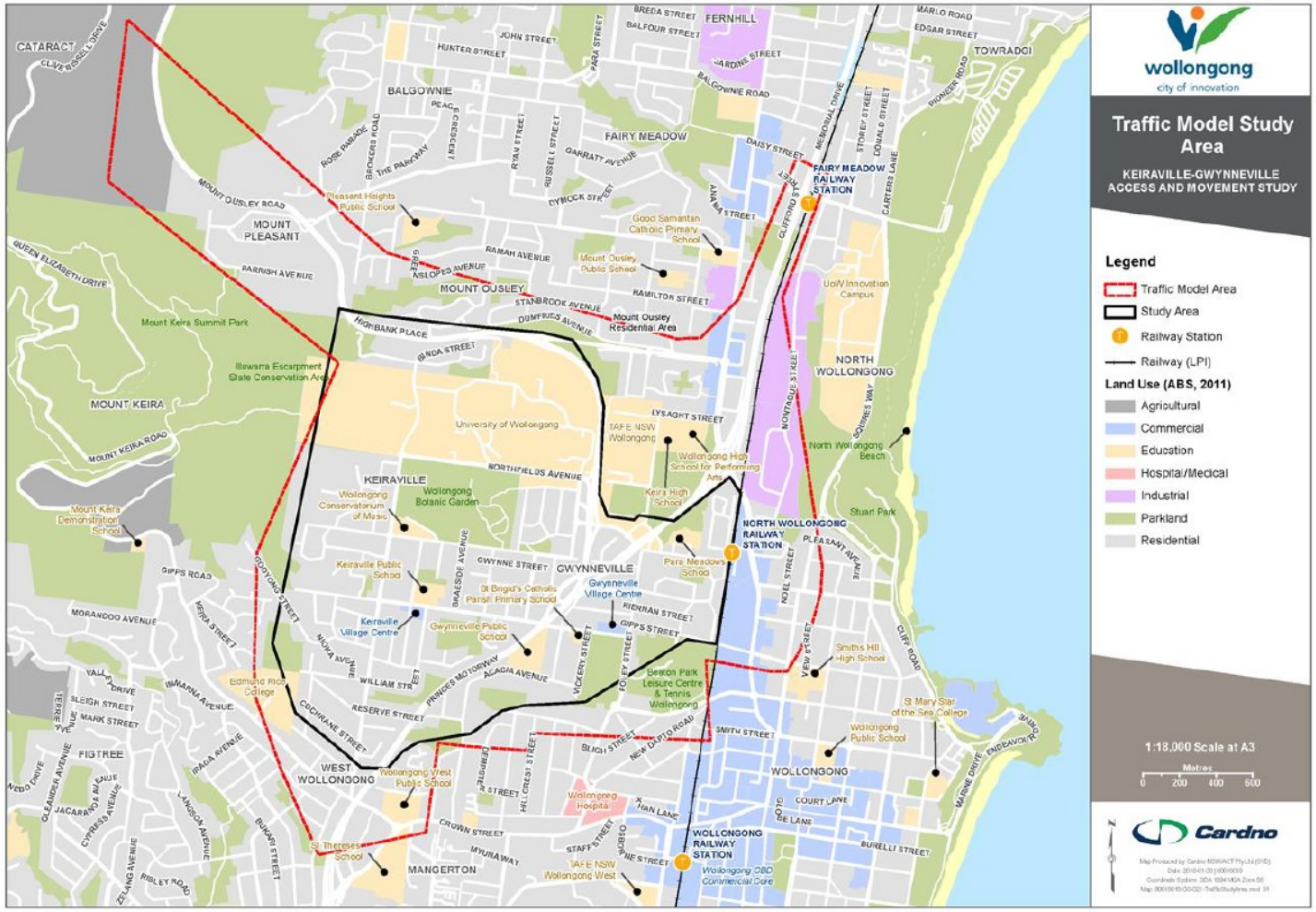
3.8.5.1 Objectives and scope of works

The aim of the traffic modelling was to test different future year scenarios in the study area. The modelling process involved the following steps:

- Assess the travel demand during the academic session (in-session) which is a characteristic for the month of August and the non-academic session (out-session) which is a characteristic for the month of September;
- Assess the impacts of potential developments on the study area and changes in road network and surrounding intersections;
- Evaluate existing and future year transport network performance; and
- Identify and evaluate mitigation measures to accommodate traffic likely to be generated from future developments and growth.

The traffic model study area is shown in **Figure 3-15**, and a full modelling report is provided in **Appendix C**.

Figure 3-15 Traffic model study area



The scope of works for the traffic modelling was as follows:

- Extract the study network from an existing Roads and Maritime Aimsun Mount Ousley Interchange hybrid model (which include the future (2022 and 2037) year scenarios) and develop a purpose built microsimulation model;
- Adjust the 2015 volumes at the interchange and surrounding junctions to balance the discrepancies between the 2015 and 2017 data;
- Determine the traffic demand for "in-session" and "out-session" AM and PM peak periods which consists of the peak academic session and the period outside of the academic session respectively;
- Calibrate and validate a microsimulation model in accordance with Traffic Modelling Guidelines (Roads and Maritime Services, 2013);
- Assess options regarding the Mount Ousley Interchange;
- Import intersection turning volumes from the Mount Ousley Aimsun Model (Jacobs, 2015) for the Memorial Drive / Princes Highway Interchange;
- Obtain outputs from the microsimulation model to be used for a SIDRA assessment of key intersections within the Keiraville-Gwynneville precinct.

3.8.5.2 Road demand and congestion locations

The road network performance can be largely determined by assessing the theoretical capacity of the mid-block and the average speed of traffic, as per the *Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis*. The performance of key roads within the precinct indicate the demand on the road network. The performance of the road network was measured using the following variables:

- Peak period volumes (veh/h);
- Average speed (km/h); and
- Percentage of speed limit (%).

The key indicator of mid-block performance is the Level of Service (LoS). This is the average speed as a percentage of the base Free Flow Speed (FFS), where results are placed on a continuum from 'A' to 'F', as shown in **Table 3-7**.

Table 3-7 Austroads Mid-Block Criteria for Speed Level of Service Analysis

LoS	Description	Travel speed as a percentage of base FFS (%)
A	Good operation	> 85
B	Good with acceptable delays and spare capacity	67-85
C	Satisfactory	50-67
D	Operating near capacity	40-50
E	At capacity	30-40
F	Unsatisfactory and requires additional capacity	≤ 30

The data used for this analysis considers weekdays during in-session (August 2017) and out-session (September 2017). The roads which were assessed are Northfields Avenue, University Avenue, Porter Street, Robsons Road, Gipps Road, and Foley Street.

Areas of concern include Northfields Avenue and Robsons Road, which provide direct access to the University of Wollongong campus and local schools. However, overall performance at the route level shows that the speed performance is satisfactory, with the worst performance identified as the westbound direction of Northfields Avenue during the AM peak in-session period.

Observations made about congested intersections are summarised in **Table 3-8**.

Table 3-8 Congestion intersections in the study area

Intersection Location	Time of Day	Observation
Mount Ousley Road / Princes Motorway	AM	The ratio between the speed level of service and the posted speed is less than 30% at a 200 metres approaching distance of the intersection. On Mount Ousley Road the maximum queue length is around 15 vehicles between in the AM peak. This is partially captured in the image below. Queuing is most likely caused by drivers having difficulty to find safe acceptable gaps between vehicles to turn right onto Princes Motorway. Vehicles are often reaching around 80km/hour along Princes Motorway and no queuing was identified on Princes Motorway.
	PM	The ratio between the speed level of service and the posted speed is 50% to 69% at a 200 metres approaching distance of the intersection. On Mount Ousley Road, the maximum queue length is roughly around the same length of the AM peak in the PM peak. There is no queuing on Princes Motorway.
Irvine Street / University Avenue	AM	The ratio between the speed level of service and the posted speed is 40% to 49% when approaching roundabout and interchange ramps. The figure below shows queuing on University Avenue in the AM peak. The community gave feedback indicating that this intersection is a stoppage point on weekday mornings and the traffic moves very slowly, if not at all, with very long waiting times.
	PM	The ratio between the speed level of service and the posted speed is 50% to 69%. On the northern and southern sides of Irvine Street, extensive queueing can be observed in the PM peak.

Princes Motorway / University Avenue	AM	The ratio between the speed level of service and the posted speed is 50% to 69%. Queueing on the off ramp of Princes Motorway is mostly likely caused by the number of vehicles coming from the motorway at high speeds and giving way at the roundabout at the intersection. During the morning peak period, there will be a large proportion of vehicles using this intersection to access the University of Wollongong and schools. The figure below illustrates the queuing behaviour in the morning. The community provided feedback that the traffic banks up around 8am exiting the freeway, heading south.
	PM	The ratio between the speed level of service and the posted speed is 70% to 85%. In comparison to the AM peak period, there may be less queues because people may not use the same route and may visit other destinations in the Keiraville – Gwynneville area.

The existing Level of Service for these roads is shown in **Figure 3-16** (AM peak) and **Figure 3-17** (PM peak). It is clear that the majority of the road network operates satisfactorily during the AM and PM peak periods. However, there are notable issues on approach to key intersections and roundabouts within the study area.

Figure 3-16 Road network speed level of service (AM period)

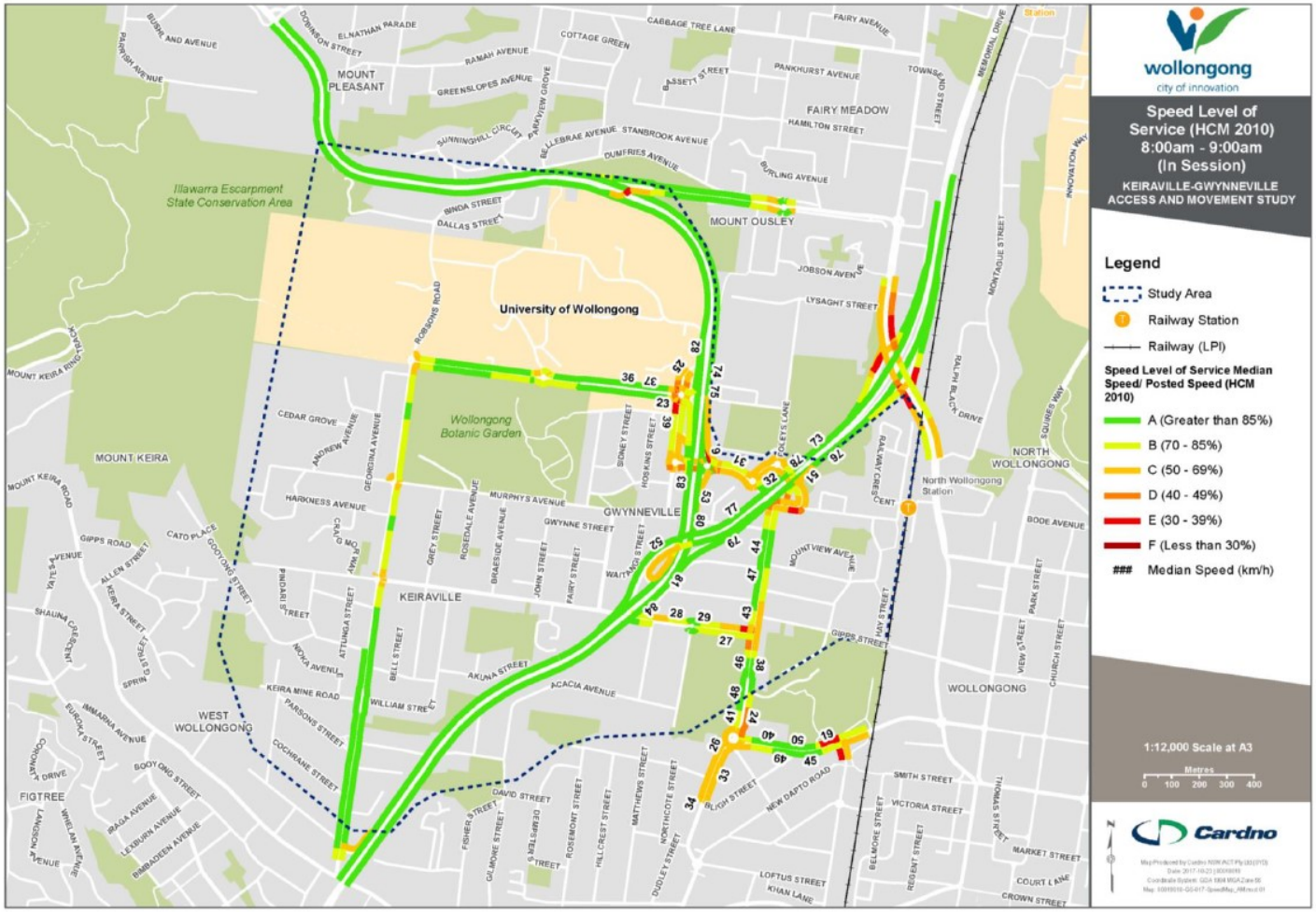
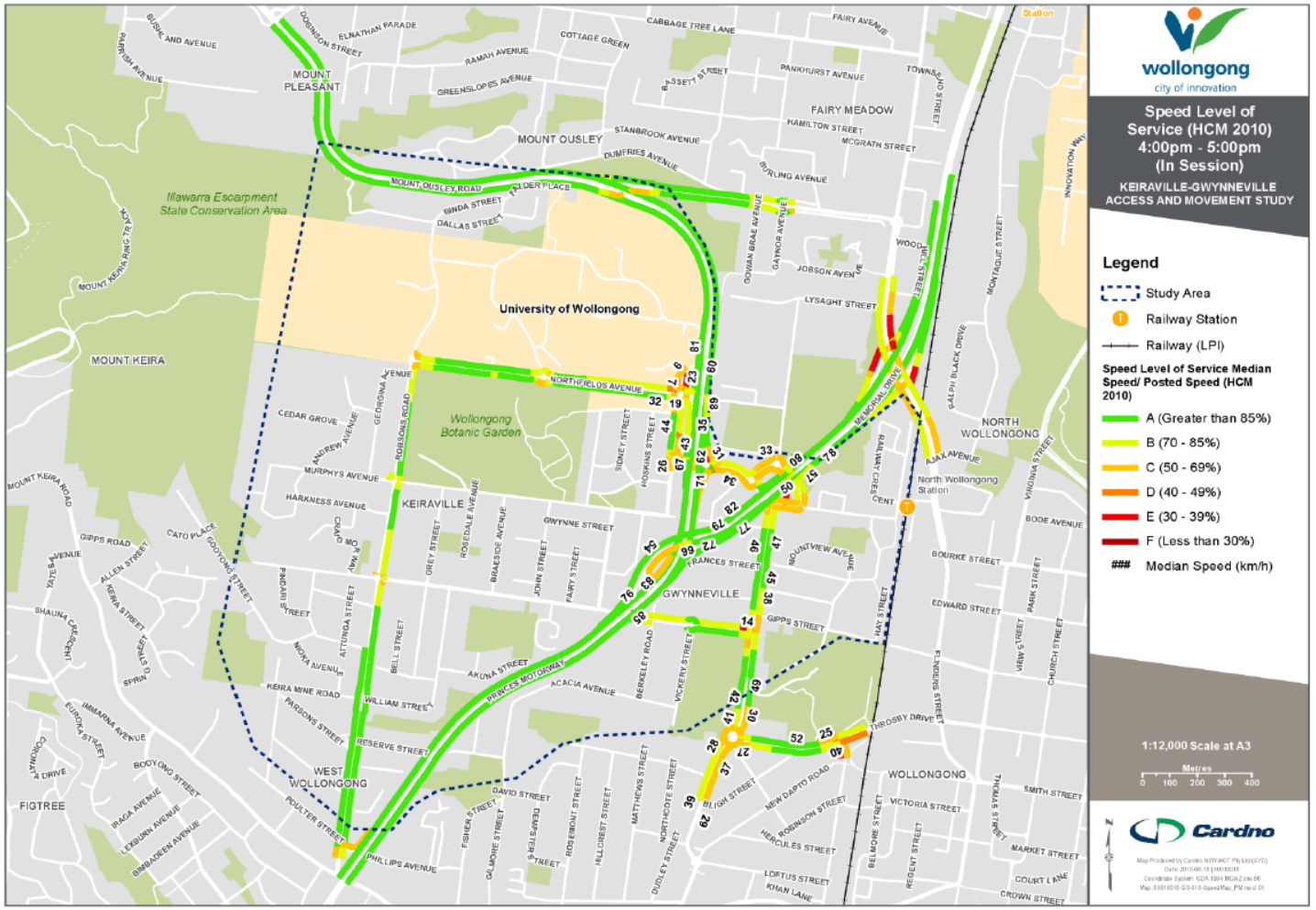


Figure 3-17 Road network speed level of service (PM period)



3.8.5.3 *Future year traffic modelling*

Microsimulation AIMSUN models were developed for the future (2022 and 2027) years with consideration of the following:

> University Avenue and Foley Street corridor.

> Mercury Street / Throsby Drive / Foley Street intersection.

> Foley Street / Gipps Road intersection.

> Impact of Mount Ousley Interchange in 2027.

3.8.5.4 *Future (2022) year traffic analysis*

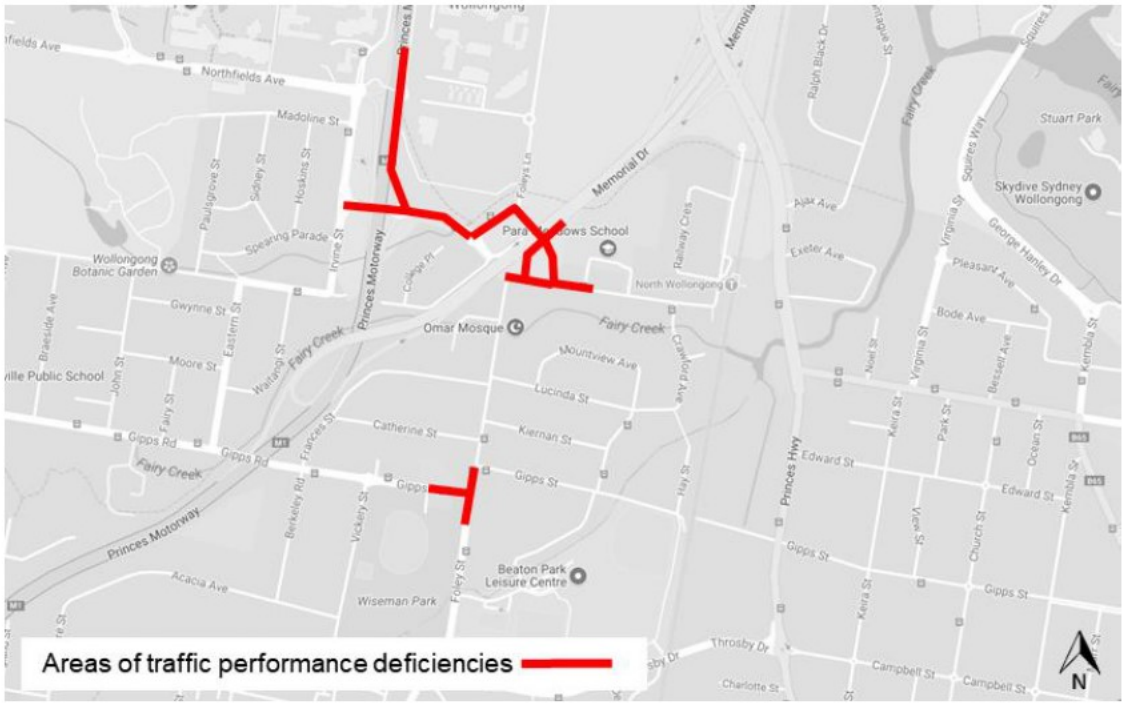
The future (2022) year traffic models identified traffic performance deficiencies at (see **Figure 3-18** for locations):

> University Avenue off-ramp, particular in the AM peak.

> University Avenue and Foley Street corridor in the PM peak.

> Foley Street / Gipps Road intersection in the PM peak.

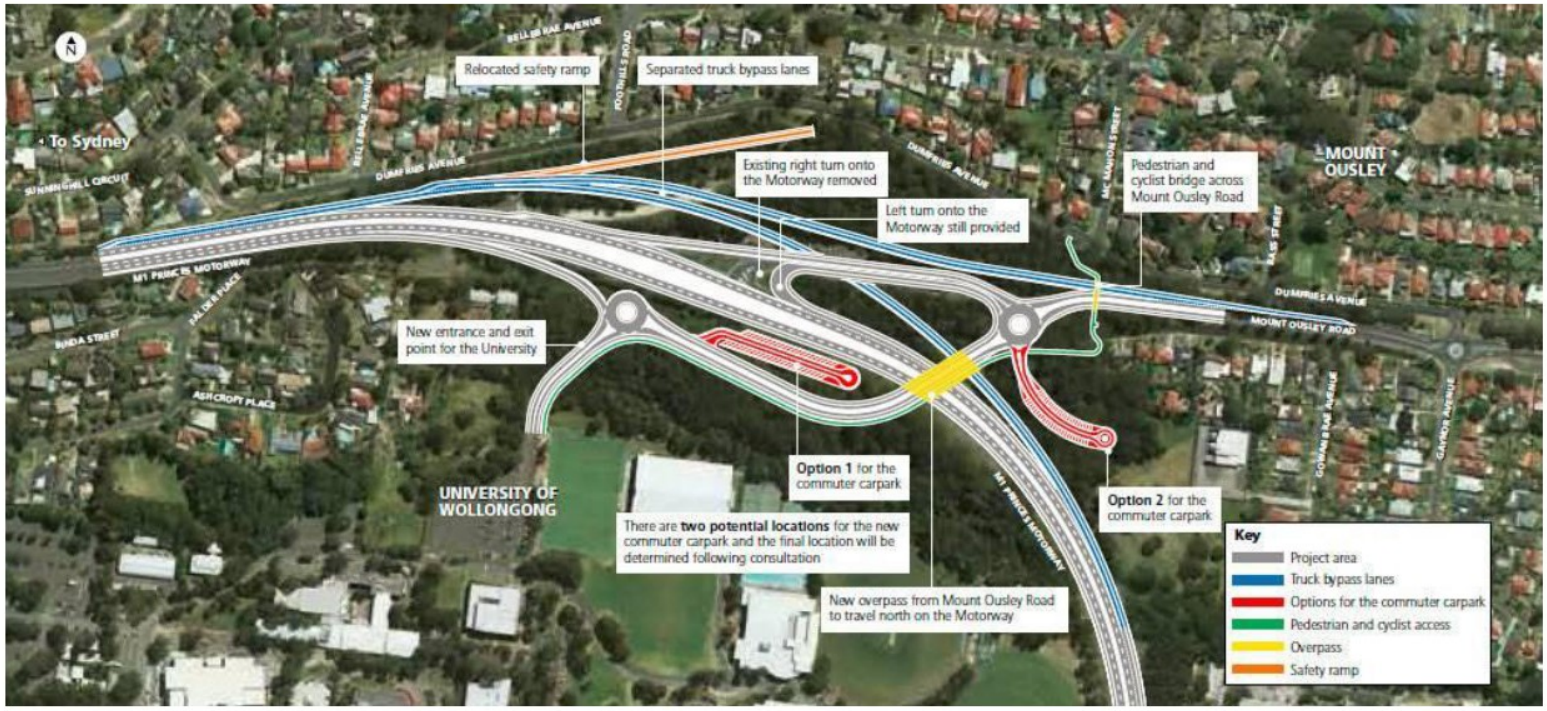
Figure 3-18 Traffic performance deficiencies in future (2022) year



3.8.5.5 *Future (2027) year traffic analysis*

The future (2027) year traffic models considered the impact of traffic growth and the upgrade of the Mount Ousley Interchange. As part of the Mount Ousley Interchange upgrade (**Figure 3-19**), the alignment of the University Avenue off-ramp is proposed to be modified so that southbound traffic will exit the motorway at the new interchange). The existing Mount Ousley Road right turn to Prices Motorway is proposed to be removed as part of the upgrade (this was identified as a traffic performance and safety issue in the existing and 2022 conditions).

Figure 3-19 Proposed Mount Ousley Interchange upgrade



Comparison of the future (2022) year and future (2027) traffic model results indicate the Mount Ousley Interchange (and traffic growth) will impact the following roads as shown in the respective figures:

- Robsons Road (**Figure 3-20**)
  - Significant reduction of vehicles per hour in the southbound direction during the AM and PM peak
- Gipps Road (**Figure 3-21**)
  - Minor reduction of vehicles per hour in both directions during the AM
  - Minor increase of vehicles per hour in both directions during the PM
- Murphys Avenue (**Figure 3-22**)
  - Reduction of vehicles per hour in the eastbound direction during the AM
  - Increase of vehicles per hour in the westbound direction during the PM
- Northfields Avenue (**Figure 3-23**)
  - Significant reduction of vehicles per hour in both directions during the AM and PM peak
- Irvine Street (**Figure 3-24**)
  - Reduction of vehicles per hour in the northbound direction during the AM
  - Increase of vehicles per hour in both directions during the PM
- Foley Street (**Figure 3-25**)
  - No significant difference in vehicles per hour.

Figure 3-20 Robsons Road – future (2022) year vs future (2027) year

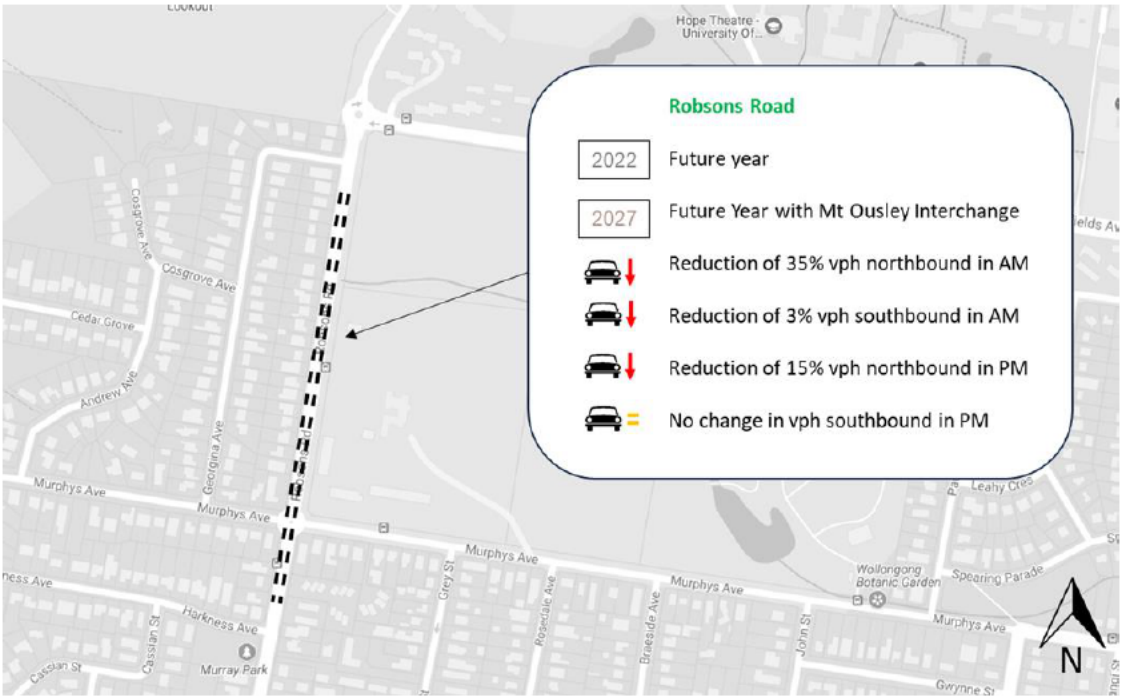


Figure 3-21 Gipps Road – future (2022) year vs future (2027) year

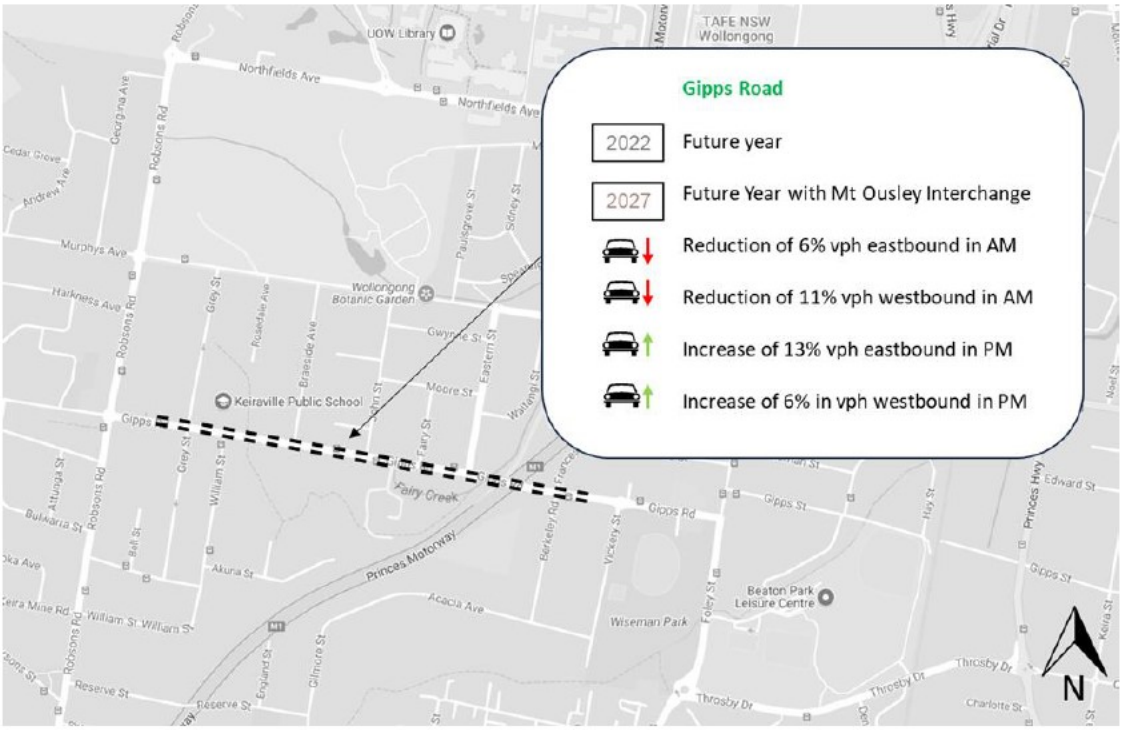


Figure 3-22 Murphys Avenue – future (2022) year vs future (2027) year

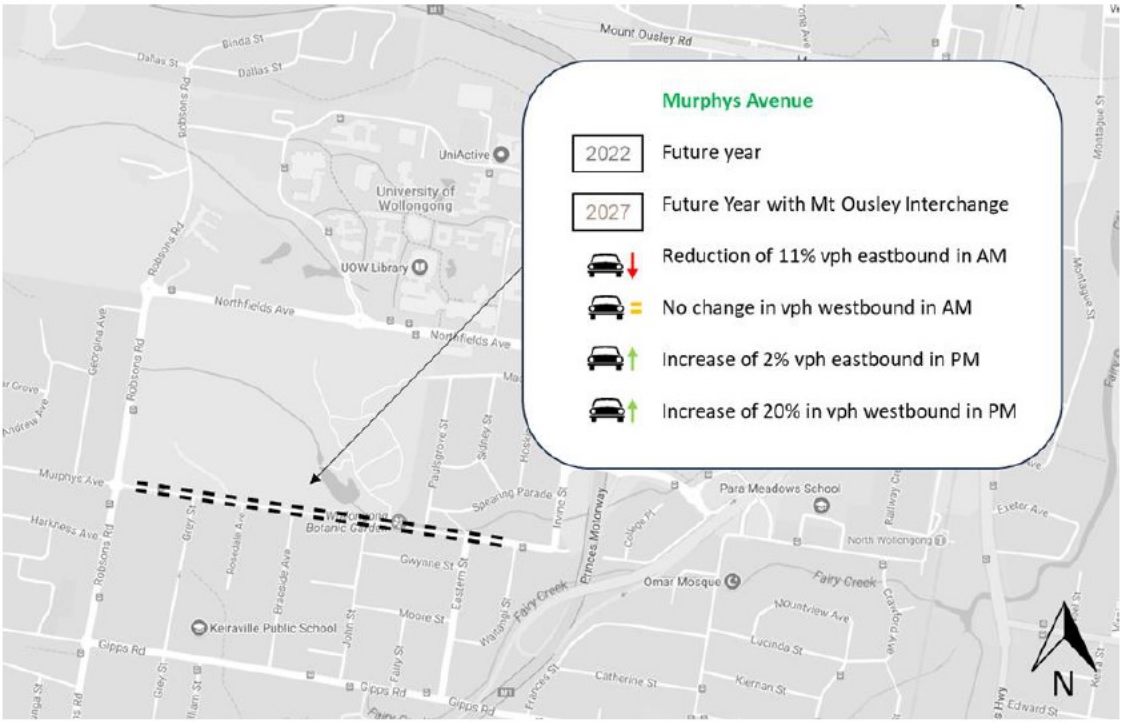


Figure 3-23 Northfields Avenue – future (2022) year vs future (2027) year

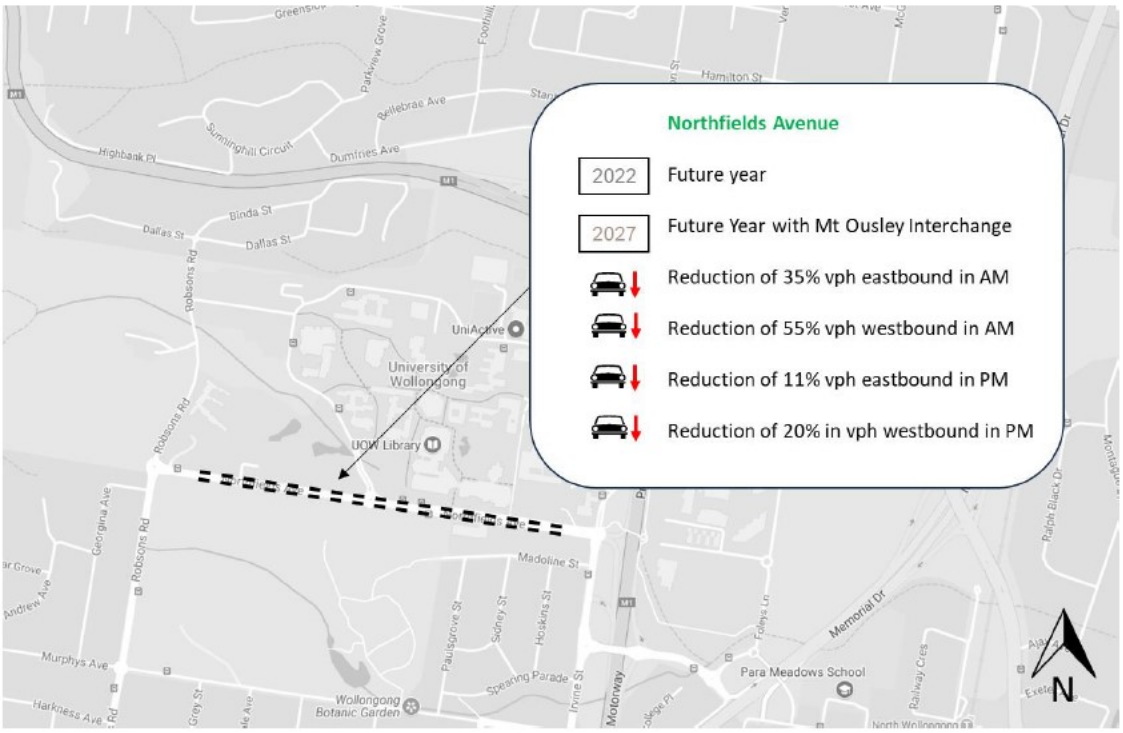
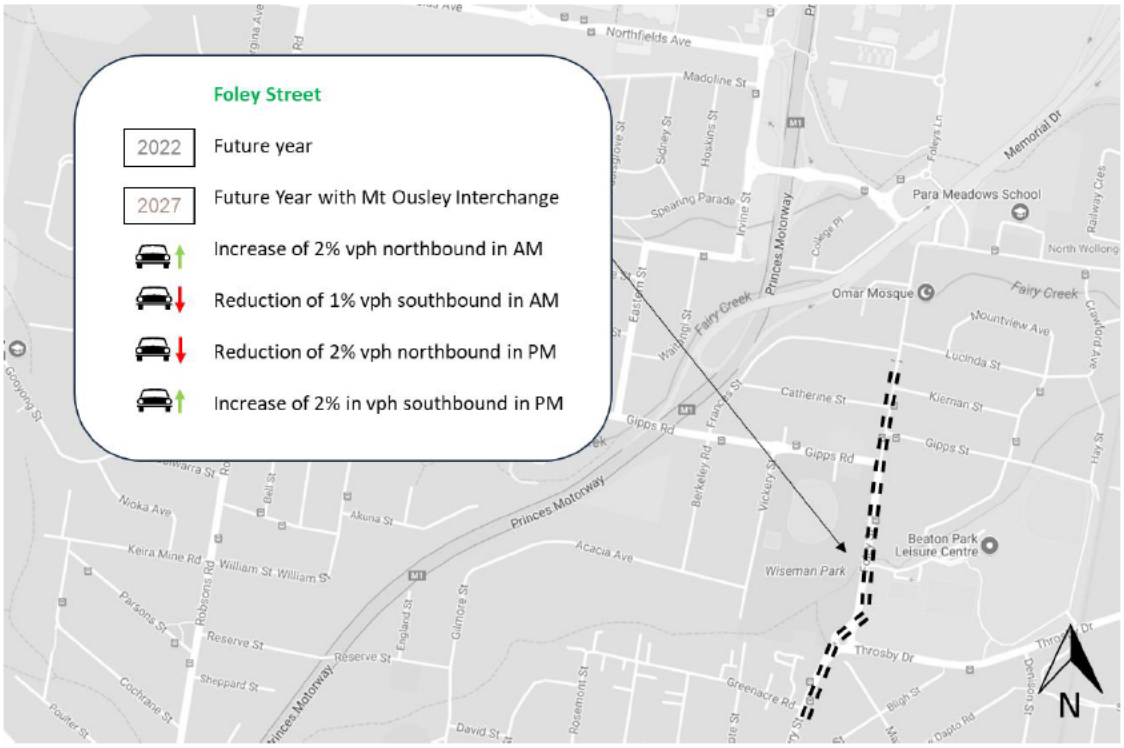


Figure 3-24 Irvine Street – future (2022) year vs future (2027) year

Figure 3-25 Foley Street – future (2022) year vs future (2027) year



3.8.5.6 Intersection performance

The future year model results indicated University Avenue / Pacific Motorway off-ramp and University Avenue / Porter Street intersections require additional capacity, with an intersection performance of LOS F during peak periods in 2022 and 2027 (even with the Mount Ousley Interchange upgrade).

No significant issues are anticipated for the other assessed intersections in 2022 or 2027, which have a satisfactory intersection performance of LOS C or better:

- University Avenue / Irvine Street
- University Avenue / University Avenue
- University Avenue / Foleys Lane
- Foley Street / Gipps Road
- Foley Street / Throsby Drive
- Foley Street / Gipps Street
- Porter St signals
- Gipps Road / Eastern Street.

A summary of the intersection performance of the assessed intersections are shown in **Figure 3-26**, **Figure 3-27**, **Figure 3-28** and **Figure 3-29** for the future (2022 and 2027) years.

Figure 3-26 Intersection performance – future (2022) year AM peak

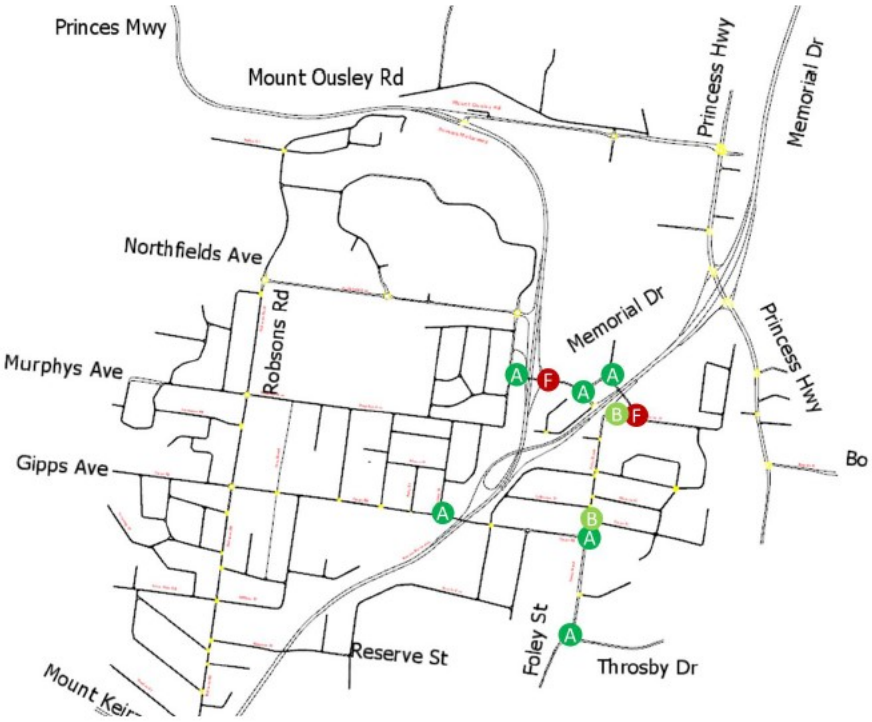


Figure 3-27 Intersection performance – future (2022) year PM peak

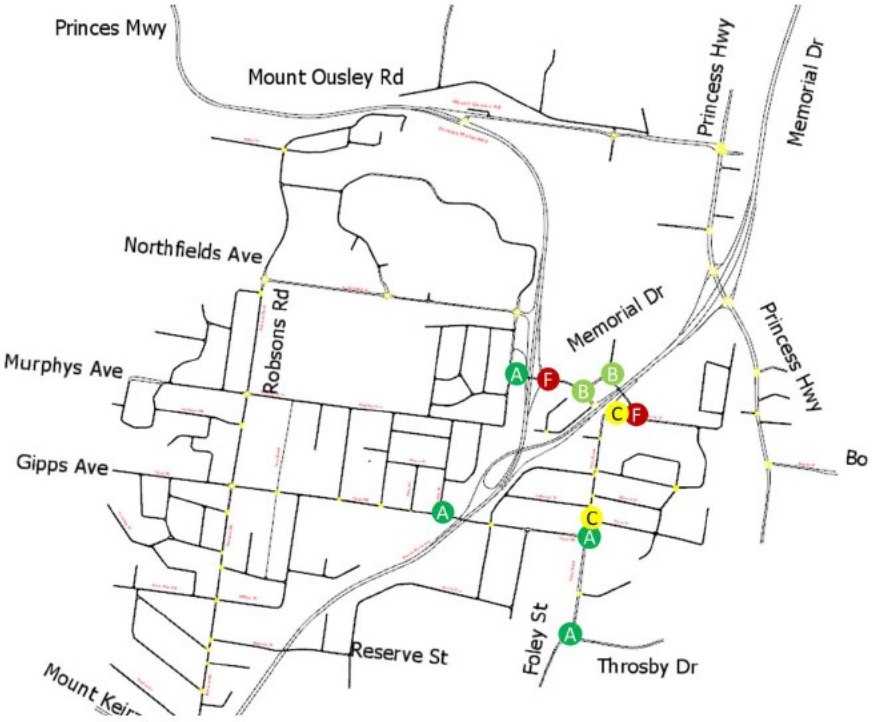


Figure 3-28 Intersection performance – future (2027) year AM peak

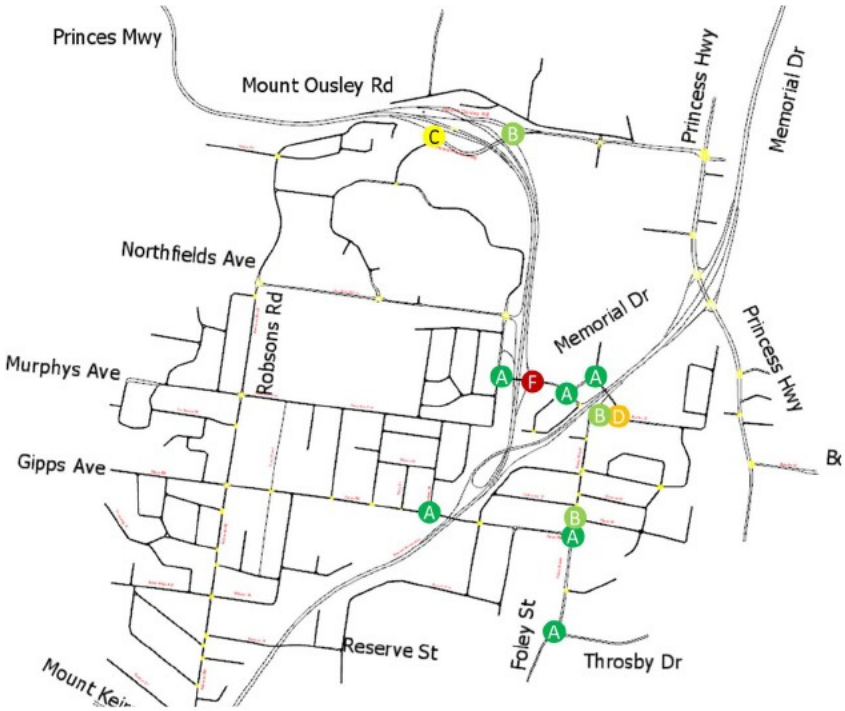


Figure 3-29 Intersection performance – future (2027) year PM peak

3.8.5.7 Summary

The traffic assessment identified existing (2018) congestion locations at:

> Mount Ousley Road / Princes Motorway

> Irvine Street / University Avenue

> Princes Motorway / University Avenue.

The impact of future traffic growth and the Mount Ousley Interchange upgrade in the future (2027) year was assessed using the AIMSUN models. The Mount Ousley Interchange upgrade removes the congestion at Mount Ousley Road / Princes Motorway (by realignment) and provides a new access to the UOW campus. The AIMSUN models indicate there is some reduction of vehicles per hour in the roads surrounding the University such as Robsons Road and Northfields Avenue. However, the modelling results indicate there would still be congestion issues at the Princes Motorway / University Avenue and nearby intersections, in future (2027) year with the Mount Ousley Interchange upgrade.

Detailed intersection assessment in SIDRA confirmed the conclusions from the AIMSUN model. Additional capacity is required at the Pacific Motorway / University Avenue and University Avenue / Porter Street intersections. Further investigations are recommended to propose and assess either strategic or localised options to relieve congestion in this area.

3.8.6 Crash analysis

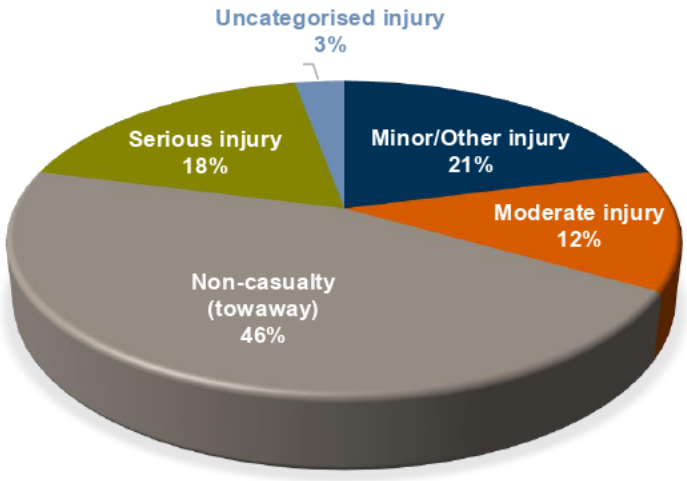
105 crashes occurred between 19 January 2010 and 28 May 2016 within the study area. This included 94 crashes involving cars, 7 involving motorcycles, 7 involving cyclists, 9 involving pedestrians, 8 involving light trucks and 4 crashes involving a bus.

A basic tool for understanding the context of a vehicle crash is Road User Movement (RUM) coding, which describes the first cause of every recorded crash. Vehicle crashes in Keiraville and Gwynneville were analysed by identifying RUM codes and trends.

Of the total 105 crashes, 54 per cent caused either a serious, moderate, minor or uncategorised injury, shown by the crash data in **Figure 3-30**. No vehicle collisions during this time caused a fatality.

The location and type of crashes within the study area during the six year period are shown in **Figure 3-31**.

Figure 3-30 Injuries from vehicle crashes



Source: TfNSW Crash Data, 2016

Figure 3-31 Crashes by vehicle type

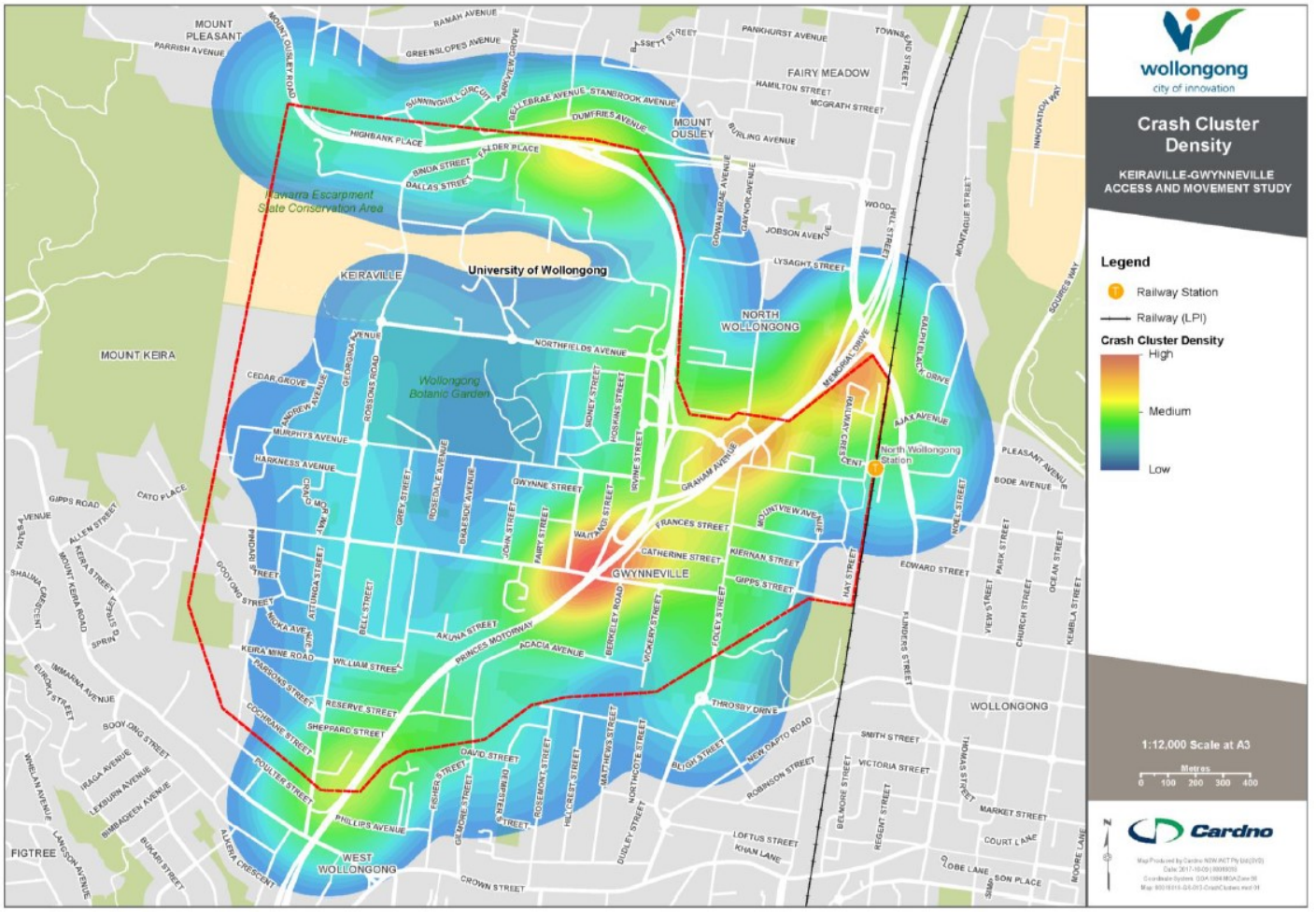
3.8.6.2 Crash clusters

The most densely clustered vehicle crashes occurred at the following locations:

- 20 crashes on the Princes Motorway near the Gipps Road Bridge;
- 29 crashes on the Princes Highway off and on ramps at the eastern side of the intersection with Memorial Drive; and
- 33 crashes on Memorial Drive near the intersection with University Avenue.

Four serious injuries occurred on Foley Street, and three occurred on both Northfields Avenue and Gipps Road. A density map summarising crashes in the study area is shown in **Figure 3-32**.

Figure 3-32 Crash clusters density



3.8.6.3 Vehicle crashes

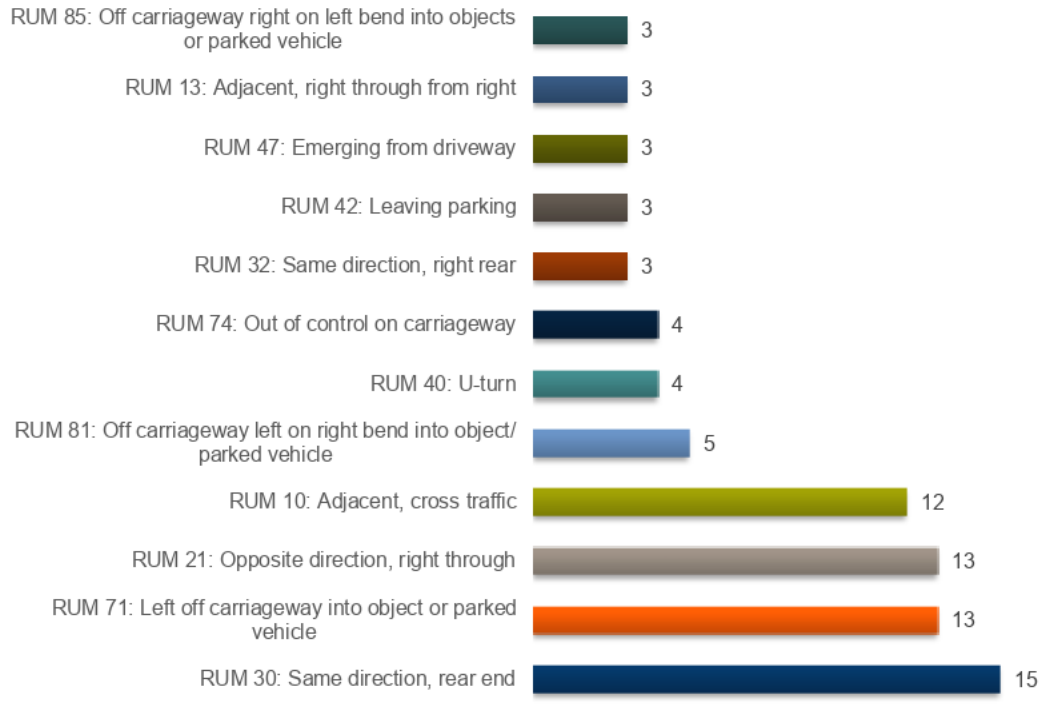
The most common crash type overall was rear end collisions between vehicles travelling in the same direction, accounting for 14 per cent of all crashes. This type of collision is common on heavily trafficked roads and can be caused by distracted drivers, tailgating, unexpected braking and loss of tracking in poor weather. These crashes mainly occurred on Robsons Road, Northfields Avenue and Foley Street.

Other common crash types were:

- Right through collisions occurring between vehicles travelling in opposite directions (12 per cent of all crashes);
- Left off carriageway into object or parked vehicle crashes (12 per cent of all crashes); and
- Cross traffic collisions between vehicles travelling in adjacent directions (11 per cent of all crashes).

The top 12 most common crashes are shown in **Figure 3-33**.

Figure 3-33 Vehicle crash type

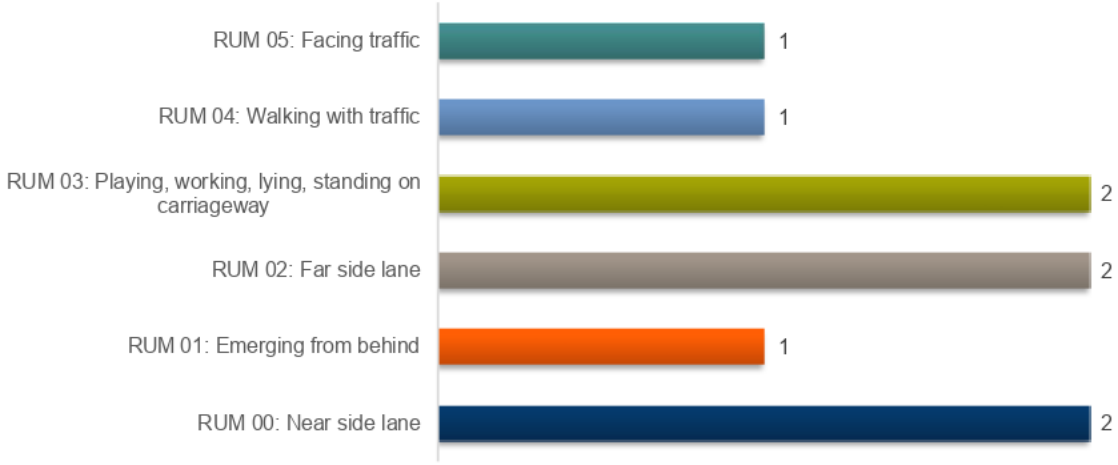


Four crashes in the study area involved a bus, located on Mount Ousley Road, University Avenue, Princes Highway and Memorial Drive.

3.8.6.4 *Pedestrian crashes*

A total of nine crashes involving pedestrians occurred in the study area between 2010 and 2016. The most common pedestrian crash types involved pedestrians playing, working, lying or standing on the carriageway, pedestrians hit in the far side lane, and pedestrians hit in the near side lane. These occurred on Murphys Avenue, Northfields Avenue, Grey Street, Gipps Road, Eastern Street, Frances Street, Gipps Street and Foley Street, where the speed limit is 50 kilometres per hour for all streets except Irvine Street, which is 40 kilometres per hour. Five of these crashes resulted in serious injuries, and the rest resulted in minor or other injuries. The number and types of pedestrian crashes are shown in **Figure 3-34**.

Figure 3-34 Pedestrian crash type



3.8.6.5 *Cyclist crashes*

Seven crashes within the study area involved cyclists. These occurred on Gipps Road, William Street, Northfields Avenue, Waitangi Street, Paulsgrove Street and Foley Street. Four of these crashes involved another vehicle, and three did not. The number and type of cyclist crashes are shown in **Figure 3-35**.

Figure 3-35 Cyclist crash type

4 Consultation

Stakeholder engagement and consultation for this project informed understanding of the key issues affecting both WCC as well as the community.

4.1 Key stakeholders

The key stakeholders for this study included:

- WCC Infrastructure Strategy & Planning Division;
- TfNSW Roads and Maritime Services;
- Neighbourhood Forum 5 (NF5);
- University of Wollongong;
- Department of Planning and Environment;
- Transport for NSW;
- WCC Active Transport Reference Group;
- Botanic Gardens;
- Department of Defence;
- Residential community;
- Bicycle User Group;
- Business operators;
- TAFE Illawarra; and
- Schools.

4.2 Communication and engagement objectives

The stakeholder engagement for this study aimed to ensure that:

- Information on the progress of the project is communicated to key stakeholders in a timely and appropriate fashion;
- Any key issues from stakeholder groups are identified early and are captured in the study during its development; and
- The findings and recommendations of the study are comprehensive and address stakeholder inputs.

The Stakeholder Engagement Plan for this project is attached in **Appendix E**.

4.3 Survey

Community feedback was collected via the following sources:

- Keiraville-Gwynneville Access and Movement Study Workshop #1;
- Wollongong City Council's Have Your Say forum; and
- Neighbourhood Forum 5 KEG workshop.

Overall, there were 242 issues raised by members of the community, the majority of which concerned parking. The number of issues logged per category is broken down below:

- 93 Parking issues
- 39 Pedestrian issues
- 32 Cycle issues

> 27 Roads issues

> 27 Public Transport issues

> 13 Other issues

> 11 Traffic issues

4.4 Consultation outcomes

The issues, expectations, and proposed solutions were captured in a single Consolidated Community Comments spreadsheet, attached as **Appendix F**. The spreadsheet is organised according to the structure shown in **Table 4-1**.

The community and stakeholder issues are reflected in **Section 5**.

Table 4-1 Consolidated Community Comments – spreadsheet structure

Category	Notes
WS1 Community Expectations	This tab contains the expectations of the Keiraville-Gwynneville Access and Movement Study identified by the community in Workshop #1 held on 29 November 2017.
WS1 Transport Solutions	This tab contains the transport solutions proposed by the community in Workshop #1 held on 29 November 2017.
Road	This tab contains the community's road related issues. These were collated from the following three sources: ▪ Community in Workshop #1 held on 29 November 2017; ▪ WCC's online portal; and ▪ Neighbourhood Forum 5 workshops.
Parking	This tab contains the community's parking related issues. These were collated from the following three sources: ▪ Community in Workshop #1 held on 29 November 2017; ▪ WCC's online portal; and ▪ Neighbourhood Forum 5 workshops.
Public Transport	This tab contains the community's public transport related issues. These were collated from the following three sources: ▪ Community in Workshop #1 held on 29 November 2017; ▪ WCC's online portal; and ▪ Neighbourhood Forum 5 workshops.
Pedestrian	This tab contains the community's pedestrian related issues. These were collated from the following three sources: ▪ Community in Workshop #1 held on 29 November 2017; ▪ WCC's online portal; and ▪ Neighbourhood Forum 5 workshops.
Cyclists	This tab contains the community's pedestrian related issues. These were collated from the following three sources: ▪ Community in Workshop #1 held on 29 November 2017; ▪ WCC's online portal; and ▪ Neighbourhood Forum 5 workshops.
Other	This tab contains the community's pedestrian related issues. These were collated from the following three sources: ▪ Community in Workshop #1 held on 29 November 2017; ▪ WCC's online portal; and ▪ Neighbourhood Forum 5 workshops.

4.5 Workshops

As part of the stakeholder engagement, three workshops were completed to discuss each stage of this study. A summary of each workshop is provided below.

4.5.1 Workshop 1 – Brainstorm

The purpose of workshop 1, held on 29 November 2017 was to present an overview of the existing transport network to the community and to capture any specific comments or concerns that the community and key stakeholders may have. The key stakeholders were given the opportunity to comment on:

- Expectations for the transport network and the project;
- Any issues with the existing transport network; and
- Potential solutions to mitigate transport issues.

Individuals also provided photos of various issues.

4.5.2 Workshop 2 – Refining

The purpose of Workshop 2, held on 23 February 2018 was to provide the key stakeholders an update of the project, and key deficiencies of the existing network and potential opportunities.

4.5.3 Workshop 3 – Prioritisation

The final workshop was held on 5 June 2018. At this workshop, the community was updated on the progress of the project including issues analysis, solutions development, and the prioritisation process.

4.5.4 Workshop 4 – Supplementary Workshop

A supplementary community workshop was held following the initial three workshops. The purpose of this workshop was to give the community an additional opportunity to provide comments on the proposed actions for Council.

5 Transport network issues and opportunities

This section outlines the issues with the existing transport network gathered from background review, stakeholder and community consultation, and the transport analysis.

5.1 Pedestrian network issues and opportunities

The majority of issues within the pedestrian network involve missing and non-compliant infrastructure. This includes missing footpaths and crossing facilities that contribute to poor connectivity within the study area.

Some of the key issues noted during the site visit, as well as through community and stakeholder consultation are as follows:

Footpaths

> Footpaths are missing on Murphy's Avenue, Eastern Street, Grey Street, Williams Street, Throsby Drive, and Robsons Road.

> There is no footpath on Gooyong Street.

> Uneven footpaths are dangerous for pedestrians.

Signage

> Signage and wayfinding is limited within the study area.

> Poor wayfinding throughout the precinct.

Crossings

> Lack of safe pedestrian crossings within Keiraville and Gwynneville.

> Kerb ramps missing at the Vickery Street children's crossing.

> A number of non-compliant crossing facilities throughout the study area.

Connectivity

> Limited connectivity to the east of the UOW campus.

> Traffic signal timings and phasings in the Keiraville and Gwynneville retail village centres are focused on vehicle movements.

> A pedestrian path is needed linking the UOW campus and suburbs to the north.

> It is difficult to access the Mount Ousley area from UOW.

Safety

> The community expressed concern regarding insufficient street lighting in some areas.

> There are opportunities for Council to review street lighting along key routes such as Robsons Road, Dallas Street and Greenacre Road to improve safety.

Behavioural

> Walking rates to school have been in decline for decades despite increases in footpaths, suggesting that families are choosing other transport modes to access schools.

The criteria used to assess the compliance of pedestrian crossing facilities were adopted from Australian Standards 1742.10 – Pedestrian Control and Protection, RMS supplements to the Australian Standards and RMS technical directions and included:

> Crossing width and length;

> Sightlines (at a high level);

> Signage;

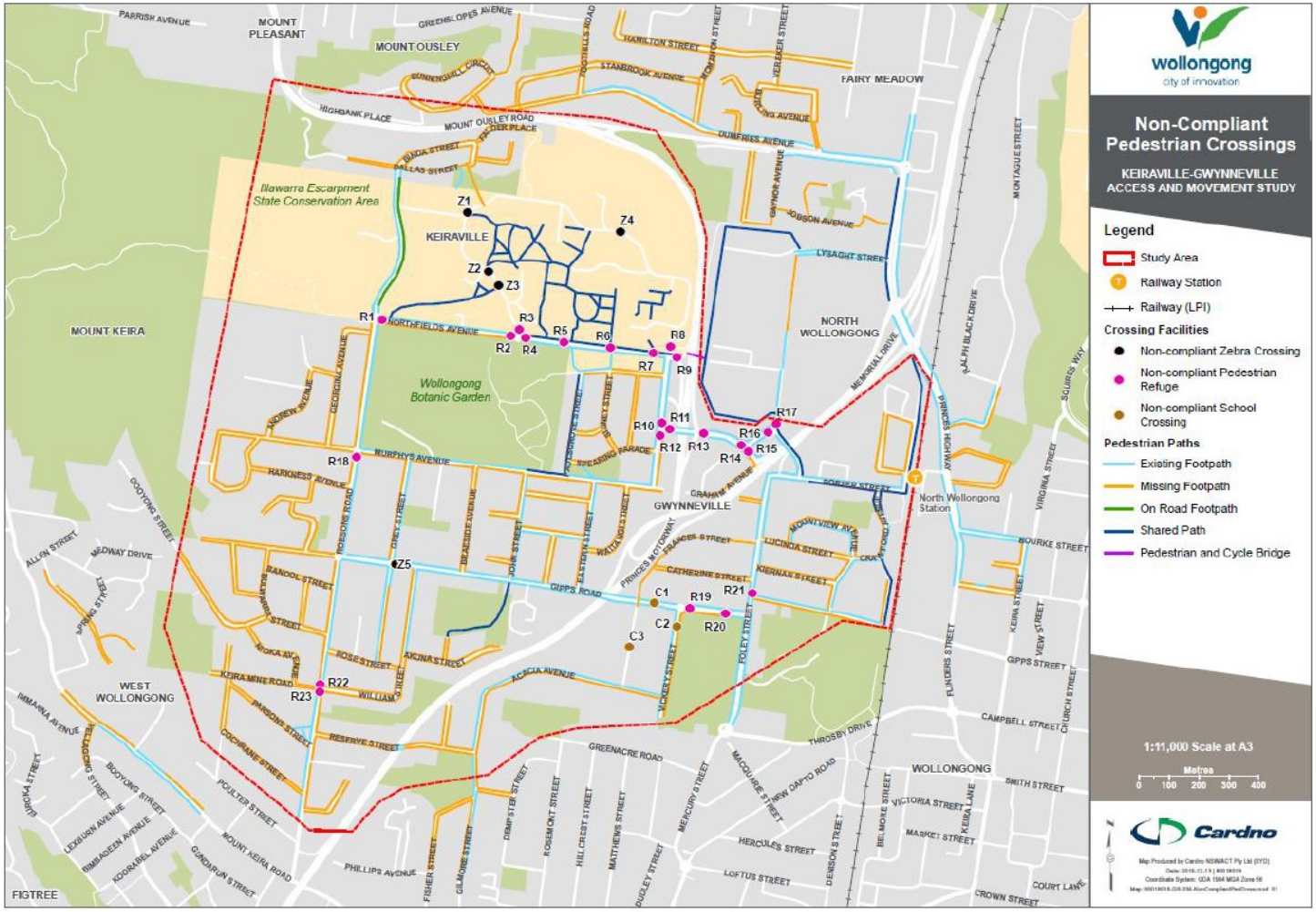
- Linemarking;
- Crossing and kerb ramp alignment;
- Provision of signalised crossings at each leg of an intersection;
- Presence of push-buttons at signalised crossings; and
- Posts for children's crossings.

A summary of the key non-compliant and missing pedestrian footpaths is shown in **Figure 5-1**. The labels correspond to the schedule of non-compliant pedestrian crossing facilities presented in **Appendix H**.

5.1.1 Opportunities

The key opportunities for the pedestrian network include addressing crossing facilities, pedestrian priority and connectivity, and wayfinding to important destinations. The associated actions are detailed in **Section 6**.

Figure 5-1 Pedestrian infrastructure issues



5.2 Cycling network issues and opportunities

Cycling network issues include gaps in the off-road network (not proposed by the WCC Bike Plan) and lack of end of trip facilities at key land uses:

- Missing link in off-road network along Gipps Road, between Robsons Road and John Street;
- Missing strategic connections between Mount Ousley and UOW;
- Missing strategic connections between east and west of the railway line, particularly close to Beaton Park;
- Lack of end of trip facilities at Keiraville and Gwynneville village centres; and
- Dangerous roundabouts for cyclists at intersection of Robson Road and Murphys Avenue and Robson Road and Gipps Road.

The key issues are shown in **Figure 5-2**, overlaid on the existing cycle network.

5.2.1 Opportunities

The key opportunities for the cycling network include shared path infrastructure, bicycle parking, and wayfinding, and include:

- Opportunity for an off-road cycle link along Robsons Road between William Street and Northfields Avenue;

The associated actions are detailed in **Section 6**.

Figure 5-2 Key cycling missing links

5.3 Bus network issues and opportunities

Bus issues are focused on poor service quality, frequency and infrastructure around the study area. The key issues are as follows:

- Infrequent bus services;
- Poor levels of on-time running;
- Bus services, particularly during peak periods are overcrowded;
- Poor integration of bus services with train timetables;
- Shuttle services are limited outside of peak times and out of session time;
- Wet weather shelter is not provided at all bus stops within the study area; and
- Poor connectivity of bus services with surrounding suburbs.

5.3.1 Opportunities

The key opportunities for the bus network include improved bus stop facilities, integrating bus and train timetables, and investigating bus priority infrastructure. The associated actions are detailed in **Section 6**.

5.4 Train network issues and opportunities

The key issues related to the train network are:

- Poor frequency of services in both directions;
- Poor integration of services with buses; and
- Poor alignment of services with UOW schedule.

5.4.1 Opportunities

The key opportunities for the train network include integrating bus and train timetables, and increasing service frequency. The associated actions are detailed in **Section 6**.

5.5 Road network issues and opportunities

The key issues for road network were largely around increasing congestion and unsafe locations. A summary of these issues are as follows:

- There is heavy traffic in many of the streets within the study area;
- The roundabout at the intersection of the M1 Princes Motorway offload ramp and University Avenue is congested and dangerous in peak times;
- Intersection of Irvine Street / University Avenue has extensive queuing in the PM peak.
- Queuing at Mount Ousley Road in the AM and PM peaks;
- University Avenue / Pacific Motorway off-ramp and University Avenue / Porter Street intersections require additional capacity by 2022;
- The UOW Ring Road is congested during the afternoon peak period;
- Foley Street experiences high traffic congestion;
- There is a community perception of high vehicle speeds prevalent throughout the study area; and
- There is a community perception that local roads near the UOW are used as rat runs for UOW students during congested periods.

5.5.1 Opportunities

The key opportunities for the road network include increased traffic calming measures, and working with schools to increase the efficiency of kiss and ride locations. The associated actions are detailed in **Section 6**.

5.6 Parking network issues and opportunities

Parking was a significant issue discussed by the community and key stakeholders. Some of the key issues with parking include:

- Parking utilisation is very high in the streets south of the UOW campus, including Keiraville village;
- Two hour parking spaces on local roads such as Robsons Road, Paulsgrove Street and Sidney Street are not long enough for students attending lectures;
- Accessible parking is not provided in the village centres;
- Lack of sufficient pick up/drop off zones at key destinations such as schools, UOW, and Beaton Park;
- Parking close to key destinations is often heavily utilised by employees;
- Vehicles are constantly parked over driveways;
- High amount of unrestricted parking provided in residential areas in close proximity to the University;
- Poor sightlines at some intersections within the precinct due to vehicles parking too close;
- Current and planned student accommodation generates parking demand;
- Multi occupancy dwellings where each occupant owns a car generates greater on-street parking demand;
- High number of vehicles parking illegally throughout the study area; and
- Number of residential streets throughout the study area which have been reduced to one lane in each direction due to parking on both sides of the road.

5.6.1 Opportunities

The key opportunities for the parking network include investigating paid and resident parking schemes in certain areas, and increasing enforcement of parking restrictions. The associated actions are detailed in **Section 6**. However it is noted that resident parking schemes are not supported by Council, especially given how most residential properties in the area have off-street parking.

6 Actions and prioritisation

6.1 Key actions

The transport network opportunities were used to inform the proposed actions for the study area. These opportunities are complemented by Council identified actions in response to additional community comments, some of which have already been completed by Council. The full list of actions is provided in **Table 6-1**. Detailed locations for the Council identified actions are included in **Appendix G**.

Table 6-1 Transport actions

ID	Mode	Issue	Action	Details
1	Bus	Poor bus service times and frequency	Extend bus timetables and frequency.	WCC to work with bus operators to increase operation times and frequency of existing bus services.
2	Bus	Poor reliability of bus services.	Work with RMS to provide bus priority infrastructure at key points.	WCC could work with RMS to provide bus queue jumps and priority at key intersections to increase reliability of bus services.
3	Bus	Poor integration of public transport.	WCC to work with bus operators to better integrate bus and train timetables.	WCC should work with bus operators to ensure bus services provide good interchange times for commuters to encourage interchanges between modes.
4	Bus	Poor bus stop facilities.	WCC to work with bus operators to provide improved bus stop facilities.	WCC should work with bus operators to ensure at a minimum DDA compliance of all bus stops are provided. Potential for bus stop relocation to allow for DDA compliance, and placed close to key land uses.
5	Bus	Poor bus capacity.	WCC to work with bus operators to ensure adequate capacity is provided to bus services.	WCC should work with bus operators to ensure safe use of all bus services. Bus operators should ensure that the demand for bus services is being provided.
6	Bus	Poor bus service coverage.	Provide direct bus services between key trip attractors.	All major centres within the precinct should be catered for by direct bus services - WCC to work with bus operators to provide additional services to key destinations.
7	Bus	Shuttle bus services.	Maintain and further promote the local shuttle bus services.	WCC to work with TfNSW and UOW to maintain Keiraville/Gwynneville Shuttle, the North Wollongong Shuttle, and the Wollongong Shuttle.
8	Cyclist	Limited safe off-road cycle path facilities throughout the precinct.	Include suggested shared path locations in future programs.	Various locations identified across the study area – see Appendix H for details.
9	Cyclist	Limited direct cycle and pedestrian facilities across railway line.	WCC to work with TfNSW to investigate active transport connection across train line close to Beaton Park.	WCC could work with TfNSW to provide an active transport connection across the railway line close to Beaton Park. This could be a shared pedestrian and cyclist bridge linking Gipps Street east and west of the train line.
10	Cyclist	Poor cycling wayfinding to key destinations.	WCC to provide improved cycling wayfinding on the key regional cycle routes.	WCC to provide improved signage and wayfinding as per NSW Bicycle Guidelines to key destinations including the University of Wollongong, Keiraville, Gwynneville, Wollongong CBD etc.
11	Cyclist	Poor lighting and footpath width along Wisemans Park (Vickery Street) shared path.	WCC to provide a widened shared path and lighting through Wisemans Park as per the Fairy Creek Master Plan.	WCC to provide a 2.5m wide shared path within Wisemans Park in accordance with the adopted Fairy Creek Master Plan.
12	Cyclist	Lack of secure or undercover bicycle parking at key land uses.	Provide increased number of secure and undercover bicycle parking at key land uses such as the UOW, Keiraville and Gwynneville village centres, Beaton Park, the local schools and especially off-street parking locations.	WCC to work with key land uses and town centre to provide an increased number of secure or undercover cycle parking.
13	Pedestrian	Roundabouts within the precinct do not have pedestrian refuges.	Provide compliant pedestrian refuges at all roundabouts.	WCC to investigate provision of compliant pedestrian refuges at all roundabouts within the precinct.
14	Pedestrian	Number of crossing facilities not to Australian Standards.	Ensure that all crossing facilities comply with Australian Standards (upgrade where needed).	All pedestrian, signalised crossings as well as pedestrian refuges should be provided to Australian Standards. Adequate lighting should also be provided.
15	Pedestrian	Poor pedestrian connectivity to the north and east of UOW.	Provide a direct pedestrian connection towards the north and east of UOW.	WCC to investigate the provision of pedestrian/ cyclist connections across Mt Ousley Road and Princes Motorway towards the north and east of UOW. It is believed that this is part of the proposed Mt Ousley interchange design
16	Pedestrian	Poor wayfinding within the precinct.	Provide wayfinding to key destinations including train stations, UOW, key centres and recreation facilities.	WCC to develop a wayfinding strategy similar to that of the City of Sydney to encourage walking and cycling. Wayfinding to be provided to key locations.
17	Pedestrian	Vehicle priority in key centres across the precinct.	Provide increased pedestrian priority within the town centres.	WCC to work with RMS to update signal phasings. WCC could also provide lower speed limits in key centres to provide increased pedestrian/ cyclist priority. Traffic calming could also be provided in these centres.
18	Pedestrian	Poor walking rates throughout the precinct.	Provide increased marketing especially in schools, workplaces and town centres to show the benefits of walking and cycling.	WCC to develop marketing tool to present the benefits of active transport, especially to schools and University.
19	Pedestrian	Poor lighting along streets impacting security.	WCC to review street lighting.	Key routes for investigation: > Robsons Rd, Dallas St, Greenacre Rd.
20	Pedestrian	Missing footpath links in study area.	Include suggested footpath locations in future programs.	Various locations identified across the study area – see Appendix H for details.
21	Vehicles	Vehicles speed down slope on Gooyong Street, in close proximity to the preschool.	Provide traffic calming along Gooyong Street	Provide warning signage and traffic calming along Gooyong Street to help regulate speed along this slope, which could include road narrowing, kerb extensions, linemarking and pavement treatments.
22	Vehicles	Poor safety at the Murphys Avenue and Robsons Avenue roundabout.	Realignment of roundabout at Murphys Avenue and Robsons Road	The Murphys Avenue and Robsons Road roundabout is too small, and may not slow vehicles down enough. WCC should investigate the enlarging of this roundabout to slow vehicles down.
23	Not used	-	-	-
24	Vehicles	High vehicle speed throughout the study area.	WCC to investigate extending school zones on the northern and southern sides of Robsons Road near the intersection with Gipps Road.	
25	Not used	-	-	-
26	Not used	-	-	-
27	Vehicles	High vehicle speed throughout the study area.	WCC to investigate traffic calming measures on Robsons Road to manage vehicle speeds, particularly on the north and south downhill sections to the Gipps Rd intersection.	This was mentioned by a number of members of the community.

ID	Mode	Issue	Action	Details
28	Vehicles	Safer crossings needed across study area.	Council has identified a number of intersections where improvements will be investigated.	Various locations identified across the study area – see Appendix H for details.
29	Not used	-	-	-
30	Vehicles	High vehicle speed throughout the study area.	WCC to investigate traffic calming improvements.	Various locations identified across the study area – see Appendix H for details.
31	Vehicles	High vehicle speed throughout the study area.	WCC to investigate roundabout installation.	Consider a roundabout for Braeside Ave/Murphys Ave intersection to slow traffic.
32	Vehicles	Safety issues close to schools.	Council has identified a number of locations where safety improvements close to schools will be reviewed.	Various locations identified across the study area – see Appendix H for details.
33	Vehicles	Safety issues on University Avenue.	Investigate safety improvements on University Avenue.	Guardrail installed on University Avenue between Memorial Drive and Porter Street (east) in 2018/2019.
34	Parking	Poor line marking of parking spaces.	WCC to investigate the provision of marked parking bays to increase the efficiency of parking spaces within the precinct.	Focus on high-demand roads without existing linemarking, including: - Northfields Avenue - O'Leary Road - Robsons Road north of Gipps Road - Murphys Avenue - Gipps Road - Local roads between Murphys Avenue and Gipps Road - Porter Avenue - Railway Crescent
35	Parking	Parking restrictions.	Review timed parking.	Various locations identified across the study area – see Appendix H for details.
36	Parking	Poor monitoring of parking in the precinct.	Review ranger patrols to ensure all vehicles abide by the corresponding parking restrictions.	Focus on all suburbs within the study area. Key areas for investigation: > Increase the number of parking rangers to ensure vehicles do not park for longer than they should and parking in designated parking spaces only. Consider varying patrol locations at the start of the University session. > Enforce current parking restrictions. > Enforce parking bay restrictions on weekends as well.
37	Parking	Lack of sufficient pick up/drop off zones at key destinations such as schools, UOW, and Beaton Park.	WCC to review parking restrictions on the western side of Grey St and consider amendments to match those on the eastern side with school zone timing restrictions.	
38	Parking	High amount of unrestricted parking provided in residential areas in close proximity to the University.	WCC to investigate introduction of paid parking in the vicinity of the University, with pricing generally be highest adjacent to the university.	Pricing is recommended to start at about $2.00 per hour (equivalent to or slightly higher than the student rate on-campus), decreasing to zero based on distance and demand. Pricing should be set at a level such that peak occupancy is maintained at around 90%.
39	Not used	-	-	-
40	Parking	Lack of sufficient pick up/drop off zones at key destinations such as schools, UOW, and Beaton Park.	WCC to consider developing a special event parking and traffic management plan to manage events at Beaton Park and other locations.	A combination of parking wardens, event parking permits for organisers, drop off/pick up points, wayfinding tools and temporary traffic management measures can be used to ensure a satisfactory experience for visitors. Council could also consider improving the opportunities for overflow parking (through facilitating agreements with demand generators) to improve peak accessibility and increase safety in the area.
41	Parking	Lack of sufficient pick up/drop off zones at key destinations such as schools, UOW, and Beaton Park.	WCC to consider implementing parking restrictions such as timed or paid parking in certain areas, to relocate staff to the periphery of these land uses or off-site.	Facility users may not be aware of alternative parking locations and parking congestion occurs in the immediate vicinity, causing safety issues for both users and residents.
42	Parking	Accessible parking is not provided in the village centres.	WCC to consider implementing parking user priority system in commercial centres.	The two village centres of Keiraville and Gwynneville should have parking signage modified to include loading zones, motorcycle parking, disability and short-term drop-off/pick-up.
43	Not used	-	-	-
44	Parking	Safety at school crossings.	WCC to advocate for the Department of Education and local schools to consider appointing wardens to assist parents with considerate and formalised kiss and ride facilities, as well as coordinating safe passage of children from the roadside into schools.	Wardens should be school teachers if possible to increase authority. If such an approach does not produce compliance, rangers can attend the school and issue warnings or infringements as necessary. Enforcement should be used as a tool to ensure compliance in conjunction with more positive approaches to parking management.
45	Parking	Lack of sufficient pick up/drop off zones at key destinations such as schools, UOW, and Beaton Park.	Local schools could consider monitoring kiss and ride parking to prevent parking, and expand it as required to support demand.	
46	Parking	Lack of sufficient pick up/drop off zones at key destinations such as schools, UOW, and Beaton Park.	Local schools could consider staggering start and finish times to help alleviate parking issues.	The fact that school start and finish times are so clearly defined means that hundreds of people are arriving and departing a single location within a very short period of time.
47	Parking	Lack of sufficient pick up/drop off zones at key destinations such as schools, UOW, and Beaton Park.	WCC to work with UOW to investigate pick up and drop off locations along Northfields Avenue.	Requested by UOW in their review of the Parking Tech Memo.
48	Parking	Signage and wayfinding is limited within the study area.	WCC to consider developing a wayfinding strategy to help manage parking at schools and other attractors such as Beaton Park and the Botanic Garden.	Council could also provide some guidelines to assist schools/local attractions in communicating parking availability to parents.

ID	Mode	Issue	Action	Details
49	Parking	Uniform approach to kiss and ride facilities does not suit every location.	WCC to work with schools to manage parking and safe drop off/pick up.	Key areas for investigation: > Meet with Schools and School Crossing Supervisors/Rangers/RMS/Police to determine the best option for that specific location; Investigate drop off zones for set times of the day; Consider 'Slow Down' signage as part of the kiss and ride strategy; Consider that parents may want to get out of their car to pick up younger children, so a kiss and ride solution may not work for everyone; Ensure drop off/pick up issues are considered in the rebuild of Gwynneville Public School; Work towards long term reduction in demand for kiss and ride zones by encouraging walking/riding by students through provision of extra pedestrian crossings and bike paths; Consider staggering start/finish times to better manage traffic.
50	Miscellaneous	High vehicle mode shared from UOW.	Potential for UOW to increase student accommodation close to the main campus to reduce the need to travel to the University.	UOW to investigate providing additional student accommodation close the main campus to reduce student travel to the University.

6.2 Prioritisation

The transport network actions were assigned a priority, based on planning principles developed in consultation with WCC. The principles are:

- Safety;
- Accessibility / Connectivity;
- Travel mode sustainability;
- Cost / Constructability;
- Addresses impacts to local community;
- Addresses impacts to UOW operation;
- Parking management;
- Improves access for vulnerable user groups; and
- Aligned with government strategies.

The actions were prioritised using a multi criteria analysis (MCA), and by scoring each action against the planning principles. Each principle was assigned a weighting of 10 per cent, except for safety, which was assigned a higher weighted score of 20 per cent. The actions with the highest score are the highest priority actions. Priority is categorised according to high, medium, and low priority, as shown in **Table 6-2**.

Table 6-2 Priority Level

Priority Level	Score
High Priority	4.0 and above
Medium Priority	3.5 to 4.0
Low Priority	0 to 3.5

The prioritisation matrix is presented in **Table 6-4**. Actions are listed in order of highest priority.

6.3 Implementation

Based on the results of the prioritisation matrix, the timeframe for the implementation of works for each priority level is presented in **Table 6-3**. The timeframes are based on short term (0-2 years), medium term (2-6 years) and long term (6-10 years) implementation. The higher priority actions are assigned the shortest timeframe.

Table 6-3 Priority rating and implementation timeframe

Priority	Timeframe
High Priority	Short term: 0 – 2 years
Medium Priority	Medium term: 2 – 6 years
Low Priority	Long term: 6 – 10 years

6.4 Cost estimates

Strategic cost estimates were developed for each action involving improvement works and are presented in **Table 6-4**. The costs are based on unit rates provided by Council, include a 50% contingency and have been rounded to the nearest $100. The costs do not allow for elements such as:

- Project management;
- Design;
- Property acquisition;
- Temporary works or traffic control;
- Site establishment or disposal of material costs;
- Relocation of services or drainage; or
- Provision of barriers and fences.

The total cost of the works is estimated to be **$10,611,700**.

Table 6-4 Prioritisation matrix

ID	Mode	Action	Safety	Accessibility / Connectivity	Travel mode sustaina-bility	Price / Constr-uctability	Address impacts to local community	Address impacts to UoW operation	Parking Manage-ment	Improve access for vulnerable user groups	Aligned with government strategies	Total Score (out of 5)	Priority	Timeframe	Estimated cost
		Weighting	**20%**	**10%**	**10%**	**10%**	**10%**	**10%**	**10%**	**10%**	**10%**	**100%**			
8	Pedestrian / Cyclist	WCC to include suggested shared path locations in future programs.	5	5	5	3	5	4	2	5	5	4.4	High	Short-term	$990,000
14	Pedestrian	WCC to ensure that all crossing facilities comply with Australian Standards (upgrade where needed).	5	5	5	5	5	2	2	5	5	4.4	High	Short-term	$75,000
13	Pedestrian	WCC to provide compliant pedestrian refuges at all roundabouts.	5	5	5	4	5	2	2	5	5	4.3	High	Short-term	$1,312,500
30	Vehicles	WCC to investigate traffic calming improvements in key locations.	5	5	3	3	5	3	4	5	5	4.3	High	Short-term	N/A
32	Vehicles	WCC to investigate identified locations for safety improvements close to schools.	5	5	4	3	5	2	4	5	5	4.3	High	Short-term	N/A
33	Vehicles	Investigate safety improvements on University Avenue.	5	5	3	3	5	4	3	5	5	4.3	High	Short-term	N/A
20	Pedestrian	WCC to include suggested footpath locations in future programs.	5	5	5	3	4	3	2	5	5	4.2	High	Short-term	$1,875,000
12	Cyclist	WCC to provide increased number of secure and undercover bicycle parking at key land uses.	4	4	5	5	4	3	4	4	4	4.1	High	Short-term	$225,000
28	Vehicles	WCC to investigate identified intersection improvements.	5	4	5	3	5	2	2	5	5	4.1	High	Short-term	$97,500
34	Parking	WCC to investigate the provision of marked parking bays to increase the efficiency of parking spaces within the precinct.	4	3	3	5	5	5	5	3	4	4.1	High	Short-term	$16,800
36	Parking	WCC to review ranger patrols to ensure all vehicles abide by the corresponding parking restrictions.	4	3	3	5	5	5	5	3	4	4.1	High	Short-term	N/A
49	Parking	WCC to work with schools to manage parking and safe drop off/pick up.	5	5	2	4	4	4	5	4	3	4.1	High	Short-term	N/A
3	Bus	WCC to work with bus operators to better integrate bus and train timetables.	3	5	5	4	5	4	2	4	5	4.0	High	Short-term	N/A
4	Bus	WCC to work with bus operators to provide improved bus stop facilities.	4	4	5	4	4	3	2	5	5	4.0	High	Short-term	N/A
11	Pedestrian / Cyclist	WCC to investigate widening shared path and lighting along Wisemans Park shared path.	5	5	5	4	4	2	2	4	4	4.0	High	Short-term	$1,342,500
15	Pedestrian	WCC to work with stakeholders to provide a direct pedestrian connection towards the north and east of UoW.	3	5	5	2	4	5	3	5	5	4.0	High	Short-term	N/A
17	Pedestrian	WCC to provide increased pedestrian priority within the town centres.	5	5	5	4	4	2	2	4	4	4.0	High	Short-term	N/A
44	Parking	WCC to advocate for the Department of Education and local schools to consider appointing wardens to assist parents with considerate and formalised kiss and ride	5	5	2	3	4	2	5	5	4	4.0	High	Short-term	N/A

ID	Mode	Action	Safety	Accessibility / Connectivity	Travel mode sustaina-bility	Price / Constr-uctability	Address impacts to local community	Address impacts to UoW operation	Parking Manage-ment	Improve access for vulnerable user groups	Aligned with government strategies	Total Score (out of 5)	Priority	Timeframe	Estimated cost
		facilities, as well as coordinating safe passage of children from the roadside into schools.													
16	Pedestrian / Cyclist	WCC to work with stakeholders to provide wayfinding to key destinations including train stations, UoW, key centres and recreation facilities.	3	5	5	5	3	4	3	4	4	3.9	Medium	Medium-term	N/A
24	Vehicles	WCC to investigate extending school zones on the northern and southern sides of Robsons Road near the intersection with Gipps Road to calm traffic.	5	3	2	4	5	3	2	5	5	3.9	Medium	Medium-term	$9,900
5	Bus	WCC to work with bus operators to ensure adequate capacity is provided to bus services.	3	4	5	4	5	4	2	4	5	3.9	Medium	Medium-term	N/A
10	Cyclist	WCC to provide improved cycling wayfinding on the key regional cycle routes.	3	4	5	5	4	4	2	4	5	3.9	Medium	Medium-term	$24,000
37	Parking	WCC to review parking restrictions on the western side of Grey St and consider amending these to match those on the eastern side with school zone timing restrictions.	3	5	2	5	5	3	5	4	4	3.9	Medium	Medium-term	N/A
7	Bus	Maintain and further promote the local shuttle bus services.	3	4	5	4	5	4	2	4	5	3.9	Medium	Medium-term	N/A
46	Parking	Local schools could consider staggering start and finish times to help alleviate parking issues.	3	5	2	4	4	3	5	5	4	3.8	Medium	Medium-term	N/A
27	Vehicles	WCC to investigate traffic calming measures on Robsons Road to manage vehicle speeds, particularly on the north and south downhill sections to the Gipps Rd intersection.	5	3	2	3	5	3	2	5	5	3.8	Medium	Medium-term	$114,200
40	Parking	WCC to consider developing a special event parking management plan to manage events at Beaton Park and other locations.	4	5	2	4	4	3	5	4	3	3.8	Medium	Medium-term	N/A
19	Pedestrian	WCC to review street lighting, particularly along Robsons Road, Dallas Avenue, and Greenacre Road.	5	4	2	3	4	3	3	5	4	3.8	Medium	Medium-term	N/A
18	Pedestrian / Cyclist	WCC to work with stakeholders to provide increased marketing especially in schools, workplaces and town centres to show the benefits of walking and cycling.	3	4	5	5	4	2	3	3	5	3.7	Medium	Medium-term	N/A
1	Bus	WCC to work with stakeholders to extend bus timetables and frequency.	2	5	5	4	4	4	2	4	5	3.7	Medium	Medium-term	N/A
47	Parking	WCC to work with UoW to investigate pick up and drop off locations along Northfields Avenue.	3	5	2	3	3	5	5	4	3	3.6	Medium	Medium-term	N/A
45	Parking	Local schools could consider monitoring kiss and ride usage to prevent parking, and expand it as required to support demand.	3	5	2	4	3	2	5	5	4	3.6	Medium	Medium-term	N/A
48	Parking	WCC to consider developing a wayfinding strategy to help manage parking at schools and other attractors such as Beaton Park and the Botanic Garden.	3	5	2	3	3	4	5	3	4	3.5	Medium	Medium-term	N/A
42	Parking	WCC to consider implementing parking user priority system in commercial centres.	2	5	2	4	4	2	5	4	4	3.4	Low	Long-term	N/A

ID	Mode	Action	Safety	Accessibility / Connectivity	Travel mode sustaina-bility	Price / Constr-uctability	Address impacts to local community	Address impacts to UoW operation	Parking Manage-ment	Improve access for vulnerable user groups	Aligned with government strategies	Total Score (out of 5)	Priority	Timeframe	Estimated cost
35	Parking	WCC to review timed parking.	2	5	3	3	4	4	5	2	3	3.3	Low	Long-term	N/A
2	Bus	WCC to work with RMS to provide bus priority infrastructure at key points.	2	5	5	2	4	3	2	3	5	3.3	Low	Long-term	N/A
9	Pedestrian / Cyclist	WCC to work with TfNSW to investigate active transport connection across train line close to Beaton Park.	3	5	5	1	3	3	2	5	3	3.3	Low	Long-term	$3,924,300
21	Vehicles	WCC to investigate centre line marking and traffic calming along Gooyong Street.	5	3	2	4	4	1	1	4	4	3.3	Low	Long-term	$114,200
31	Vehicles	WCC to investigate roundabout installation at Braeside Avenue/Murphys Avenue intersection.	5	4	3	2	4	2	2	3	3	3.3	Low	Long-term	$225,000
50	Parking	UoW to investigate increasing student accommodation close to main campus to reduce the need to travel.	2	5	5	1	4	5	4	3	2	3.3	Low	Long-term	N/A
41	Parking	WCC to consider implementing parking restrictions such as timed or paid parking in certain areas, to relocate staff to the periphery of these land uses or off-site.	2	4	3	4	4	2	5	3	3	3.2	Low	Long-term	N/A
6	Bus	WCC to work with stakeholders to provide direct bus services between key trip attractors.	2	5	5	2	4	3	2	3	4	3.2	Low	Long-term	N/A
38	Parking	WCC to investigate introduction of paid parking in the vicinity of the University, with pricing generally be highest adjacent to the university.	2	3	2	3	3	5	5	3	4	3.2	Low	Long-term	N/A
22	Vehicles	WCC to investigate realignment of roundabout at Murphys Avenue and Robsons Road.	5	3	2	3	3	1	1	4	4	3.1	Low	Long-term	$225,000

The structure plans indicating the actions to be undertaken for each mode are presented in **Figure 6-1**, **Figure 6-2** and **Figure 6-3** for the active transport, vehicle and parking actions respectively. A public transport structure plan was not developed since the related actions are not location-specific.

Figure 6-1 Active transport structure plan

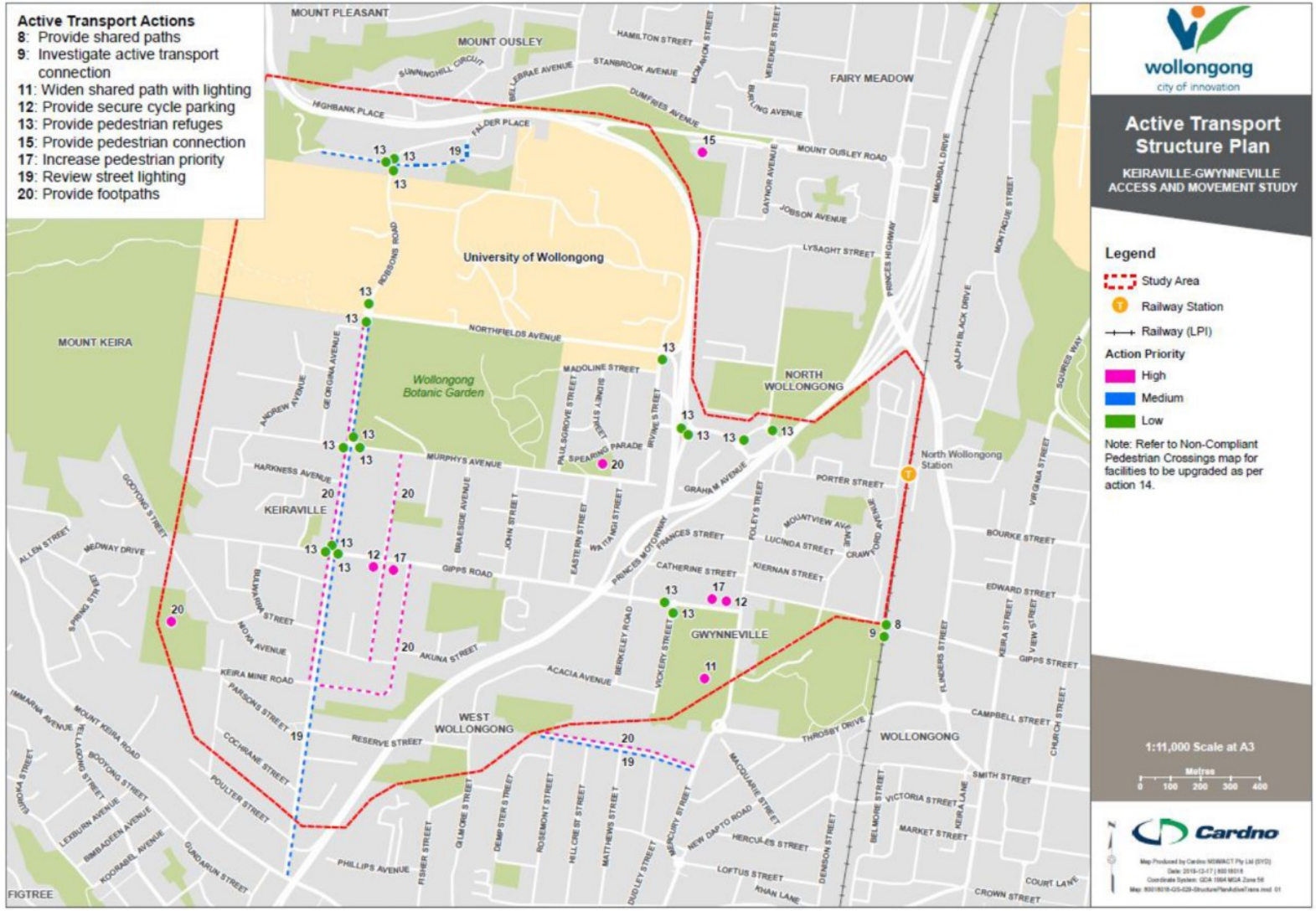


Figure 6-2 Vehicle structure plan

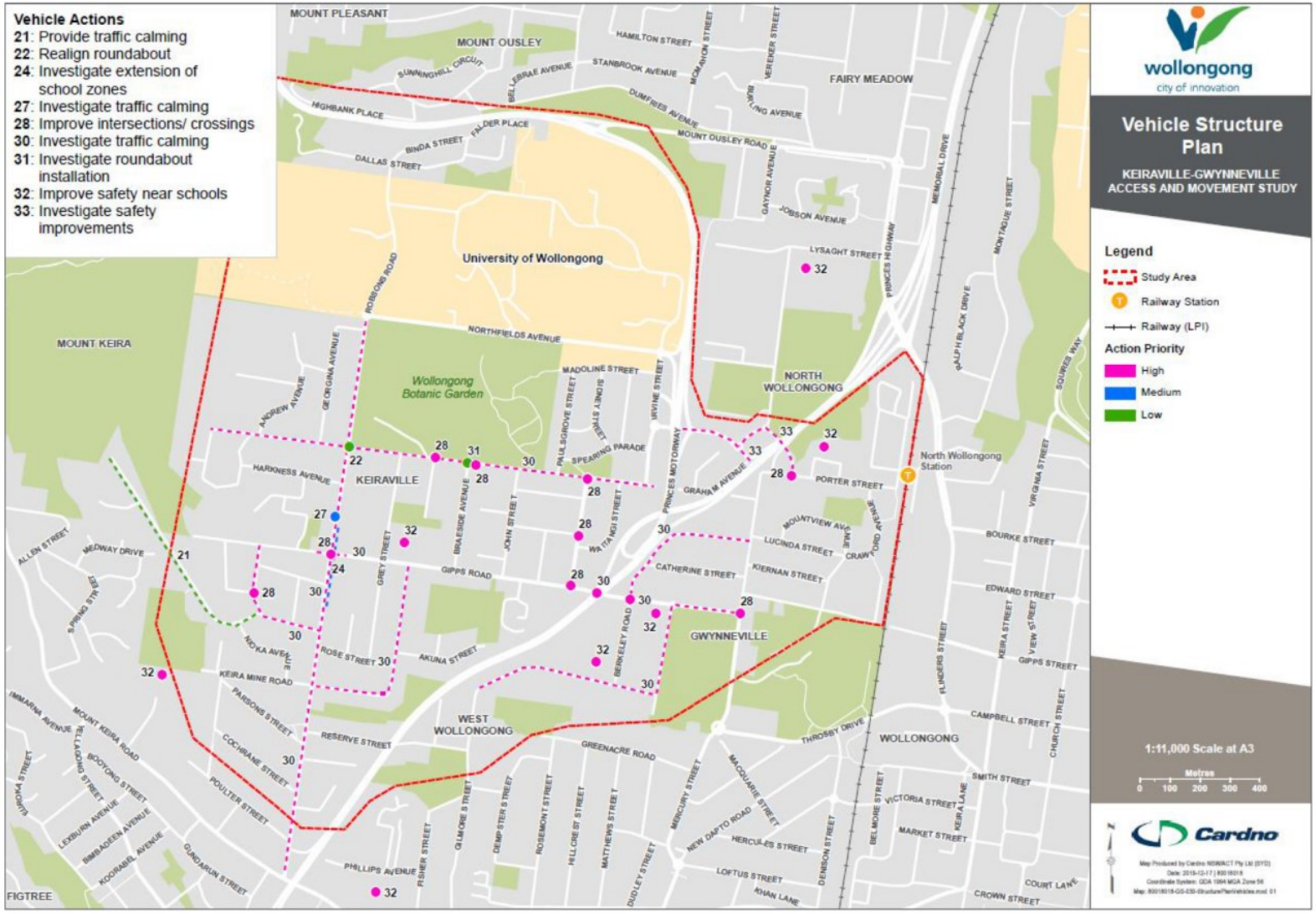


Figure 6-3 Parking structure plan

Conclusion

The Keiraville-Gwynneville Access and Movement Study highlights a number of issues with the traffic and transport network in the precinct, which will become more challenging as land use changes in the area and further development increases the number of daily trips made by residents, workers, students, and visitors.

At the same time, the study has identified a number of opportunities to make improvements to the network and facilitate easier movement of people in the precinct, through better parking management, optimised public transport connections, and enhanced infrastructure to improve safety for pedestrians and cyclists.

The proposed actions provide a comprehensive framework to assist Council in addressing the issues and capitalising on the opportunities to support access and movement in Keiraville and Gwynneville. The Access and Movement Study:

- Discusses the strategic context and the relevance of other plans and strategies to the study;
- Examines the existing transport network and travel behaviour;
- Summarises the results of community consultation activities;
- Outlines the issues observed through the existing network analysis, and highlighted by community members;
- Identifies the opportunities to improve access and movement;
- Proposes actions to address the issues and capitalise on the opportunities, covering the whole transport network; and
- Recommends 50 actions to enable better access and movement in the precinct, and a timeframe for implementation to help Council achieve these actions.

6.5 Next steps

The next steps to implement the Access and Movement Study should include:

- Working with internal stakeholders to develop a detailed implementation plan;
- Consulting with external stakeholders to gather input for the implementation plan;
- Developing detailed cost estimates of the proposed actions;
- Aligning the proposed actions with other planned capital works and available budget, and delivering on these actions;
- Continuing to work with external stakeholders to engage the community in sustainable travel behaviour; and
- Continuing to work with external stakeholders on the proposed actions that will need their input and assistance to deliver.

APPENDIX A

DRAFT UOW TRANSPORT SURVEY AND STRATEGY - SUMMARY OF RECOMMENDED ACTIONS

APPENDIX B

UOW CAMPUS MASTER PLAN - SUMMARY OF KEY STRATEGIES AND ACTIONS

APPENDIX C

BASE MODEL DEVELOMPENT REPORT

APPENDIX D

PARKING ANALYSIS TECHNICAL MEMORANDUM

APPENDIX E

STAKEHOLDER ENGAGEMENT PLAN – DRAFT

APPENDIX F

CONSOLIDATED COMMUNITY COMMENTS

APPENDIX G

COUNCIL IDENTIFIED ACTIONS IN RESPONSE TO COMMUNITY COMMENTS

APPENDIX A

DRAFT UOW TRANSPORT SURVEY AND STRATEGY - SUMMARY OF RECOMMENDED ACTIONS

Table 1-1 Key Actions from University of Wollongong Transport Strategy and Survey

Code	Actions
Active Transport	Work with authorities to provide an active transport bridge into the University from the M1 Princes Motorway on the south eastern side and improve cycle connectivity on the Ring Road.
	Work with authorities surrounding any planned increase to residential densities at North Wollongong Station, aiming to increase walking catchment for UOW but also achieve state government objectives for increased density around transport and employment nodes.
	Work with authorities to prioritise missing pedestrian and cycling links to the north of campus, to align with the timing of the proposed northern entry and Mount Ousley interchange.
	Work with authorities to prioritise missing cycleway links on Foley Street, Church Street and Bourke Street to improve connections to the Wollongong campus from UOW accommodation sites.
	Work with authorities to prioritise proposed cycleway upgrades on Porter Street and Crawford Avenue, to improve the cycling connection between North Wollongong Station and the Wollongong campus.
	Investigate shared zone within the campus core.
	Develop wayfinding strategy.
	Enhance existing pedestrian refuge at the Western Entrance of Northfields Avenue.
	Install pedestrian refuge at roundabout at Northfields Avenue and Irvine Street (southern leg).
	Investigate bike share scheme expansion.
	Provide new Bike Bases and end of trip facilities in new developments.
	Consider including a bidirectional cycleway as part of the planned upgrade of Northfields Avenue.
	Run cycling skills workshops and Bike Buses.
Public Transport	Investigate increase to UOW Shuttle services during peak and off peak travel times.
	Analyse Opal data to lobby State Government for additional services during peak times e.g. Gong Shuttle.
	Consider target student growth areas for UOW and review existing public transport connections to determine whether these are sufficient.
	Provide bus shelters for all stops on campus.
	Lobby State Government to provide sufficient bus shelters for stops on routes which service the Wollongong campus, including at North Wollongong Station.
	Trial queuing system for UOW shuttle buses at Northfields interchange and North Wollongong Station.
Private Transport	Investigate options to manage parking capacity including carpooling, reserved parking and options for staff engagement car share.
	Increase carpooling numbers by offering reduced parking rates for vehicles with two people.
	Model anticipated northern entry vehicle trips to determine appropriate parking provision.

Code	Actions
All Modes	Investigate automated parking management and dynamic price structuring to improve parking management across campus.
	Reallocate Bus Bay to east of bus interchange on Northfields Avenue to alternative location, to increase capacity for a pick up and drop off zone.
	Investigate opportunity to add pick up/drop off zone close to Robsons Road entry.
	Investigate opportunity for smart bus stops with digital signage to improve wayfinding and provide advertising revenue opportunities.
	Investigate opportunities to streamline travel information and improve efficiency for UOW.
	Review course delivery modes and timings to ease demand on the transport network.
	Nominate Sustainable Transport Student Ambassadors and staff liaisons to educate peers about sustainable transport options to campus.
	Investigate lighting improvements on campus to improve safety for all modes, particularly active transport and public transport.

Table 1-2 Relevant UOW Master Plan strategies and directions

Master Plan Strategy	Directions	Actions
Access to the campus strategy: The vision presented in the Master Plan is to continue an ongoing modal shift away from private vehicle travel to the campus and reduce vehicular reliance on the roundabout at Northfields Avenue and Irvine Street.	Reduce congestion on Northfields Avenue	Northfields Avenue currently provides most of the campus' vehicle arrivals, and given UOW's growing population, this will become highly congested in the future. A new northern access point to the campus is proposed that will reduce vehicular reliance on Northfields Avenue. The following actions are proposed: ▪ Increasing on-campus accommodation to reduce the number of people using private vehicles and public transport to access the campus; ▪ Congestion on Northfields Avenue can be reduced by introducing a new western entrance on Robsons Road to the P3 multi-deck car park, making arrivals at this entry point more attractive to drivers; ▪ Supporting carpool programs as well as Park-and-Ride locations to reduce the number of private vehicles parking in and around campus; ▪ Increasing active transport mode share to the campus, improving footpaths and shared path links, and ▪ Student accommodations in the Wollongong area should be equipped with bike share systems to increase active travel mode share.
	Improve road safety along Irvine Street	Work with WCC and RMS to improve road safety at the Northfields Avenue/ Irvine Street Roundabout and the M1 southbound exit at University Avenue. The following actions are proposed: ▪ Installation of a bypass left turn lane from Irvine Street into Northfields Avenue to increase road safety; and ▪ Replace the parking lane between Irivine Street and the UniCentre Lane on the southern side of Northfields Avenue with a traffic lane.
	Introduce a new pedestrian and cycle link to the north	The M1 Princes Motorway restricts pedestrian and cyclist movement to the north and northeast of the campus. A new link to this area would significantly increase accessibility to the north and north eastern suburbs, and ultimately promote a mode shift towards active transport. UOW will enter into discussions with WCC and RMS to ensure that the proposed link aligns with plans for an M1 Princes Motorway/ Mt Ousley Road interchange.
Student accommodation strategy: The vision presented in the Master Plan is to provide 500 beds on campus over the next 20 years. Existing student accommodation will be upgraded and consolidated into key locations well served by public and active transport and facilities.	Consolidate existing housing stock	Existing housing stock that is outdated and in need of repair will be progressively decommissioned, renovated or replaced. Housing will be consolidated into strategic locations with good access to public and active transport facilities.
	Introduce additional beds to the campus	Additional beds will be located at existing accommodations on campus, with half replacing ageing stock on Robsons Road and the other half replacing the at-grade car parking at the Northfields Avenue housing.
	Redevelop Weerona housing	The ageing student accommodation at Beaton Park will be renewed in alignment with the upgrades to the area currently planned by WCC.
	Increase diversity of housing on offer	Diversifying the offer of student housing will accommodate different types of students on campus. The following actions are proposed: ▪ Introducing housing that transitions undergraduate students to adult life; and ▪ Short-stay accommodation for block learning students, conference guests and visiting scholars.
Pedestrian and cycling strategy:	Introduce a hierarchy of key pedestrian paths	Typologies will be introduced to create a hierarchy of pedestrian paths through campus. These will include:

Master Plan Strategy	Directions	Actions
The vision presented in the Master Plan is to improve pedestrian and cycling priority on campus, and improve signage and wayfinding. Intuitive, direct paths will be introduced as well as high quality shared zones, increasing overall pedestrian and cycling amenity.		▪ Primary civic walks leading people directly into the campus and to key locations. Civic walks should be aligned between buildings and be characterised by generous widths, integrated furniture and lighting. These will also function as pedestrian gateways, welcoming visitors to the campus; ▪ Primary green walks that work with the existing vegetation on campus, and that are aligned with existing trees; and ▪ A secondary network of quality paved laneways that will connect to buildings, open spaces and primary walks.
	Improve signage and wayfinding on campus	A wayfinding strategy will be developed for the campus that will build upon the directions of the primary and secondary pedestrian walks.
	Improve pedestrian safety on the Ring Road and key service roads	Shared zones within the campus will be introduced to increase pedestrian and cyclist safety. These shared zones will have capacity for low speed vehicles of service, delivery and maintenance. The look and feel of the low speed environment will make drivers more aware of their speed and the presence of pedestrians.
	Limit access for private vehicles in the core campus	The pedestrian and cycling environment within the campus core could be compromised if the existing car priority and unrestricted access is left unchanged.
	Introduce bike hubs in prominent new buildings	Bike hubs should be provided in prominent locations, such as student accommodation sites, and new buildings. Showers and lockers should also be provided in the hubs.
	Increase pedestrian safety on Northfields Avenue	Increasing pedestrian safety on Northfields Avenue is a priority for UOW. A previously suggested skybridge is not recommended due to the additional time required to cross the road compared to crossing at ground level. Construction of an elevated skybridge would also give the impression that the road network is for vehicles only. Actions that can achieve increased safety for pedestrians and cyclists without the construction of the skybridge include: ▪ Introducing traffic calming measures such as raised pedestrian crossings that increase visibility for approaching vehicles; ▪ Introducing improved signage and flashing lights to increase visibility of the crossing; and ▪ Maintaining median strips and narrow lane widths to slow traffic.
<u>Public transport and vehicular access strategy:</u> The vision presented in the Campus Master Plan is to enhance the public transport arrival experience and restrict private vehicle access to the Wollongong campus' inner core.	Improve the arrival experience for bus passengers	The arrival experience for bus passengers should be enhanced by including improvements to pedestrian amenities from the terminus to the campus core (via the existing access path between P1 and P2 car parks). The proposed development at the P2 car park presents an opportunity to repurpose the corridor as a welcoming arrival space for bus passengers.
	Extend the capacity of the existing bus terminus	The anticipated increase in UOW population in the future will place strain on the bus terminus. To accommodate this growth, an expansion of the terminus is required. UOW should consider consolidating the UniCentre loading bay to University Hall, to accommodate an additional bus bay at the terminus. For additional capacity requirements, the University should collaborate with Wollongong City Council to add additional bays south of the bus terminus to maintain a consolidated terminus area.
	Limit vehicular access in the campus core	Vehicular access to the campus core will still be provided to those that need it, for example service, delivery and emergency vehicles. However, tighter control will be placed on the vehicles that enter campus through control methods such as rising bollards that minimise unnecessary movements in shared zones. Large vehicle loading zones should be limited and consolidated where possible.

Master Plan Strategy	Directions	Actions
	Maintain taxi pick up area	The taxi drop off zone to the south of UniHall on Northfields Avenue should continue to be used for this purpose, and a general drop-off zone should be investigated.
Car parking strategy: The vision presented in the Master Plan is to maintain the campus' current ratio of car parking spaces to the Effective Full Time Student Load (EFTSL). Parking on site will be consolidated into key locations that free up the core campus for new academic buildings and public spaces. Parking will still be supplied for service and contractor vehicles, disabled users and regional students.	Maintain current ratio of car spaces to students	The existing local road network currently experiences heavy congestion in peak periods, hence provision for additional car parking will only exacerbate road congestion even further. The current ratio of 5.4 car parking spaces per EFTSL at the Wollongong campus will decrease slightly during the key construction period, but will be restored by 2036. At the same time, a number of actions will be introduced to reduce car parking demand: ▪ Improving walking, cycling and public transport infrastructure, facilities and services; ▪ Increasing the on-campus residential population, and providing car and bike sharing facilities at all student accommodations; ▪ Encouraging the use of carpooling with priority parking; and ▪ Introducing new parking pricing methods.
	Consolidate car parking to outside the Ring Road	The provision of consolidated parking locations outside of the Ring Road will make finding a car parking space more reliable and reduce unnecessary movements from car park hunting. Two potential locations for increased parking are the Sports Precinct and at the P4 Western car park.
	Continue to provide car parking for those who need it	Car parking access will be given to those who need it, such as vehicles servicing specific facilities, people with disabilities and UOW operations vehicles. The following actions are proposed: ▪ Continue to provide drop off spaces and convenient parking access for those accessing the Kids' Uni and Early Start Discovery Space; and ▪ Maintain access and contractor and disabled parking next to buildings.
	Collaborate with external stakeholders to reduce the impact of on-street parking	UOW should support Wollongong City Council to reduce the impact of on-street parking on the local community and for the convenience of other road users.

APPENDIX B

UOW CAMPUS MASTER PLAN - SUMMARY OF KEY STRATEGIES AND ACTIONS

Strategy Review	Area	Strategies	Directions/Actions	Status	Covered in Transport Strategy (Y/N)	Relevant Objective (# and Title)	Relevant Action #	Comments
UOW Campus Master Plan - directions	The University Village	Communications and technology strategy	Integrate audio visual and virtual classroom technologies	For completion as part of Master Plan implementation	Y	Objective 1: Improve existing campus access constraints to meet current and future demands	ALL 3: Review Course delivery modes and timings to ease demand on the transport network	N/A
			Introduce online courses	For completion as part of Master Plan implementation	Y	Objective 1: Improve existing campus access constraints to meet current and future demands	ALL 3: Review Course delivery modes and timings to ease demand on the transport network	N/A
			Upgrade digital campus management	For completion as part of Master Plan implementation	Y	Objective 2: Improve active transport as a means of accessing the campus	ACT 5: Develop wayfinding strategy	N/A
	Access and Wayfinding	Access to the campus strategy	Reduce congestion on Northfields Avenue	For completion as part of Master Plan implementation	Y	Objective 4: Maximise the use of UOW parking to meet current and future demands	PRT 1: Investigate options to increase carpool and other parking capacity PRT 2: Increase carpooling numbers by offering reduced parking rates for vehicles with two people PRT 4: Investigate automated parking management and dynamic price structuring to improve parking management across campus. PRT 5: Reallocate Bus Bay to east of bus interchange on Northfields Avenue to alternative location, to increase capacity for a pick up and drop off zone. ALL 3: Review Course delivery modes and timings to ease demand on the transport network	N/A
			Improve road safety along Irvine Street	For completion as part of Master Plan implementation	Y	Objective 2: Improve active transport as a means of accessing the campus	ACT 7: Install pedestrian refuge at roundabout at Northfields Avenue and Irvine Street (southern leg)	N/A
			Introduce a new pedestrian and cycle link to the north	For completion as part of Master Plan implementation	Y	Objective 2: Improve active transport as a means of accessing the campus	ACT 5: Develop wayfinding strategy ACT 1: Lobby Council to prioritise missing pedestrian and cycling links to the north of campus, to align with the timing of the proposed northern entry and Mount Ousley interchange. ACT 2: Lobby Council to prioritise missing cycleway links on Foley Street, Church Street and Bourke Street to improve connections to the Wollongong campus from UOW accommodation sites. ACT 3: Lobby Council to prioritise proposed cycleway upgrades on Porter Street and Crawford Avenue, to improve the cycling connection between North Wollongong Station and the Wollongong campus.	N/A
		Pedestrian and cycling strategy	Introduce a hierarchy of key pedestrian paths	For completion as part of Master Plan implementation	Y	Objective 2: Improve active transport as a means of accessing the campus	ACT 5: Develop wayfinding strategy	N/A
			Improve signage and wayfinding on campus	For completion as part of Master Plan implementation	Y	Objective 2: Improve active transport as a means of accessing the campus	ACT 5: Develop wayfinding strategy	N/A
			Improve pedestrian safety on the Ring Road and key service roads	For completion as part of Master Plan implementation	Y	Objective 2: Improve active transport as a means of accessing the campus Objective 3: Improve public and shared transport as a means for accessing the campus	ACT 4: Investigate shared zone within the campus core ACT 6: Enhance existing pedestrian refuge at the Western Entrance of Northfields Avenue ACT 7: Install pedestrian refuge at roundabout at Northfields Avenue and Irvine Street (southern leg) PUT 4: Provide bus shelters for all stops on campus PUT 6: Trial queuing system for UOW shuttle buses at Northfields interchange and North Wollongong Station PRT 5: Reallocate Bus Bay to east of bus interchange on Northfields Avenue to alternative location, to increase capacity for a pick up and drop off zone. PRT 6: Investigate opportunity to add pick up/drop off zone close to Robsons Road entry	N/A
			Limit access for private vehicles in the core campus	For completion as part of Master Plan implementation	Y	Objective 2: Improve active transport as a means of accessing the campus	ACT 4: Investigate shared zone within the campus core	N/A
			Introduce bike hubs in prominent new buildings	For completion as part of Master Plan implementation	Y	Objective 2: Improve active transport as a means of accessing the campus	ACT 9: Provide new Bike Bases and end of trip facilities in new developments	N/A
		Public transport and vehicular access	Improve the arrival experience for bus passengers	For completion as part of Master Plan implementation	Y	Objective 3: Improve public and shared transport as a means for accessing the campus	PUT 4: Provide bus shelters for all stops on campus PUT 5: Lobby State Government to provide sufficient bus shelters for stops on routes which service the Wollongong campus, including at North Wollongong Station PUT 6: Trial queuing system for UOW shuttle buses at Northfields interchange and North Wollongong Station	N/A
			Extend the capacity of the existing bus terminus	For completion as part of Master Plan implementation	Y	Objective 3: Improve public and shared transport as a means for accessing the campus	PUT 4: Provide bus shelters for all stops on campus PUT 6: Trial queuing system for UOW shuttle buses at Northfields interchange and North Wollongong Station	N/A

Strategy Review	Area	Strategies	Directions/Actions	Status	Covered in Transport Strategy (Y/N)	Relevant Objective (# and Title)	Relevant Action #	Comments
		strategy	Limit vehicular access in the campus core	For completion as part of Master Plan implementation	Y	Objective 2: Improve active transport as a means of accessing the campus	ACT 4: Investigate shared zone within the campus core	N/A
			Maintain taxi pick up area	For completion as part of Master Plan implementation	Y	Objective 3: Improve public and shared transport as a means for accessing the campus	PRT 5: Reallocate Bus Bay to east of bus interchange on Northfields Avenue to alternative location, to increase capacity for a pick up and drop off zone. PRT 6: Investigate opportunity to add pick up/drop off zone close to Robsons Road entry	N/A
			Consolidate car parking to outside the Ring Road	For completion as part of Master Plan implementation	Y	Objective 2: Improve active transport as a means of accessing the campus	ACT 4: Investigate shared zone within the campus core	N/A
			Continue to provide car parking for those who need it	For completion as part of Master Plan implementation	Y	Objective 4: Maximise the use of UOW parking to meet current and future demands	PRT 1: Investigate options to increase carpool and other parking capacity PRT 3: Model anticipated northern entry vehicle trips to determine appropriate parking provision.	N/A
	Landscape and Public Realm	Landscape and public realm strategy	Create a hierarchy of Paths	For completion as part of Master Plan implementation	Y	Objective 2: Improve active transport as a means of accessing the campus	ACT 5: Develop wayfinding strategy	N/A

APPENDIX C

BASE MODEL DEVELOMPENT REPORT

Base Model Development Report

Keiraville – Gwynneville Access and Movement Study

80018018

Prepared for
Wollongong City Council

7 February 2018

Cardno

DRAFT

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Appendix A - TRAFFIC FLOW DIAGRAMS
Appendix B – TRAFFIC SIGNAL DATA
Appendix C – CALIBRATION, GEH TABLES
Appendix D – TRAVEL TIME DATA

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1 Introduction

1.1 Background

Cardno was commissioned by Wollongong City Council to examine the existing and future operation of the Keiraville-Gwynneville traffic and transport system, and develop strategies to reduce congestion and increase sustainable transport mode share to accommodate growth in the area. The study includes assessing the impact of planned development and infrastructure upgrades on traffic generation, accessibility, parking demand, and the overall transport network operation. The ultimate purpose of this study is to develop strategies to improve the transport system, reduce impacts on surrounding suburbs, promote the use of sustainable travel modes and ensure that the transport network can adequately accommodate future development in the area.

The study includes the development of a purpose built microsimulation model to assess the existing traffic issues and manage future traffic demands in Keiraville and Gwynneville. This report outlines the assumptions and methodology adopted in the development of the base model, together with some key results. The model will be used as part of the subsequent stages of the project, including the creation of future year scenarios and option testing.

1.2 Project Objective

The Keiraville and Gwynneville traffic model is to test a number of transport infrastructure options in different future year scenarios. The outputs of the model will be used to inform design and assist with the economic appraisal of transport investments within the study area.

The main objectives of the access and movement study are as follows:

- Examine and document existing and future potential operation of the traffic and transport system within Keiraville and Gwynneville
- Develop strategies to reduce congestion
- Increase sustainable transport mode share
- Understand impact of planned development and infrastructure upgrades.

The key objectives of the traffic modelling exercise are to:

- Assess the travel demand during the academic season (in-session) which is a characteristic for the month of August and the non-academic season (out-session) which is a characteristic for the month of September.
- Assess the impacts of potential developments on the study area and changes in road network and surrounding intersections
- Evaluate existing and future year transport network performance
- Identify and evaluate mitigation measures to accommodate traffic likely to be generated from future developments and growth.

1.3 Scope of Work

The scope of work is as follows:

- Extract the study network from an existing RMS Aimsun Mount Ousley Interchange hybrid model and develop a purpose built microsimulation model;
- Adjust the 2015 volumes at the interchange and surrounding junctions to balance the discrepancies between the 2015 and 2017 data;
- Determine the traffic demand for “in-session” and “out-session” AM and PM peak periods which consists of the peak academic season and the period outside of the academic season respectively;
- Calibrate and validate a microsimulation model in accordance with *Traffic Modelling Guidelines* (Roads and Maritime Services, 2013);
- Assess options regarding Mount Ousley Interchange;

- Import intersection turning volumes from the Jacob's Mount Ousley Aimsun Model (2015) for Memorial Drive / Princes Highway Interchange;
- Obtain outputs from the microsimulation model to be used for a SIDRA assessment of key intersections within Keiraville – Gwynneville precinct.

1.4 Study Area

The model is centred around Keiraville and Gwynneville, which is located northwest of the Wollongong city centre, in the Illawarra region of New South Wales. The study area is bounded by the Princes Motorway (M1) north-west of the University of Wollongong to the rail corridor in the east, including the Mount Ousley Road / Princes Highway intersection, to Beaton Park in the south and to Edmund Rice College in the west. The study area land use is predominantly characterised by residential and educational areas, an illustration is shown in **Figure 1-1**.

There are a number of important trip generators in and around the Keiraville-Gwynneville area which generate a high number of trips per day, traffic demand and behaviour. These include:

- Keiraville and Gwynneville village centres
- The University of Wollongong (UOW) Campus
- UOW Innovation Campus (iC)
- Wollongong CBD
- Wollongong Hospital
- Wollongong Botanic Garden
- North Wollongong Station
- TAFE Illawarra Wollongong Campus.
- Mount Ousley residential area
- Local schools
- Student accommodation centres
- Beaton Park sports and recreation facilities.

Access to these destinations via the road network is supported by major routes such as the Princes Motorway (M1), Princes Highway (A1) and Mount Ousley Road.

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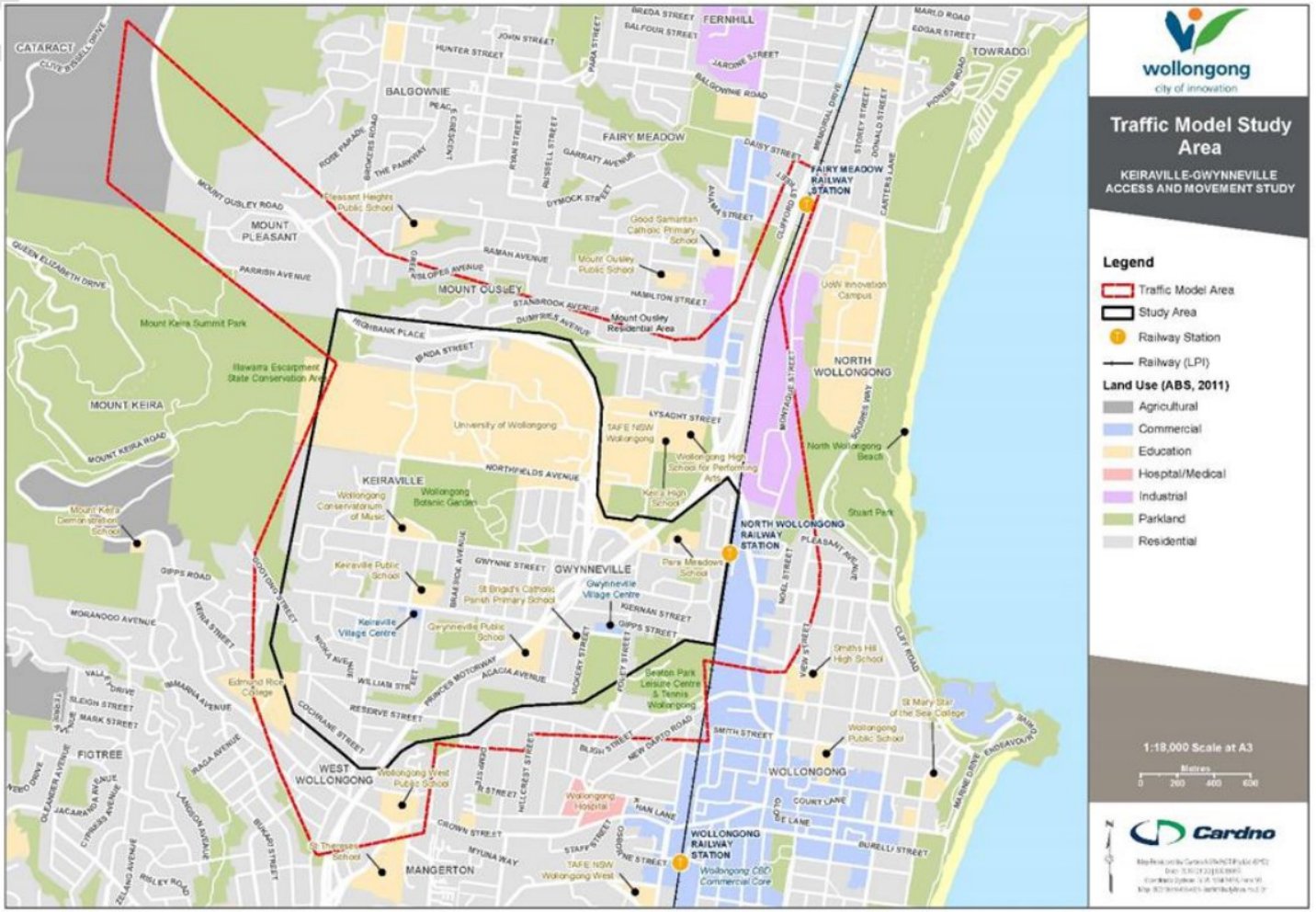
Figure 1-1 Study area



1.5 Report Outline

The general structure for this report is outlined below:

- Section 1 – Introduction: outlines the background, project objectives, scope of work and the study area
- Section 2 – Existing Conditions: outlines and assesses the current traffic and transport conditions
- Section 3 – Model Assumptions: outlines the assumptions behind the base model development and the methodology
- Section 4 – Model Stability: outlines the statistical analysis of the model's stability
- Section 5 – Model Calibration and Validation: summarises the results from the base model calibration and validation process
- Section 6 – Conclusion: summarises the recommendations, main outcomes and fitness for purpose of the base year model

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2 Existing Conditions

2.1 Traffic Surveys

Intersection counts were commissioned between 6:00am to 10:00am and 3:00pm to 7:00pm. For the in-session period, the counts were conducted on Thursday 24 August 2017 and for the out-session period, the counts were conducted on Thursday 28 September 2017. The locations of the surveys are shown in **Figure 2-1** and the intersection ID descriptions are summarised in **Table 2-1**.

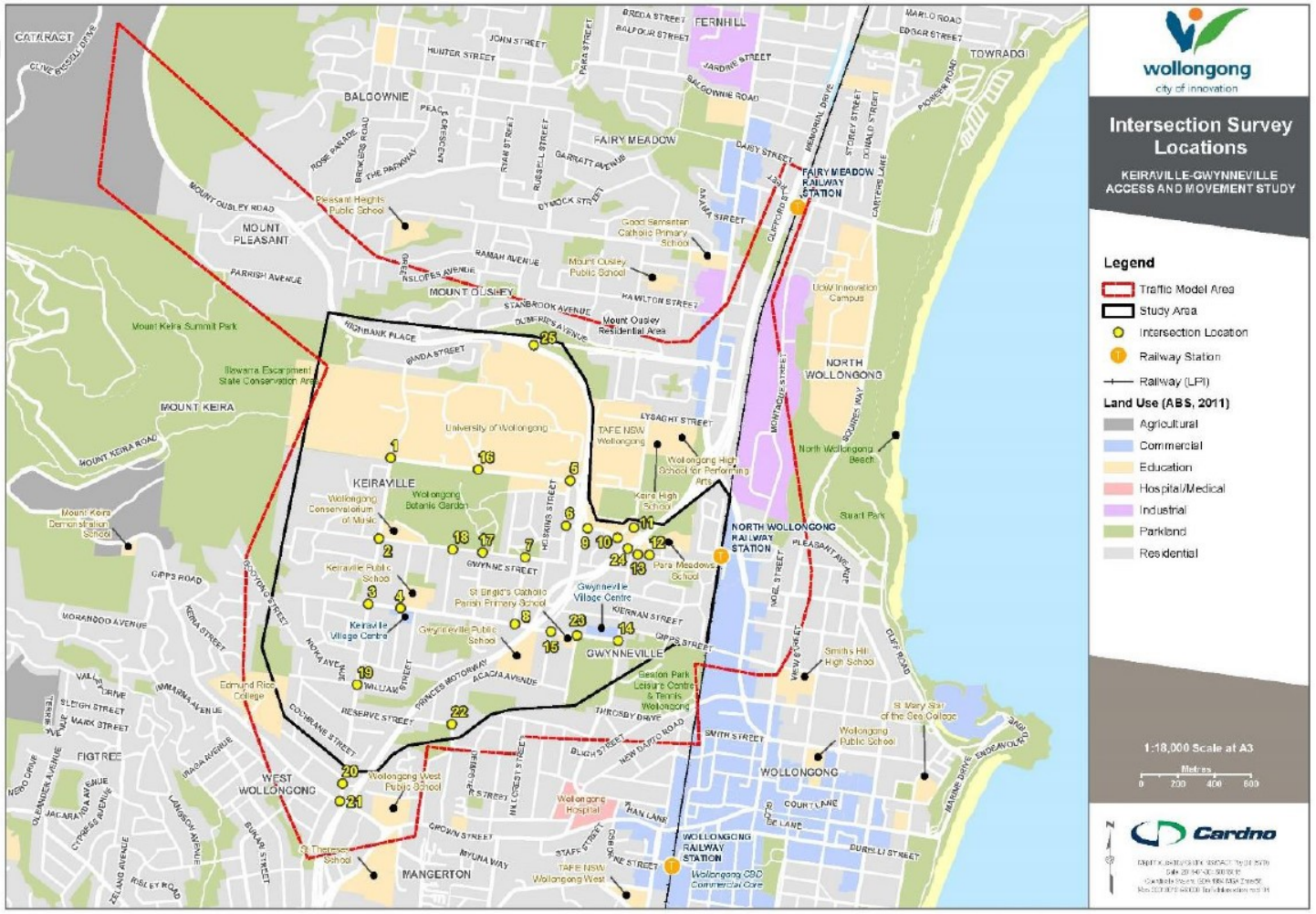
During the in-session period, the peak AM period is identified between 8:00am to 9:00pm and the peak PM period is identified between 4:00pm to 5:00pm.

During the out-session period, the peak AM period is identified between 8:15am to 9:15am and the peak PM period is identified between 4:30pm to 5:30pm.

Table 2-1 Intersection ID Description

Intersection ID Description			
1	Robsons Road / Northfield Avenue	**14**	Foley Street / Gipps Road
2	Robsons Road / Murphys Avenue	**15**	Frances Street / Gipps Road
3	Robsons Road / Gipps Road	**16**	Ring Road / Northfields Avenue
4	Grey Street / Gipps Road	**17**	Murphys Avenue / John Street
5	Ring Road / Northfields Avenue	**18**	Murphys Avenue / Braeside Avenue
6	Irvine Street / University Avenue	**19**	Robsons Road / William Street
7	Murphys Avenue / Eastern Street	**20**	Robsons Road / Princes Highway
8	Eastern Street / Gipps Road	**21**	Robsons Road / Mount Keira Road
9	Princes Highway / Princes Highway exit	**22**	Gilmore Street / Reserve Street
10	University Avenue / Graham Avenue	**23**	Gipps Road / Vickery Street
11	Foleys Lane / University Avenue	**24**	Memorial Drive On Ramp / University Avenue
12	University Avenue / Porter Street	**25**	Mount Ousley Road / Princes Motorway
13	Memorial Drive Off Ramp / Porter Street		

Figure 2-1 Location of Intersection Count Surveys



2.2 Journey Travel Time Analysis

Speed and travel time data was extracted from TomTom's real-time data for vehicles travelling within the Keiraville and Gwynneville area.

TomTom captures 3.5 million km of floating car data (FCD) every day in Australia. The data is collected from a combination of TomTom devices (fleet and consumer), third party Auto Original Equipment Manufacturers (OEMs) and phone handsets. FCD provides a new method for measuring speeds, travel times and thus road performance. Probe devices in vehicles, which may be cellular phones, or more commonly GPS devices, provide this data.

All the TomTom data in the reports used by Cardno has been conducted through a quality assurance and data cleansing process. TomTom processes the raw GPS information received from customers in a number of ways in order to protect privacy, filter out possible inaccurate measurements and create geographic databases which can be queried. The most important part of this process algorithm is called map-matching.

In the map-matching process, the GPS measurements are matched to a digital map using a map-matching algorithm. This process assigns each GPS speed measurement to a road segment with the highest possible confidence level. The algorithm looks at the path of consecutive GPS points in a journey file to define the path of a vehicle in order to produce the most accurate speed information possible.

For example, the map-matcher filters out traces which could not be matched to a map (due to, for example, changes in the road infrastructure, the use of the GPS device outside a vehicle, etc.), detects U-turns and losing GPS signals in tunnels.

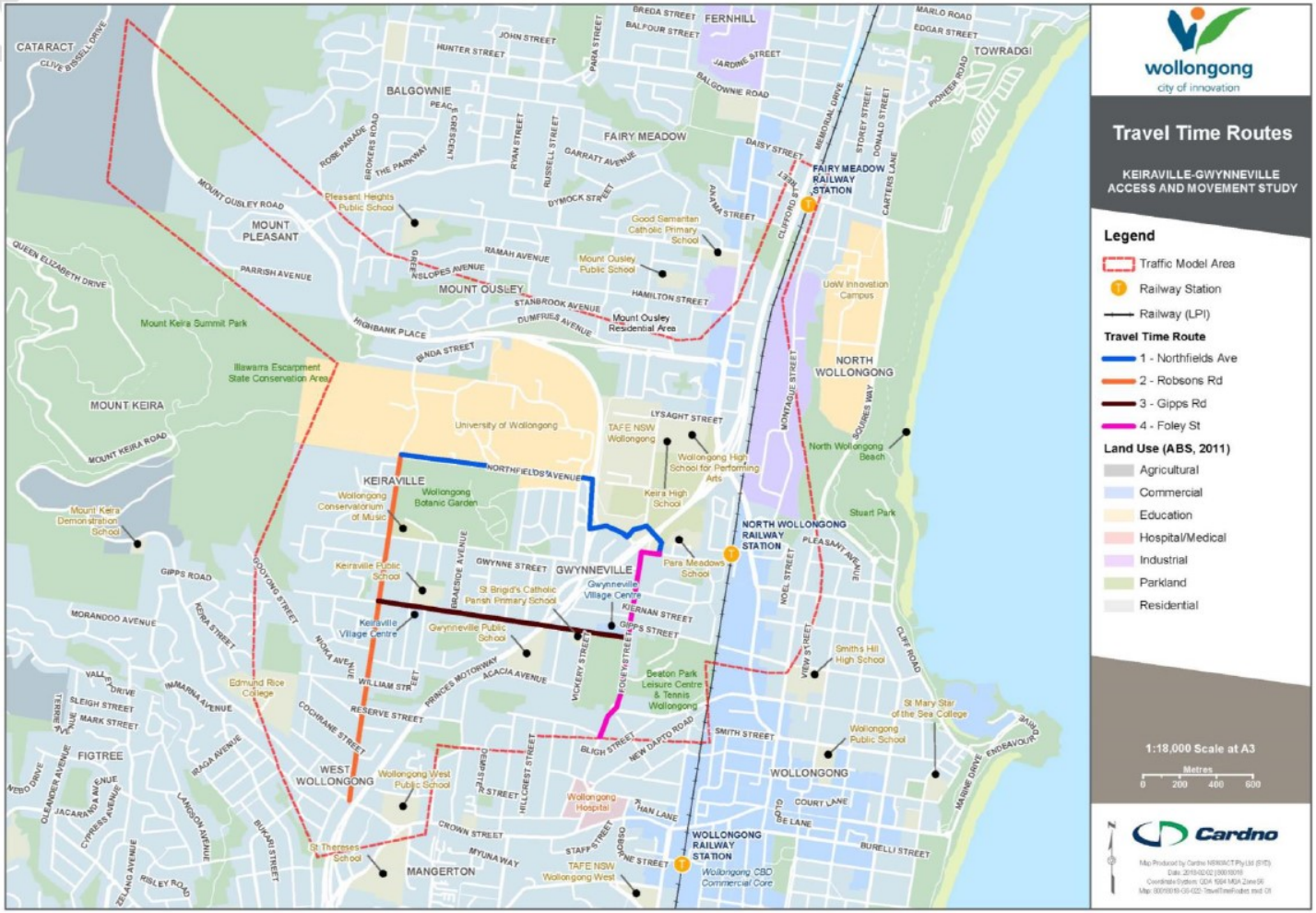
When the map-matching is done, an aggregated geographic database (geobase) of measured road speeds is produced. These geobases are updated regularly for each map of each region or country to take into account the growing historical GPS speed database as well as updates and changes in the road network.

Average travel times were collected for weekdays between 8:00am to 9:00am and 4:00pm to 5:00pm during August 2017 and September 2017. This data was collected for four routes in both directions. The routes and respective lengths are summarised **Table 2-2**. The location of these routes are illustrated in **Figure 2-2**.

Table 2-2 Routes of Interest for Journey Travel time Analysis

Route ID	Route	Direction	Length of Route (m)
1	Northfields Avenue via Irvine Street, via University Avenue from Robsons Road to Porter Street	Eastbound	1,813
		Westbound	1,813
2	Robsons Road from Mount Keira Road to Northfields Avenue	Northbound	1,881
		Southbound	1,878
3	Gipps Road from Robsons Road to Foley Street	Eastbound	1,362
		Westbound	1,363
4	Foley Street from Greenacre Road to University Avenue	Northbound	1,128
		Southbound	1,137

Figure 2-2 Location of Routes



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The average travel times for in-session and out-session between 8:00am to 9:00am and 4:00pm to 5:00pm are summarised in **Table 2-3** and **Table 2-4** respectively.

Table 2-3 Average Travel Time: 8:00AM to 9:00AM

Route	Direction	Average Travel Time (mm:ss)	
		In-Session	Out-Session
Northfields Avenue	Eastbound	04:23	04:25
	Westbound	04:25	04:26
Robsons Road	Northbound	03:22	03:13
	Southbound	03:34	03:11
Gipps Road	Eastbound	03:09	02:59
	Westbound	02:40	02:50
Foley Street	Northbound	02:33	02:19
	Southbound	02:42	02:29

Table 2-4 Average Travel Time: 4:00PM to 5:00PM

Route	Direction	Average Travel Time (mm:ss)	
		In-Session	Out-Session
Northfields Avenue	Eastbound	04:20	03:45
	Westbound	03:25	03:53
Robsons Road	Northbound	03:05	03:06
	Southbound	03:02	03:04
Gipps Road	Eastbound	03:01	02:35
	Westbound	02:35	02:42
Foley Street	Northbound	02:23	02:18
	Southbound	04:20	03:45

2.3 Existing Condition Analysis

2.3.1 Princes Motorway

Princes Motorway (M1) is a major motorway that connects Sydney to Wollongong through to Albion Park Rail. This route provides key access to destinations in the Wollongong, Illawarra and South Coast regions for tourists. It is also a major freight route from Port Kembla.

This corridor is located around the south-west of the model study area, running in a north-south direction to the north-west. The number of lanes vary between two to three lanes in either direction within the study area. The speed limit is 80km/h, however, at the steep downhill grade further north of the motorway, trucks and buses are limited to 40km/h and all other vehicles to 80km/h.

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2.3.2 Mount Ousley Road

Mount Ousley Road is an arterial road located in the north of the model study area that connects the Princes Highway and the Princes Motorway. Once the road joins the Princes Motorway through a right turn, the speed limit is 80km/h.

2.3.3 Princes Highway

Princes Highway is a highway that runs in a north-south direction that provides access from Mount Ousley Road, Memorial Drive and Princes Motorway. It runs almost parallel to the Princes Motorway and the coastline in the model study area. There are three lanes in both directions with speed limits that varies from 60km/h to 50km/h.

2.3.4 Memorial Drive

Memorial Drive is a major arterial road that runs in a north-east to south-west direction within the modelled area. Memorial Drive is connected to Princes Highway, Princes Motorway by ramps, which provides access to the Keiraville and Gwynneville area.

2.3.5 Robson Road

Robson Road is a collector road which operates as a north-south corridor connecting to the western entrance of University of Wollongong and West Wollongong residential suburbs.

2.3.6 Irvine Street

Irvine Street is a collector road which provides access to Princess Motorway ramps and connection to the University of Wollongong Ring Road, Northfields Avenue and Murphys Avenue.

2.3.7 Gipps Road

Gipps Road runs is a collector road which operates as an east-west corridor connecting to the Keiraville and Gwynneville village centres, the Beaton Park precinct and to Robsons Road.

2.3.8 University Avenue

University Avenue provides east-west road access between North Wollongong Station and Irvine Street. This collector road is one of the main connections between North Wollongong, Keiraville and Gwynneville.

2.3.9 Murphys Avenue

Murphys Avenue is a local road and runs east-west along the southern side of the Botanic Garden, and connects to Irvine Street and Robsons Road.

2.3.10 Northfields Avenue

Northfields Avenue is collector road located on the southern boundary of the UOW campus, running east-west and connecting between Robsons Road and Irvine Street. Two UOW campus access points and the Bus Bay are located on Northfields Avenue.

2.3.11 Road Demand and Congestion Locations

The performance of key roads within the precinct indicate the demand on the road network. The performance of the road network was measured by three variables, as follows:

- Peak period volumes (veh/h);
- Average speed (km/h); and
- Percentage of speed limit (%).

The road network performance can be largely determined by assessing the theoretical capacity of the mid-block and the average speed of traffic, as presented in the Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis, acceptable traffic conditions associated with levels of service D. The average speed is a mean of all the vehicle speeds travelling along a road in a particular timeframe. The percentage of speed limit is a measure of how many vehicles are travelling at the designated speed for the road, the higher the percentage of speed limit the better flow along the road.

The key indicator of the mid-block performance is the Level of Service (LoS). This is the average speed as a percentage of the base Free Flow Speed (FFS), where results are placed on a continuum from 'A' to 'F', as shown in **Table 2-5**.

Table 2-5 Austroads Mid-Block Criteria for Speed Level of Service Analysis

LoS	Description	Travel speed as a percentage of base FFS (%)
A	Good operation	> 85
B	Good with acceptable delays and spare capacity	67-85
C	Satisfactory	50-67
D	Operating near capacity	40-50
E	At capacity	30-40
F	Unsatisfactory and requires additional capacity	≤ 30

The data used for this analysis considers weekdays during in-session (August 2017) and out-session (September 2017). The roads which were assessed are Northfields Avenue, University Avenue and Porter Street corridor, Robsons Road, Gipps Road and Foley Street.

A summary of the performance data is shown in **Table 2-6**.

Table 2-6 AM Peak Period Road Network Performance

Route	Direction	Vehicles per hour (veh/hr)		Median speed (km/h)		FFS (%)	
		August	September	August	September	August	September
Northfields Avenue	Eastbound	727	557	33	33	0.7	0.7
	Westbound	796	474	31	32	**0.6**	**0.6**
Robsons Road	Northbound	827	530	42	42	0.8	0.8
	Southbound	414	233	42	42	0.8	0.8
Gipps Road	Eastbound	409	322	30	32	**0.6**	**0.6**
	Westbound	415	301	36	33	0.7	0.7
Foley Street	Northbound	408	316	36	37	0.7	0.7
	Southbound	840	688	32	34	0.6	0.7

Table 2-7 PM Peak Period Road Network Performance

Route	Direction	Vehicles per hour (veh/hr)		Median speed (km/h)		FFS (%)	
		August	September	August	September	August	September
Northfields Avenue	Eastbound	1,087	876	33	35	0.7	0.7
	Westbound	777	554	34	35	0.7	0.7
Robsons Road	Northbound	552	434	44	44	0.9	0.9
	Southbound	531	414	44	45	0.9	0.9
Gipps Road	Eastbound	358	296	34	34	0.7	0.7
	Westbound	404	407	37	37	0.7	0.7
Foley Street	Northbound	508	437	38	38	0.8	0.8
	Southbound	767	616	36	37	0.7	0.7

This shows that during the in-session period, there are significantly more vehicles utilising these routes in comparison to the out-session period.

Key areas of concern are Northfields Avenue and Robsons Road which provide direct access to the University of Wollongong campus and other schools, however, overall performance at the route level the speed performance is satisfactory with the worst performance being identified as the westbound direction of Northfields Avenue corridor during the AM peak during in-session period.

Other areas of congestion were identified using TomTom travel time data and camera footage during the in-session period. The areas of main interest are focused on the major interchanges and ramps of the study area to supplement the overall road network performance analysis.

As already stated, there will be more traffic on the network in comparison to the out-session period and it is important to accurately identify these areas to represent the traffic operation and behaviour in the AM and PM peak to validate the base model.

The observations made at the intersections are summarised in **Table 2-8**. The median speeds and speed level of service for both peak periods are shown in **Figure 2-3** and **Figure 2-4**. The LoS is calculated using the Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis, speed level of service methodology.

Table 2-8 Congestion Locations in the Study Area

Intersection Location	Time of Day	Observation
Mount Ousley Road / Princes Motorway	AM	The ratio between the speed level of service and the posted speed is less than 30% at a 200 metres approaching distance of the intersection. On Mount Ousley Road the maximum queue length is around 15 vehicles between in the AM peak. This is partially captured in the footage below. Queuing is most likely caused by drivers having difficulty to find safe acceptable gaps between vehicles to turn right onto Princes Motorway. Vehicles are often reaching around 80km/hour along Princes Motorway and no queuing was identified on Princes Motorway.
	PM	The ratio between the speed level of service and the posted speed is 50% to 69% at a 200 metres approaching distance of the intersection. On Mount Ousley Road, the maximum queue length is roughly around the same length of the AM peak in the PM peak. There is no queuing on Princes Motorway.
Irvine Street / University Avenue	AM	The ratio between the speed level of service and the posted speed is 40% to 49% when approaching roundabout and interchange ramps. Figure below shows queuing On University Avenue in the AM peak.

Intersection Location	Time of Day	Observation
		 The community gave feedback indicating that this intersection is a stoppage point on weekday mornings and the traffic moves very slowly, if not at all, with very long waiting times.
	PM	The ratio between the speed level of service and the posted speed is 50% to 69%. On the northern side of Irvine Street and southern side of Irvine Street , extensive queueing can be observed in the PM peak.
Princes Highway / University Avenue	AM	The ratio between the speed level of service and the posted speed is 50% to 69%. Queueing on the off ramp of Princes Highway is mostly likely caused by the number of vehicles coming from the highway at high speeds and giving way at the roundabout at the intersection. During the morning peak period, there will be a large proportion of vehicles using this intersection to access the University of Wollongong and schools. The figure below illustrates the queuing behaviour in the morning.

Intersection Location	Time of Day	Observation
		 The community gave feedback saying that the traffic banks up around 8am exiting the freeway, heading south.
	PM	The ratio between the speed level of service and the posted speed is 70% to 85%. In comparison to the AM peak period, there may be less queues because people may not use the same route and may visit other destinations in the Keiraville – Gwynneville area.

Figure 2-3 Network Performance: AM peak period

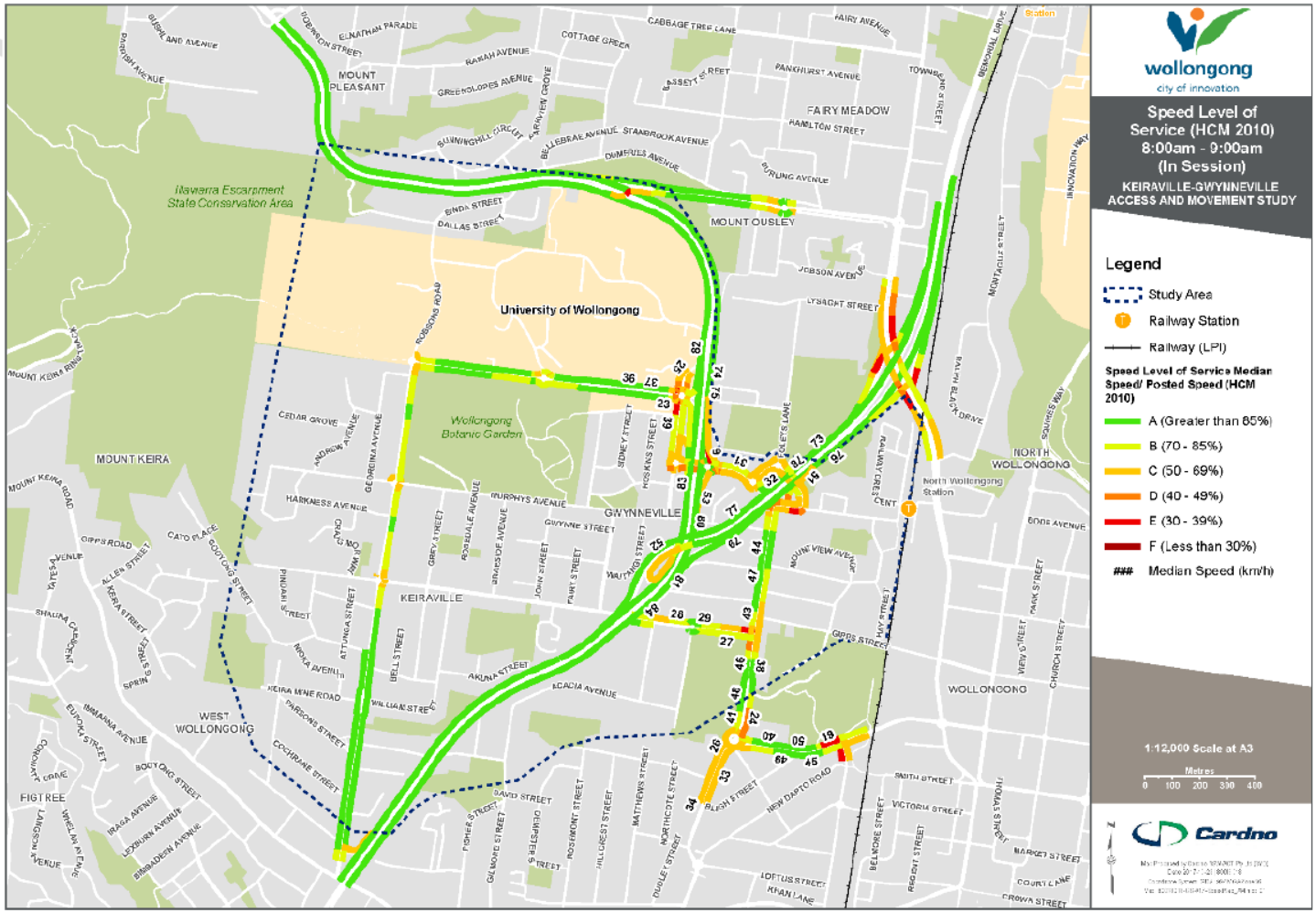
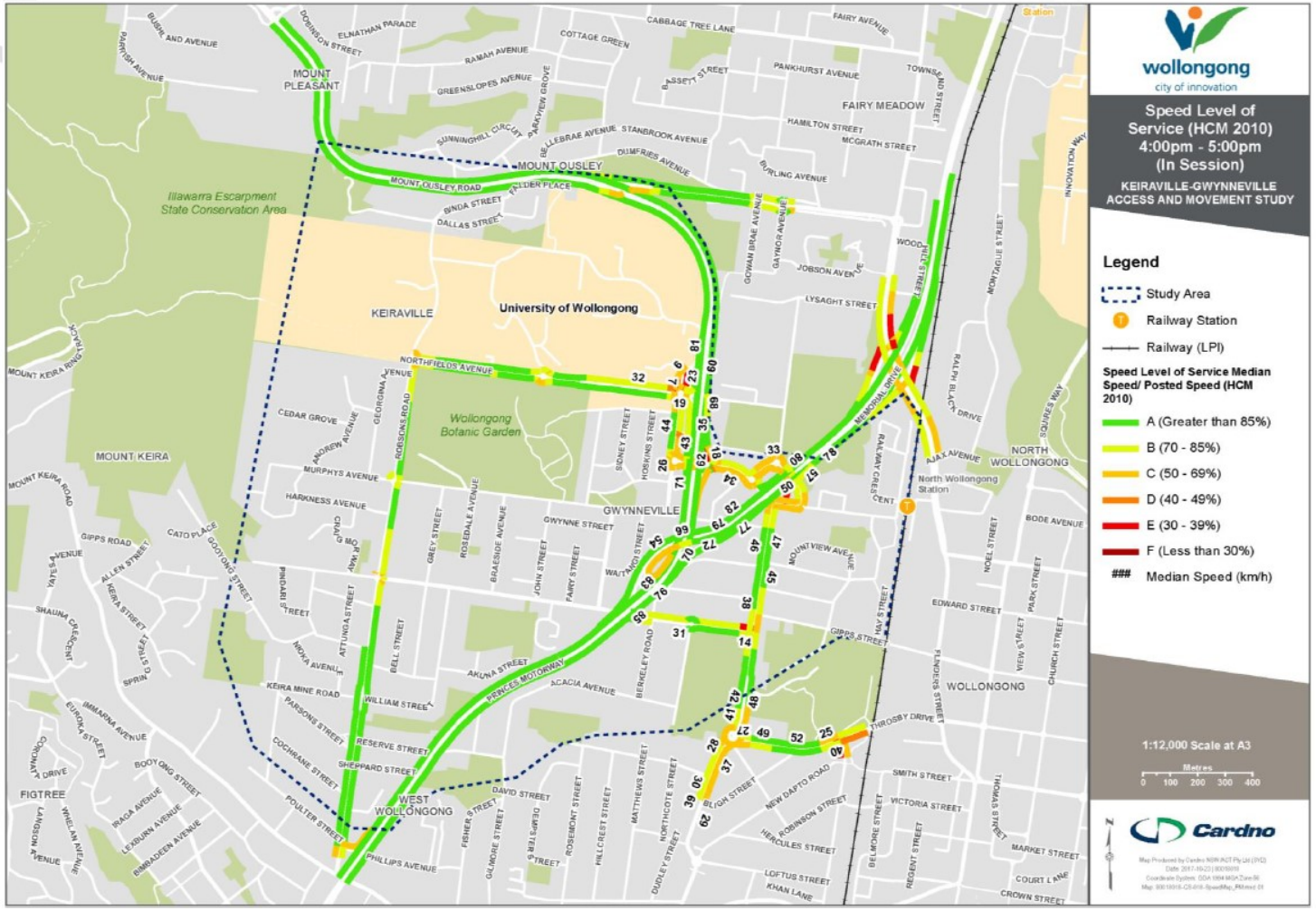


Figure 2-4 Network Performance: PM peak period



2.4 School Zones

There are five 40km/h school zones located within the study area during 8:00am to 9:30am and 2:30pm to 4:00pm during school days. The roads that are affected are:

- Railway Crescent
- Porter Street
- University Avenue
- Gipps Road
- Grey Street
- Braeside Avenue
- Berkeley Road
- Acacia Avenue
- Vickery Street
- Keira Mine Road
- Armstrong Street
- Parsons Street
- Poulter Street

The location of the school zones are shown in **Figure 2-5**.

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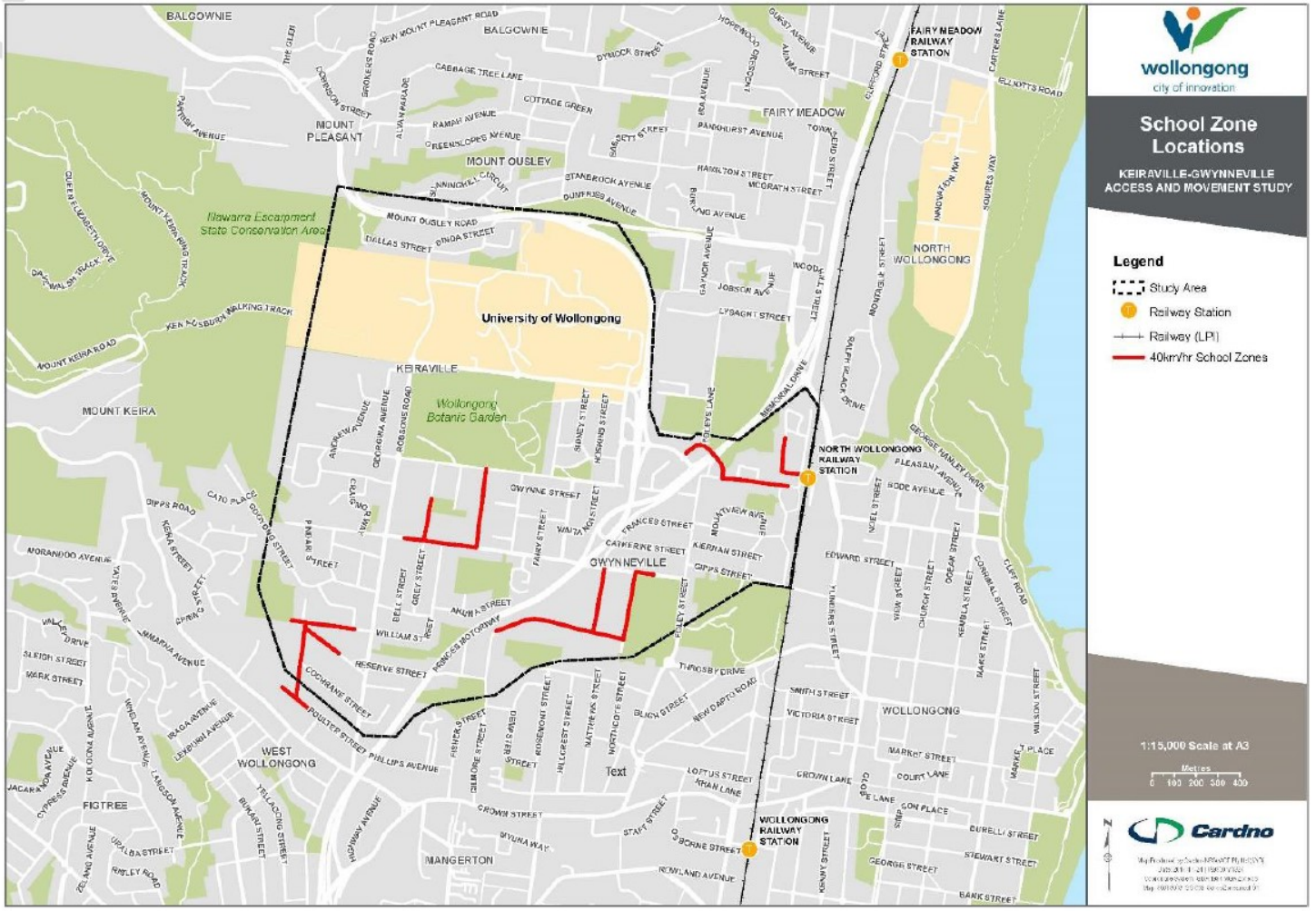
Figure 2-5 School Zones



2.5 Public Transport

In the proximity of the model study area there are train services that can be accessed through the North Wollongong train station at the eastern end of traffic model, Fairy Meadow train station north of the model and Wollongong train station in the south. Since the train lines do not interact with the road network, train services have not been modelled in the study area.

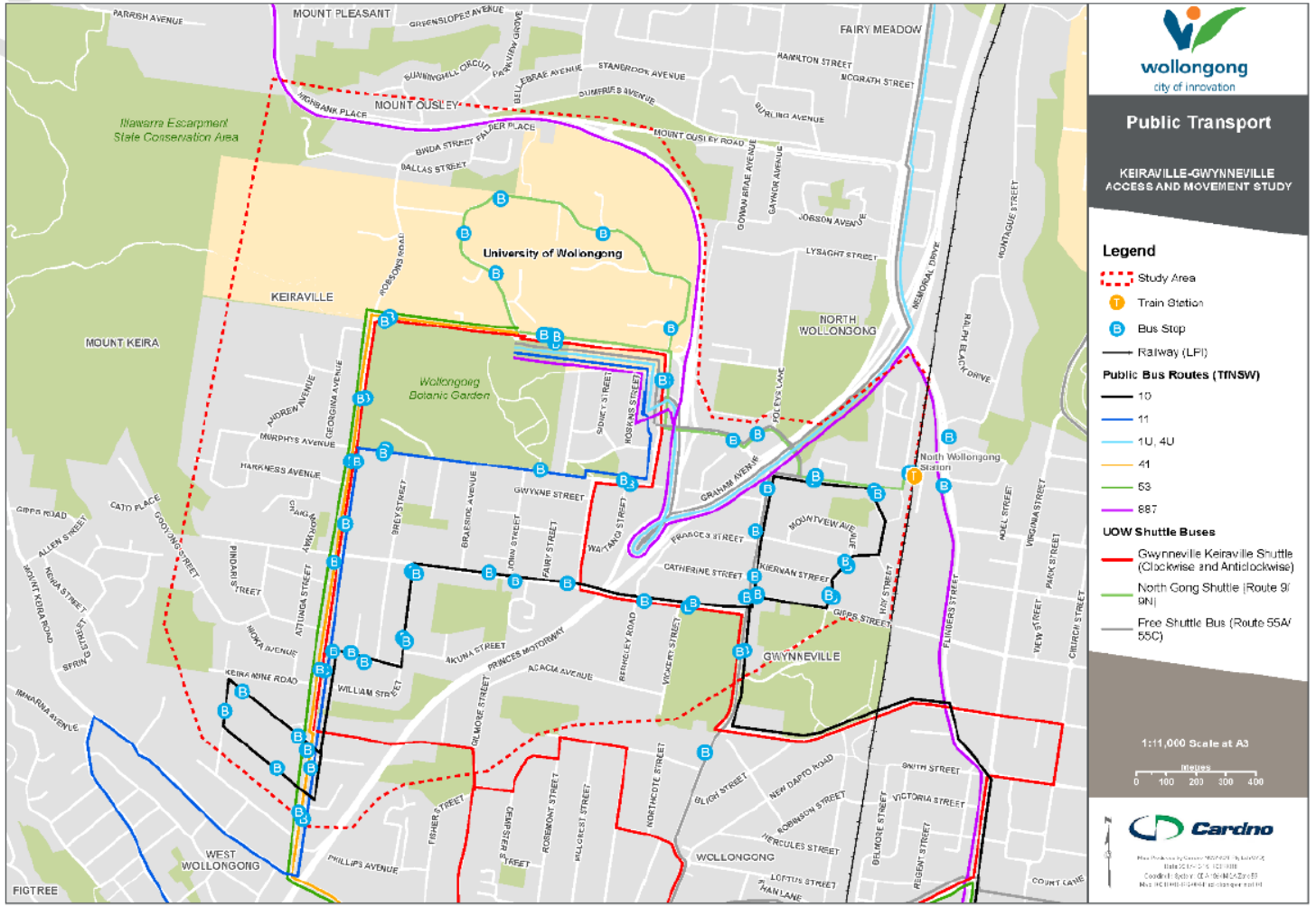
There are also a number of bus routes in the area providing connections to the Wollongong CBD, Wollongong and North Wollongong train stations, Figtree, Dapto and Shellharbour to the south, Fairy Meadow, Corrimal, and Campbelltown to the north, and the Innovation Campus to the east. The majority of these services operate within the Keiraville area, with some also travelling through Gwynneville.

There are seven major bus services for the public and five shuttle bus services that goes to the University of Wollongong. These bus routes coded in the microsimulation model are:

- 10 – Wollongong to West Wollongong Loop
- 11 – Wollongong to University of Wollongong
- 1U – Austinemer to University of Wollongong
- 4U – Bulli to University of Wollongong
- 41 – Dapto to University of Wollongong
- 53 – Shellharbour to Wollongong
- 887 – Wollongong and Appin to Campbelltown
- 9 (North Gong Shuttle) – Ring Road Loop (anti-clockwise)
- 9N (North Gong Shuttle) – North Wollongong Station to University of Wollongong Terminus
- 55A / 55C (Free Shuttle Bus) – University of Wollongong to North Wollongong Station
- Gwynneville Keiraville Shuttle – University of Wollongong to Wollongong Station (loop)

The bus routes are shown in **Figure 2-6**.

Figure 2-6 Bus Routes in the Study Area



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3 Model Assumptions

3.1 Modelling Platform

The Keiraville – Gwynneville Access and Movement Study microsimulation model was developed using Aimsun 8.2.0 (R48406).

3.2 Modelled Time Periods

Four model time periods were assessed in this study - Weekday AM and PM peaks during in-session academic period (August 2017) and Weekday AM and PM peaks during the out-session academic period (September 2017).

The modelled peak hour periods were determined from the obtained traffic survey data, with separate model scenarios developed for each peak period. For each peak period, a 'warm-up' period of 60 minutes was added before the modelled peak hour, with overall modelled periods assumed in Aimsun as follows:

> Weekday AM (in-session and out-session)

Warm-up:	07:00 to 08:00
AM peak	period: 08:00 to 09:00

> Weekday PM (in-session and out-session)

Warm-up:	15:00 to 16:00
PM peak	period: 16:00 to 17:00

Although the in-session and out-session network morning and afternoon peak periods were identified on different intervals, the one hour peak periods defined in Aimsun were the same to ease analysis and Aimsun file set-up.

3.3 Vehicle Type

Three vehicle types have been modelled in the Aimsun microsimulation model and they are:

- Light vehicles (cars)
- Heavy vehicles (trucks); and
- Buses.

Default values of vehicle type parameters (e.g. vehicle dimensions and driving behaviour) from Sydney Aimsun Foundation Network (SAFN) were utilised for this modelling exercise.

3.4 Road Types

The road types used within the study area are consistent with the Sydney Aimsun Foundation Network (SAFN). The model road types and associated typical parameters adopted within the Keiraville-Gwynneville microsimulation model includes the following road types:

	Road Types Used in the Model					
	Local Road	Sub-arterial	Arterial (Divided)	Arterials (Undivided)	Freeway Ramp	Freeway
Maximum Speed (km/h)	40 – 50	60	60	60 – 80	45 – 80	80 – 110
Capacity (per lane) (PCUs/h)	800 – 900	900 – 1,000	1,000 –1,200	1,200 –1,400	1,000 –1,500	1,800 –2,000

3.5 Model Road Network Extent

The microscopic model covers approximately 8.37 km² within the Keiraville and Gwynneville precinct. The model was developed at microscopic level with finer detail accounting for many of the minor local roads within the study area. The Aimsun microscopic model road network coverage is presented in **Figure 3-1**.

Figure 3-1 Road Network in Model Study Area

3.6 Slope Modelling

The effect of grade on heavy vehicle types can result in speed reduction. Slope modelling and its use is required on gradients in excess of 3% where there are significant volumes of heavy vehicles or for high speed roads. The Queensland Department of Transport and Main Roads, Road Planning and Design Manual, Chapter 12 (2012) highlights the expected behaviour of light and heavy vehicles when slope modelling is considered in traffic studies (see **Table 3-1)**.

For consistency, Cardno used LiDAR grid elevation data and imported slopes into the base model to be used during the dynamic simulations. This allows slope modelling in AIMSUN to reflect the real-world effects of gradients, particularly in relation to heavy vehicles.

Table 3-1 Effect of Grade on Vehicle Speed

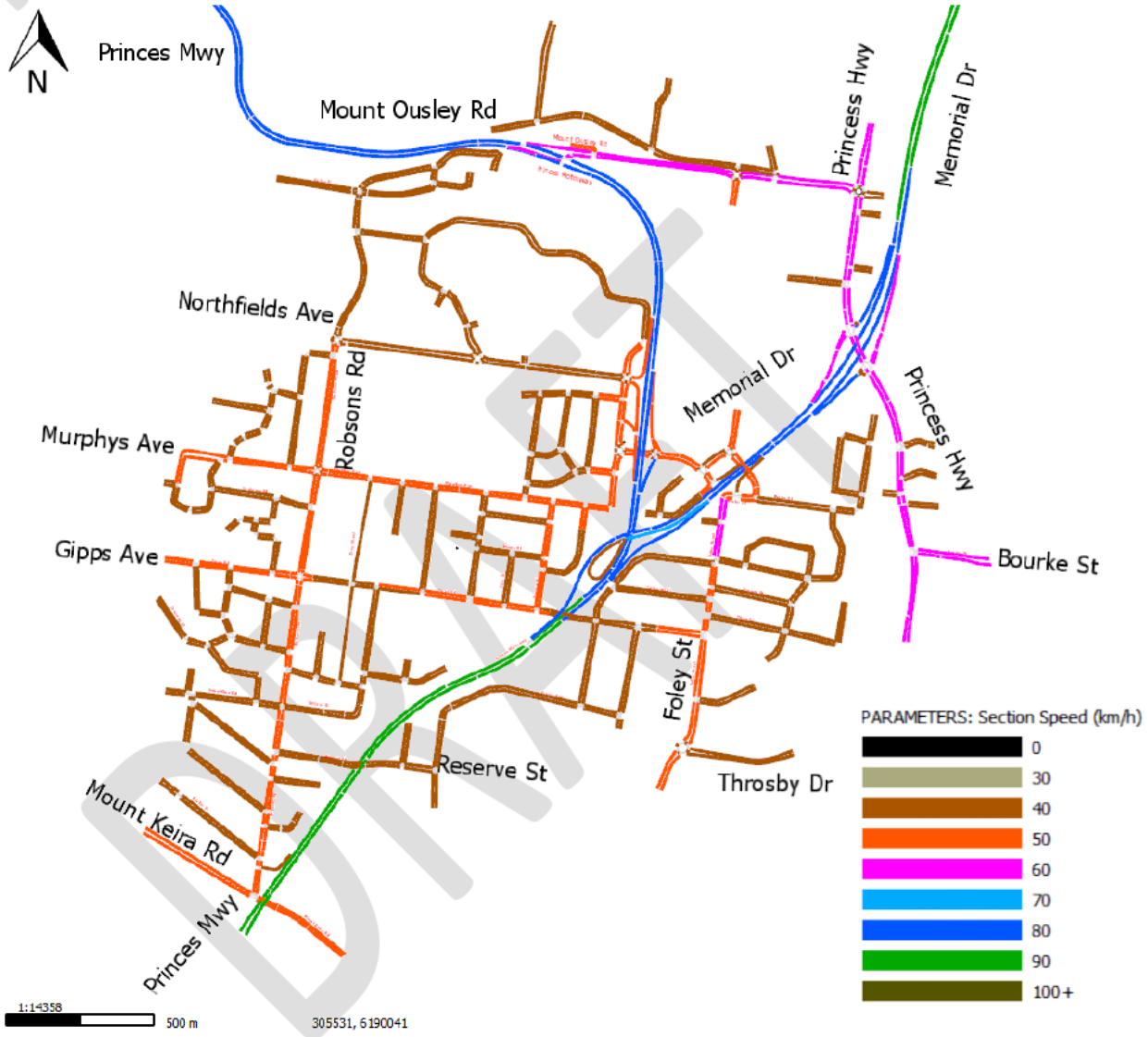
Reduction in Vehicle Speed compared to Flat Grade					
Grade	Uphill		Downhill		Road Type Suitability
	Light Vehicle	Heavy Vehicle	Light Vehicle	Heavy Vehicle	
0-3	Minimal	Minimal	Minimal	Minimal	For use on all roads.
3-6	Minimal	Some reduction on high speed roads	Minimal	Minimal	For use on low- moderate speed roads (incl. high roads traffic volume roads).
6-9	Largely unaffected	Significantly slower	Minimal	Minimal for straight alignment. Substantial for winding alignment.	Need to provide auxiliary lanes for moderate – high traffic volumes. Need to consider run-away vehicle facilities if the number of commercial vehicles is high.
9-12	Slower	Much slower	Slower	Significantly slower for straight alignment. Much slower for winding alignment.	Satisfactory on low volume roads (very few or no commercial vehicles).
12-15	10 – 15 km/h slower	15% max. negotiable	10 – 15 km/h slower	Extremely slow	Only to be used in extreme cases and be of short lengths (no commercial vehicles).
15-33	Very slow	Not negotiable	Very slow	Not negotiable	

Source: Queensland Department of Transport and Main Roads, Road Planning and Design Manual, Chapter 12 (2012)

3.7 Speed Profiles

The desired speed of a vehicle is determined by the minimum of the maximum desired speed of a vehicle and the posted speed limit. The posted speed limits are shown in **Figure 3-2**.

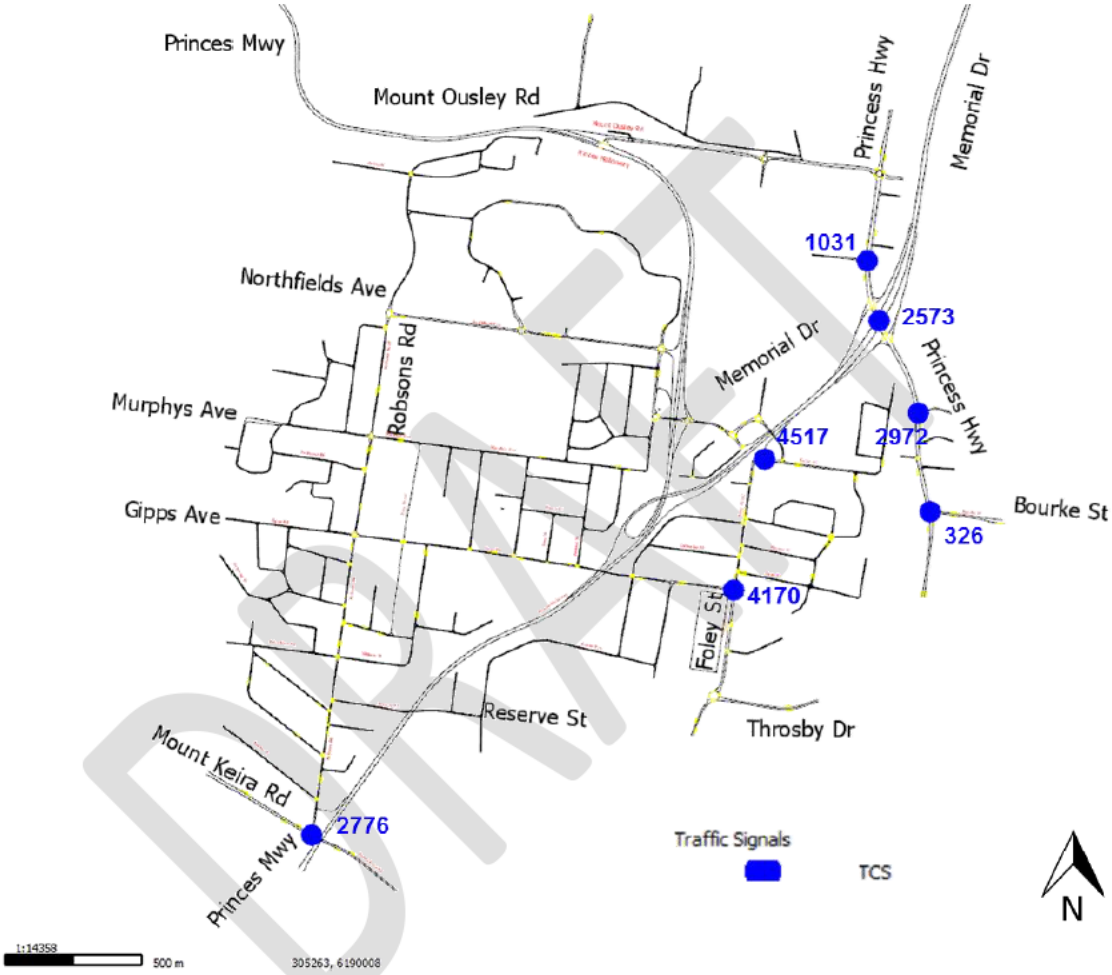
Figure 3-2 Posted Speeds in the Model Study Area



3.8 Traffic Signals

There are 7 signalised intersections within the Keiraville and Gwynneville study area as shown in **Figure 3-3**. These signalised intersections are implemented in Aimsun using historical Intersection Diagnostic Monitor (IDM) data obtained from the Sydney Coordinated Adaptive Traffic System (SCATS). The SCATS Traffic Control Signal (TCS) plans are used in conjunction with the IDM data to determine the phase times associated with each traffic signal phase.

Figure 3-3 Signalised Intersection Locations in the Model Study Area



The TCS IDs found at the labelled intersections in **Figure 3-3** are summarised in **0**

Table 3-2 TCS IDs

TCS ID	Intersection
1031	Lysaghy Street / Princes Highway
2573	Princes Highway / Memorial Drive
2972	Princes Highway / Ajax Avenue
326	Princes Highway / Bourke Street
4517	Memorial Drive Off Ramp / Porter Street
4170	Foley Street / Gipps Road
2776	Robsons Road / Mount Keira Road

The signalised intersections within the study area were implemented in the microsimulation model as fixed time. These signalised intersections were based on the Roads and Maritime Mount Ousley REF (2015) Traffic Model which were developed based on the SCATS average signal timing.

3.9 Bus Network

3.9.1 Public Transport Services and General Transit Feed Specification (GTFS) Data

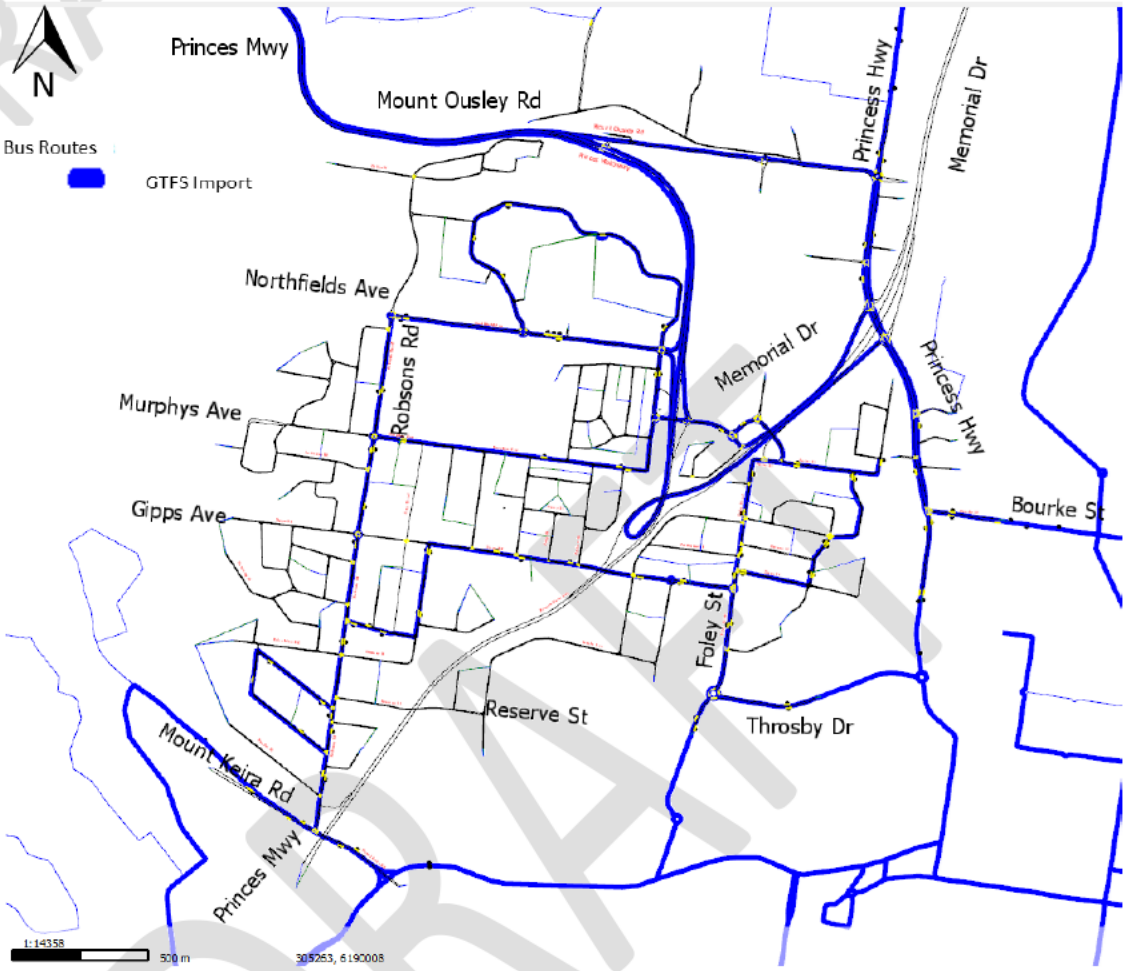
The purpose of the GTFS bus timetable feed is to publish, in advance, the schedules and route information of Bus services that operate under the Sydney Metropolitan, Outer Sydney Olympic Park Major Events Bus Contracts, Sydney NightRide and Sydney Olympic Park Major Events Bus Contracts.

GTFS data is typically used for TfNSW Transport Info, Realtime transport app developers and online map services (e.g. Google Maps and Apple Maps). GTFS data is provided in nine (9) data files:

- Agency.txt – Defines one or more transit agencies (Operators) that provide the data in this feed
- Calendar_dates.txt – Defines exceptions for the service IDs defined in the calendar.txt file
- Calendar.txt – Defines dates for service IDs using a weekly schedule. It also provides the start and end dates as well as the days of the week the service is available
- Routes.txt – Defines transit routes
- Shapes.txt – Defines rules for drawings lines on a map to represent a transit organisation's routes
- Stop_times.txt – Provides the times that a vehicle arrives at and departs from individual stops for each trip
- Stops.txt – Provides individual locations where vehicles pick up or drop off passengers
- Trips.txt – Provides the trips for each route. A trip is a sequence of two or more stops that occurs at a specific time
- Notes.txt – This file is an extension on the GTFS Fileset standard. It contains a list of notes referenced from trips.txt and stop_times.txt.

To utilise this data, Aimsun has incorporated a GTFS importing function in their latest version of Aimsun (v8.2). To incorporate the data into the base model, GTFS data from September and August 2017 was sourced from TfNSW and imported into the base model to match the model area extents. **Figure 3-4** highlights in blue the bus routes coded in Keiraville-Gwynneville microscopic which is overlayed with the modelled road network.

Figure 3-4 Bus Routes in the Model Study Area



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3.10 Model Zoning System

The Roads and Maritime Services' TRACKS model referred on *Traffic Modelling for the Proposed Interchange at Mt Ousley Road on the M1 Princes Motorway, Roads and Maritime Services, 2015,* was reviewed to understand the strategic level zoning structure within this area. The *Roads and Maritime Services Mount Ousley REF (2015) Traffic Model* Aimsun file was also used as reference, to preserve the Mount Ousley Aimsun model existing centroid configuration.

Further zone disaggregation process was carried out to ensure traffic was accurately allocated to specific locations in the Keiraville and Gwynneville study precinct model but still respecting Aimsun and TRACKS naming conventions according to Roads and Maritime guidelines. The Keiraville and Gwynneville microsimulation model was completed with a total 77 child travel zones after further disaggregation of the 41 parent travel zones identified in the Roads and Maritime Mount Ousley REF (2015) Traffic Model.

Table 3-3 summarises the zoning system in the models, their disaggregation in the Keirvaville-Gwyneville traffic models and their description.

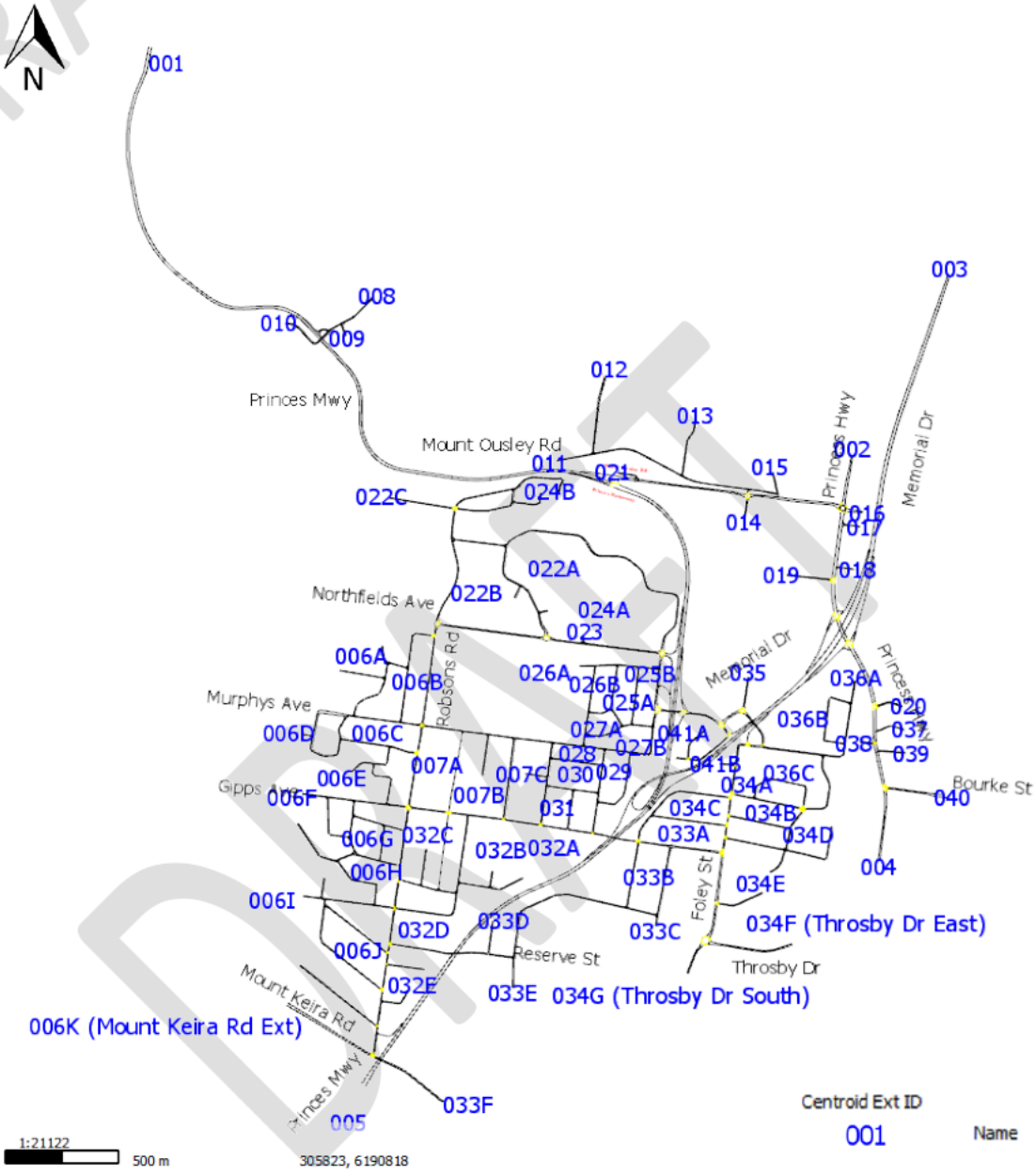
Table 3-3 Model Zoning System Description

Parent Zone	Child Zones	Description	Parent Zone	Child Zones	Description
1	1	Princes Motorway north of Mt Pleasant Road	22	3	Ring Road north of Northfields Avenue
2	1	Princes Highway north of Mt Ousley Road	23	1	Car park north of Northfields Avenue
3	1	Memorial Drive north of Princes Highway	24	2	Ring Road east north of Northfields Avenue
4	1	Princes Highway south of Bourke Street	25	2	Madoline Street west of Princes Highway
5	1	Princes Motorway south of Gipps Road	26	2	Paulsgrove Street north of Murphys Avenue
6	11	Murphys Avenue west of Paulsgrove Street	27	2	Spearing Parade west of Princes Highway
7	3	Northfields Avenue east of Ring Road	28	1	Gwynne Street west of Eastern Street
8	1	New Mt Pleasant Road north of Princes Motorway	29	1	Waitangi Street south of Murphys Avenue
9	1	Dobinson Street east of New Mt Pleasant Road	30	1	Moore Street west of Eastern Street
10	1	New Mt Pleasant Road south of Princes Motorway	31	1	Fairy Street north of Gipps Road
11	1	Dumfries Avenue west of Foothills Road	32	5	Gipps Road west of Fairy Street
12	1	Foothills Road north of Dumfries Avenue	33	6	Gipps Road east of Eastern Street
13	1	McMahon Street north of Dumfries Avenue	34	7	Foley Street south of Porter Street

Parent Zone	Child Zones	Description	Parent Zone	Child Zones	Description
14	1	Gaynor Avenue south of Mt Ousley Road	35	1	Foley Lane north of University Avenue
15	1	Strone Avenue north of Mt Ousley Road	36	3	Porter Street east of University Avenue
16	1	Mt Ousley Road east of Princes Highway	37	1	Exeter Avenue east of Princes Highway
17	1	Woodhill Street east of Princes Highway	38	1	Station Street west of Princes Highway
18	1	Woodhill Street south east of Princes Highway	39	1	Achilles Avenue east of Princes Highway
19	1	Lysaght Street west if Princes Highway	40	1	Bourke Street east of Princes Highway
20	1	Ajax Avenue east of Princes Highway	41	2	Graham Avenue west of University Avenue
21	1	Car park north of Mount Ousley Road			

The key external zones remain as the ones from the Princes Motorway, the Princes Highway, Memorial Drive, Mount Keira Road, Bourke Street and Throsby Street. All the minor streets (including the car parks) within the defined study area were included as the connection between the major roads and the local traffic demand zones such as the University of Wollongong, TAFE, commercial and the residential precincts in Keiraville and Gwynneville areas. The Keiraville and Gwynneville Aimsun microsimulation model centroid configuration layout is illustrated in **Figure 3-5**.

Figure 3-5 Centroid Configuration Layout in the Model Study Area



3.11 Behaviour Parameters

Vehicle behaviour parameters were adopted from the calibrated Roads and Maritime Services Mount Ousley REF (2015) Traffic Model and SAFN default settings.

3.12 Traffic Demand Development

The demand estimation for the study area relied on Roads and Maritime Services Mount Ousley REF (2015) Traffic Model for Keiraville - Gwynneville Microsimulation Study. More information on the base demand and modelling approach can be found in *Traffic Modelling for the Proposed Interchange at Mt Ousley Road on the M1 Princes Motorway, Roads and Maritime Serivces, Appendix B – Model development, calibration and validation, 2015*

Four (4) base models were developed (in-session / out-session & AM / PM) with respective demand estimation and calibration process undertaken separately. This used the 2015 AM and PM peak one hour matrices for cars, trucks and heavy trucks derived from the Roads and Maritime Services Mount Ousley REF (2015) Traffic Model. This formed the base pattern matrix for demand adjustment undertaken in Aimsun.

The methodology for the development of the trip demand matrices for each of the modelled periods and its adjustments are detailed below.

- Static assignment of strategic model demand to the Keiraville - Gwynneville network.
- Static Assignment Adjustment: Further development and demand estimation was undertaken using static equilibrium assignment. This was used to calibrate the initial traffic demand (derived hourly matrices demands to peak AM and PM peak periods and initially constant over time) across the entire network and provide a starting point for more detailed microscopic simulation.
- Manual Adjustment: Matrices were then restructured to fit the microscopic model zone system. This consists of analysis of turning movement counts on a network wide basis and link total comparisons between surveyed intersections. Where necessary, minor adjustments were made to balance trip totals between intersections for the base year. This also consisted of vehicle type demand aggregation (i.e. heavy trucks and trucks combined) and splits review according to observed traffic composition (e.g. heavy vehicles and light vehicles only) of the study area using 2017 traffic surveys information dated of August (in-session) and September (out-session)
- Departure Time Adjustment: Traffic demand release profiles were applied to dispense traffic demands in defined time intervals over the model periods. These profiles were developed based on the traffic survey data which was collated in 15 minute intervals (refer to Traffic Profile section for traffic demand release percentages of the two-hour trip demand matrices).
- Dynamic Traffic Assignment Adjustment: The resulting sliced trip demand matrices from the departure adjustment process were applied to the model and an iterative loop of testing and matrix refinement undertaken to achieve an appropriate level of model calibration.

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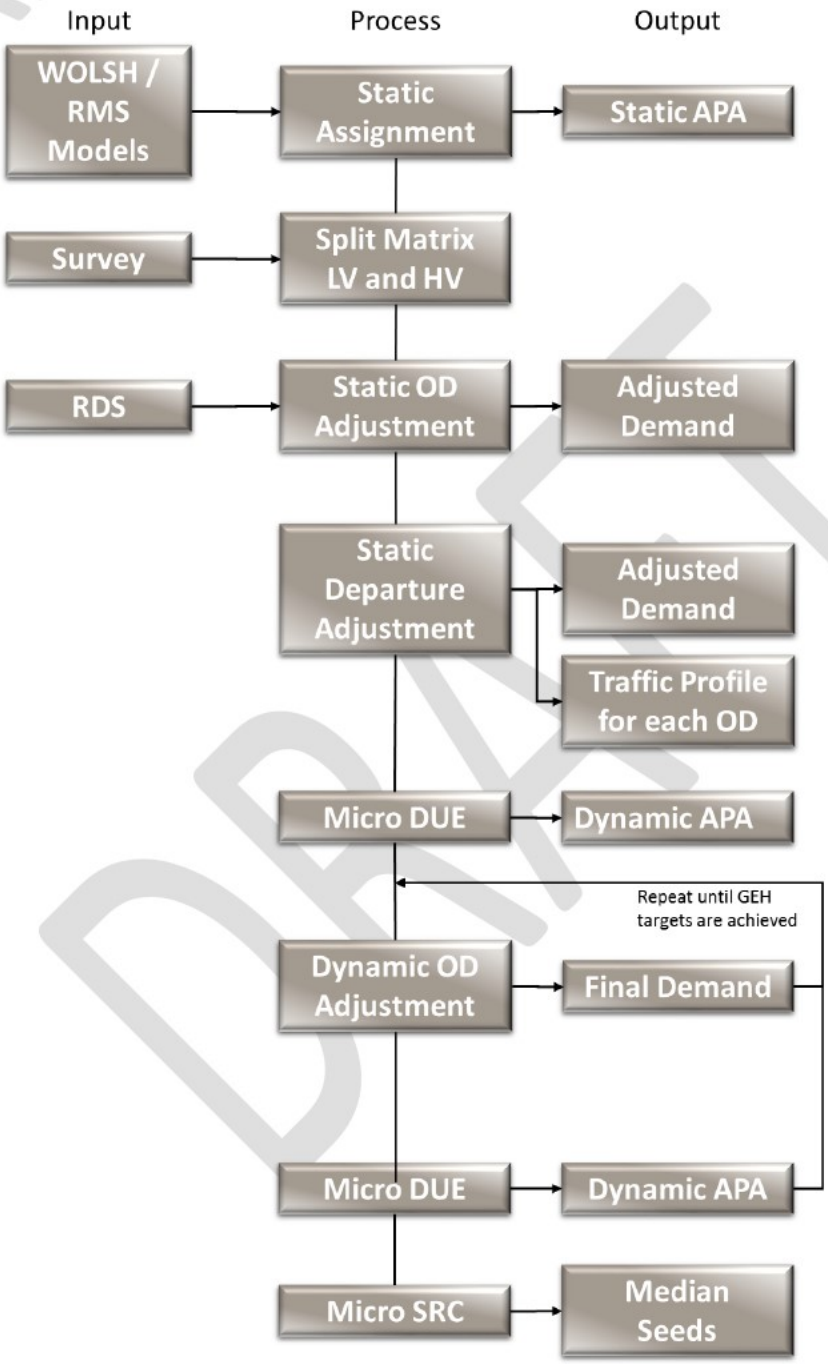
Figure 3-6 summarizes the demand estimation process and all steps used within the Aimsun platform.

Figure 3-6 Demand Estimation and Adjustment Process



As stated in the previous section, the model covers the weekday AM and PM peak periods including a warmup period of one hour to generate sufficient demand on the network at the start of each analysis period.

Figure 3-7 to **Figure 3-10** presents the AM and PM network traffic demand profiles respectively.

Figure 3-7 In-session - AM Network Traffic Demand

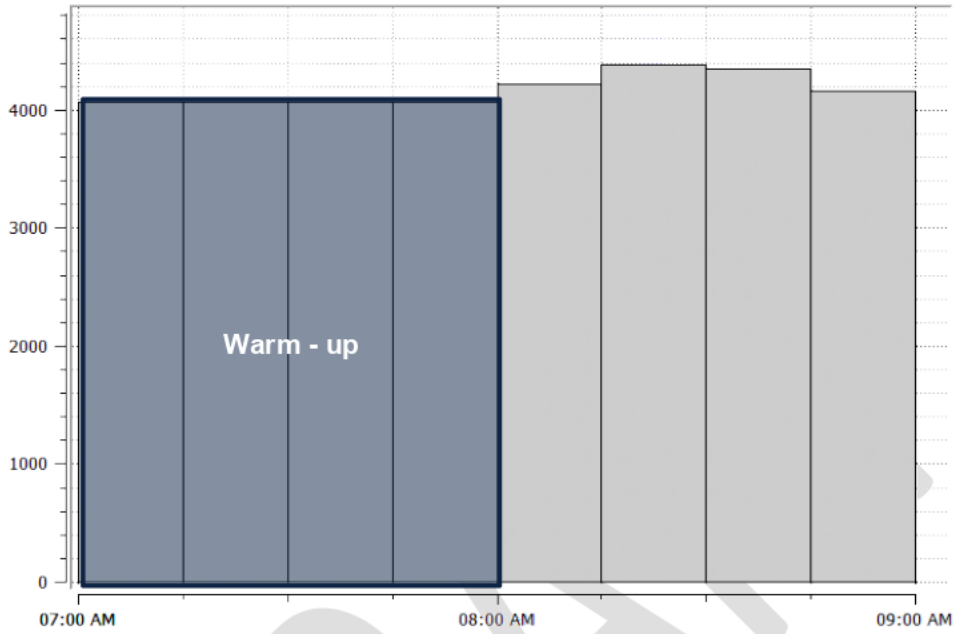


Figure 3-8 In-session - PM Network Traffic Demand

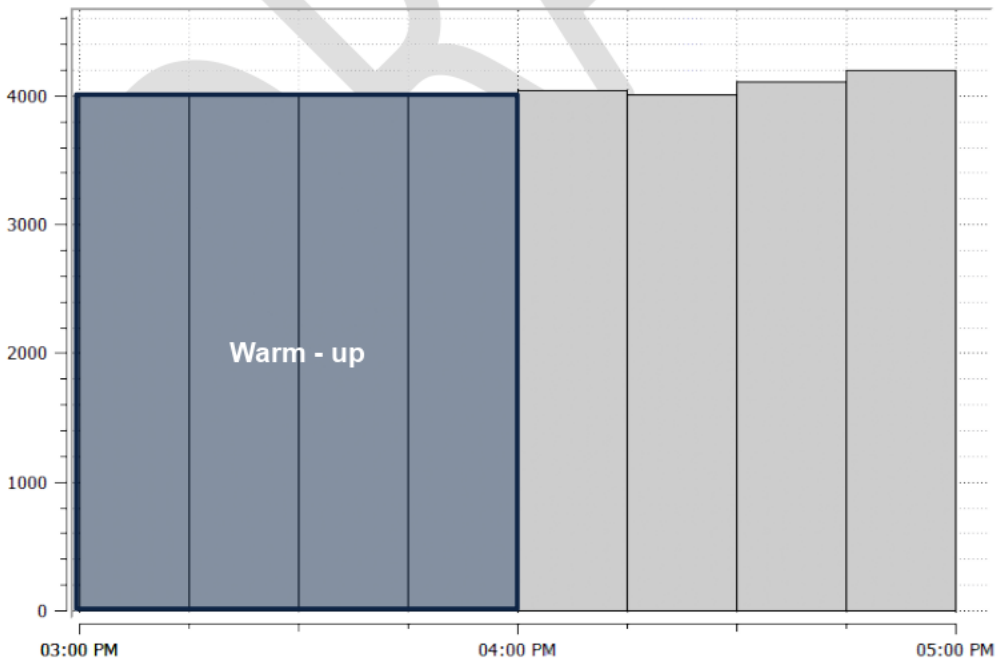


Figure 3-9 Out-session - AM Network Traffic Demand

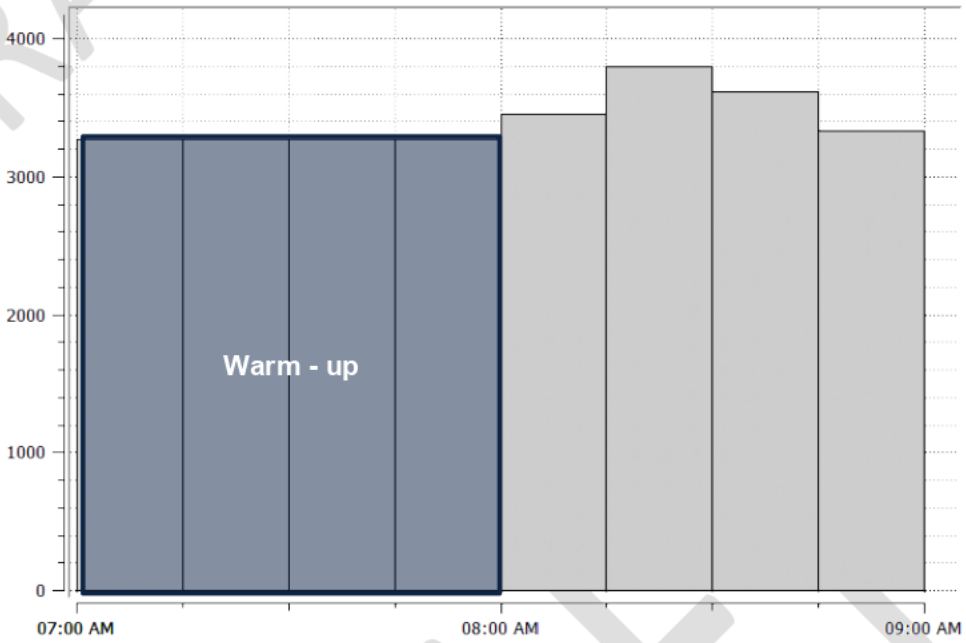
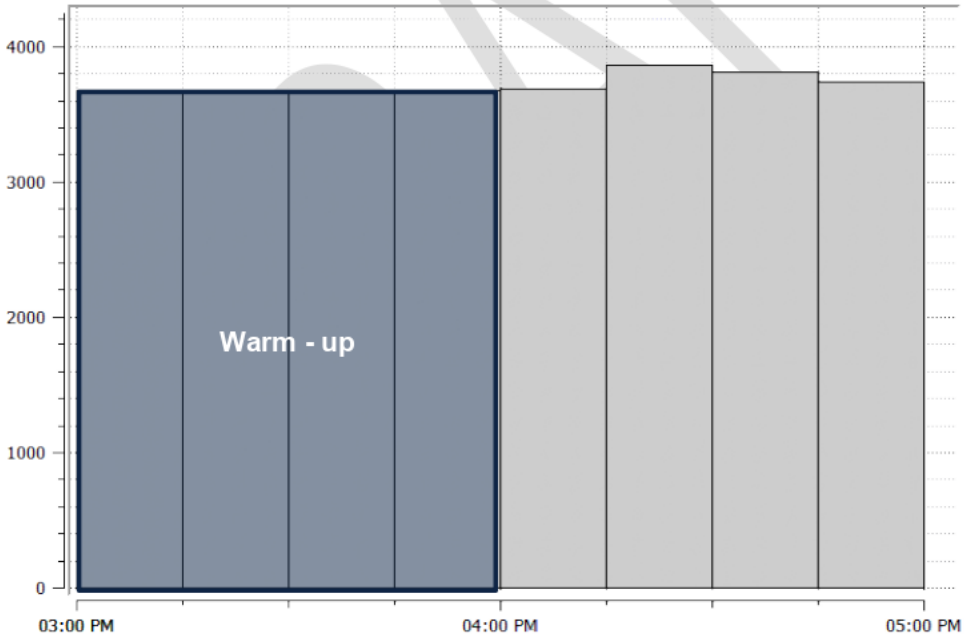


Figure 3-10 Out-session - PM Network Traffic Demand



A quick assessment of the in-session and out-session traffic demands shows that during the morning peak (08:00AM to 09:00AM), there are more trips (17,000 trips) during academic season than non-academic season (14,000), which consist of around 20% difference.

The traffic demand also shows an increase of roughly 10% more trips when comparing academic season (16,300 trips) to non-academic season (15,000 trips) during the afternoon peak (04:00PM to 05:00PM).

It was also identified through the travel demand patterns that during academic season there are more trips within the model area being completed during the morning peak than afternoon peak. In contrast, there are more trips completed during the afternoon peak than morning peak for the non-academic season.

3.13 Assignment Type

After static assignment and adjustments two assignment methods were mainly used in the microsimulation model and are summarised in **Section 3.13.1** and **Section 3.13.2.**

3.13.1 Dynamic User Equilibrium Assignment

The dynamic user equilibrium (DUE) assignment is a form of traffic assignment that uses an iterative process to determine the traffic flows across the network based on the costs of travel routes between origin and destination (OD) pairs derived in previous iterations until it converges to an equilibrium state.

The underlying principle for this assignment is that travellers will try to minimise their individual travel times and travel on the route which they perceive to be the shortest path in their traffic conditions. In order for a dynamic user equilibrium to be achieved, the travel times of each OD pair for vehicles departing at the same time on all used routes are equal and less than any unused route experienced by a single person (Ran and Boyce's dynamic version of Wardrop's user equilibrium).

3.13.2 Stochastic Route Choice Assignment

The stochastic route choice (SRC) assignment is based on discrete route choice models or on a user-defined assignment. The discrete route choice models are based on discrete choice theory and emulates a driver's decision of selecting a path from those that are available.

This model utilises probability for choosing alternative paths from those available as a function of disutility, which is often travel time or travel cost.

In the Keiraville-Gwynneville base model, paths are provided from the DUE assignment and route choice is set to follow 80% of the DUE paths and the remaining 20% to follow the SRC assignment.

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4 Model Stability

The stochasticity of a micro-simulation model can cause instability in the model, which can undermine the reliability of the model to forecast future traffic conditions. Thus, it is important to develop a base model that is stable and has an appropriate degree of accuracy for future options assessment. To determine the stability of a model, a total of 5 seed values and the default time-step value in Aimsun are initially used, as recommended by the *Traffic Modelling Guidelines* to iteratively determine the required number of runs.

The statistic chosen as a summary measure to determine the model's stability is the vehicle hours travelled (VHT). The VHT results are a single figure summary used as an indication of the whole network performance by identifying whether or not the model has unrealistic gridlocks and excessive delays. VHT consists of the sum of travel time for every single vehicle across the whole network and therefore can identify congestion within a network.

In Aimsun, VHT is calculated only for the vehicles which were able to complete the respective trips from origin to destination. Any vehicles remaining in the system during the simulation period are excluded from the total system travel-time as they are unable to generate a complete travel time.

The number of seed runs required to determine the stability of the model is calculated iteratively by:

$$N = \left(\frac{t\sigma}{\Delta}\right)^2$$

Where:

N = number of runs

t = two-tailed inverse of Student's t-distribution

σ = standard deviation

Δ = acceptable error (precision multiplied by sample mean)

The number of simulation runs required is below the initial 5 seeds used, therefore it is sufficient to retain the initial 5 seeds for a confidence interval of 95%.

The results of the VHT stability for the AM and PM peak are summarised in **Table 4-1**.

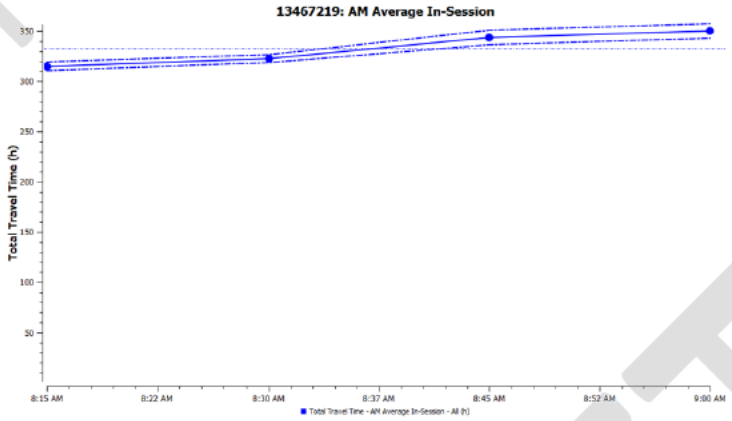
Table 4-1 Number of Simulation Runs Required

Parameter	In-Session Models		Out-Session Models	
	AM	PM	AM	PM
t	2.776	2.776	2.776	2.776
σ	25.003	50.718	13.428	24.557
Δ	67.090	63.629	54.118	59.663
N	1.070	4.896	0.474	1.305

The VHT during the AM and PM models are consistent and independent across different 5 seed values, which confirms that one seed value for the model runs can be representative of a general model run. On this basis, the peak hour models are considered stable and show the model remains robust under varying conditions and can be used to reliably forecast future scenarios.

The average total travel time is illustrated in **Figure 4-2** and **Figure 4-3** for the in-session period, and **Figure 4-4** and **Figure 4-5** for the out-session period.

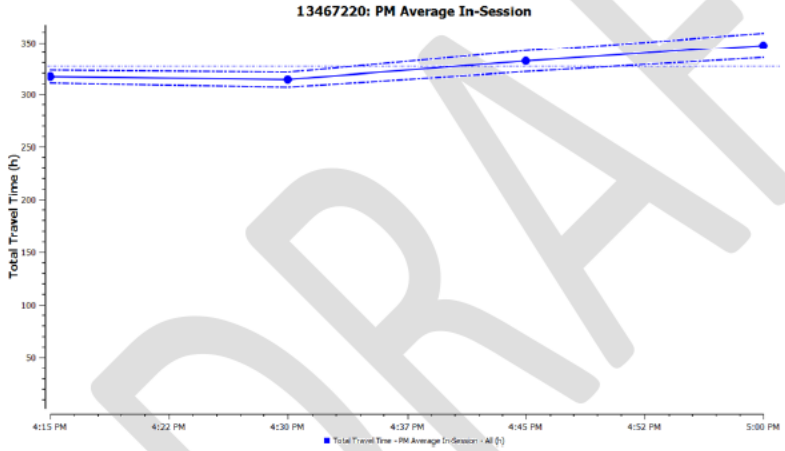
Figure 4-2 Average AM In-session Vehicle Hours Travelled



Time	Vehicle Hours Travelled (VHT)	5 Seeds Standard Deviation
8:15	315.04	4.50
8:30	322.90	4.02
8:45	343.52	7.21
9:00	350.08	7.32

The aggregated vehicle hours travelled is 1331.34 and the mean vehicle hours travelled is 332.89.

Figure 4-3 Average PM In-session Vehicle Hours Travelled



Time	Vehicle Hours Travelled (VHT)	5 Seeds Standard Deviation
4:15	316.61	6.11
4:30	313.70	7.04
4:45	331.34	10.12
5:00	346.84	11.79

The aggregated vehicle hours travelled is 1308.48 and the mean vehicle hours travelled is 327.12.

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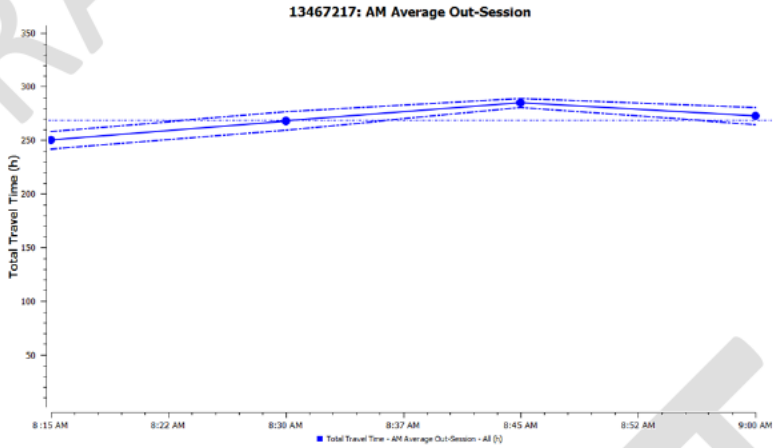
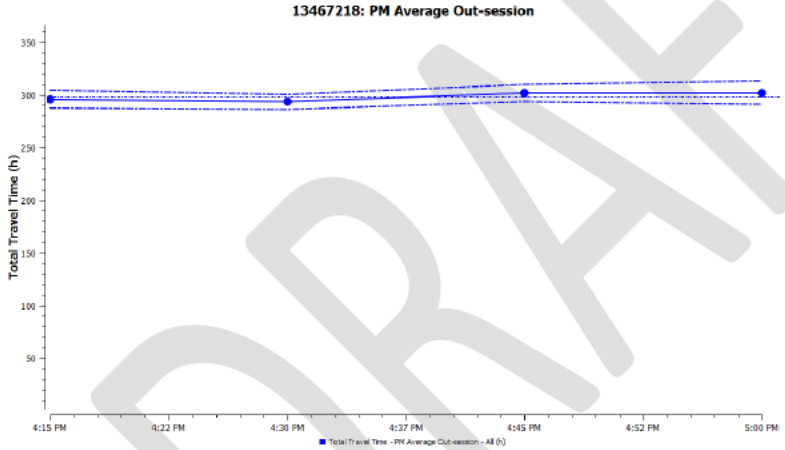
Figure 4-4 Average AM Out-session Vehicle Hours Travelled



Time	Vehicle Hours Travelled (VHT)	5 Seeds Standard Deviation
8:15	250.09	8.07
8:30	267.88	8.51
8:45	284.91	4.03
9:00	272.94	7.91

The aggregated vehicle hours travelled is 1075.83 and the mean vehicle hours travelled is 268.96.

Figure 4-5 Average PM Out-session Vehicle Hours Travelled



Time	Vehicle Hours Travelled (VHT)	5 Seeds Standard Deviation
4:15	295.95	8.63
4:30	293.35	7.17
4:45	301.98	8.10
5:00	301.99	11.22

The aggregated vehicle hours travelled is 1193.26 and the mean vehicle hours travelled is 298.31.

The resulting model performance is summarised by the total vehicle hours travelled comparisons above. The general network statistics for both periods show a substantial low level of variability in the peak hours of both the AM and PM peaks. Overall, the statistical analysis of the model runs demonstrates the modelled network and output results are stable.

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5 Model Calibration and Validation

This section sets out the key calibration statistics from the preparation of the base (existing conditions) model. The calibration of a base model is important to ensure a robust base from which to test options and provide statistical comparisons of existing layouts against options.

Calibration for this model has been based on the following:

- Model Convergence: Assessing the relative gap between iterations is a measure of how close the assignment is to the "optimal" equilibrium assignment
- Turn Counts: Comparing observed and modelled turning movements for general traffic over the modelled peak hour periods.

The Keiraville - Gwynneville microsimulation base model turn counts calibration has been undertaken in two stages:

- Calibration of the static assignment parameters iteratively alongside demand adjustment to ensure that the adjustment is undertaken using valid static assignment routing
- Calibration of the traffic signals, microsimulation and DUE assignment parameters.

The calibration and validation statistics are outputted from a single seed run determined as the median seed from the VHT assessment of model stability (**Table 5-1**).

Table 5-1 Median Seeds used for Calibration and Validation Results

Median Seed	In-Session Models		Out-Session Models	
	AM	PM	AM	PM
	2849	560	28	560

5.2 Calibration Criteria

A turning count calibration was used to compare observed on-site traffic volumes with equivalent outputs from the model. Turning count calibration was undertaken for each of the major intersections and the purpose of this calibration was to ensure that simulated traffic volumes in the models were representative of traffic volumes observed on site for each traffic movement at each intersection.

The calibration process was done on both a network-wide level and in the core area, each with its own criteria. The core area of the microscopic model not the entire Keiraville-Gwynneville study area and key locations will be treated as core area as per Wollongong City Council and Roads and Maritime Services advice after microscopic network wide calibration.

5.2.1 Network-Wide Calibration Criteria

The model was calibrated using the criteria provided in the modelling guidelines to ensure the model reflects the observed traffic conditions to a statistically high level of accuracy. The method of calibration recommended by the modelling guidelines is the modified Chi-Square empirical formula that Geoffrey E. Harves invented it in the 1970s, commonly known as the GEH statistic, for individual flows. The R-Square (R^2) statistical measure is used for the correlation of the entire data set.

The GEH formula is:

$$GEH = \sqrt{\frac{(V_o - V_m)^2}{0.5(V_o + V_m)}}$$

Where:

V_o is the observed traffic flow; and

V_m is the modelled traffic flow.

A GEH of 5.0 or less is considered to provide a good match between the modelled and observed traffic flows. According to the *UK Highways Agency Design Manual for Roads and Bridges (DMRB)* a model should be calibrated with at least 85% of links or turns to have a GEH no greater than 5.0.

The following criteria were used during the turning count calibration process for the whole network:

- 95% of turn and link flow comparisons with GEH less than 10
- 85% of turn and link flow comparisons with GEH less than 5
- R^2 statistics should be between 0.95 and 1.05 for a flow plot of observed vs modelled turn volumes (where R^2 = 1.0 is a perfect correlation).

5.2.2 Core Area Calibration Criteria

The following criteria is to be used during the turning count calibration process for the core area:

- Turn or link flows to be within 10 vehicles for flows <99
- Turn of link flows to be within 10% of observed values for flows between 100 and 999
- Turn or link flows to be within 100 vehicles for flows between 1000 and 1999
- Turn of link flows to be within 5% of observed values for flows >2000
- 100% of observations to be within tolerance limits
- Regression of modelled and observed counts to show R2>0.95.

5.3 Calibration Results

5.3.1 Network Wide

The network wide calibration was undertaken by comparing the modelled turn flows with observed counts at 110 locations within the study area. As described in **Section 5.2.1**, a GEH statistic of less than 5.0 is considered to be a good match when comparing the observed turning counts with modelled turning volumes. The GEH calibration statistics for the whole network is shown in **Table 5-2.**

Table 5-2 Network Wide Calibration Summary

	In-session				Out-session			
Time Period	8:00 – 9:00 AM		4:00 – 5:00 PM		8:00 – 9:00 AM		4:00 – 5:00 PM	
Vehicle Type	LV	HV	LV	HV	LV	HV	LV	HV
GEH < 5	91%	98%	87%	97%	94%	98%	92%	95%
GEH < 10	100%	100%	100%	100%	100%	100%	100%	100%
R^2	0.98	0.98	0.98	0.98	0.99	0.99	0.99	0.99

The network wide calibration results show that the model is sufficiently calibrated according to the Roads and Maritime Services *Traffic Modelling Guidelines*.

Figure 5-1 and **Figure 5-2** highlights the GEH statistics by location of the modelled peak period for the AM peak and PM peak during in-session and out-session periods respectively.

Figure 5-1 In-session AM Peak and PM Peak GEH Statistic by Location

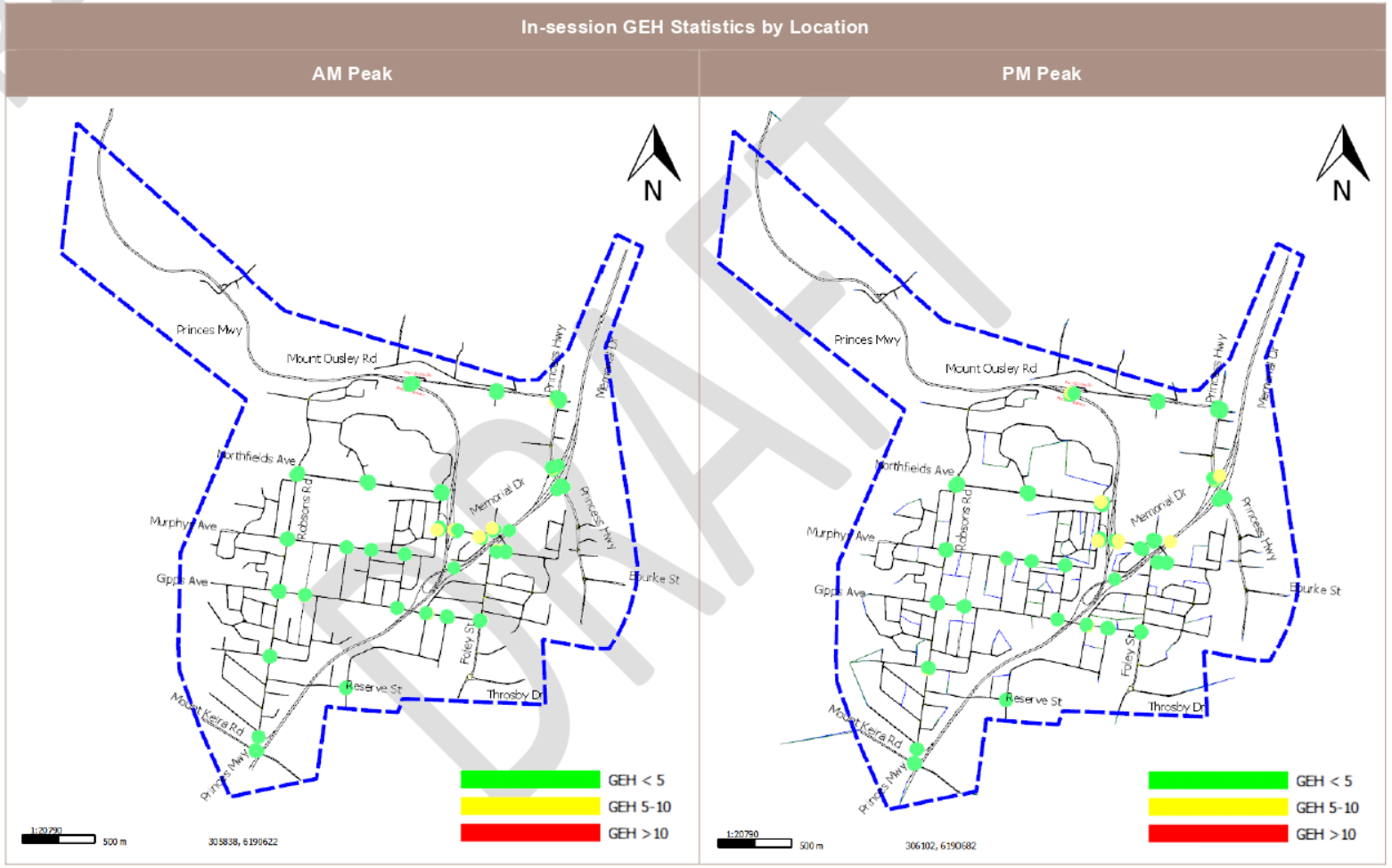


Figure 5-2 Out-session AM Peak and PM Peak GEH Statistic by Location

The turning count comparison between the observed and modelled flows are shown in **Figure 5-3** to **Figure 5-6.** The regression plots were generated with a trend line intercept of zero for the AM peak and PM peak in both in-session and out-session periods.

Figure 5-3 In-session 08:00 - 09:00 AM Regression Analysis

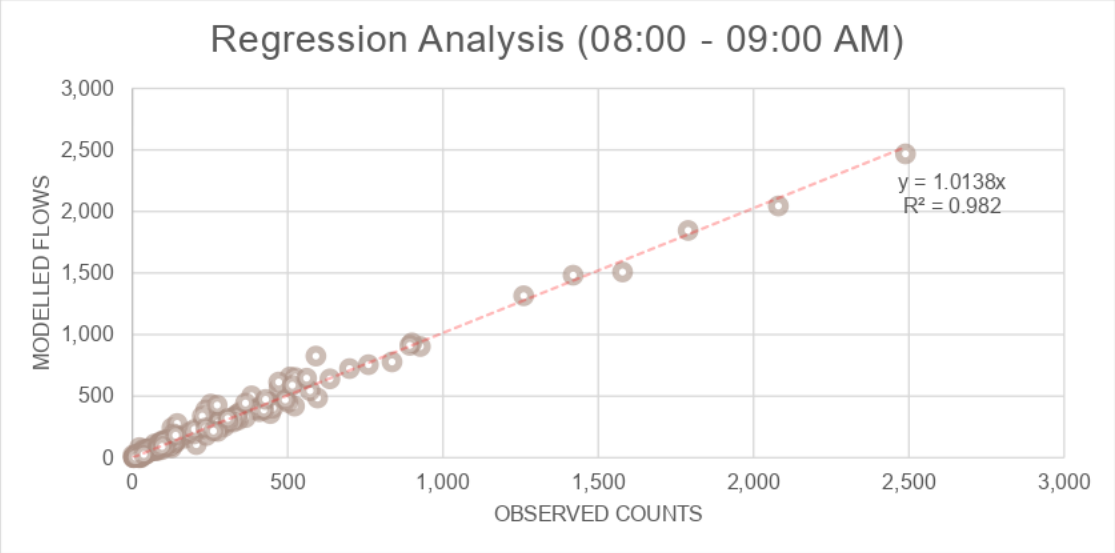


Figure 5-4 In-session 04:00 - 05:00 PM Regression Analysis

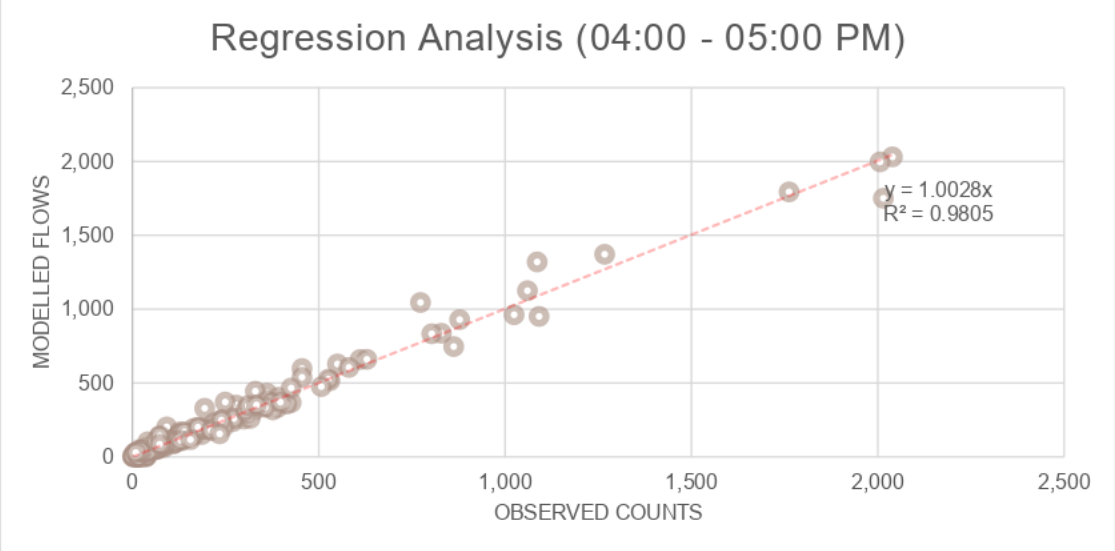


Figure 5-5 Out-session 08:00 - 09:00 AM Regression Analysis

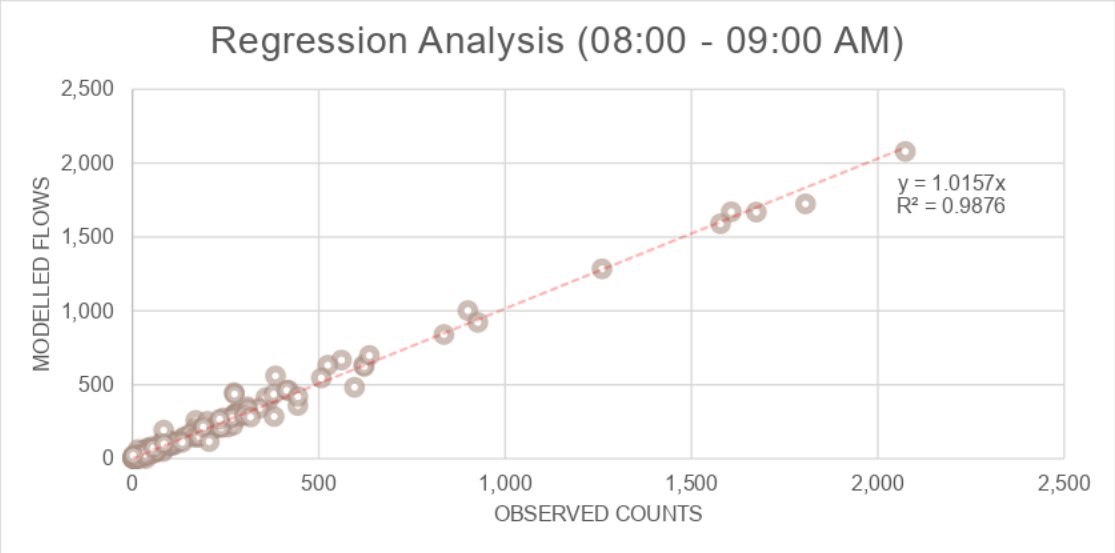
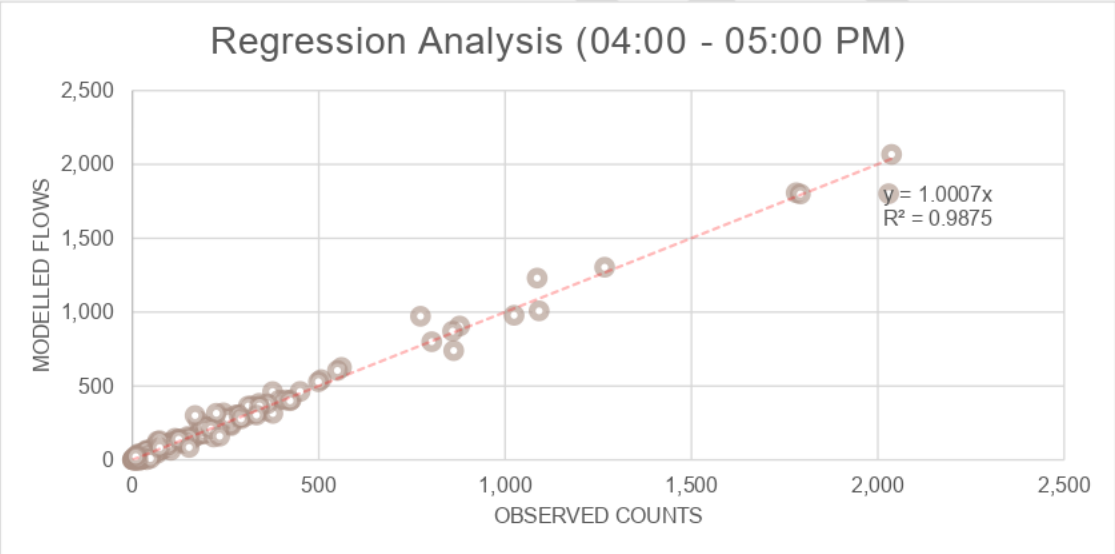


Figure 5-6 Out-session 04:00 - 05:00 PM Regression Analysis



5.4 Validation Criteria

The Roads and Maritime Services Traffic Modelling Guidelines set the travel time validation criteria for traffic models as the average modelled travel time to be within 15% or one minute (whichever is greater) of average observed travel time for full length of route for 95% of observed travel time routes.

5.5 Validation Results

Table 5-3 to Table 5-6 and Figure 5-7 to Figure 5-10 summarize travel time data extracted from Keiraville-Gwynneville microscopic model for both in-session and out-session scenarios. After identifying the median seed, the average travel times for the routes within the study area were used for the validation comparison of median travel times from TomTom journey travel time's data set and the microscopic model outputs.

Figure 5-7 In-session Travel Time box-plot for routes within study are AM peak

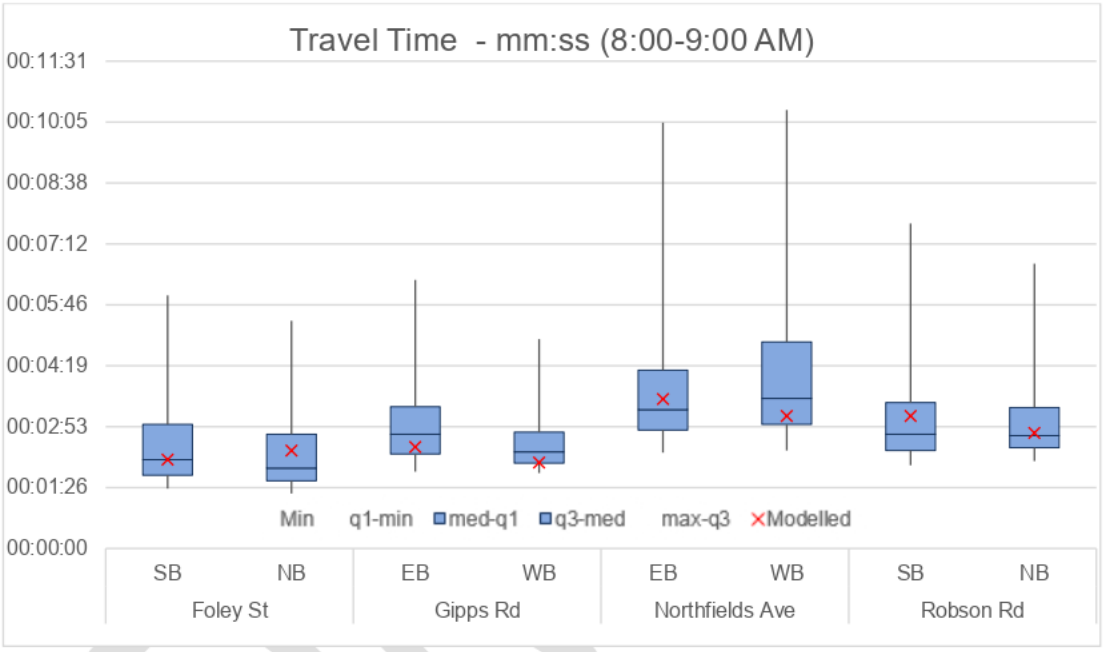


Table 5-3 In-session Travel Time Validation Results for AM peak

	08:00-9:00 AM							
	Foley St		Gipps Rd		Northfields Ave		Robson Rd	
	SB	NB	EB	WB	EB	WB	SB	NB
Min	01:25	01:18	01:49	01:47	02:16	02:19	01:58	02:04
1st Quartile	01:44	01:36	02:14	02:01	02:48	02:56	02:19	02:23
Median	02:06	01:54	02:42	02:17	03:17	03:33	02:42	02:40
3rd Quartile	02:56	02:42	03:21	02:45	04:13	04:53	03:27	03:20
Max	05:59	05:23	06:21	04:57	10:04	10:22	07:41	06:44
Modelled	02:06	02:19	02:24	02:02	03:32	03:08	03:08	02:44
Difference	00:00	00:25	00:18	00:15	00:15	00:25	00:26	00:04
Pass	✓	✓	✓	✓	✓	✓	✓	✓

Figure 5-8 In-session Travel Time box-plot for routes within study are PM peak

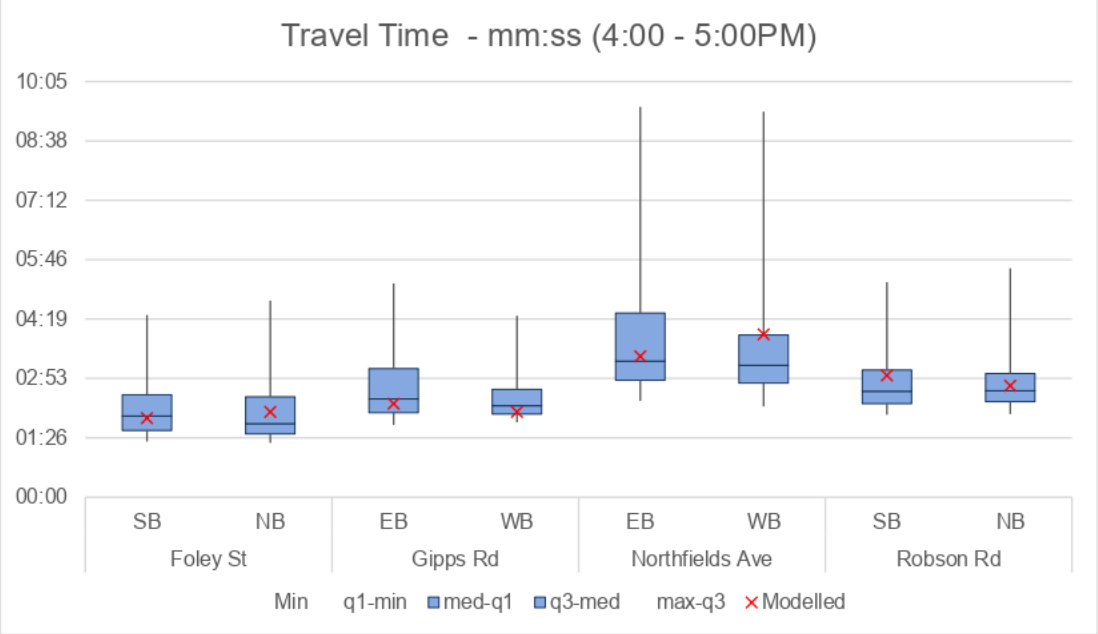


Table 5-4 In-session Travel Time Validation Results for PM peak

	04:00 - 5:00PM							
	Foley St		Gipps Rd		Northfields Ave		Robson Rd	
	SB	NB	NB	SB	EB	WB	SB	NB
Min	01:21	01:19	01:45	01:49	02:20	02:12	02:00	02:01
1st Quartile	01:37	01:32	02:03	02:01	02:50	02:46	02:16	02:19
Median	01:58	01:47	02:23	02:13	03:18	03:12	02:34	02:35
3rd Quartile	02:29	02:26	03:07	02:37	04:28	03:56	03:05	03:00
Max	04:25	04:46	05:11	04:24	09:28	09:21	05:13	05:33
Modelled	01:55	02:04	02:16	02:04	03:25	03:57	02:57	02:42
Difference	00:03	00:17	00:07	00:09	00:07	00:45	00:23	00:07
Pass	✓	✓	✓	✓	✓	✓	✓	✓

Figure 5-9 Out-session Travel Time box-plot for routes within study are AM peak

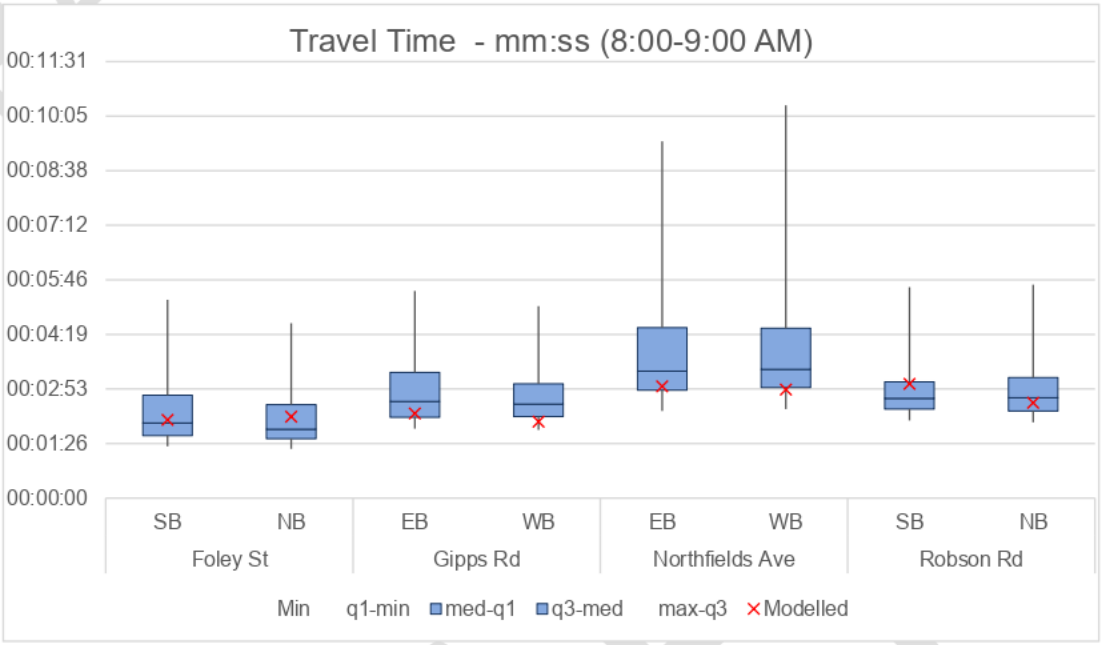


Table 5-5 Out-session Travel Time Validation Results for AM peak

	08:00-9:00 AM							
	Foley St		Gipps Rd		Northfields Ave		Robson Rd	
	SB	NB	EB	WB	EB	WB	SB	NB
Min	00:01:22	00:01:18	00:01:50	00:01:48	00:02:18	00:02:21	00:02:03	00:02:00
1st Quartile	00:01:39	00:01:34	00:02:08	00:02:09	00:02:51	00:02:55	00:02:21	00:02:18
Median	00:01:59	00:01:49	00:02:33	00:02:29	00:03:21	00:03:24	00:02:38	00:02:39
3rd Quartile	00:02:43	00:02:28	00:03:19	00:03:01	00:04:30	00:04:29	00:03:04	00:03:11
Max	00:05:14	00:04:37	00:05:28	00:05:04	00:09:25	00:10:22	00:05:34	00:05:38
Modelled	00:02:04	00:02:09	00:02:14	00:02:01	00:02:57	00:02:52	00:03:01	00:02:31
Difference	00:00:05	00:00:20	00:00:19	00:00:28	00:00:24	00:00:32	00:00:23	00:00:08
Pass	✓	✓	✓	✓	✓	✓	✓	✓

Figure 5-10 Out-session Travel Time box-plot for routes within study are PM peak

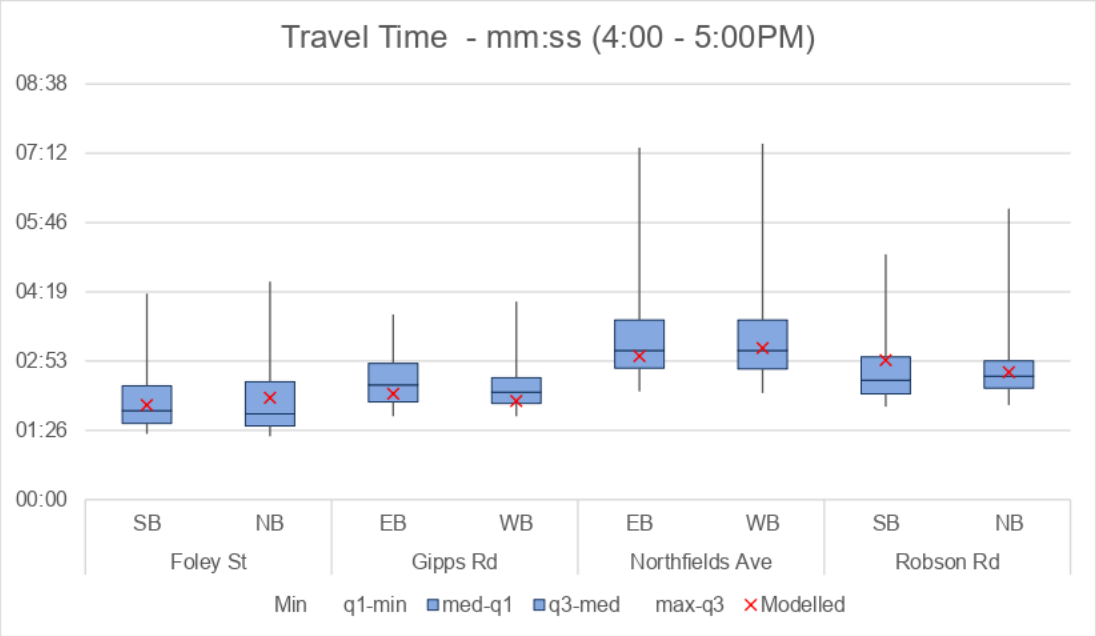


Table 5-6 Out-session Travel Time Validation Results for PM peak

	04:00 - 5:00PM							
	Foley St		Gipps Rd		Northfields Ave		Robson Rd	
	SB	NB	NB	SB	EB	WB	SB	NB
Min	01:22	01:19	01:44	01:44	02:15	02:13	01:56	01:58
1st Quartile	01:35	01:32	02:02	02:00	02:44	02:43	02:12	02:19
Median	01:51	01:47	02:23	02:14	03:06	03:06	02:29	02:34
3rd Quartile	02:22	02:27	02:50	02:32	03:44	03:44	02:58	02:53
Max	04:17	04:32	03:51	04:07	07:19	07:24	05:06	06:03
Modelled	01:58	02:07	02:12	02:03	02:59	03:09	02:54	02:39
Difference	00:07	00:20	00:11	00:11	00:07	00:03	00:25	00:05
Pass	✓	✓	✓	✓	✓	✓	✓	✓

The travel times modelled in Aimsun closely reflected the travel times recoded indicated by the TomTom data.

6 Conclusion

The Base Weekday AM and PM models, both for in-session and out-session periods, conform to Roads and Maritime Services Traffic Modelling Guidelines for microsimulation traffic modelling. The modelling results show that the models have:

- 100% of the turning counts had a GEH of less than 10
- High regression value with R2 > 0.99
- Travel time results within one minute of median observed travel times
- Stable performance amongst five seeds run
- Replicated traffic operation and behaviour at identified hotspots in the study area.

It is concluded that the four (4) peak base models appropriately reflect existing year conditions and provide a suitable basis for the development of present and long term infrastructure upgrades and subsequent performance assessment for the respective future year horizon.

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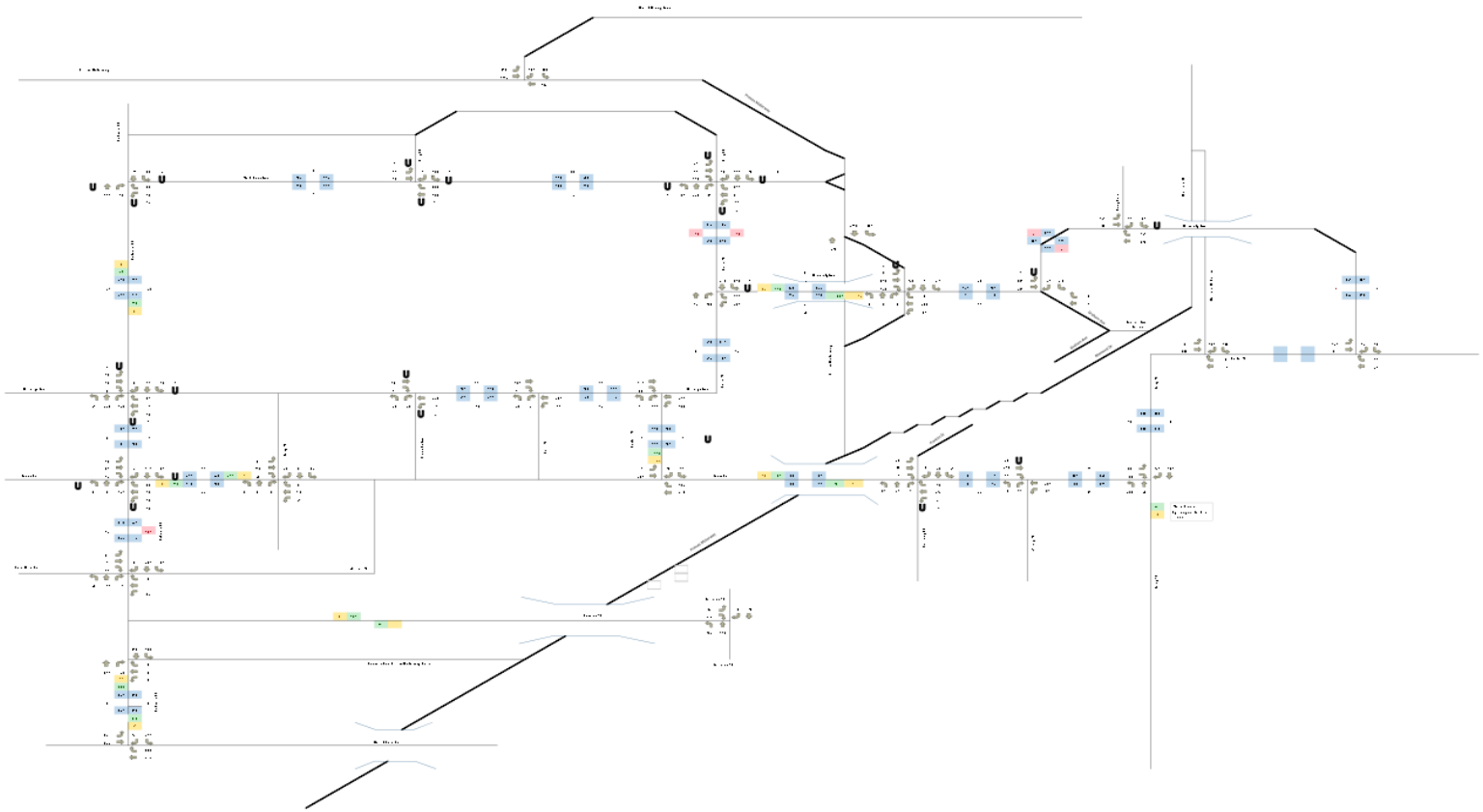
Keiraville – Gwynneville Access and Movement Study

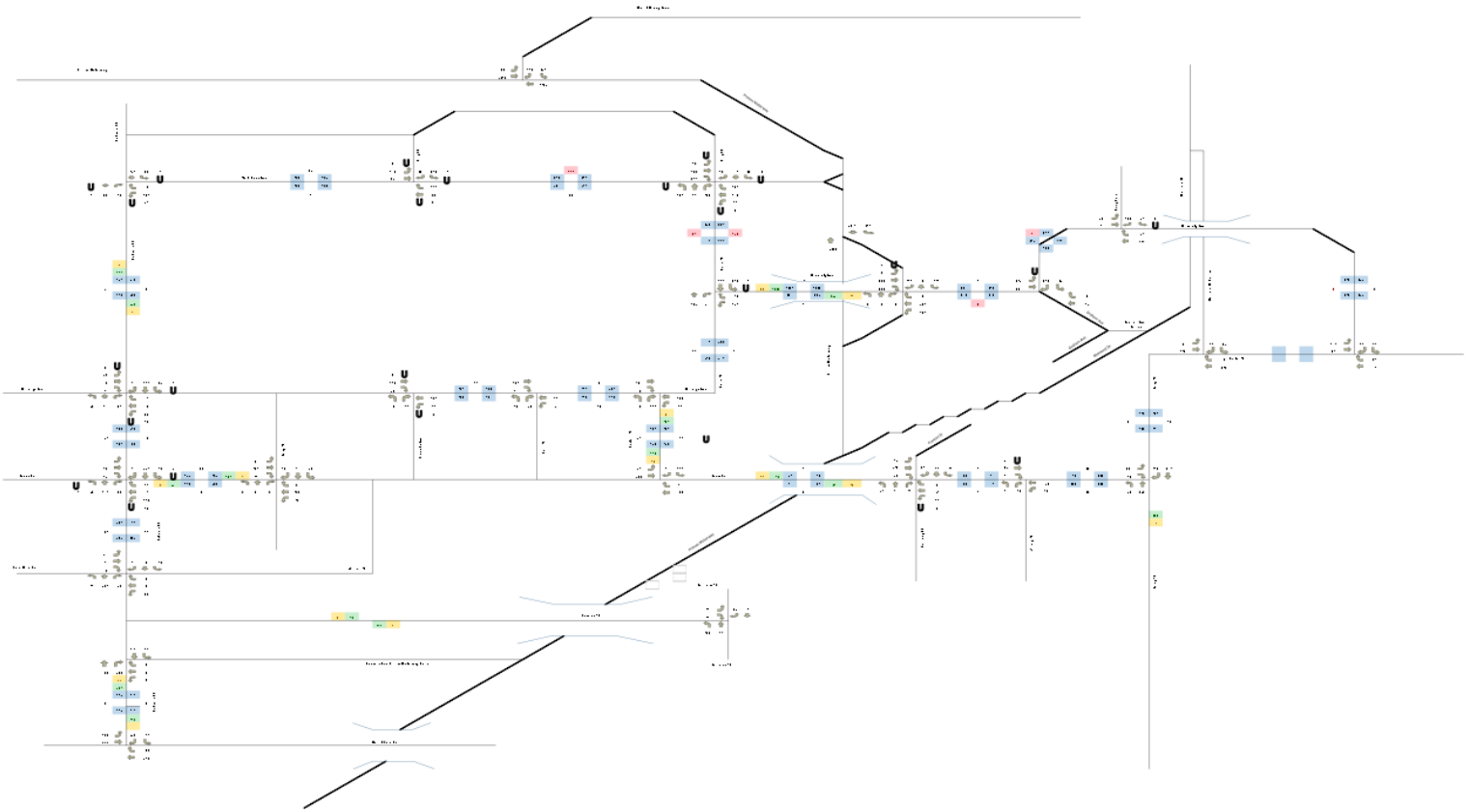
APPENDIX A

TRAFFIC FLOW DIAGRAMS

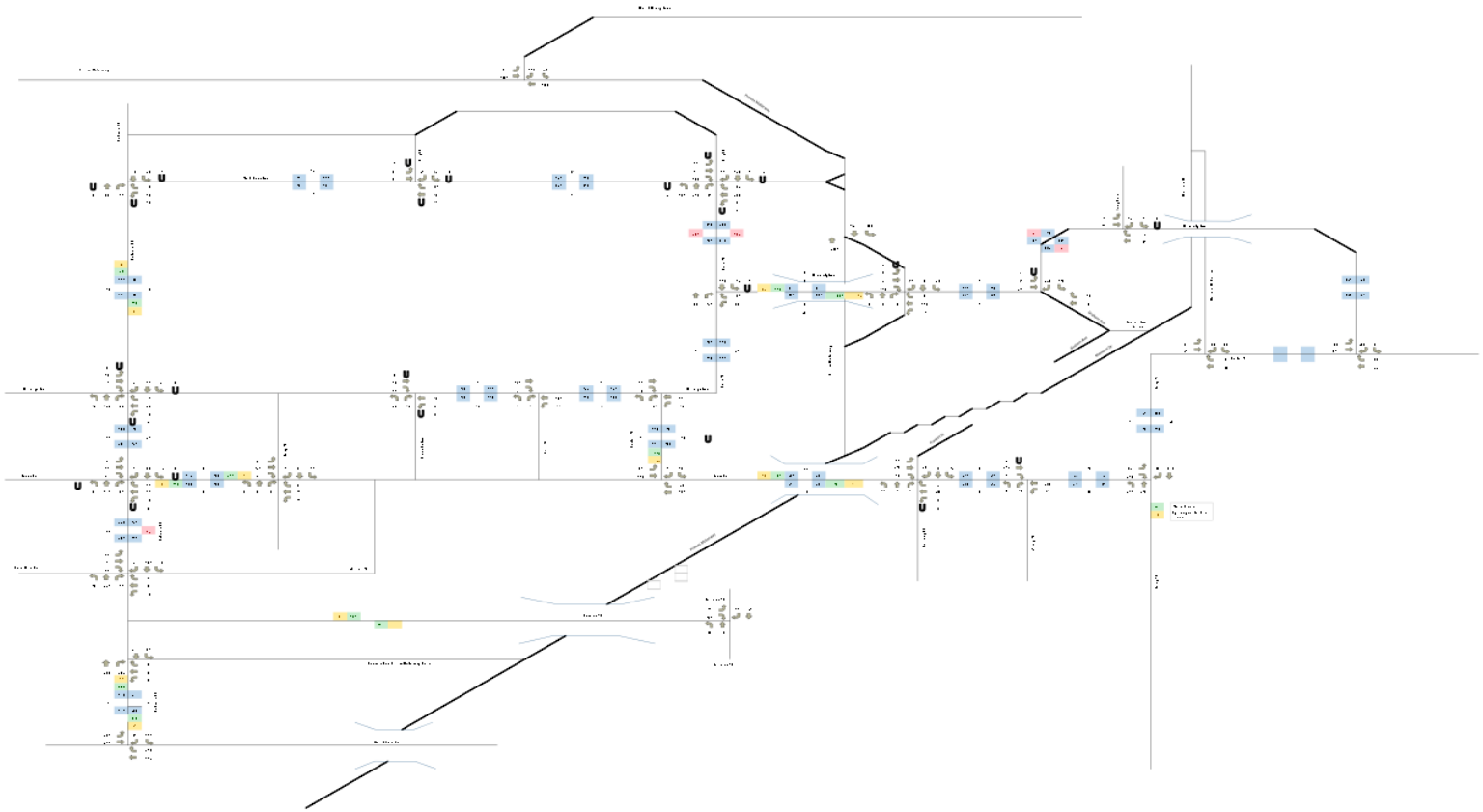
In-session AM Peak



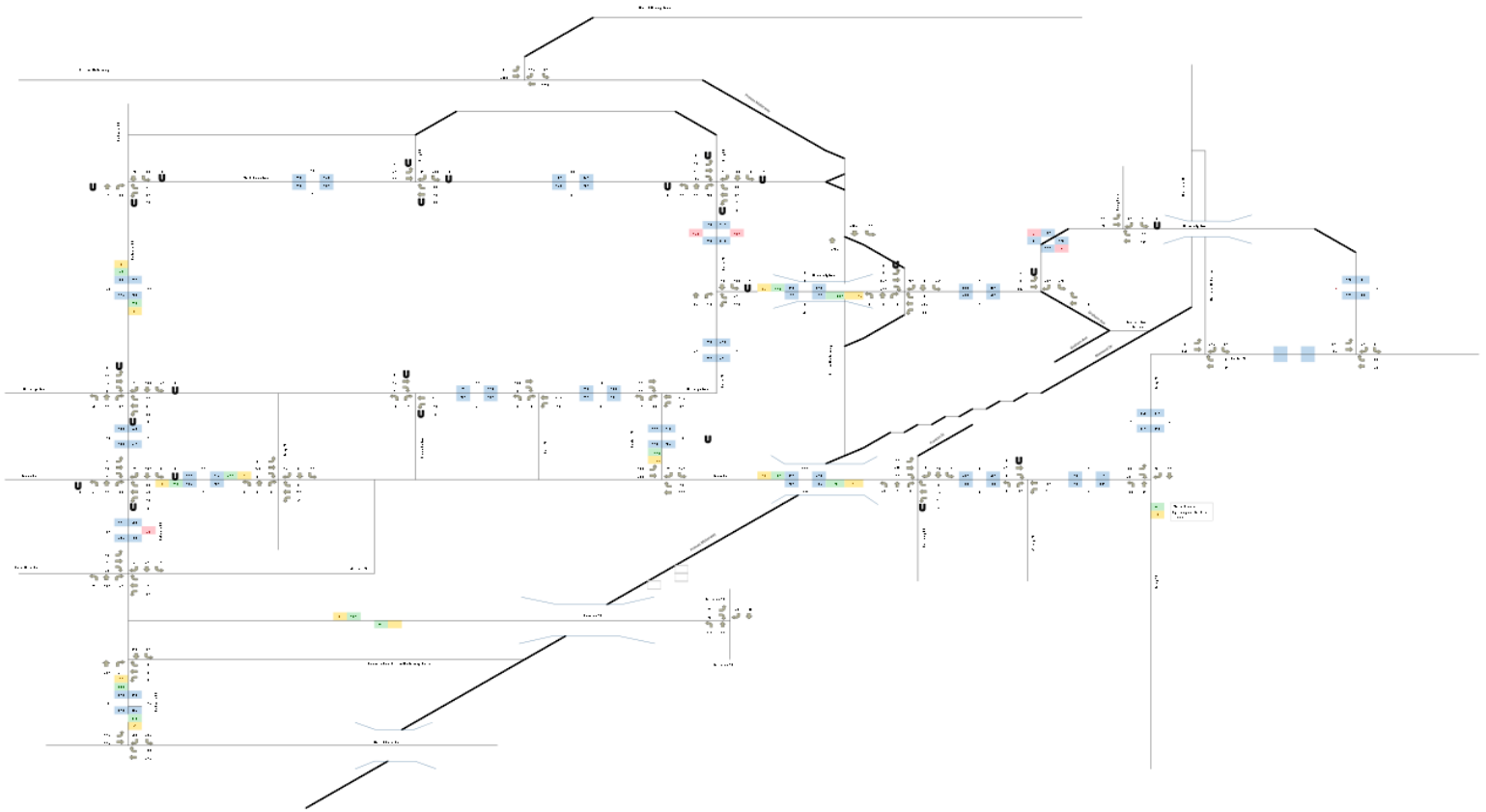
In-session PM Peak



Out-session AM Peak



Out-session PM Peak



Keiraville – Gwynneville Access and Movement Study

APPENDIX B

TRAFFIC SIGNAL DATA

Princes Hwy and Ajax Avenue
AM Peak 4/03/2015

From	to	Phase A %	Phase B %	Phase C %	Phase A	Phase B	Phase C	Cycle time	
6:00	6:15	76%	3%	21%	65	3	18	85	100%
6:15	6:30	80%	4%	15%	68	3	13	85	99%
6:30	6:45	77%	7%	16%	69	6	14	90	100%
6:45	7:00	77%	3%	20%	93	4	24	121	100%
6:00	**7:00**	**78%**	**4%**	**18%**	**74**	**4**	**17**	**95**	100%
7:00	7:15	70%	2%	28%	82	2	33	117	100%
7:15	7:30	67%	7%	26%	71	7	28	106	100%
7:30	7:45	66%	12%	22%	83	15	28	126	100%
7:45	8:00	64%	14%	22%	95	21	33	148	100%
7:00	**8:00**	**67%**	**9%**	**25%**	**83**	**11**	**30**	**124**	100%
8:00	8:15	62%	16%	23%	93	24	35	150	101%
8:15	8:30	64%	14%	22%	97	21	33	152	100%
8:30	8:45	65%	15%	21%	96	22	31	147	101%
8:45	9:00	60%	19%	22%	88	28	32	146	101%
8:00	**9:00**	**63%**	**16%**	**22%**	**93**	**24**	**33**	**149**	101%
9:00	9:15	63%	17%	20%	94	25	30	149	100%
9:15	9:30	64%	18%	19%	85	24	25	133	101%
9:30	9:45	62%	15%	23%	74	18	27	119	100%
9:45	10:00	61%	17%	22%	71	20	26	117	100%
9:00	**10:00**	**63%**	**17%**	**21%**	**81**	**22**	**27**	**130**	100%

PM Peak

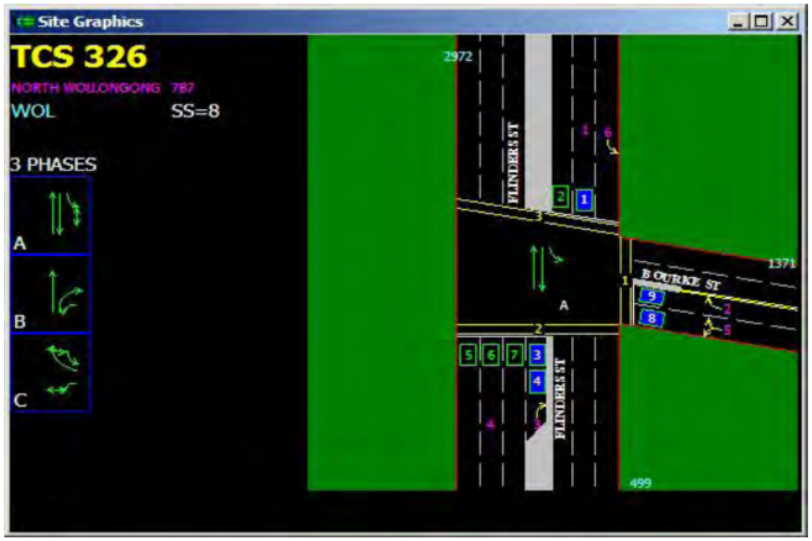
From	to	Phase A %	Phase B %	Phase C %	Phase A	Phase B	Phase C	Cycle time	
15:00	15:15	58%	17%	25%	62	18	27	107	100%
15:15	15:30	55%	19%	25%	69	24	32	126	99%
15:30	15:45	53%	19%	29%	68	24	37	128	101%
15:45	15:00	62%	17%	21%	82	23	28	133	100%
15:00	**16:00**	**57%**	**18%**	**25%**	**70**	**22**	**31**	**124**	100%
16:00	16:15	60%	17%	23%	86	24	33	143	100%
16:15	16:30	63%	14%	23%	85	19	31	135	100%
16:30	16:45	51%	20%	29%	68	27	39	133	100%
16:45	17:00	53%	22%	26%	67	28	33	127	101%
16:00	**17:00**	**57%**	**18%**	**25%**	**76**	**24**	**34**	**135**	100%
17:00	17:15	45%	25%	30%	54	30	36	120	100%
17:15	17:30	53%	21%	26%	73	29	36	138	100%
17:30	17:45	59%	16%	25%	73	20	31	124	100%
17:45	18:00	60%	18%	22%	74	22	27	124	100%
17:00	**18:00**	**54%**	**20%**	**26%**	**69**	**25**	**33**	**127**	100%
18:00	18:15	68%	12%	20%	87	15	26	128	100%
18:15	18:30	72%	13%	16%	86	16	19	120	101%
18:30	18:45	68%	10%	22%	79	12	26	116	100%
18:45	19:00	69%	14%	17%	79	16	19	114	100%
18:00	**19:00**	**69%**	**12%**	**19%**	**83**	**15**	**22**	**120**	100%

Flinders Street and Bourke Street
AM Peak 4/03/2015

From	to	Phase A %	Phase B %	Phase C %	Phase A	Phase B	Phase C	Cycle time	
6:00	6:15	72%	0%	28%	60	0	24	84	100%
6:15	6:30	68%	0%	32%	58	0	27	85	100%
6:30	6:45	68%	1%	31%	61	1	28	90	100%
6:45	7:00	71%	3%	26%	86	4	31	121	100%
6:00	**7:00**	**70%**	**1%**	**29%**	**66**	**1**	**28**	**95**	100%
7:00	7:15	64%	3%	34%	60	3	32	94	101%
7:15	7:30	64%	4%	32%	68	4	34	106	100%
7:30	7:45	56%	10%	34%	76	14	46	135	100%
7:45	8:00	56%	10%	34%	76	14	46	135	100%
7:00	**8:00**	**60%**	**7%**	**34%**	**70**	**9**	**39**	**118**	100%
8:00	8:15	54%	12%	34%	80	18	50	148	100%
8:15	8:30	61%	12%	27%	92	18	41	151	100%
8:30	8:45	58%	10%	32%	86	15	48	149	100%
8:45	9:00	59%	11%	30%	89	17	45	150	100%
8:00	**9:00**	**58%**	**11%**	**31%**	**87**	**17**	**46**	**150**	100%
9:00	9:15	57%	13%	30%	84	19	44	148	100%
9:15	9:30	52%	11%	37%	70	15	50	135	100%
9:30	9:45	54%	13%	33%	63	15	38	116	100%
9:45	10:00	58%	12%	30%	68	14	35	118	100%
9:00	**10:00**	**55%**	**12%**	**33%**	**71**	**16**	**42**	**129**	100%

PM Peak

From	to	Phase A %	Phase B %	Phase C %	Phase A	Phase B	Phase C	Cycle time	
15:00	15:15	50%	16%	34%	60	19	41	120	100%
15:15	15:30	53%	13%	34%	69	17	45	131	100%
15:30	15:45	48%	15%	37%	60	19	46	125	100%
15:45	15:00	47%	15%	38%	63	20	51	134	100%
15:00	**16:00**	**50%**	**15%**	**36%**	**63**	**19**	**46**	**128**	100%
16:00	16:15	55%	13%	32%	79	19	46	143	100%
16:15	16:30	49%	16%	35%	67	22	48	136	100%
16:30	16:45	52%	16%	32%	70	22	43	135	100%
16:45	17:00	50%	16%	34%	63	20	43	126	100%
16:00	**17:00**	**52%**	**15%**	**33%**	**70**	**21**	**45**	**135**	100%
17:00	17:15	44%	17%	39%	52	20	46	119	100%
17:15	17:30	42%	16%	41%	57	22	56	136	99%
17:30	17:45	42%	17%	41%	53	21	51	125	100%
17:45	18:00	46%	15%	39%	57	19	48	124	100%
17:00	**18:00**	**44%**	**16%**	**40%**	**55**	**20**	**50**	**126**	100%
18:00	18:15	42%	17%	41%	54	22	52	128	100%
18:15	18:30	37%	16%	47%	44	19	56	120	100%
18:30	18:45	49%	16%	34%	56	18	39	114	99%
18:45	19:00	43%	15%	42%	50	17	49	116	100%
18:00	**19:00**	**43%**	**16%**	**41%**	**51**	**19**	**49**	**120**	100%



Princes Hwy and Lysaght Street
AM Peak 4/03/2015

From	to	Phase A %	Phase B %	Phase C %	Phase A	Phase B	Phase C	Cycle time	
6:00	6:15	93%	1%	6%	82	1	5	88	100%
6:15	6:30	96%	0%	4%	82	0	3	85	100%
6:30	6:45	94%	0%	6%	97	0	6	103	100%
6:45	7:00	93%	0%	7%	115	0	9	124	100%
6:00	**7:00**	**94%**	**0%**	**6%**	**94**	**0**	**6**	**100**	100%
7:00	7:15	78%	4%	18%	69	4	16	89	100%
7:15	7:30	77%	2%	21%	81	2	22	105	100%
7:30	7:45	77%	0%	23%	97	0	29	126	100%
7:45	8:00	69%	4%	27%	103	6	40	149	100%
7:00	**8:00**	**75%**	**3%**	**22%**	**88**	**3**	**27**	**117**	100%
8:00	8:15	65%	5%	30%	99	8	46	152	100%
8:15	8:30	51%	8%	40%	75	12	59	147	99%
8:30	8:45	48%	14%	37%	72	21	55	149	99%
8:45	9:00	55%	13%	32%	84	20	49	152	100%
8:00	**9:00**	**55%**	**10%**	**35%**	**82**	**15**	**52**	**150**	100%
9:00	9:15	78%	1%	20%	118	2	30	151	99%
9:15	9:30	73%	1%	26%	96	1	34	131	100%
9:30	9:45	79%	0%	21%	93	0	25	118	100%
9:45	10:00	70%	0%	30%	83	0	35	118	100%
9:00	**10:00**	**75%**	**1%**	**24%**	**97**	**1**	**31**	**130**	100%

PM Peak

From	to	Phase A %	Phase B %	Phase C %	Phase A	Phase B	Phase C	Cycle time	
15:00	15:15	67%	2%	31%	80	2	37	119	100%
15:15	15:30	59%	6%	35%	74	8	44	125	100%
15:30	15:45	66%	5%	29%	88	7	39	133	100%
15:45	15:00	71%	2%	26%	96	3	35	135	99%
15:00	**16:00**	**66%**	**4%**	**30%**	**84**	**5**	**39**	**128**	100%
16:00	16:15	67%	4%	30%	95	6	43	142	101%
16:15	16:30	66%	4%	30%	88	5	40	134	100%
16:30	16:45	69%	2%	29%	92	3	39	133	100%
16:45	17:00	74%	1%	25%	95	1	32	128	100%
16:00	**17:00**	**69%**	**3%**	**29%**	**93**	**4**	**38**	**134**	100%
17:00	17:15	73%	3%	24%	88	4	29	120	100%
17:15	17:30	75%	7%	18%	105	10	25	140	100%
17:30	17:45	76%	2%	21%	94	2	26	124	99%
17:45	18:00	81%	1%	18%	101	1	23	125	100%
17:00	**18:00**	**76%**	**3%**	**20%**	**97**	**4**	**26**	**127**	100%
18:00	18:15	81%	1%	18%	103	1	23	127	100%
18:15	18:30	86%	1%	13%	104	1	16	121	100%
18:30	18:45	80%	1%	19%	90	1	21	113	100%
18:45	19:00	82%	0%	18%	94	0	21	115	100%
18:00	**19:00**	**82%**	**1%**	**17%**	**98**	**1**	**20**	**119**	100%

Phase D was not activiated through 8 hours.

Princes Hwy and Memorial Dr
AM Peak 4/03/2015

From	to	Phase A %	Phase B %	Phase C %	Phase D %	Phase E %	Phase A	Phase B	Phase C	Phase D	Phase E	Cycle time	
6:00	6:15	46%	18%	2%	28%	6%	39	15	2	24	5	84	100%
6:15	6:30	45%	20%	2%	31%	2%	38	17	2	26	2	84	100%
6:30	6:45	45%	16%	8%	29%	2%	41	14	7	26	2	90	100%
6:45	7:00	33%	16%	4%	37%	10%	39	19	5	43	12	117	100%
6:00	**7:00**	**42%**	**18%**	**4%**	**31%**	**5%**	**39**	**16**	**4**	**30**	**5**	**94**	100%
7:00	7:15	39%	9%	4%	34%	14%	37	9	4	32	13	95	100%
7:15	7:30	28%	17%	6%	35%	15%	29	18	6	36	15	103	101%
7:30	7:45	34%	16%	10%	30%	10%	41	19	12	36	12	120	100%
7:45	8:00	20%	15%	0%	43%	21%	29	22	0	63	31	147	99%
7:00	**8:00**	**30%**	**14%**	**5%**	**36%**	**15%**	**34**	**17**	**5**	**42**	**18**	**116**	100%
8:00	8:15	20%	19%	0%	39%	22%	30	29	0	59	33	150	100%
8:15	8:30	16%	19%	0%	43%	22%	24	29	0	65	33	150	100%
8:30	8:45	16%	19%	0%	44%	21%	24	29	0	66	32	150	100%
8:45	9:00	17%	19%	0%	44%	20%	25	28	0	66	30	149	100%
8:00	**9:00**	**17%**	**19%**	**0%**	**43%**	**21%**	**26**	**28**	**0**	**64**	**32**	**150**	100%
9:00	9:15	20%	19%	0%	39%	22%	30	29	0	59	33	151	100%
9:15	9:30	31%	13%	6%	34%	16%	42	17	8	46	21	134	100%
9:30	9:45	33%	19%	11%	28%	8%	39	22	13	33	9	118	99%
9:45	10:00	36%	15%	13%	28%	9%	42	18	15	33	11	117	101%
9:00	**10:00**	**30%**	**17%**	**8%**	**32%**	**14%**	**38**	**22**	**9**	**43**	**19**	**130**	100%

PM Peak

From	to	Phase A %	Phase B %	Phase C %	Phase D %	Phase E %	Phase A	Phase B	Phase C	Phase D	Phase E	Cycle time	
15:00	15:15	31%	15%	10%	30%	14%	38	18	12	36	17	121	100%
15:15	15:30	29%	17%	12%	28%	14%	36	21	15	35	17	124	100%
15:30	15:45	26%	17%	11%	32%	14%	35	23	15	43	19	134	100%
15:45	15:00	24%	20%	13%	33%	10%	32	27	17	44	13	133	100%
15:00	**16:00**	**28%**	**17%**	**12%**	**31%**	**13%**	**35**	**22**	**15**	**39**	**17**	**128**	100%
16:00	16:15	32%	21%	12%	24%	11%	46	30	17	35	16	144	100%
16:15	16:30	24%	20%	15%	30%	11%	32	27	20	40	15	133	100%
16:30	16:45	30%	15%	12%	30%	13%	40	20	16	40	17	134	100%
16:45	17:00	26%	19%	15%	32%	8%	32	23	18	39	10	123	100%
16:00	**17:00**	**28%**	**19%**	**14%**	**29%**	**11%**	**38**	**25**	**18**	**39**	**14**	**134**	100%
17:00	17:15	27%	20%	15%	30%	9%	32	24	18	36	11	120	101%
17:15	17:30	26%	22%	14%	27%	11%	36	30	19	37	15	138	100%
17:30	17:45	24%	15%	12%	33%	17%	30	19	15	41	21	125	101%
17:45	18:00	26%	18%	16%	29%	11%	33	23	20	36	14	125	100%
17:00	**18:00**	**26%**	**19%**	**14%**	**30%**	**12%**	**33**	**24**	**18**	**38**	**15**	**127**	101%
18:00	18:15	28%	20%	14%	30%	8%	36	26	18	39	10	129	100%
18:15	18:30	31%	22%	15%	28%	4%	37	26	18	33	5	119	100%
18:30	18:45	38%	15%	10%	28%	9%	43	17	11	32	10	113	100%
18:45	19:00	35%	20%	6%	30%	10%	41	23	7	35	12	116	101%
18:00	**19:00**	**33%**	**19%**	**11%**	**29%**	**8%**	**39**	**23**	**14**	**35**	**9**	**119**	100%

Phase F and G were not activated through 8 hours.

Princes Hwy and McGrath Street
AM Peak 4/03/2015

From	to	Phase A %	Phase B %	Phase C %	Phase A	Phase B	Phase C	Cycle time	
6:00	6:15	95%	1%	4%	28	0	1	29	100%
6:15	6:30	96%	0%	4%	31	0	1	32	100%
6:30	6:45	93%	0%	7%	38	0	3	41	100%
6:45	7:00	95%	0%	5%	50	0	3	53	100%
6:00	**7:00**	**95%**	**0%**	**5%**	**37**	**0**	**2**	**39**	100%
7:00	7:15	85%	2%	13%	36	1	5	42	100%
7:15	7:30	87%	1%	12%	58	1	8	67	100%
7:30	7:45	89%	0%	11%	70	0	9	79	100%
7:45	8:00	86%	0%	14%	75	0	12	87	100%
7:00	**8:00**	**87%**	**1%**	**13%**	**60**	**0**	**9**	**69**	100%
8:00	8:15	76%	0%	24%	72	0	23	95	100%
8:15	8:30	70%	2%	27%	61	2	23	87	99%
8:30	8:45	72%	1%	27%	64	1	24	89	100%
8:45	9:00	72%	1%	26%	74	1	27	103	99%
8:00	**9:00**	**73%**	**1%**	**26%**	**68**	**1**	**24**	**94**	100%
9:00	9:15	70%	3%	28%	71	3	28	101	101%
9:15	9:30	83%	3%	14%	85	3	14	103	100%
9:30	9:45	83%	1%	16%	78	1	15	94	100%
9:45	10:00	83%	2%	15%	77	2	14	93	100%
9:00	**10:00**	**80%**	**2%**	**18%**	**78**	**2**	**18**	**98**	100%

PM Peak

From	to	Phase A %	Phase B %	Phase C %	Phase A	Phase B	Phase C	Cycle time	
15:00	15:15	73%	3%	24%	77	3	25	105	100%
15:15	15:30	74%	3%	23%	78	3	24	106	100%
15:30	15:45	82%	5%	13%	88	5	14	107	100%
15:45	15:00	82%	3%	15%	82	3	15	100	100%
15:00	**16:00**	**78%**	**4%**	**19%**	**81**	**4**	**20**	**105**	100%
16:00	16:15	81%	1%	18%	83	1	18	102	100%
16:15	16:30	78%	4%	18%	81	4	19	104	100%
16:30	16:45	82%	1%	17%	84	1	18	103	100%
16:45	17:00	80%	2%	18%	81	2	18	101	100%
16:00	**17:00**	**80%**	**2%**	**18%**	**82**	**2**	**18**	**103**	100%
17:00	17:15	83%	2%	15%	90	2	16	108	100%
17:15	17:30	85%	2%	13%	90	2	14	106	100%
17:30	17:45	80%	3%	17%	83	3	18	104	100%
17:45	18:00	82%	1%	17%	83	1	17	101	100%
17:00	**18:00**	**83%**	**2%**	**16%**	**86**	**2**	**16**	**105**	100%
18:00	18:15	83%	1%	16%	85	1	16	103	100%
18:15	18:30	82%	3%	15%	79	3	14	96	100%
18:30	18:45	80%	4%	16%	75	4	15	94	100%
18:45	19:00	90%	2%	8%	86	2	8	95	100%
18:00	**19:00**	**84%**	**3%**	**14%**	**81**	**2**	**13**	**97**	100%

Phase D was not activiated through 8 hours.

Keiraville – Gwynneville Access and Movement Study

APPENDIX C

CALIBRATION - GEH TABLES

In-session AM peak: Light Vehicles

Intersection	Direction	Movement	Aimsun TID	Survey Count	Modelled Flow	Difference	GEH	Relative Difference (%)
Gipps Road and Berkeley Road	East	Through	13452423	23	9	-14	3.50	-60.87
	East	Left	13452422	18	8	-10	2.77	-55.56
	East	Right	13452424	285	282	-3	0.18	-1.05
	North	Through	13452421	21	0	-21	6.48	-100.00
	North	Right	13452429	36	67	31	4.32	86.11
	North	Left	13452430	25	23	-2	0.41	-8.00
	South	Right	13452426	49	72	23	2.96	46.94
	South	Through	13452428	9	12	3	0.93	33.33
	South	Left	13452427	29	48	19	3.06	65.52
	West	Left	13452419	19	13	-6	1.50	-31.58
	West	Right	13452425	37	43	6	0.95	16.22
	West	Through	13452420	296	250	-46	2.78	-15.54
Gipps Road and Eastern Street	East	Through	173239	139	181	42	3.32	30.22
	East	Right	173237	234	241	7	0.45	2.99
	North	Left	173241	96	90	-6	0.62	-6.25
	North	Right	173236	10	4	-6	2.27	-60.00
	West	Through	173238	37	26	-11	1.96	-29.73
	West	Left	173240	260	216	-44	2.85	-16.92
Gipps Road and Foley Street	North	Through	13452242	126	80	-46	4.53	-36.51
	North	Right	13452241	695	722	27	1.01	3.88
	South	Through	13452243	284	292	8	0.47	2.82
	South	Left	13452244	320	309	-11	0.62	-3.44
	West	Left	13452239	75	56	-19	2.35	-25.33
	West	Right	13452240	341	305	-36	2.00	-10.56
Gipps Road and Grey Street	East	Through	13451443	21	0	-21	6.48	-100.00
	East	Left	13451444	133	122	-11	0.97	-8.27
	North	Right	13452492	42	25	-17	2.94	-40.48
	North	Left	13452493	24	1	-23	6.51	-95.83
	North	Through	13451445	5	4	-1	0.47	-20.00
	West	Through	13451441	28	0	-28	7.48	-100.00
	West	Right	13451442	197	192	-5	0.36	-2.54
Gipps Road and Vickery Street	East	Through	13452654	85	84	-1	0.11	-1.18
	East	Left	13452653	273	285	12	0.72	4.40
	South	Left	13452649	28	15	-13	2.80	-46.43
	South	Right	13452650	112	105	-7	0.67	-6.25
	West	Through	13452644	288	264	-24	1.44	-8.33
Memorial Drive and Porter Street	East	Through	13449030	330	337	7	0.38	2.12
	North	Right	13449029	144	266	122	8.52	84.72
	North	Left	13449031	497	448	-49	2.25	-9.86
	West	Through	13449025	450	402	-48	2.33	-10.67
Memorial Drive North Bound and M1 Princes Hwy	North	Left	13448802	55	67	12	1.54	21.82
	North	Through	13449737	1234	1277	43	1.21	3.48
	South	Right	13449738	128	114	-14	1.27	-10.94
	South	Through	13449735	513	635	122	5.09	23.78
	West	Left	13449736	879	905	26	0.87	2.96
	West	Right	13449734	618	608	-10	0.40	-1.62
Memorial Drive South Bound and M1 Princes Hwy	East	Left	13448816	430	349	-81	4.10	-18.84
	East	Right	168314	98	128	30	2.82	30.61
	North	Through	168311	354	412	58	2.96	16.38
	North	Right	168316	1543	1469	-74	1.91	-4.80
	South	Left	13448825	568	457	-111	4.90	-19.54
	South	Through	168315	544	623	79	3.27	14.52
Mount Keira Road and Robsons Road	East	Through	13451237	391	386	-5	0.25	-1.28
	East	Right	13451238	127	154	27	2.28	21.26
	North	Right	13451235	283	281	-2	0.12	-0.71
	North	Left	13451236	119	92	-27	2.63	-22.69
	West	Through	13451233	415	394	-21	1.04	-5.06
	West	Left	13451234	414	420	6	0.29	1.45
Mt Ousley Road and Gaynor Avenue	East	Left	13449230	55	54	-1	0.14	-1.82
	East	Through + Right	13449231	370	457	87	4.28	23.51
	North	Through + Right	13449226	68	87	19	2.16	27.94
	North	Left	13449227	267	239	-28	1.76	-10.49
	South	Left	13449232	26	22	-4	0.82	-15.38
	South	Through + Right	13449233	51	46	-5	0.72	-9.80
	West	Through + Right	13448727	2	14	12	4.24	600.00
	West	Left	13448709	426	415	-11	0.54	-2.58
Murphys Ave and Braeside Ave	East	Left	13451989	30	16	-14	2.92	-46.67
	East	Through	13451990	222	244	22	1.44	9.91
	South	Left	13451991	26	9	-17	4.06	-65.38
	South	Right	13451992	26	18	-8	1.71	-30.77
	West	Right	13451987	12	2	-10	3.78	-83.33
	West	Through	13451988	138	145	7	0.59	5.07
Murphys Ave and Eastern Street	East	Left	168003	107	86	-21	2.14	-19.63
	East	Through	167998	273	210	-63	4.05	-23.08
	South	Right	167999	53	75	22	2.75	41.51
	South	Left	168001	114	148	34	2.97	29.82
	West	Right	168002	39	55	16	2.33	41.03
	West	Through	168000	132	130	-2	0.17	-1.52
	East	Left	13452001	75	62	-13	1.57	-17.33
	East	Through	13452002	241	269	28	1.75	11.62

Murphys Ave and John Street	South	Right	13452003	26	28	2	0.38	7.69
	South	Left	13452004	23	82	59	8.14	256.52
	West	Right	13452000	12	20	8	2.00	66.67
	West	Through	13451999	137	128	-9	0.78	-6.57
Murphys Ave and Robsons Road	East	Left	13452577	72	67	-5	0.60	-6.94
	East	Through + Right	13452574	92	132	40	3.78	43.48
	North	Through + Right	13452570	53	55	2	0.27	3.77
	North	Left	13452571	79	57	-22	2.67	-27.85
	South	Through + Right	13452579	25	20	-5	1.05	-20.00
	South	Left	13452578	336	332	-4	0.22	-1.19
	West	Through + Right	13452585	6	3	-3	1.41	-50.00
	West	Left	13452584	73	66	-7	0.84	-9.59
Northfields Ave and Princes Ramps	East	Through + Right	13452617	11	21	10	2.50	90.91
	East	Left	13452616	889	904	15	0.50	1.69
	North	Left	13452610	16	28	12	2.56	75.00
	North	Through + Right	13452613	132	191	59	4.64	44.70
	South	Left	13452621	323	289	-34	1.94	-10.53
	South	Through + Right	13452620	282	309	27	1.57	9.57
	West	Through + Right	13452624	25	17	-8	1.75	-32.00
	West	Left	13452625	175	205	30	2.18	17.14
Northfields Ave and Uni Entrance	East	Through + Right	13449191	754	752	-2	0.07	-0.27
	North	Left	13449199	102	142	40	3.62	39.22
	North	Right	13449200	35	47	12	1.87	34.29
	West	Left	13449196	90	95	5	0.52	5.56
	West	Through	13449197	68	77	9	1.06	13.24
Princes Hwy and Mt Ousley Road	East	Through + Right	13448774	85	104	19	1.95	22.35
	East	Left	13448773	103	64	-39	4.27	-37.86
	North	Through + Right	13449243	48	40	-8	1.21	-16.67
	North	Left	13449240	900	884	-16	0.54	-1.78
	South	Through + Right	168304	269	409	140	7.60	52.04
	South	Left	168309	811	754	-57	2.04	-7.03
	West	Left	13449238	119	107	-12	1.13	-10.08
	West	Through + Right	13449239	493	645	152	6.37	30.83
Princes Hwy-Princes Hwy Exit	North	Through	168171	1979	1946	-33	0.74	-1.67
	South	Through	173227	2402	2377	-25	0.51	-1.04
Princes Motorway and Mount Ousley Road	East	Through	173116	1194	1247	53	1.52	4.44
	North	Left	13448693	390	391	1	0.05	0.26
	North	Right	13448695	165	135	-30	2.45	-18.18
	West	Through	173118	1610	1649	39	0.97	2.42
Reserve Street and Gilmores Street	North	Through	13451327	34	32	-2	0.35	-5.88
	North	Right	13451328	57	63	6	0.77	10.53
	South	Left	13451324	159	174	15	1.16	9.43
	South	Through	13451325	111	113	2	0.19	1.80
	West	Right	13451326	41	38	-3	0.48	-7.32
	West	Left	13451329	137	138	1	0.09	0.73
Robsons Road and Gipps Road	East	Left	13452558	74	69	-5	0.59	-6.76
	East	Through + Right	13452553	61	54	-7	0.92	-11.48
	North	Through + Right	13452552	134	114	-20	1.80	-14.93
	North	Left	13452557	47	48	1	0.15	2.13
	South	Through + Right	13452559	4	1	-3	1.90	-75.00
	South	Left	13452554	421	387	-34	1.69	-8.08
	West	Through + Right	13452555	13	14	1	0.27	7.69
	West	Left	13452556	53	70	17	2.17	32.08
Robsons Road and Northfields Ave	East	Left	13452598	93	64	-29	3.27	-31.18
	East	Right	13452597	84	109	25	2.54	29.76
	North	Left	13452605	45	32	-13	2.10	-28.89
	North	Through	13452607	58	55	-3	0.40	-5.17
	South	Through + Right	13452600	268	329	61	3.53	22.76
Robsons Road and Princes Motorway On Ramp	North	Through	13451189	99	127	28	2.63	28.28
	North	Left	13451190	402	371	-31	1.58	-7.71
	South	Through	13451186	316	311	-5	0.28	-1.58
	South	Right	13451185	490	469	-21	0.96	-4.29
Robsons Road and William Street	East	Left	13451281	61	61	0	0.00	0.00
	East	Through	13451282	4	2	-2	1.15	-50.00
	East	Right	13451289	3	0	-3	2.45	-100.00
	North	Right	13451286	6	0	-6	3.46	-100.00
	North	Left	13451287	41	36	-5	0.81	-12.20
	North	Through	13451285	272	276	4	0.24	1.47
	South	Through	13451277	28	25	-3	0.58	-10.71
	South	Right	13451288	31	36	5	0.86	16.13
	South	Left	13451278	362	325	-37	2.00	-10.22
	West	Through	13451279	43	41	-2	0.31	-4.65
	West	Left	13451280	55	57	2	0.27	3.64
	West	Right	13451290	7	13	6	1.90	85.71
University Ave and Foleys Lane	North	Right	13449252	45	45	0	0.00	0.00
	North	Left	13449015	59	64	5	0.64	8.47
	South	Right	13449008	470	554	84	3.71	17.87
	South	Left	13449009	125	103	-22	2.06	-17.60
	West	Right	13449253	342	365	23	1.22	6.73
	West	Through	13449012	127	243	116	8.53	91.34
University Ave and Graham Ave	East	Right	13452674	307	288	-19	1.10	-6.19
	East	Left	13452673	224	326	102	6.15	45.54
	North	Through	13452665	467	610	143	6.16	30.62
	North	Left	13452666	231	385	154	8.77	66.67

University Ave and Irvine St	East	Right	13452636	199	226	27	1.85	13.57
	East	Left	13452637	569	539	-30	1.27	-5.27
	North	Through	13452634	422	468	46	2.18	10.90
	North	Left	13452632	232	234	2	0.13	0.86
	South	Through + Right	13452638	251	434	183	9.89	72.91
University Ave and Porter Street	East	Right	168188	83	77	-6	0.67	-7.23
	East	Through	168183	26	24	-2	0.40	-7.69
	North	Right	168186	84	94	10	1.06	11.90
	North	Left	168184	304	317	13	0.74	4.28
	West	Through	168187	513	577	64	2.74	12.48
	West	Left	168185	81	88	7	0.76	8.64
University Ave and Princes Ramps	East	Left + Through	13448974	335	351	16	0.86	4.78
	North	Left	13448972	225	302	77	4.74	34.22
	North	Through + Right	13448973	518	410	-108	5.01	-20.85
	West	Through + Right	13448977	584	819	235	8.87	40.24
Mean				239.82	247.43	7.60		3.17

In-session AM peak: Heavy Vehicles

Intersection	Direction	Movement	Aimsun TID	Survey Count	Modelled Flow	Difference	GEH	Relative Difference (%)
Gipps Road and Berkeley Road	East	Through	13452424	2	0	-2	2.00	-100.00
	East	Left	13452423	0	0	0	0.00	0.00
	East	Right	13452422	0	0	0	0.00	0.00
	North	Through	13452430	1	0	-1	1.41	-100.00
	North	Right	13452429	0	0	0	0.00	0.00
	North	Left	13452421	0	0	0	0.00	0.00
	South	Right	13452428	0	0	0	0.00	0.00
	South	Through	13452427	0	0	0	0.00	0.00
	South	Left	13452426	0	0	0	0.00	0.00
	West	Left	13452419	1	0	-1	1.41	-100.00
	West	Right	13452425	0	0	0	0.00	0.00
	West	Through	13452420	0	1	1	1.41	inf
Gipps Road and Eastern Street	East	Through	173237	2	0	-2	2.00	-100.00
	East	Right	173239	0	0	0	0.00	0.00
	North	Left	173241	0	1	1	1.41	inf
	North	Right	173236	0	0	0	0.00	0.00
	West	Through	173240	1	0	-1	1.41	-100.00
	West	Left	173238	0	0	0	0.00	0.00
Gipps Road and Foley Street	North	Through	13452241	4	1	-3	1.90	-75.00
	North	Right	13452242	0	0	0	0.00	0.00
	South	Through	13452244	1	0	-1	1.41	-100.00
	South	Left	13452243	1	0	-1	1.41	-100.00
	West	Left	13452239	0	0	0	0.00	0.00
	West	Right	13452240	0	1	1	1.41	inf
Gipps Road and Grey Street	East	Through	13451444	3	0	-3	2.45	-100.00
	East	Left	13451443	0	0	0	0.00	0.00
	North	Right	13452493	0	0	0	0.00	0.00
	North	Left	13452492	0	0	0	0.00	0.00
	North	Through	13451445	0	0	0	0.00	0.00
	West	Through	13451442	0	0	0	0.00	0.00
	West	Right	13451441	0	0	0	0.00	0.00
Gipps Road and Vickery Street	East	Through	13452653	4	0	-4	2.83	-100.00
	East	Left	13452654	0	0	0	0.00	0.00
	South	Left	13452649	1	0	-1	1.41	-100.00
	South	Right	13452650	0	0	0	0.00	0.00
	West	Through	13452644	1	1	0	0.00	0.00
Memorial Drive and Porter Street	East	Through	13449030	3	1	-2	1.41	-66.67
	North	Right	13449031	4	0	-4	2.83	-100.00
	North	Left	13449029	0	11	11	4.69	inf
	West	Through	13449025	2	0	-2	2.00	-100.00
Memorial Drive North Bound and M1 Princes Hwy	North	Left	13448802	1	0	-1	1.41	-100.00
	North	Through	13449737	26	38	12	2.12	46.15
	South	Right	13449738	6	8	2	0.76	33.33
	South	Through	13449735	11	16	5	1.36	45.45
	West	Left	13449736	21	27	6	1.22	28.57
	West	Right	13449734	18	32	14	2.80	77.78
Memorial Drive South Bound and M1 Princes Hwy	East	Left	13448816	14	9	-5	1.47	-35.71
	East	Right	168314	0	2	2	2.00	inf
	North	Through	168316	35	39	4	0.66	11.43
	North	Right	168311	10	31	21	4.64	210.00
	South	Left	13448825	28	27	-1	0.19	-3.57
	South	Through	168315	17	22	5	1.13	29.41
Mount Keira Road and Robsons Road	East	Through	13451238	3	0	-3	2.45	-100.00
	East	Right	13451237	6	4	-2	0.89	-33.33
	North	Right	13451236	2	0	-2	2.00	-100.00
	North	Left	13451235	5	3	-2	1.00	-40.00
	West	Through	13451234	2	0	-2	2.00	-100.00
	West	Left	13451233	4	9	5	1.96	125.00
Mt Ousley Road and Gaynor Avenue	East	Left	13449230	0	0	0	0.00	0.00
	East	Through + Right	13449231	14	45	31	5.71	221.43
	North	Through + Right	13449227	0	0	0	0.00	0.00
	North	Left	13449226	3	25	22	5.88	733.33
	South	Left	13449232	0	0	0	0.00	0.00
	South	Through + Right	13449233	0	11	11	4.69	inf
	West	Through + Right	13448709	18	35	17	3.30	94.44
	West	Left	13448727	0	6	6	3.46	inf
Murphys Ave and Braeside Ave	East	Left	13451989	1	0	-1	1.41	-100.00
	East	Through	13451990	0	3	3	2.45	inf
	South	Left	13451991	1	0	-1	1.41	-100.00
	South	Right	13451992	0	0	0	0.00	0.00
	West	Right	13451987	1	0	-1	1.41	-100.00
	West	Through	13451988	1	1	0	0.00	0.00
Murphys Ave and Eastern Street	East	Left	168003	0	0	0	0.00	0.00
	East	Through	167998	2	3	1	0.63	50.00
	South	Right	168001	0	0	0	0.00	0.00
	South	Left	167999	0	0	0	0.00	0.00
	West	Right	168002	0	0	0	0.00	0.00
	West	Through	168000	0	1	1	1.41	inf
	East	Left	13452001	0	0	0	0.00	0.00

Murphys Ave and John Street	East	Through	13452002	2	3	1	0.63	50.00
	South	Right	13452004	0	0	0	0.00	0.00
	South	Left	13452003	0	0	0	0.00	0.00
	West	Right	13452000	1	0	-1	1.41	-100.00
	West	Through	13451999	0	1	1	1.41	inf
Murphys Ave and Robsons Road	East	Left	13452577	4	3	-1	0.53	-25.00
	East	Through + Right	13452574	0	0	0	0.00	0.00
	North	Through + Right	13452571	1	0	-1	1.41	-100.00
	North	Left	13452570	0	1	1	1.41	inf
	South	Through + Right	13452578	1	0	-1	1.41	-100.00
	South	Left	13452579	0	0	0	0.00	0.00
	West	Through + Right	13452584	1	0	-1	1.41	-100.00
	West	Left	13452585	0	0	0	0.00	0.00
Northfields Ave and Princes Ramps	East	Through + Right	13452616	4	8	4	1.63	100.00
	East	Left	13452617	0	7	7	3.74	inf
	North	Left	13452610	0	0	0	0.00	0.00
	North	Through + Right	13452613	0	3	3	2.45	inf
	South	Left	13452621	2	0	-2	2.00	-100.00
	South	Through + Right	13452620	1	3	2	1.41	200.00
	West	Through + Right	13452625	10	2	-8	3.27	-80.00
	West	Left	13452624	0	0	0	0.00	0.00
Northfields Ave and Uni Entrance	East	Through + Right	13449191	6	3	-3	1.41	-50.00
	North	Left	13449199	2	1	-1	0.82	-50.00
	North	Right	13449200	0	0	0	0.00	0.00
	West	Left	13449196	0	0	0	0.00	0.00
	West	Through	13449197	4	1	-3	1.90	-75.00
Princes Hwy and Mt Ousley Road	East	Through + Right	13448773	103	42	-61	7.16	-59.22
	East	Left	13448774	0	12	12	4.90	inf
	North	Through + Right	13449240	27	19	-8	1.67	-29.63
	North	Left	13449243	0	0	0	0.00	0.00
	South	Through + Right	168309	25	24	-1	0.20	-4.00
	South	Left	168304	4	17	13	4.01	325.00
	West	Left	13449238	119	72	-47	4.81	-39.50
	West	Through + Right	13449239	14	11	-3	0.85	-21.43
Princes Hwy-Princes Hwy Exit	North	Through	168171	101	98	-3	0.30	-2.97
	South	Through	173227	87	91	4	0.42	4.60
Princes Motorway and Mount Ousley Road	East	Through	173116	225	235	10	0.66	4.44
	North	Left	13448693	7	13	6	1.90	85.71
	North	Right	13448695	4	23	19	5.17	475.00
	West	Through	173118	179	197	18	1.31	10.06
Reserve Street and Gilmores Street	North	Through	13451328	1	0	-1	1.41	-100.00
	North	Right	13451327	0	0	0	0.00	0.00
	South	Left	13451324	1	0	-1	1.41	-100.00
	South	Through	13451325	1	0	-1	1.41	-100.00
	West	Right	13451329	0	0	0	0.00	0.00
	West	Left	13451326	0	0	0	0.00	0.00
Robsons Road and Gipps Road	East	Left	13452558	2	0	-2	2.00	-100.00
	East	Through + Right	13452553	1	0	-1	1.41	-100.00
	North	Through + Right	13452552	3	3	0	0.00	0.00
	North	Left	13452557	0	0	0	0.00	0.00
	South	Through + Right	13452554	2	0	-2	2.00	-100.00
	South	Left	13452559	0	0	0	0.00	0.00
	West	Through + Right	13452556	0	0	0	0.00	0.00
	West	Left	13452555	0	0	0	0.00	0.00
Robsons Road and Northfields Ave	East	Left	13452598	1	0	-1	1.41	-100.00
	East	Right	13452597	0	1	1	1.41	inf
	North	Left	13452605	1	0	-1	1.41	-100.00
	North	Through	13452607	0	1	1	1.41	inf
	South	Through + Right	13452600	1	0	-1	1.41	-100.00
Robsons Road and Princes Motorway On Ramp	North	Through	13451190	7	3	-4	1.79	-57.14
	North	Left	13451189	1	5	4	2.31	400.00
	South	Through	13451185	2	0	-2	2.00	-100.00
	South	Right	13451186	8	13	5	1.54	62.50
Robsons Road and William Street	East	Left	13451281	1	0	-1	1.41	-100.00
	East	Through	13451289	0	0	0	0.00	0.00
	East	Right	13451282	0	0	0	0.00	0.00
	North	Right	13451287	0	0	0	0.00	0.00
	North	Left	13451286	0	0	0	0.00	0.00
	North	Through	13451285	6	7	1	0.39	16.67
	South	Through	13451278	2	0	-2	2.00	-100.00
	South	Right	13451288	0	0	0	0.00	0.00
	South	Left	13451277	0	0	0	0.00	0.00
	West	Through	13451290	0	0	0	0.00	0.00
	West	Left	13451279	0	0	0	0.00	0.00
	West	Right	13451280	0	1	1	1.41	inf
University Ave and Foleys Lane	North	Right	13449015	1	0	-1	1.41	-100.00
	North	Left	13449252	0	0	0	0.00	0.00
	South	Right	13449009	0	0	0	0.00	0.00
	South	Left	13449008	2	11	9	3.53	450.00
	West	Right	13449253	4	4	0	0.00	0.00
	West	Through	13449012	0	0	0	0.00	0.00
University Ave and Graham Ave	East	Right	13452674	1	0	-1	1.41	-100.00
	East	Left	13452673	1	11	10	4.08	1000.00

[illegible]	North	Through	13452666	5	3	-2	1.00	-40.00
	North	Left	13452665	4	4	0	0.00	0.00
University Ave and Irvine St	East	Right	13452637	3	5	2	1.00	66.67
	East	Left	13452636	1	4	3	1.90	300.00
	North	Through	13452632	2	0	-2	2.00	-100.00
	North	Left	13452634	7	5	-2	0.82	-28.57
	South	Through + Right	13452638	1	1	0	0.00	0.00
University Ave and Porter Street	East	Right	168188	0	0	0	0.00	0.00
	East	Through	168183	0	0	0	0.00	0.00
	North	Right	168184	3	1	-2	1.41	-66.67
	North	Left	168186	1	3	2	1.41	200.00
	West	Through	168185	0	0	0	0.00	0.00
	West	Left	168187	2	11	9	3.53	450.00
University Ave and Princes Ramps	East	Left + Through	13448974	1	0	-1	1.41	-100.00
	North	Left	13448972	5	1	-4	2.31	-80.00
	North	Through + Right	13448973	4	9	5	1.96	125.00
	West	Through + Right	13448977	7	6	-1	0.39	-14.29
Mean				7.32	7.92	0.59		8.09

In-session PM peak: Light Vehicles

Intersection	Direction	Movement	Aimsun TID	Survey Count	Modelled Flow	Difference	GEH	Relative Difference (%)
Gipps Road and Berkeley Road	East	Left	13452423	17	0	-17	5.83	-100.00
	East	Right	13452422	4	1	-3	1.90	-75.00
	East	Through	13452424	317	341	24	1.32	7.57
	North	Left	13452421	15	0	-15	5.48	-100.00
	North	Right	13452429	40	67	27	3.69	67.50
	North	Through	13452430	11	14	3	0.85	27.27
	South	Left	13452426	25	35	10	1.83	40.00
	South	Right	13452428	15	15	0	0.00	0.00
	South	Through	13452427	13	15	2	0.53	15.38
	West	Left	13452419	12	28	16	3.58	133.33
	West	Right	13452425	28	37	9	1.58	32.14
	West	Through	13452420	269	239	-30	1.88	-11.15
Gipps Road and Eastern Street	East	Right	173239	92	145	53	4.87	57.61
	East	Through	173237	295	302	7	0.41	2.37
	North	Left	173241	112	114	2	0.19	1.79
	North	Right	173236	9	6	-3	1.10	-33.33
	West	Left	173238	27	20	-7	1.44	-25.93
	West	Through	173240	203	190	-13	0.93	-6.40
Gipps Road and Foley Street	North	Right	13452242	115	112	-3	0.28	-2.61
	North	Through	13452241	628	607	-21	0.85	-3.34
	South	Left	13452243	324	319	-5	0.28	-1.54
	South	Through	13452244	413	315	-98	5.14	-23.73
	West	Left	13452239	87	65	-22	2.52	-25.29
	West	Right	13452240	316	258	-58	3.42	-18.35
Gipps Road and Grey Street	East	Left	13451443	18	3	-15	4.63	-83.33
	East	Through	13451444	183	162	-21	1.60	-11.48
	North	Left	13452492	20	12	-8	2.00	-40.00
	North	Right	13452493	14	1	-13	4.75	-92.86
	North	Through	13451445	5	1	-4	2.31	-80.00
	West	Right	13451441	15	11	-4	1.11	-26.67
	West	Through	13451442	147	150	3	0.25	2.04
Gipps Road and Vickery Street	East	Left	13452654	76	93	17	1.85	22.37
	East	Through	13452653	323	340	17	0.93	5.26
	South	Left	13452649	9	3	-6	2.45	-66.67
	South	Right	13452650	56	75	19	2.35	33.93
	West	Through	13452644	299	250	-49	2.96	-16.39
Memorial Drive and Porter Street	East	Through	13449030	394	374	-20	1.02	-5.08
	North	Left	13449029	62	132	70	7.11	112.90
	North	Right	13449031	355	315	-40	2.19	-11.27
	West	Through	13449025	505	464	-41	1.86	-8.12
Memorial Drive North Bound and M1 Princes Hwy	North	Left	13448802	72	136	64	6.28	88.89
	North	Through	13449737	1082	978	-104	3.24	-9.61
	South	Right	13449738	374	299	-75	4.09	-20.05
	South	Through	13449735	762	952	190	6.49	24.93
	West	Left	13449736	867	880	13	0.44	1.50
	West	Right	13449734	350	349	-1	0.05	-0.29
Memorial Drive South Bound and M1 Princes Hwy	East	Left	13448816	207	203	-4	0.28	-1.93
	East	Right	168314	51	55	4	0.55	7.84
	North	Right	168311	422	409	-13	0.64	-3.08
	North	Through	168316	1007	922	-85	2.74	-8.44
	South	Left	13448825	845	716	-129	4.62	-15.27
	South	Through	168315	1075	1227	152	4.48	14.14
Mount Keira Road and Robsons Road	East	Right	13451237	361	339	-22	1.18	-6.09
	East	Through	13451238	268	283	15	0.90	5.60
	North	Left	13451235	302	298	-4	0.23	-1.32
	North	Right	13451236	212	199	-13	0.91	-6.13
	West	Left	13451233	181	196	15	1.09	8.29
	West	Through	13451234	187	196	9	0.65	4.81
Mt Ousley Road and Gaynor Avenue	East	Left	13449230	35	37	2	0.33	5.71
	East	Through + Right	13449231	539	567	28	1.19	5.19
	North	Left	13449226	37	43	6	0.95	16.22
	North	Through + Right	13449227	138	140	2	0.17	1.45
	South	Left	13449232	19	47	28	4.87	147.37
	South	Through + Right	13449233	31	34	3	0.53	9.68
	West	Left	13448727	9	26	17	4.06	188.89
	West	Through + Right	13448709	323	263	-60	3.51	-18.58
Murphys Ave and Braeside Ave	East	Left	13451989	17	19	2	0.47	11.76
	East	Through	13451990	147	120	-27	2.34	-18.37
	South	Left	13451991	38	5	-33	7.12	-86.84
	South	Right	13451992	19	1	-18	5.69	-94.74
	West	Right	13451987	23	0	-23	6.78	-100.00
	West	Through	13451988	147	173	26	2.06	17.69
Murphys Ave and Eastern Street	East	Left	168003	69	62	-7	0.86	-10.14
	East	Through	167998	158	123	-35	2.95	-22.15
	South	Left	167999	34	25	-9	1.66	-26.47
	South	Right	168001	113	90	-23	2.28	-20.35
	West	Right	168002	38	47	9	1.38	23.68
	West	Through	168000	160	174	14	1.08	8.75
	East	Left	13452001	23	20	-3	0.65	-13.04

Murphys Ave and John Street	East	Through	13452002	151	132	-19	1.60	-12.58
	South	Left	13452003	9	2	-7	2.98	-77.78
	South	Right	13452004	28	22	-6	1.20	-21.43
	West	Right	13452000	12	15	3	0.82	25.00
	West	Through	13451999	161	190	29	2.19	18.01
Murphys Ave and Robsons Road	East	Left	13452577	82	72	-10	1.14	-12.20
	East	Through + Right	13452574	65	49	-16	2.12	-24.62
	North	Left	13452570	62	60	-2	0.26	-3.23
	North	Through + Right	13452571	178	174	-4	0.30	-2.25
	South	Left	13452579	28	26	-2	0.38	-7.14
	South	Through + Right	13452578	133	122	-11	0.97	-8.27
	West	Left	13452585	9	9	0	0.00	0.00
	West	Through + Right	13452584	56	79	23	2.80	41.07
Northfields Ave and Princes Ramps	East	Left	13452617	11	20	9	2.29	81.82
	East	Through + Right	13452616	223	194	-29	2.01	-13.00
	North	Left	13452610	44	38	-6	0.94	-13.64
	North	Through + Right	13452613	390	358	-32	1.65	-8.21
	South	Left	13452621	122	103	-19	1.79	-15.57
	South	Through + Right	13452620	278	322	44	2.54	15.83
	West	Left	13452624	18	0	-18	6.00	-100.00
	West	Through + Right	13452625	611	637	26	1.04	4.26
Northfields Ave and Uni Entrance	East	Through + Right	13449191	239	208	-31	2.07	-12.97
	North	Left	13449199	455	500	45	2.06	9.89
	North	Right	13449200	80	72	-8	0.92	-10.00
	West	Left	13449196	42	35	-7	1.13	-16.67
	West	Through	13449197	130	140	10	0.86	7.69
Princes Hwy and Mt Ousley Road	East	Left	13448774	72	82	10	1.14	13.89
	East	Through + Right	13448773	117	129	12	1.08	10.26
	North	Left	13449243	50	57	7	0.96	14.00
	North	Through + Right	13449240	793	825	32	1.13	4.04
	South	Left	168304	336	364	28	1.50	8.33
	South	Through + Right	168309	1251	1254	3	0.08	0.24
	West	Left	13449238	109	107	-2	0.19	-1.83
	West	Through + Right	13449239	309	345	36	1.99	11.65
Princes Hwy-Princes Hwy Exit	North	Through	168171	1970	1792	-178	4.10	-9.04
	South	Through	173227	2001	1994	-7	0.16	-0.35
Princes Motorway and Mount Ousley Road	East	Through	173116	1645	1639	-6	0.15	-0.36
	North	Left	13448693	425	386	-39	1.94	-9.18
	North	Right	13448695	153	92	-61	5.51	-39.87
	West	Through	173118	1857	1851	-6	0.14	-0.32
Reserve Street and Gilmores Street	North	Right	13451327	41	52	11	1.61	26.83
	North	Through	13451328	53	50	-3	0.42	-5.66
	South	Left	13451324	165	157	-8	0.63	-4.85
	South	Through	13451325	75	66	-9	1.07	-12.00
	West	Left	13451326	15	13	-2	0.53	-13.33
	West	Right	13451329	73	74	1	0.12	1.37
Robsons Road and Gipps Road	East	Left	13452558	107	92	-15	1.50	-14.02
	East	Through + Right	13452553	86	70	-16	1.81	-18.60
	North	Through + Right	13452552	237	233	-4	0.26	-1.69
	North	Left	13452557	58	54	-4	0.53	-6.90
	South	Left	13452559	24	0	-24	6.93	-100.00
	South	Through + Right	13452554	170	165	-5	0.39	-2.94
	West	Left	13452555	3	3	0	0.00	0.00
	West	Through + Right	13452556	30	29	-1	0.18	-3.33
Robsons Road and Northfields Ave	East	Left	13452598	105	95	-10	1.00	-9.52
	East	Right	13452597	36	0	-36	8.49	-100.00
	North	Left	13452605	65	78	13	1.54	20.00
	North	Through	13452607	127	145	18	1.54	14.17
	South	Through + Right	13452600	119	107	-12	1.13	-10.08
Robsons Road and Princes Motorway On Ramp	North	Left	13451189	58	63	5	0.64	8.62
	North	Through	13451190	514	501	-13	0.58	-2.53
	South	Right	13451186	242	231	-11	0.72	-4.55
	South	Through	13451185	300	308	8	0.46	2.67
Robsons Road and William Street	East	Left	13451281	64	59	-5	0.64	-7.81
	East	Right	13451282	0	6	6	3.46	inf
	East	Through	13451289	8	13	5	1.54	62.50
	North	Left	13451286	1	1	0	0.00	0.00
	North	Right	13451287	18	19	1	0.23	5.56
	North	Through	13451285	375	391	16	0.82	4.27
	South	Left	13451277	16	0	-16	5.66	-100.00
	South	Right	13451288	18	4	-14	4.22	-77.78
	South	Through	13451278	241	240	-1	0.06	-0.41
	West	Left	13451279	13	11	-2	0.58	-15.38
	West	Right	13451280	37	1	-36	8.26	-97.30
	West	Through	13451290	5	24	19	4.99	380.00
University Ave and Foleys Lane	North	Left	13449252	29	30	1	0.18	3.45
	North	Right	13449015	180	159	-21	1.61	-11.67
	South	Left	13449008	579	581	2	0.08	0.35
	South	Right	13449009	21	57	36	5.76	171.43
	West	Right	13449253	370	365	-5	0.26	-1.35
	West	Through	13449012	24	29	5	0.97	20.83
	East	Right	13452674	402	345	-57	2.95	-14.18

University Ave and Graham Ave	East	Left	13452673	359	383	24	1.25	6.69
	North	Left	13452665	388	395	7	0.35	1.80
	North	Through	13452666	453	579	126	5.55	27.81
University Ave and Irvine St	East	Left	13452636	125	136	11	0.96	8.80
	East	Right	13452637	300	264	-36	2.14	-12.00
	North	Left	13452634	827	828	1	0.03	0.12
	North	Through	13452632	114	122	8	0.74	7.02
	South	Through + Right	13452638	330	420	90	4.65	27.27
University Ave and Porter Street	East	Right	168188	72	113	41	4.26	56.94
	East	Through	168183	38	32	-6	1.01	-15.79
	North	Left	168186	43	55	12	1.71	27.91
	North	Right	168184	356	344	-12	0.64	-3.37
	West	Left	168187	528	536	8	0.35	1.52
	West	Through	168185	39	62	23	3.24	58.97
University Ave and Princes Ramps	East	Left + Through	13448974	248	311	63	3.77	25.40
	North	Left	13448972	194	286	92	5.94	47.42
	North	Through + Right	13448973	176	189	13	0.96	7.39
	West	Through + Right	13448977	1058	1130	72	2.18	6.81
Mean				235.01	234.00	-1.01		-0.43

In-session PM peak: Heavy Vehicles

Intersection	Direction	Movement	Aimsun TID	Survey Count	Modelled Flow	Difference	GEH	Relative Difference (%)
Gipps Road and Berkeley Road	East	Left	13452423	1	0	-1	1.41	-100.00
	East	Right	13452422	0	0	0	0.00	0.00
	East	Through	13452424	2	1	-1	0.82	-50.00
	North	Left	13452421	0	0	0	0.00	0.00
	North	Right	13452429	1	1	0	0.00	0.00
	North	Through	13452430	0	0	0	0.00	0.00
	South	Left	13452426	0	0	0	0.00	0.00
	South	Right	13452428	0	0	0	0.00	0.00
	South	Through	13452427	0	0	0	0.00	0.00
	West	Left	13452419	0	0	0	0.00	0.00
	West	Right	13452425	0	0	0	0.00	0.00
	West	Through	13452420	0	0	0	0.00	0.00
Gipps Road and Eastern Street	East	Right	173239	0	1	1	1.41	inf
	East	Through	173237	3	1	-2	1.41	-66.67
	North	Left	173241	0	0	0	0.00	0.00
	North	Right	173236	0	0	0	0.00	0.00
	West	Left	173238	0	0	0	0.00	0.00
	West	Through	173240	1	0	-1	1.41	-100.00
Gipps Road and Foley Street	North	Right	13452242	0	0	0	0.00	0.00
	North	Through	13452241	1	3	2	1.41	200.00
	South	Left	13452243	2	0	-2	2.00	-100.00
	South	Through	13452244	1	0	-1	1.41	-100.00
	West	Left	13452239	0	0	0	0.00	0.00
	West	Right	13452240	0	0	0	0.00	0.00
Gipps Road and Grey Street	East	Left	13451443	0	0	0	0.00	0.00
	East	Through	13451444	3	5	2	1.00	66.67
	North	Left	13452492	0	0	0	0.00	0.00
	North	Right	13452493	0	0	0	0.00	0.00
	North	Through	13451445	0	0	0	0.00	0.00
	West	Right	13451441	0	0	0	0.00	0.00
	West	Through	13451442	0	0	0	0.00	0.00
Gipps Road and Vickery Street	East	Left	13452654	0	0	0	0.00	0.00
	East	Through	13452653	2	0	-2	2.00	-100.00
	South	Left	13452649	0	1	1	1.41	inf
	South	Right	13452650	0	0	0	0.00	0.00
	West	Through	13452644	0	0	0	0.00	0.00
Memorial Drive and Porter Street	East	Through	13449030	3	3	0	0.00	0.00
	North	Left	13449029	0	4	4	2.83	inf
	North	Right	13449031	1	1	0	0.00	0.00
	West	Through	13449025	2	1	-1	0.82	-50.00
Memorial Drive North Bound and M1 Princes Hwy	North	Left	13448802	1	0	-1	1.41	-100.00
	North	Through	13449737	9	15	6	1.73	66.67
	South	Right	13449738	3	0	-3	2.45	-100.00
	South	Through	13449735	11	8	-3	0.97	-27.27
	West	Left	13449736	11	12	1	0.29	9.09
	West	Right	13449734	12	9	-3	0.93	-25.00
Memorial Drive South Bound and M1 Princes Hwy	East	Left	13448816	4	3	-1	0.53	-25.00
	East	Right	168314	0	0	0	0.00	0.00
	North	Right	168311	4	13	9	3.09	225.00
	North	Through	168316	17	10	-7	1.91	-41.18
	South	Left	13448825	17	23	6	1.34	35.29
	South	Through	168315	11	9	-2	0.63	-18.18
Mount Keira Road and Robsons Road	East	Right	13451237	3	1	-2	1.41	-66.67
	East	Through	13451238	4	0	-4	2.83	-100.00
	North	Left	13451235	5	13	8	2.67	160.00
	North	Right	13451236	7	2	-5	2.36	-71.43
	West	Left	13451233	2	0	-2	2.00	-100.00
	West	Through	13451234	3	0	-3	2.45	-100.00
Mt Ousley Road and Gaynor Avenue	East	Left	13449230	0	0	0	0.00	0.00
	East	Through + Right	13449231	11	49	38	6.94	345.46
	North	Left	13449226	0	26	26	7.21	inf
	North	Through + Right	13449227	1	0	-1	1.41	-100.00
	South	Left	13449232	0	0	0	0.00	0.00
	South	Through + Right	13449233	0	0	0	0.00	0.00
	West	Left	13448727	0	1	1	1.41	inf
	West	Through + Right	13448709	10	26	16	3.77	160.00
Murphys Ave and Braeside Ave	East	Left	13451989	0	0	0	0.00	0.00
	East	Through	13451990	1	1	0	0.00	0.00
	South	Left	13451991	0	0	0	0.00	0.00
	South	Right	13451992	0	0	0	0.00	0.00
	West	Right	13451987	0	0	0	0.00	0.00
	West	Through	13451988	0	0	0	0.00	0.00
Murphys Ave and Eastern Street	East	Left	168003	0	8	8	4.00	inf
	East	Through	167998	1	1	0	0.00	0.00
	South	Left	167999	0	0	0	0.00	0.00
	South	Right	168001	0	0	0	0.00	0.00
	West	Right	168002	0	0	0	0.00	0.00
	West	Through	168000	0	0	0	0.00	0.00
	East	Left	13452001	0	0	0	0.00	0.00

Murphys Ave and John Street	East	Through	13452002	1	1	0	0.00	0.00
	South	Left	13452003	1	0	-1	1.41	-100.00
	South	Right	13452004	0	0	0	0.00	0.00
	West	Right	13452000	1	0	-1	1.41	-100.00
	West	Through	13451999	3	0	-3	2.45	-100.00
Murphys Ave and Robsons Road	East	Left	13452577	1	1	0	0.00	0.00
	East	Through + Right	13452574	0	0	0	0.00	0.00
	North	Left	13452570	0	0	0	0.00	0.00
	North	Through + Right	13452571	0	0	0	0.00	0.00
	South	Left	13452579	0	0	0	0.00	0.00
	South	Through + Right	13452578	0	0	0	0.00	0.00
	West	Left	13452585	0	0	0	0.00	0.00
	West	Through + Right	13452584	0	0	0	0.00	0.00
Northfields Ave and Princes Ramps	East	Left	13452617	0	0	0	0.00	0.00
	East	Through + Right	13452616	0	4	4	2.83	inf
	North	Left	13452610	0	0	0	0.00	0.00
	North	Through + Right	13452613	0	0	0	0.00	0.00
	South	Left	13452621	0	7	7	3.74	inf
	South	Through + Right	13452620	0	1	1	1.41	inf
	West	Left	13452624	0	0	0	0.00	0.00
	West	Through + Right	13452625	0	0	0	0.00	0.00
Northfields Ave and Uni Entrance	East	Through + Right	13449191	0	6	6	3.46	inf
	North	Left	13449199	0	0	0	0.00	0.00
	North	Right	13449200	0	0	0	0.00	0.00
	West	Left	13449196	0	0	0	0.00	0.00
	West	Through	13449197	0	0	0	0.00	0.00
Princes Hwy and Mt Ousley Road	East	Left	13448774	1	12	11	4.31	1100.00
	East	Through + Right	13448773	117	47	-70	7.73	-59.83
	North	Left	13449243	0	0	0	0.00	0.00
	North	Through + Right	13449240	10	1	-9	3.84	-90.00
	South	Left	168304	4	3	-1	0.53	-25.00
	South	Through + Right	168309	16	10	-6	1.66	-37.50
	West	Left	13449238	109	50	-59	6.62	-54.13
	West	Through + Right	13449239	2	4	2	1.15	100.00
Princes Hwy-Princes Hwy Exit	North	Through	168171	45	44	-1	0.15	-2.22
	South	Through	173227	38	19	-19	3.56	-50.00
Princes Motorway and Mount Ousley Road	East	Through	173116	117	138	21	1.86	17.95
	North	Left	13448693	1	20	19	5.86	1900.00
	North	Right	13448695	3	24	21	5.72	700.00
	West	Through	173118	149	177	28	2.19	18.79
Reserve Street and Gilmores Street	North	Right	13451327	0	0	0	0.00	0.00
	North	Through	13451328	0	0	0	0.00	0.00
	South	Left	13451324	1	0	-1	1.41	-100.00
	South	Through	13451325	0	0	0	0.00	0.00
	West	Left	13451326	0	0	0	0.00	0.00
	West	Right	13451329	0	0	0	0.00	0.00
Robsons Road and Gipps Road	East	Left	13452558	3	5	2	1.00	66.67
	East	Through + Right	13452553	0	0	0	0.00	0.00
	North	Through + Right	13452552	0	1	1	1.41	inf
	North	Left	13452557	0	0	0	0.00	0.00
	South	Left	13452559	0	0	0	0.00	0.00
	South	Through + Right	13452554	0	0	0	0.00	0.00
	West	Left	13452555	0	0	0	0.00	0.00
	West	Through + Right	13452556	0	0	0	0.00	0.00
Robsons Road and Northfields Ave	East	Left	13452598	0	0	0	0.00	0.00
	East	Right	13452597	0	0	0	0.00	0.00
	North	Left	13452605	0	0	0	0.00	0.00
	North	Through	13452607	0	0	0	0.00	0.00
	South	Through + Right	13452600	0	0	0	0.00	0.00
Robsons Road and Princes Motorway On Ramp	North	Left	13451189	1	1	0	0.00	0.00
	North	Through	13451190	12	14	2	0.55	16.67
	South	Right	13451186	2	1	-1	0.82	-50.00
	South	Through	13451185	3	0	-3	2.45	-100.00
Robsons Road and William Street	East	Left	13451281	0	1	1	1.41	inf
	East	Right	13451282	0	0	0	0.00	0.00
	East	Through	13451289	0	0	0	0.00	0.00
	North	Left	13451286	0	0	0	0.00	0.00
	North	Right	13451287	0	0	0	0.00	0.00
	North	Through	13451285	2	6	4	2.00	200.00
	South	Left	13451277	1	0	-1	1.41	-100.00
	South	Right	13451288	2	0	-2	2.00	-100.00
	South	Through	13451278	0	0	0	0.00	0.00
	West	Left	13451279	0	0	0	0.00	0.00
	West	Right	13451280	1	0	-1	1.41	-100.00
	West	Through	13451290	0	0	0	0.00	0.00
University Ave and Foleys Lane	North	Left	13449252	0	0	0	0.00	0.00
	North	Right	13449015	1	0	-1	1.41	-100.00
	South	Left	13449008	2	4	2	1.15	100.00
	South	Right	13449009	0	0	0	0.00	0.00
	West	Right	13449253	4	3	-1	0.53	-25.00
	West	Through	13449012	0	0	0	0.00	0.00
University Ave and Graham Ave	East	Right	13452674	0	0	0	0.00	0.00
	East	Left	13452673	2	4	2	1.15	100.00

[illegible]	North	Left	13452665	4	3	-1	0.53	-25.00
	North	Through	13452666	2	11	9	3.53	450.00
University Ave and Irvine St	East	Left	13452636	2	6	4	2.00	200.00
	East	Right	13452637	0	8	8	4.00	inf
	North	Left	13452634	2	0	-2	2.00	-100.00
	North	Through	13452632	0	3	3	2.45	inf
	South	Through + Right	13452638	0	0	0	0.00	0.00
University Ave and Porter Street	East	Right	168188	0	0	0	0.00	0.00
	East	Through	168183	0	0	0	0.00	0.00
	North	Left	168186	1	0	-1	1.41	-100.00
	North	Right	168184	3	3	0	0.00	0.00
	West	Left	168187	2	4	2	1.15	100.00
	West	Through	168185	0	1	1	1.41	inf
University Ave and Princes Ramps	East	Left + Through	13448974	1	3	2	1.41	200.00
	North	Left	13448972	0	14	14	5.29	inf
	North	Through + Right	13448973	0	22	22	6.63	inf
	West	Through + Right	13448977	2	0	-2	2.00	-100.00
Mean				4.73	5.25	0.52		10.99

Out-session AM peak: Light Vehicles

Intersection	Direction	Movement	Aimsun TID	Survey Count	Modelled Flow	Difference	GEH	Relative Difference (%)
Gipps Road and Berkeley Road	East	Left	13452423	0	3	3	2.45	inf
	East	Right	13452422	2	3	1	0.63	50.00
	East	Through	13452424	202	193	-9	0.64	-4.46
	North	Left	13452421	12	0	-12	4.90	-100.00
	North	Right	13452429	24	40	16	2.83	66.67
	North	Through	13452430	4	11	7	2.56	175.00
	South	Left	13452426	15	33	18	3.67	120.00
	South	Right	13452428	5	6	1	0.43	20.00
	South	Through	13452427	5	15	10	3.16	200.00
	West	Left	13452419	15	58	43	7.12	286.67
	West	Right	13452425	10	20	10	2.58	100.00
	West	Through	13452420	254	208	-46	3.03	-18.11
Gipps Road and Eastern Street	East	Right	173239	87	122	35	3.42	40.23
	East	Through	173237	156	144	-12	0.98	-7.69
	North	Left	173241	103	110	7	0.68	6.80
	North	Right	173236	4	0	-4	2.83	-100.00
	West	Left	173238	26	28	2	0.38	7.69
	West	Through	173240	183	174	-9	0.67	-4.92
Gipps Road and Foley Street	North	Right	13452242	81	46	-35	4.39	-43.21
	North	Through	13452241	616	618	2	0.08	0.32
	South	Left	13452243	214	201	-13	0.90	-6.07
	South	Through	13452244	244	246	2	0.13	0.82
	West	Left	13452239	57	38	-19	2.76	-33.33
	West	Right	13452240	266	220	-46	2.95	-17.29
Gipps Road and Grey Street	East	Left	13451443	15	0	-15	5.48	-100.00
	East	Through	13451444	97	90	-7	0.72	-7.22
	North	Left	13452492	15	11	-4	1.11	-26.67
	North	Right	13452493	7	2	-5	2.36	-71.43
	North	Through	13451445	4	0	-4	2.83	-100.00
	West	Right	13451441	13	0	-13	5.10	-100.00
	West	Through	13451442	125	115	-10	0.91	-8.00
Gipps Road and Vickery Street	East	Left	13452654	25	48	23	3.81	92.00
	East	Through	13452653	186	195	9	0.65	4.84
	South	Left	13452649	2	5	3	1.60	150.00
	South	Right	13452650	51	49	-2	0.28	-3.92
	West	Through	13452644	234	213	-21	1.40	-8.97
Memorial Drive and Porter Street	East	Through	13449030	299	291	-8	0.47	-2.68
	North	Left	13449029	83	187	104	8.95	125.30
	North	Right	13449031	376	279	-97	5.36	-25.80
	West	Through	13449025	315	281	-34	1.97	-10.79
Memorial Drive North Bound and M1 Princes Hwy	North	Left	13448802	55	72	17	2.13	30.91
	North	Through	13449737	1234	1242	8	0.23	0.65
	South	Right	13449738	128	107	-21	1.94	-16.41
	South	Through	13449735	513	620	107	4.50	20.86
	West	Left	13449736	879	980	101	3.31	11.49
	West	Right	13449734	618	672	54	2.13	8.74
Memorial Drive South Bound and M1 Princes Hwy	East	Left	13448816	430	356	-74	3.73	-17.21
	East	Right	168314	98	87	-11	1.14	-11.22
	North	Right	168311	354	357	3	0.16	0.85
	North	Through	168316	1543	1557	14	0.36	0.91
	South	Left	13448825	568	457	-111	4.90	-19.54
	South	Through	168315	544	653	109	4.46	20.04
Mount Keira Road and Robsons Road	East	Right	13451237	266	296	30	1.79	11.28
	East	Through	13451238	105	109	4	0.39	3.81
	North	Left	13451235	164	150	-14	1.12	-8.54
	North	Right	13451236	68	65	-3	0.37	-4.41
	West	Left	13451233	257	263	6	0.37	2.33
	West	Through	13451234	275	304	29	1.70	10.55
Mt Ousley Road and Gaynor Avenue	East	Left	13449230	55	47	-8	1.12	-14.55
	East	Through + Right	13449231	370	530	160	7.54	43.24
	North	Left	13449226	68	58	-10	1.26	-14.71
	North	Through + Right	13449227	267	277	10	0.61	3.75
	South	Left	13449232	26	25	-1	0.20	-3.85
	South	Through + Right	13449233	51	49	-2	0.28	-3.92
	West	Left	13448727	2	16	14	4.67	700.00
	West	Through + Right	13448709	426	377	-49	2.45	-11.50
Murphys Ave and Braeside Ave	East	Left	13451989	6	4	-2	0.89	-33.33
	East	Through	13451990	91	98	7	0.72	7.69
	South	Left	13451991	24	7	-17	4.32	-70.83
	South	Right	13451992	10	11	1	0.31	10.00
	West	Right	13451987	15	4	-11	3.57	-73.33
	West	Through	13451988	94	108	14	1.39	14.89
Murphys Ave and Eastern Street	East	Left	168003	52	40	-12	1.77	-23.08
	East	Through	167998	108	90	-18	1.81	-16.67
	South	Left	167999	33	53	20	3.05	60.61
	South	Right	168001	85	89	4	0.43	4.71
	West	Right	168002	36	39	3	0.49	8.33
	West	Through	168000	87	81	-6	0.65	-6.90
Murphys Ave and John Street	East	Left	13452001	11	5	-6	2.12	-54.55
	East	Through	13452002	102	116	14	1.34	13.73
	South	Left	13452003	5	4	-1	0.47	-20.00
	South	Right	13452004	12	27	15	3.40	125.00
	West	Right	13452000	2	10	8	3.27	400.00
	West	Through	13451999	106	112	6	0.57	5.66

Murphys Ave and Robsons Road	East	Left	13452577	33	24	-9	1.69	-27.27
	East	Through + Right	13452574	51	80	29	3.58	56.86
	North	Left	13452570	23	27	4	0.80	17.39
	North	Through + Right	13452571	53	53	0	0.00	0.00
	South	Left	13452579	14	33	19	3.92	135.71
	South	Through + Right	13452578	170	141	-29	2.33	-17.06
	West	Left	13452585	3	1	-2	1.41	-66.67
	West	Through + Right	13452584	55	53	-2	0.27	-3.64
Northfields Ave and Princes Ramps	East	Left	13452617	4	5	1	0.47	25.00
	East	Through + Right	13452616	616	628	12	0.48	1.95
	North	Left	13452610	5	11	6	2.12	120.00
	North	Through + Right	13452613	140	146	6	0.50	4.29
	South	Left	13452621	173	188	15	1.12	8.67
	South	Through + Right	13452620	278	312	34	1.98	12.23
	West	Left	13452624	17	9	-8	2.22	-47.06
	West	Through + Right	13452625	126	134	8	0.70	6.35
Northfields Ave and Uni Entrance	East	Through + Right	13449191	413	458	45	2.16	10.90
	North	Left	13449199	78	110	32	3.30	41.03
	North	Right	13449200	29	27	-2	0.38	-6.90
	West	Left	13449196	63	47	-16	2.16	-25.40
	West	Through	13449197	40	31	-9	1.51	-22.50
Princes Hwy and Mt Ousley Road	East	Left	13448774	85	88	3	0.32	3.53
	East	Through + Right	13448773	103	76	-27	2.85	-26.21
	North	Left	13449243	48	48	0	0.00	0.00
	North	Through + Right	13449240	900	900	0	0.00	0.00
	South	Left	168304	269	440	171	9.08	63.57
	South	Through + Right	168309	811	814	3	0.11	0.37
	West	Left	13449238	119	134	15	1.33	12.61
	West	Through + Right	13449239	493	536	43	1.90	8.72
Princes Hwy-Princes Hwy Exit	North	Through	168171	1714	1629	-85	2.08	-4.96
	South	Through	173227	1986	1992	6	0.13	0.30
Princes Motorway and Mount Ousley Road	East	Through	173116	1437	1425	-12	0.32	-0.84
	North	Left	13448693	220	291	71	4.44	32.27
	North	Right	13448695	182	203	21	1.51	11.54
	West	Through	173118	1391	1432	41	1.09	2.95
Reserve Street and Gilmores Street	North	Right	13451327	19	16	-3	0.72	-15.79
	North	Through	13451328	27	32	5	0.92	18.52
	South	Left	13451324	80	78	-2	0.23	-2.50
	South	Through	13451325	36	38	2	0.33	5.56
	West	Left	13451326	19	20	1	0.23	5.26
	West	Right	13451329	104	90	-14	1.42	-13.46
Robsons Road and Gipps Road	East	Left	13452558	30	45	15	2.45	50.00
	East	Through + Right	13452553	68	50	-18	2.34	-26.47
	North	Through + Right	13452552	85	69	-16	1.82	-18.82
	North	Left	13452557	31	29	-2	0.37	-6.45
	South	Left	13452559	5	0	-5	3.16	-100.00
	South	Through + Right	13452554	215	200	-15	1.04	-6.98
	West	Left	13452555	5	1	-4	2.31	-80.00
	West	Through + Right	13452556	32	32	0	0.00	0.00
Robsons Road and Northfields Ave	East	Left	13452598	49	30	-19	3.02	-38.78
	East	Right	13452597	36	0	-36	8.49	-100.00
	North	Left	13452605	28	15	-13	2.80	-46.43
	North	Through	13452607	35	52	17	2.58	48.57
	South	Through + Right	13452600	152	166	14	1.11	9.21
Robsons Road and Princes Motorway On Ramp	North	Left	13451189	56	68	12	1.52	21.43
	North	Through	13451190	229	215	-14	0.94	-6.11
	South	Right	13451186	275	285	10	0.60	3.64
	South	Through	13451185	239	272	33	2.06	13.81
Robsons Road and William Street	East	Left	13451281	33	31	-2	0.35	-6.06
	East	Right	13451282	1	3	2	1.41	200.00
	East	Through	13451289	4	0	-4	2.83	-100.00
	North	Left	13451286	2	0	-2	2.00	-100.00
	North	Right	13451287	6	6	0	0.00	0.00
	North	Through	13451285	182	181	-1	0.07	-0.55
	South	Left	13451277	13	8	-5	1.54	-38.46
	South	Right	13451288	15	12	-3	0.82	-20.00
	South	Through	13451278	216	216	0	0.00	0.00
	West	Left	13451279	15	12	-3	0.82	-20.00
	West	Right	13451280	14	11	-3	0.85	-21.43
	West	Through	13451290	7	10	3	1.03	42.86
University Ave and Foleys Lane	North	Left	13449252	7	9	2	0.71	28.57
	North	Right	13449015	12	4	-8	2.83	-66.67
	South	Left	13449008	376	431	55	2.74	14.63
	South	Right	13449009	32	31	-1	0.18	-3.13
	West	Right	13449253	308	332	24	1.34	7.79
	West	Through	13449012	35	17	-18	3.53	-51.43
University Ave and Graham Ave	East	Right	13452674	188	180	-8	0.59	-4.26
	East	Left	13452673	168	253	85	5.86	50.60
	North	Left	13452665	307	348	41	2.27	13.36
	North	Through	13452666	186	243	57	3.89	30.65
University Ave and Irvine St	East	Left	13452636	76	108	32	3.34	42.11
	East	Right	13452637	336	340	4	0.22	1.19
	North	Left	13452634	264	290	26	1.56	9.85
	North	Through	13452632	100	103	3	0.30	3.00
	South	Through + Right	13452638	168	204	36	2.64	21.43
	East	Right	168188	56	55	-1	0.13	-1.79
	East	Through	168183	21	20	-1	0.22	-4.76

University Ave and Porter Street	North	Left	168186	40	73	33	4.39	82.50
	North	Right	168184	278	270	-8	0.48	-2.88
	West	Left	168187	355	406	51	2.61	14.37
	West	Through	168185	43	63	20	2.75	46.51
University Ave and Princes Ramps	East	Left + Through	13448974	179	148	-31	2.42	-17.32
	North	Left	13448972	223	261	38	2.44	17.04
	North	Through + Right	13448973	267	406	139	7.58	52.06
	West	Through + Right	13448977	405	455	50	2.41	12.35
University Ave and Princes Ramps	East	Left	13454071	38	43	5	0.79	13.16
Mean				186.93	193.55	6.62		3.54

Out-session AM peak: Heavy Vehicles

Intersection	Direction	Movement	Aimsun TID	Survey Count	Modelled Flow	Difference	GEH	Relative Difference (%)
Gipps Road and Berkeley Road	East	Left	13452423	0	0	0	0.00	0.00
	East	Right	13452422	0	0	0	0.00	0.00
	East	Through	13452424	1	0	-1	1.41	-100.00
	North	Left	13452421	0	0	0	0.00	0.00
	North	Right	13452429	0	3	3	2.45	inf
	North	Through	13452430	0	1	1	1.41	inf
	South	Left	13452426	0	0	0	0.00	0.00
	South	Right	13452428	0	0	0	0.00	0.00
	South	Through	13452427	0	0	0	0.00	0.00
	West	Left	13452419	0	3	3	2.45	inf
	West	Right	13452425	0	0	0	0.00	0.00
	West	Through	13452420	2	5	3	1.60	150.00
Gipps Road and Eastern Street	East	Right	173239	0	0	0	0.00	0.00
	East	Through	173237	1	3	2	1.41	200.00
	North	Left	173241	0	5	5	3.16	inf
	North	Right	173236	1	2	1	0.82	100.00
	West	Left	173238	0	0	0	0.00	0.00
	West	Through	173240	2	3	1	0.63	50.00
Gipps Road and Foley Street	North	Right	13452242	2	2	0	0.00	0.00
	North	Through	13452241	6	6	0	0.00	0.00
	South	Left	13452243	3	0	-3	2.45	-100.00
	South	Through	13452244	3	0	-3	2.45	-100.00
	West	Left	13452239	2	0	-2	2.00	-100.00
	West	Right	13452240	4	5	1	0.47	25.00
Gipps Road and Grey Street	East	Left	13451443	0	0	0	0.00	0.00
	East	Through	13451444	2	2	0	0.00	0.00
	North	Left	13452492	0	0	0	0.00	0.00
	North	Right	13452493	0	0	0	0.00	0.00
	North	Through	13451445	0	0	0	0.00	0.00
	West	Right	13451441	0	0	0	0.00	0.00
	West	Through	13451442	2	3	1	0.63	50.00
Gipps Road and Vickery Street	East	Left	13452654	0	2	2	2.00	inf
	East	Through	13452653	3	0	-3	2.45	-100.00
	South	Left	13452649	0	0	0	0.00	0.00
	South	Right	13452650	0	0	0	0.00	0.00
	West	Through	13452644	3	5	2	1.00	66.67
Memorial Drive and Porter Street	East	Through	13449030	2	3	1	0.63	50.00
	North	Left	13449029	1	6	5	2.67	500.00
	North	Right	13449031	4	6	2	0.89	50.00
	West	Through	13449025	2	0	-2	2.00	-100.00
Memorial Drive North Bound and M1 Princes Hwy	North	Left	13448802	1	1	0	0.00	0.00
	North	Through	13449737	26	42	16	2.74	61.54
	South	Right	13449738	6	3	-3	1.41	-50.00
	South	Through	13449735	11	12	1	0.29	9.09
	West	Left	13449736	21	22	1	0.22	4.76
	West	Right	13449734	18	26	8	1.71	44.44
Memorial Drive South Bound and M1 Princes Hwy	East	Left	13448816	14	4	-10	3.33	-71.43
	East	Right	168314	0	1	1	1.41	inf
	North	Right	168311	10	35	25	5.27	250.00
	North	Through	168316	35	33	-2	0.34	-5.71
	South	Left	13448825	28	26	-2	0.38	-7.14
	South	Through	168315	17	14	-3	0.76	-17.65
Mount Keira Road and Robsons Road	East	Right	13451237	8	5	-3	1.18	-37.50
	East	Through	13451238	6	0	-6	3.46	-100.00
	North	Left	13451235	6	2	-4	2.00	-66.67
	North	Right	13451236	0	0	0	0.00	0.00
	West	Left	13451233	2	3	1	0.63	50.00
	West	Through	13451234	2	0	-2	2.00	-100.00
Mt Ousley Road and Gaynor Avenue	East	Left	13449230	0	0	0	0.00	0.00
	East	Through + Right	13449231	14	30	16	3.41	114.29
	North	Left	13449226	3	18	15	4.63	500.00
	North	Through + Right	13449227	0	0	0	0.00	0.00
	South	Left	13449232	0	0	0	0.00	0.00
	South	Through + Right	13449233	0	16	16	5.66	inf
	West	Left	13448727	0	6	6	3.46	inf
	West	Through + Right	13448709	18	43	25	4.53	138.89
Murphys Ave and Braeside Ave	East	Left	13451989	0	0	0	0.00	0.00
	East	Through	13451990	2	1	-1	0.82	-50.00
	South	Left	13451991	0	0	0	0.00	0.00
	South	Right	13451992	0	0	0	0.00	0.00
	West	Right	13451987	0	0	0	0.00	0.00
	West	Through	13451988	0	4	4	2.83	inf
Murphys Ave and Eastern Street	East	Left	168003	4	4	0	0.00	0.00
	East	Through	167998	3	1	-2	1.41	-66.67
	South	Left	167999	0	0	0	0.00	0.00
	South	Right	168001	0	0	0	0.00	0.00
	West	Right	168002	0	1	1	1.41	inf
	West	Through	168000	1	1	0	0.00	0.00
	East	Left	13452001	0	0	0	0.00	0.00

Murphys Ave and John Street	East	Through	13452002	2	1	-1	0.82	-50.00
	South	Left	13452003	0	0	0	0.00	0.00
	South	Right	13452004	1	1	0	0.00	0.00
	West	Right	13452000	0	2	2	2.00	inf
	West	Through	13451999	0	2	2	2.00	inf
Murphys Ave and Robsons Road	East	Left	13452577	2	0	-2	2.00	-100.00
	East	Through + Right	13452574	0	0	0	0.00	0.00
	North	Left	13452570	0	4	4	2.83	inf
	North	Through + Right	13452571	3	1	-2	1.41	-66.67
	South	Left	13452579	0	0	0	0.00	0.00
	South	Through + Right	13452578	2	2	0	0.00	0.00
	West	Left	13452585	0	0	0	0.00	0.00
	West	Through + Right	13452584	0	0	0	0.00	0.00
Northfields Ave and Princes Ramps	East	Left	13452617	0	0	0	0.00	0.00
	East	Through + Right	13452616	4	5	1	0.47	25.00
	North	Left	13452610	0	0	0	0.00	0.00
	North	Through + Right	13452613	0	2	2	2.00	inf
	South	Left	13452621	3	1	-2	1.41	-66.67
	South	Through + Right	13452620	2	0	-2	2.00	-100.00
	West	Left	13452624	0	0	0	0.00	0.00
	West	Through + Right	13452625	7	3	-4	1.79	-57.14
Northfields Ave and Uni Entrance	East	Through + Right	13449191	6	5	-1	0.43	-16.67
	North	Left	13449199	3	2	-1	0.63	-33.33
	North	Right	13449200	0	0	0	0.00	0.00
	West	Left	13449196	0	1	1	1.41	inf
	West	Through	13449197	2	1	-1	0.82	-50.00
Princes Hwy and Mt Ousley Road	East	Left	13448774	0	12	12	4.90	inf
	East	Through + Right	13448773	103	39	-64	7.60	-62.14
	North	Left	13449243	0	0	0	0.00	0.00
	North	Through + Right	13449240	27	22	-5	1.01	-18.52
	South	Left	168304	4	7	3	1.28	75.00
	South	Through + Right	168309	25	26	1	0.20	4.00
	West	Left	13449238	119	75	-44	4.47	-36.97
	West	Through + Right	13449239	14	10	-4	1.15	-28.57
Princes Hwy-Princes Hwy Exit	North	Through	168171	92	96	4	0.41	4.35
	South	Through	173227	88	87	-1	0.11	-1.14
Princes Motorway and Mount Ousley Road	East	Through	173116	237	244	7	0.45	2.95
	North	Left	13448693	6	9	3	1.10	50.00
	North	Right	13448695	8	12	4	1.26	50.00
	West	Through	173118	216	239	23	1.52	10.65
Reserve Street and Gilmores Street	North	Right	13451327	0	0	0	0.00	0.00
	North	Through	13451328	0	0	0	0.00	0.00
	South	Left	13451324	0	0	0	0.00	0.00
	South	Through	13451325	0	0	0	0.00	0.00
	West	Left	13451326	0	0	0	0.00	0.00
	West	Right	13451329	1	0	-1	1.41	-100.00
Robsons Road and Gipps Road	East	Left	13452558	0	2	2	2.00	inf
	East	Through + Right	13452553	2	0	-2	2.00	-100.00
	North	Through + Right	13452552	2	0	-2	2.00	-100.00
	North	Left	13452557	1	1	0	0.00	0.00
	South	Left	13452559	1	0	-1	1.41	-100.00
	South	Through + Right	13452554	3	4	1	0.53	33.33
	West	Left	13452555	0	0	0	0.00	0.00
	West	Through + Right	13452556	0	0	0	0.00	0.00
Robsons Road and Northfields Ave	East	Left	13452598	0	0	0	0.00	0.00
	East	Right	13452597	0	0	0	0.00	0.00
	North	Left	13452605	0	1	1	1.41	inf
	North	Through	13452607	1	3	2	1.41	200.00
	South	Through + Right	13452600	3	2	-1	0.63	-33.33
Robsons Road and Princes Motorway On Ramp	North	Left	13451189	5	2	-3	1.60	-60.00
	North	Through	13451190	1	2	1	0.82	100.00
	South	Right	13451186	5	4	-1	0.47	-20.00
	South	Through	13451185	6	4	-2	0.89	-33.33
Robsons Road and William Street	East	Left	13451281	1	0	-1	1.41	-100.00
	East	Right	13451282	0	0	0	0.00	0.00
	East	Through	13451289	0	0	0	0.00	0.00
	North	Left	13451286	0	0	0	0.00	0.00
	North	Right	13451287	2	0	-2	2.00	-100.00
	North	Through	13451285	5	4	-1	0.47	-20.00
	South	Left	13451277	1	0	-1	1.41	-100.00
	South	Right	13451288	0	0	0	0.00	0.00
	South	Through	13451278	5	4	-1	0.47	-20.00
	West	Left	13451279	0	0	0	0.00	0.00
	West	Right	13451280	1	0	-1	1.41	-100.00
	West	Through	13451290	0	1	1	1.41	inf
University Ave and Foleys Lane	North	Left	13449252	0	0	0	0.00	0.00
	North	Right	13449015	2	0	-2	2.00	-100.00
	South	Left	13449008	3	6	3	1.41	100.00
	South	Right	13449009	0	0	0	0.00	0.00
	West	Right	13449253	2	3	1	0.63	50.00
	West	Through	13449012	0	0	0	0.00	0.00
University Ave and Graham Ave	East	Right	13452674	1	0	-1	1.41	-100.00
	East	Left	13452673	2	6	4	2.00	200.00

[illegible]	North	Left	13452665	2	3	1	0.63	50.00
	North	Through	13452666	15	9	-6	1.73	-40.00
University Ave and Irvine St	East	Left	13452636	3	7	4	1.79	133.33
	East	Right	13452637	5	1	-4	2.31	-80.00
	North	Left	13452634	8	5	-3	1.18	-37.50
	North	Through	13452632	2	1	-1	0.82	-50.00
	South	Through + Right	13452638	1	2	1	0.82	100.00
University Ave and Porter Street	East	Right	168188	0	0	0	0.00	0.00
	East	Through	168183	0	0	0	0.00	0.00
	North	Left	168186	0	0	0	0.00	0.00
	North	Right	168184	2	3	1	0.63	50.00
	West	Left	168187	3	6	3	1.41	100.00
	West	Through	168185	0	0	0	0.00	0.00
University Ave and Princes Ramps	East	Left + Through	13448974	1	0	-1	1.41	-100.00
	North	Left	13448972	11	5	-6	2.12	-54.55
	North	Through + Right	13448973	7	32	25	5.66	357.14
	West	Through + Right	13448977	9	7	-2	0.71	-22.22
University Ave and Princes Ramps	East	Left	13454071	1	0	-1	1.41	-100.00
Mean				7.80	8.11	0.31		3.99

Out-session PM peak: Light Vehicles

Intersection	Direction	Movement	Aimsun TID	Survey Count	Modelled Flow	Difference	GEH	Relative Difference (%)
Gipps Road and Berkeley Road	East	Left	13452423	13	0	-13	5.10	-100.00
	East	Right	13452422	0	2	2	2.00	inf
	East	Through	13452424	328	315	-13	0.73	-3.96
	North	Left	13452421	9	0	-9	4.24	-100.00
	North	Right	13452429	30	48	18	2.88	60.00
	North	Through	13452430	14	21	7	1.67	50.00
	South	Left	13452426	20	36	16	3.02	80.00
	South	Right	13452428	8	3	-5	2.13	-62.50
	South	Through	13452427	7	13	6	1.90	85.71
	West	Left	13452419	17	42	25	4.60	147.06
	West	Right	13452425	11	13	2	0.58	18.18
	West	Through	13452420	265	232	-33	2.09	-12.45
Gipps Road and Eastern Street	East	Right	173239	99	115	16	1.55	16.16
	East	Through	173237	285	286	1	0.06	0.35
	North	Left	173241	125	127	2	0.18	1.60
	North	Right	173236	15	15	0	0.00	0.00
	West	Left	173238	14	19	5	1.23	35.71
	West	Through	173240	170	159	-11	0.86	-6.47
Gipps Road and Foley Street	North	Right	13452242	101	65	-36	3.95	-35.64
	North	Through	13452241	505	540	35	1.53	6.93
	South	Left	13452243	304	296	-8	0.46	-2.63
	South	Through	13452244	362	329	-33	1.78	-9.12
	West	Left	13452239	66	43	-23	3.12	-34.85
	West	Right	13452240	263	239	-24	1.51	-9.13
Gipps Road and Grey Street	East	Left	13451443	21	0	-21	6.48	-100.00
	East	Through	13451444	174	171	-3	0.23	-1.72
	North	Left	13452492	15	13	-2	0.53	-13.33
	North	Right	13452493	12	0	-12	4.90	-100.00
	North	Through	13451445	6	5	-1	0.43	-16.67
	West	Right	13451441	7	0	-7	3.74	-100.00
	West	Through	13451442	124	141	17	1.48	13.71
Gipps Road and Vickery Street	East	Left	13452654	43	59	16	2.24	37.21
	East	Through	13452653	275	304	29	1.70	10.55
	South	Left	13452649	3	13	10	3.54	333.33
	South	Right	13452650	37	45	8	1.25	21.62
	West	Through	13452644	243	236	-7	0.45	-2.88
Memorial Drive and Porter Street	East	Through	13449030	340	362	22	1.17	6.47
	North	Left	13449029	67	126	59	6.01	88.06
	North	Right	13449031	290	277	-13	0.77	-4.48
	West	Through	13449025	423	400	-23	1.13	-5.44
Memorial Drive North Bound and M1 Princes Hwy	North	Left	13448802	72	130	58	5.77	80.56
	North	Through	13449737	1082	994	-88	2.73	-8.13
	South	Right	13449738	374	314	-60	3.23	-16.04
	South	Through	13449735	762	962	200	6.81	26.25
	West	Left	13449736	867	896	29	0.98	3.34
	West	Right	13449734	350	368	18	0.95	5.14
Memorial Drive South Bound and M1 Princes Hwy	East	Left	13448816	207	209	2	0.14	0.97
	East	Right	168314	51	61	10	1.34	19.61
	North	Right	168311	422	392	-30	1.49	-7.11
	North	Through	168316	1007	968	-39	1.24	-3.87
	South	Left	13448825	845	723	-122	4.36	-14.44
	South	Through	168315	1075	1221	146	4.31	13.58
Mount Keira Road and Robsons Road	East	Right	13451237	340	343	3	0.16	0.88
	East	Through	13451238	286	290	4	0.24	1.40
	North	Left	13451235	198	212	14	0.98	7.07
	North	Right	13451236	199	193	-6	0.43	-3.02
	West	Left	13451233	150	151	1	0.08	0.67
	West	Through	13451234	188	174	-14	1.04	-7.45
Mt Ousley Road and Gaynor Avenue	East	Left	13449230	35	38	3	0.50	8.57
	East	Through + Right	13449231	539	551	12	0.51	2.23
	North	Left	13449226	37	50	13	1.97	35.14
	North	Through + Right	13449227	138	122	-16	1.40	-11.59
	South	Left	13449232	19	30	11	2.22	57.89
	South	Through + Right	13449233	31	26	-5	0.94	-16.13
	West	Left	13448727	9	21	12	3.10	133.33
	West	Through + Right	13448709	323	276	-47	2.72	-14.55
Murphys Ave and Braeside Ave	East	Left	13451989	16	14	-2	0.52	-12.50
	East	Through	13451990	131	128	-3	0.26	-2.29
	South	Left	13451991	38	1	-37	8.38	-97.37
	South	Right	13451992	6	9	3	1.10	50.00
	West	Right	13451987	7	0	-7	3.74	-100.00
	West	Through	13451988	89	95	6	0.63	6.74
Murphys Ave and Eastern Street	East	Left	168003	78	83	5	0.56	6.41
	East	Through	167998	130	112	-18	1.64	-13.85
	South	Left	167999	31	34	3	0.53	9.68
	South	Right	168001	79	86	7	0.77	8.86
	West	Right	168002	55	54	-1	0.14	-1.82
	West	Through	168000	88	87	-1	0.11	-1.14
	East	Left	13452001	18	18	0	0.00	0.00

Murphys Ave and John Street	East	Through	13452002	137	134	-3	0.26	-2.19
	South	Left	13452003	8	4	-4	1.63	-50.00
	South	Right	13452004	8	2	-6	2.68	-75.00
	West	Right	13452000	8	10	2	0.67	25.00
	West	Through	13451999	106	122	16	1.50	15.09
Murphys Ave and Robsons Road	East	Left	13452577	78	84	6	0.67	7.69
	East	Through + Right	13452574	62	52	-10	1.32	-16.13
	North	Left	13452570	21	18	-3	0.68	-14.29
	North	Through + Right	13452571	145	112	-33	2.91	-22.76
	South	Left	13452579	24	24	0	0.00	0.00
	South	Through + Right	13452578	117	122	5	0.46	4.27
	West	Left	13452585	0	0	0	0.00	0.00
	West	Through + Right	13452584	52	51	-1	0.14	-1.92
Northfields Ave and Princes Ramps	East	Left	13452617	9	17	8	2.22	88.89
	East	Through + Right	13452616	160	142	-18	1.46	-11.25
	North	Left	13452610	38	43	5	0.79	13.16
	North	Through + Right	13452613	301	315	14	0.80	4.65
	South	Left	13452621	63	61	-2	0.25	-3.17
	South	Through + Right	13452620	239	279	40	2.49	16.74
	West	Left	13452624	14	1	-13	4.75	-92.86
	West	Through + Right	13452625	391	402	11	0.55	2.81
Northfields Ave and Uni Entrance	East	Through + Right	13449191	124	139	15	1.31	12.10
	North	Left	13449199	284	305	21	1.22	7.39
	North	Right	13449200	49	37	-12	1.83	-24.49
	West	Left	13449196	25	20	-5	1.05	-20.00
	West	Through	13449197	96	99	3	0.30	3.13
Princes Hwy and Mt Ousley Road	East	Left	13448774	72	73	1	0.12	1.39
	East	Through + Right	13448773	117	110	-7	0.66	-5.98
	North	Left	13449243	50	56	6	0.82	12.00
	North	Through + Right	13449240	793	799	6	0.21	0.76
	South	Left	168304	336	380	44	2.33	13.10
	South	Through + Right	168309	1251	1295	44	1.23	3.52
	West	Left	13449238	109	110	1	0.10	0.92
	West	Through + Right	13449239	309	362	53	2.89	17.15
Princes Hwy-Princes Hwy Exit	North	Through	168171	1997	1771	-226	5.21	-11.32
	South	Through	173227	1749	1789	40	0.95	2.29
Princes Motorway and Mount Ousley Road	East	Through	173116	1699	1682	-17	0.41	-1.00
	North	Left	13448693	342	351	9	0.48	2.63
	North	Right	13448695	151	52	-99	9.83	-65.56
	West	Through	173118	1893	1897	4	0.09	0.21
Reserve Street and Gilmores Street	North	Right	13451327	28	30	2	0.37	7.14
	North	Through	13451328	44	28	-16	2.67	-36.36
	South	Left	13451324	137	131	-6	0.52	-4.38
	South	Through	13451325	57	48	-9	1.24	-15.79
	West	Left	13451326	19	26	7	1.48	36.84
	West	Right	13451329	50	64	14	1.85	28.00
Robsons Road and Gipps Road	East	Left	13452558	98	96	-2	0.20	-2.04
	East	Through + Right	13452553	83	75	-8	0.90	-9.64
	North	Through + Right	13452552	188	177	-11	0.81	-5.85
	North	Left	13452557	43	33	-10	1.62	-23.26
	South	Left	13452559	2	0	-2	2.00	-100.00
	South	Through + Right	13452554	147	158	11	0.89	7.48
	West	Left	13452555	5	6	1	0.43	20.00
	West	Through + Right	13452556	23	32	9	1.72	39.13
Robsons Road and Northfields Ave	East	Left	13452598	79	72	-7	0.81	-8.86
	East	Right	13452597	23	0	-23	6.78	-100.00
	North	Left	13452605	66	73	7	0.84	10.61
	North	Through	13452607	98	87	-11	1.14	-11.22
	South	Through + Right	13452600	80	71	-9	1.04	-11.25
Robsons Road and Princes Motorway On Ramp	North	Left	13451189	45	54	9	1.28	20.00
	North	Through	13451190	410	404	-6	0.30	-1.46
	South	Right	13451186	229	216	-13	0.87	-5.68
	South	Through	13451185	257	282	25	1.52	9.73
Robsons Road and William Street	East	Left	13451281	47	44	-3	0.44	-6.38
	East	Right	13451282	3	5	2	1.00	66.67
	East	Through	13451289	7	6	-1	0.39	-14.29
	North	Left	13451286	2	0	-2	2.00	-100.00
	North	Right	13451287	13	11	-2	0.58	-15.38
	North	Through	13451285	287	298	11	0.64	3.83
	South	Left	13451277	15	0	-15	5.48	-100.00
	South	Right	13451288	27	15	-12	2.62	-44.44
	South	Through	13451278	183	211	28	1.99	15.30
	West	Left	13451279	10	9	-1	0.32	-10.00
	West	Right	13451280	24	1	-23	6.51	-95.83
	West	Through	13451290	7	14	7	2.16	100.00
University Ave and Foleys Lane	North	Left	13449252	13	23	10	2.36	76.92
	North	Right	13449015	47	10	-37	6.93	-78.72
	South	Left	13449008	499	529	30	1.32	6.01
	South	Right	13449009	11	32	21	4.53	190.91
	West	Right	13449253	340	357	17	0.91	5.00
	West	Through	13449012	15	4	-11	3.57	-73.33
University Ave and Graham Ave	East	Right	13452674	199	226	27	1.85	13.57
	East	Left	13452673	244	318	74	4.41	30.33

[illegible]	North	Left	13452665	319	362	43	2.33	13.48
	North	Through	13452666	367	451	84	4.15	22.89
University Ave and Irvine St	East	Left	13452636	114	130	16	1.45	14.04
	East	Right	13452637	211	222	11	0.75	5.21
	North	Left	13452634	559	625	66	2.71	11.81
	North	Through	13452632	77	80	3	0.34	3.90
	South	Through + Right	13452638	174	263	89	6.02	51.15
University Ave and Porter Street	East	Right	168188	61	94	33	3.75	54.10
	East	Through	168183	25	23	-2	0.41	-8.00
	North	Left	168186	39	43	4	0.62	10.26
	North	Right	168184	315	338	23	1.27	7.30
	West	Left	168187	450	463	13	0.61	2.89
	West	Through	168185	40	64	24	3.33	60.00
University Ave and Princes Ramps	East	Left + Through	13448974	193	224	31	2.15	16.06
	North	Left	13448972	218	304	86	5.32	39.45
	North	Through + Right	13448973	166	270	104	7.04	62.65
	West	Through + Right	13448977	855	869	14	0.48	1.64
University Ave and Princes Ramps	East	Left	13454071	66	68	2	0.24	3.03
Mean				207.57	211.32	3.74		1.80

Out-session PM peak: Heavy Vehicles

Intersection	Direction	Movement	Aimsun TID	Survey Count	Modelled Flow	Difference	GEH	Relative Difference (%)
Gipps Road and Berkeley Road	East	Left	13452423	0	0	0	0.00	0.00
	East	Right	13452422	0	0	0	0.00	0.00
	East	Through	13452424	2	0	-2	2.00	-100.00
	North	Left	13452421	0	0	0	0.00	0.00
	North	Right	13452429	0	0	0	0.00	0.00
	North	Through	13452430	0	0	0	0.00	0.00
	South	Left	13452426	0	0	0	0.00	0.00
	South	Right	13452428	0	0	0	0.00	0.00
	South	Through	13452427	0	0	0	0.00	0.00
	West	Left	13452419	0	0	0	0.00	0.00
	West	Right	13452425	0	0	0	0.00	0.00
	West	Through	13452420	0	0	0	0.00	0.00
Gipps Road and Eastern Street	East	Right	173239	0	0	0	0.00	0.00
	East	Through	173237	2	0	-2	2.00	-100.00
	North	Left	173241	1	0	-1	1.41	-100.00
	North	Right	173236	0	0	0	0.00	0.00
	West	Left	173238	0	0	0	0.00	0.00
	West	Through	173240	0	0	0	0.00	0.00
Gipps Road and Foley Street	North	Right	13452242	2	0	-2	2.00	-100.00
	North	Through	13452241	1	3	2	1.41	200.00
	South	Left	13452243	0	0	0	0.00	0.00
	South	Through	13452244	1	0	-1	1.41	-100.00
	West	Left	13452239	0	0	0	0.00	0.00
	West	Right	13452240	0	0	0	0.00	0.00
Gipps Road and Grey Street	East	Left	13451443	0	0	0	0.00	0.00
	East	Through	13451444	1	0	-1	1.41	-100.00
	North	Left	13452492	0	0	0	0.00	0.00
	North	Right	13452493	0	0	0	0.00	0.00
	North	Through	13451445	0	0	0	0.00	0.00
	West	Right	13451441	1	0	-1	1.41	-100.00
	West	Through	13451442	0	0	0	0.00	0.00
Gipps Road and Vickery Street	East	Left	13452654	0	0	0	0.00	0.00
	East	Through	13452653	3	0	-3	2.45	-100.00
	South	Left	13452649	0	0	0	0.00	0.00
	South	Right	13452650	0	0	0	0.00	0.00
	West	Through	13452644	0	0	0	0.00	0.00
Memorial Drive and Porter Street	East	Through	13449030	1	2	1	0.82	100.00
	North	Left	13449029	0	0	0	0.00	0.00
	North	Right	13449031	2	1	-1	0.82	-50.00
	West	Through	13449025	0	0	0	0.00	0.00
Memorial Drive North Bound and M1 Princes Hwy	North	Left	13448802	1	0	-1	1.41	-100.00
	North	Through	13449737	9	15	6	1.73	66.67
	South	Right	13449738	3	0	-3	2.45	-100.00
	South	Through	13449735	11	10	-1	0.31	-9.09
	West	Left	13449736	11	10	-1	0.31	-9.09
	West	Right	13449734	12	11	-1	0.29	-8.33
Memorial Drive South Bound and M1 Princes Hwy	East	Left	13448816	4	1	-3	1.90	-75.00
	East	Right	168314	0	0	0	0.00	0.00
	North	Right	168311	4	15	11	3.57	275.00
	North	Through	168316	17	11	-6	1.60	-35.29
	South	Left	13448825	17	17	0	0.00	0.00
	South	Through	168315	11	10	-1	0.31	-9.09
Mount Keira Road and Robsons Road	East	Right	13451237	3	0	-3	2.45	-100.00
	East	Through	13451238	4	0	-4	2.83	-100.00
	North	Left	13451235	2	3	1	0.63	50.00
	North	Right	13451236	0	0	0	0.00	0.00
	West	Left	13451233	2	0	-2	2.00	-100.00
	West	Through	13451234	3	0	-3	2.45	-100.00
Mt Ousley Road and Gaynor Avenue	East	Left	13449230	0	0	0	0.00	0.00
	East	Through + Right	13449231	11	54	43	7.54	390.91
	North	Left	13449226	0	15	15	5.48	inf
	North	Through + Right	13449227	1	0	-1	1.41	-100.00
	South	Left	13449232	0	0	0	0.00	0.00
	South	Through + Right	13449233	0	0	0	0.00	0.00
	West	Left	13448727	0	1	1	1.41	inf
	West	Through + Right	13448709	10	27	17	3.95	170.00
Murphys Ave and Braeside Ave	East	Left	13451989	0	0	0	0.00	0.00
	East	Through	13451990	1	2	1	0.82	100.00
	South	Left	13451991	0	0	0	0.00	0.00
	South	Right	13451992	1	0	-1	1.41	-100.00
	West	Right	13451987	0	0	0	0.00	0.00
	West	Through	13451988	1	0	-1	1.41	-100.00
Murphys Ave and Eastern Street	East	Left	168003	0	17	17	5.83	inf
	East	Through	167998	1	2	1	0.82	100.00
	South	Left	167999	0	0	0	0.00	0.00
	South	Right	168001	0	1	1	1.41	inf
	West	Right	168002	0	0	0	0.00	0.00
	West	Through	168000	1	0	-1	1.41	-100.00
	East	Left	13452001	0	0	0	0.00	0.00

Murphys Ave and John Street	East	Through	13452002	1	2	1	0.82	100.00
	South	Left	13452003	0	0	0	0.00	0.00
	South	Right	13452004	0	0	0	0.00	0.00
	West	Right	13452000	0	0	0	0.00	0.00
	West	Through	13451999	0	0	0	0.00	0.00
Murphys Ave and Robsons Road	East	Left	13452577	1	2	1	0.82	100.00
	East	Through + Right	13452574	0	0	0	0.00	0.00
	North	Left	13452570	0	0	0	0.00	0.00
	North	Through + Right	13452571	0	0	0	0.00	0.00
	South	Left	13452579	2	0	-2	2.00	-100.00
	South	Through + Right	13452578	0	0	0	0.00	0.00
	West	Left	13452585	0	0	0	0.00	0.00
	West	Through + Right	13452584	2	0	-2	2.00	-100.00
Northfields Ave and Princes Ramps	East	Left	13452617	0	0	0	0.00	0.00
	East	Through + Right	13452616	0	0	0	0.00	0.00
	North	Left	13452610	0	0	0	0.00	0.00
	North	Through + Right	13452613	0	0	0	0.00	0.00
	South	Left	13452621	0	0	0	0.00	0.00
	South	Through + Right	13452620	2	3	1	0.63	50.00
	West	Left	13452624	0	0	0	0.00	0.00
	West	Through + Right	13452625	3	3	0	0.00	0.00
Northfields Ave and Uni Entrance	East	Through + Right	13449191	0	0	0	0.00	0.00
	North	Left	13449199	1	1	0	0.00	0.00
	North	Right	13449200	0	0	0	0.00	0.00
	West	Left	13449196	0	0	0	0.00	0.00
	West	Through	13449197	0	2	2	2.00	inf
Princes Hwy and Mt Ousley Road	East	Left	13448774	1	10	9	3.84	900.00
	East	Through + Right	13448773	117	50	-67	7.33	-57.27
	North	Left	13449243	0	0	0	0.00	0.00
	North	Through + Right	13449240	10	1	-9	3.84	-90.00
	South	Left	168304	4	3	-1	0.53	-25.00
	South	Through + Right	168309	16	9	-7	1.98	-43.75
	West	Left	13449238	109	44	-65	7.43	-59.63
	West	Through + Right	13449239	2	2	0	0.00	0.00
Princes Hwy-Princes Hwy Exit	North	Through	168171	32	31	-1	0.18	-3.13
	South	Through	173227	32	19	-13	2.57	-40.63
Princes Motorway and Mount Ousley Road	East	Through	173116	93	118	25	2.43	26.88
	North	Left	13448693	5	20	15	4.24	300.00
	North	Right	13448695	1	32	31	7.63	3100.00
	West	Through	173118	144	171	27	2.15	18.75
Reserve Street and Gilmores Street	North	Right	13451327	0	0	0	0.00	0.00
	North	Through	13451328	0	0	0	0.00	0.00
	South	Left	13451324	0	0	0	0.00	0.00
	South	Through	13451325	0	0	0	0.00	0.00
	West	Left	13451326	0	0	0	0.00	0.00
	West	Right	13451329	0	0	0	0.00	0.00
Robsons Road and Gipps Road	East	Left	13452558	0	0	0	0.00	0.00
	East	Through + Right	13452553	1	0	-1	1.41	-100.00
	North	Through + Right	13452552	1	2	1	0.82	100.00
	North	Left	13452557	0	0	0	0.00	0.00
	South	Left	13452559	0	0	0	0.00	0.00
	South	Through + Right	13452554	1	0	-1	1.41	-100.00
	West	Left	13452555	0	0	0	0.00	0.00
	West	Through + Right	13452556	0	0	0	0.00	0.00
Robsons Road and Northfields Ave	East	Left	13452598	0	0	0	0.00	0.00
	East	Right	13452597	0	0	0	0.00	0.00
	North	Left	13452605	0	2	2	2.00	inf
	North	Through	13452607	0	0	0	0.00	0.00
	South	Through + Right	13452600	0	0	0	0.00	0.00
Robsons Road and Princes Motorway On Ramp	North	Left	13451189	0	1	1	1.41	inf
	North	Through	13451190	1	2	1	0.82	100.00
	South	Right	13451186	4	0	-4	2.83	-100.00
	South	Through	13451185	0	0	0	0.00	0.00
Robsons Road and William Street	East	Left	13451281	0	0	0	0.00	0.00
	East	Right	13451282	0	0	0	0.00	0.00
	East	Through	13451289	0	0	0	0.00	0.00
	North	Left	13451286	0	0	0	0.00	0.00
	North	Right	13451287	0	0	0	0.00	0.00
	North	Through	13451285	2	2	0	0.00	0.00
	South	Left	13451277	0	0	0	0.00	0.00
	South	Right	13451288	0	0	0	0.00	0.00
	South	Through	13451278	1	0	-1	1.41	-100.00
	West	Left	13451279	0	0	0	0.00	0.00
	West	Right	13451280	0	0	0	0.00	0.00
	West	Through	13451290	0	0	0	0.00	0.00
University Ave and Foleys Lane	North	Left	13449252	0	0	0	0.00	0.00
	North	Right	13449015	1	0	-1	1.41	-100.00
	South	Left	13449008	0	0	0	0.00	0.00
	South	Right	13449009	0	0	0	0.00	0.00
	West	Right	13449253	1	2	1	0.82	100.00
	West	Through	13449012	0	0	0	0.00	0.00
University Ave and Graham Ave	East	Right	13452674	0	0	0	0.00	0.00
	East	Left	13452673	0	0	0	0.00	0.00

[illegible]	North	Left	13452665	1	2	1	0.82	100.00
	North	Through	13452666	9	11	2	0.63	22.22
University Ave and Irvine St	East	Left	13452636	0	16	16	5.66	inf
	East	Right	13452637	2	3	1	0.63	50.00
	North	Left	13452634	2	1	-1	0.82	-50.00
	North	Through	13452632	1	3	2	1.41	200.00
	South	Through + Right	13452638	3	1	-2	1.41	-66.67
University Ave and Porter Street	East	Right	168188	0	0	0	0.00	0.00
	East	Through	168183	0	0	0	0.00	0.00
	North	Left	168186	0	0	0	0.00	0.00
	North	Right	168184	1	2	1	0.82	100.00
	West	Left	168187	0	0	0	0.00	0.00
	West	Through	168185	0	0	0	0.00	0.00
University Ave and Princes Ramps	East	Left + Through	13454071	0	3	3	2.45	inf
	North	Left	13448974	0	3	3	2.45	inf
	North	Through + Right	13448972	7	11	4	1.33	57.14
	West	Through + Right	13448973	2	30	28	7.00	1400.00
University Ave and Princes Ramps	East	Left	13448977	4	2	-2	1.15	-50.00
Mean				4.34	4.72	0.38		8.83

Keiraville – Gwynneville Access and Movement Study

APPENDIX D

TRAVEL TIME DATA

AM Peak - 8:00AM to 9:00AM

Location / Direction	Month	Covered Route Length [meters]	Sample size [avg per segment]	Average Travel Time [hh:mm:ss]	Median Travel Time [hh:mm:ss]	Harmonic Average Speed [kph]	15th percentile Speed [kph]	85th percentile Speed [kph]
Foley St / Southbound	Aug	1,137.40	590.22	00:02:42	00:02:06	25.20	18.27	42.76
Foley St / Northbound		1,127.98	273.75	00:02:33	00:01:54	26.48	19.68	45.80
Foley St / Southbound	Sep	1,137.40	546.26	00:02:29	00:01:59	27.43	20.19	44.46
Foley St / Northbound		1,127.98	238.58	00:02:19	00:01:49	29.17	21.49	46.02
Gipps Rd / Eastbound	Aug	1,361.67	90.41	00:03:09	00:02:42	26.01	20.25	39.27
Gipps Rd / Westbound		1,363.00	77.74	00:02:40	00:02:17	30.63	24.84	42.21
Gipps Rd / Eastbound	Sep	1,361.67	69.56	00:02:59	00:02:33	27.43	20.55	41.00
Gipps Rd / Westbound		1,363.00	56.50	00:02:50	00:02:29	28.90	23.36	40.85
Northfields Rd / Eastbound	Aug	1,812.82	312.38	00:04:23	00:03:17	24.85	20.26	41.78
Northfields Rd / Westbolund		1,812.82	271.09	00:04:25	00:03:21	24.60	18.99	41.08
Northfields Rd / Eastbound	Sep	1,812.82	271.09	00:04:25	00:03:21	24.60	18.99	41.08
Northfields Rd / Westbolund		1,814.28	446.86	00:04:26	00:03:24	24.56	19.17	40.21
Robson Rd / Northbound	Aug	1,880.61	179.85	00:03:22	00:02:40	33.58	26.89	50.29
Robson Rd / Southbound		1,877.84	133.62	00:03:34	00:02:42	31.64	26.95	51.59
Robson Rd / Northbound	Sep	1,880.61	162.30	00:03:13	00:02:38	35.09	31.54	50.41
Robson Rd / Southbound		1,877.84	114.21	00:03:11	00:02:39	35.34	30.41	51.45

PM Peak - 4:00PM to 5:00PM

Location / Direction	Month	Covered Route Length [meters]	Sample size [avg per segment]	Average Travel Time [hh:mm:ss]	Median Travel Time [hh:mm:ss]	Harmonic Average Speed [kph]	15th percentile Speed [kph]	85th percentile Speed [kph]
Foley St / Southbound	Aug	1,137.40	513.78	00:02:20	00:01:54	29.16	22.62	45.28
Foley St / Northbound		1,127.98	315.67	00:02:23	00:01:47	28.33	22.15	46.57
Foley St / Southbound	Sep	1,137.40	473.37	00:02:17	00:01:51	29.91	23.65	45.64
Foley St / Northbound		1,127.98	322.63	00:02:18	00:01:47	29.36	22.88	46.67
Gipps Rd / Eastbound	Aug	1,361.67	69.94	00:03:01	00:02:23	27.14	23	42.19
Gipps Rd / Westbound		1,363.00	68.97	00:02:35	00:02:13	31.63	27.13	42.48
Gipps Rd / Eastbound	Sep	1,361.67	56.75	00:02:35	00:02:23	31.57	26.24	42.97
Gipps Rd / Westbound		1,363.00	65.47	00:02:42	00:02:14	30.23	28.71	42.74
Northfields Rd / Eastbound	Aug	1,812.82	513.72	00:04:20	00:03:18	25.1	19.29	41.16
Northfields Rd / Westbolund		1,812.82	431.47	00:03:45	00:03:06	29.02	24.02	42.23
Northfields Rd / Eastbound	Sep	1,812.82	431.47	00:03:45	00:03:06	29.02	24.02	42.23
Northfields Rd / Westbolund		1,814.28	326.36	00:03:53	00:03:06	28.03	24.67	42.76
Robson Rd / Northbound	Aug	1,880.61	108.78	00:03:05	00:02:35	36.57	32.35	51.66
Robson Rd / Southbound		1,877.84	185.9	00:03:02	00:02:34	37.2	32.34	52.15
Robson Rd / Northbound	Sep	1,880.61	82.23	00:03:06	00:02:34	36.45	34.51	51.68
Robson Rd / Southbound		1,877.84	143.51	00:03:04	00:02:29	36.8	33.54	53.8

APPENDIX D

PARKING ANALYSIS TECHNICAL MEMORANDUM

Our Ref: CW80018018
Contact: Jacob Martin

21 May 2018

Wollongong City Council
Locked Bag 8821
WOLLONGONG DC NSW 2500

Attention:

Dear

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KEIRAVILLE-GWINNEVILLE ACCESS AND MOVEMENT STUDY
CAR PARKING STRATEGY

Introduction

Wollongong City Council (WCC) has commissioned a Keiraville–Gwynneville Access and Movement Study to improve their understanding of existing access and transport demand in the area, and to mitigate the impacts of future growth.

This letter is provided in response to the parking component of this work, and concerns strategic recommendations to support the objectives of the overall Study, as follows:

> Examine and document the existing and future potential operation of the traffic and transport system within the suburbs of Keiraville and Gwynneville; and
> Develop strategies to improve the transport system, reduce impacts on surrounding suburbs, promote the use of sustainable travel modes and ensure that the transport network can adequately accommodate future development.

For the purpose of the parking component of the Study, we have reviewed the existing strategic and statutory planning frameworks. From this base we provide recommendations based on the observed function and behaviour of parking across the Study Area.

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Background

For the purpose of parking, the University of Wollongong (UoW) campus dominates the study area. The parking demand from this source has an effect on the function of residential and commercial development, in addition to impacts on recreational amenity at the Wollongong Botanic Garden and Beaton Park facilities.

Other significant land uses include the Gwynneville and Keiraville commercial centres, Beaton Park Leisure Centre and surrounds, Botanic Gardens, North Wollongong Station and Wollongong Hospital. The requirements for, and impacts of parking, will be discussed in the context of these uses.

Literature Review

A short summary of planning documentation identifies the following components related to parking supply, parking management and enforcement.

Table 1 Parking relevance of strategic plans

Document	Parking-related recommendations
Wollongong 2022 Community Strategic Plan (2012)	▪ Expand shuttle bus service to support peripheral commuter 'Park and Ride'
Wollongong City Centre Access and Movement Strategy (2013)	▪ Encourage developers to provide parking in consolidated off-street parking locations, ▪ Improve parking guidance systems ▪ Comprehensive on- and off-street parking surveys
Keiraville Gwynneville Community Planning Project (2014)	▪ Increase provision of bike parking at the Botanic Gardens and retail centres ▪ Improve enforcement of parking ▪ Increase quantum of short-stay parking adjacent to retail ▪ Improve parking wayfinding signage ▪ Convert of informal to formal parking bays ▪ Expand shuttle bus service to reduce parking demand ▪ Undertake a Parking Strategy, including specifically for University accommodation
Keiraville Gwynneville Implementation Plan (2015)	▪ Undertake an Access and Movement Strategy that includes parking ▪ Improve regulation and enforcement of parking ▪ Increase quantum of short-stay parking adjacent to retail ▪ Increase provision of bike parking at retail centres ▪ Improve parking wayfinding signage
Beaton Park Precinct Needs Assessment Project (2015)	▪ Maximise on-site parking
University of Wollongong Campus Master Plan 2016-2036 (2016)	▪ Consolidate car parking on the periphery of the campus ▪ Maintain existing student/parking ratio (5.4 bays per FTE student) ▪ Increase on-campus accommodation ▪ Support carpooling programs ▪ Prioritise parking access to those with special needs: vehicles servicing specific facilities, people with disabilities and University operations vehicles ▪ UoW to support Wollongong City Council to reduce the impact of on-street parking on the local community
Draft University of Wollongong Transport Strategy (2017)	▪ Maximise the efficiency of on-site parking ▪ Investigate carpooling, reserved parking and car share ▪ Investigate automated parking management and dynamic price structuring ▪ Increase capacity for pick-up/drop-off parking

Current Travel Behaviour

Mode share data has been extracted from *ABS census data* (2016) and *Draft UoW Transport Survey Findings Report* (2017), suggesting that driving remains the primary mode for the majority of work or education trips. From these sources, car-as-driver mode share was determined to be 47% for UoW students, 57% for Keiraville and Gwynneville residents and 62% for employees within the Study Area. While mode share statistics are difficult to find for other trip purposes, research generally shows that retail, entertainment and regional recreation trips all exhibit higher driving mode shares than work trips (this is mitigated somewhat by the increased vehicle occupancy for these activities).

The results of statistical review shows that the majority of visitors to the Study Area still require a parking bay. Naturally, this demand is clustered around the destination, with consideration made for availability and price, walking distance and public transport interchange penalties.

While the provision of free shuttle bus services offers an alternative to driving, it also extends the range of viable parking locations. This can help to alleviate the intense pressures on parking adjacent to high-demand nodes (e.g. North Wollongong Station, Wollongong Hospital and the University of Wollongong). While this means that that a greater number of residents are affected (due to the wider distribution of parking demand), the impact is somewhat mitigated around these nodes.

Discussion

Within the Study Area, parking is generated by many sources, each of which are defined by different needs and behaviours. The following discussion is intended to generally frame these differences, for the purpose of determining an appropriate response.

In recommending parking interventions it is important to consider both the needs of the individual land uses, and the potential conflicts between them. The following describes a series of recommendations, in the context of the affected user groups.

University of Wollongong Parking

Current Student Behaviour

The UoW campus is attended by over 17,000 students (EFTSLs), according to the UoW Campus Master Plan (2016). Of these, 12% live in student accommodation, though only 4% on campus. Previous surveys have indicated that as many as 55% of students live within 2.5km of the campus.

Typically, students tend to park for periods of between 2 and 6 hours and are generally more price-sensitive than employees. Results from studies of other universities have shown that students are willing to walk further to obtain free parking, and are willing and able to move their vehicle multiple times to circumvent timing restrictions.

University students make up the largest group for parking demand, which is satisfied on-site by 1,029 ticket parking bays (plus approximately 350 car pool and 150 specialty bays). This ratio of student parking is significantly lower than that at other universities surveyed in the past, and is generally consistent only with City-Centre campuses at UNSW and University of Sydney (see **Table 2** below).

Table 2 Parking provision by student population – comparison statistics

University	Student Enrolment (EFTSL)	Total Parking	Students per Bay	Comments
Curtin Bentley	18,000	6,750	2.7	Much of the parking is unavailable to students – actual ratio 4.2 to 4.7
Macquarie	18,000	5,060	3.6	All parking shared with staff
UoW (2010)	13,000	2,700	4.8	Majority of parking unavailable to students – actual ratio 8.8
UoW (2016)	17,080	3,168	5.4	Majority of parking unavailable to students – actual ratio 12 to 16
ANU	13,300	5,870	2.8	Proportion of parking unavailable for students – actual ratio 3.6 to 4.1
USC	4,000	1,025	3.9	From ANU report
LaTrobe	22,900	5,500	4.2	From ANU report
UNSW	29,650	3,000	9.9	From ANU report
USyd	32,250	2,500	12.9	From ANU report
ECU	13,200	4,890	2.7	From ECU integrated transport plan
UWA	15,500	3,400	4.6	Actual ratio available to students - 6.4 to 9.6 (a large quantum of parking is available off-campus)
Murdoch			2.2	From ECU integrated transport plan

Source: Curtin University Transport Study (2010), UoW Campus Master Plan (2016)

This relative lack of student parking can act as a supply constraint, resulting in higher sustainable transport mode shares. However, in this case it appears that the free, unrestricted on-street public parking supply surrounding the University is providing capacity for students, off-setting the effect of on-campus parking restrictions.

As a benchmarking exercise, we have considered the following scenario, based on a reasonable approximation of existing behaviour:

> student attendance: 55% of weekdays*
> percentage of students on-campus during peak demand period: 75%*
> existing car-as-driver mode share: 43% (*Draft UoW Travel Survey 2017*)
> ***on-site student parking demand: 14,250 x 55% x 75% x 43% = 2,527***

** indicative benchmarks from other university surveys*

This can be compared with the on-site student parking supply of approximately 1,200 bays (assumed to include all ticket parking bays plus a 40% proportion of car pool and specialty bays).

Therefore, the existing consumption of parking when classes are in session is in the order of 2,500 bays, of which 1,300 are provided in the public realm. In contrast, the existing on-site student parking supply is sufficient to accommodate a car-as-driver mode share of approximately 20%.

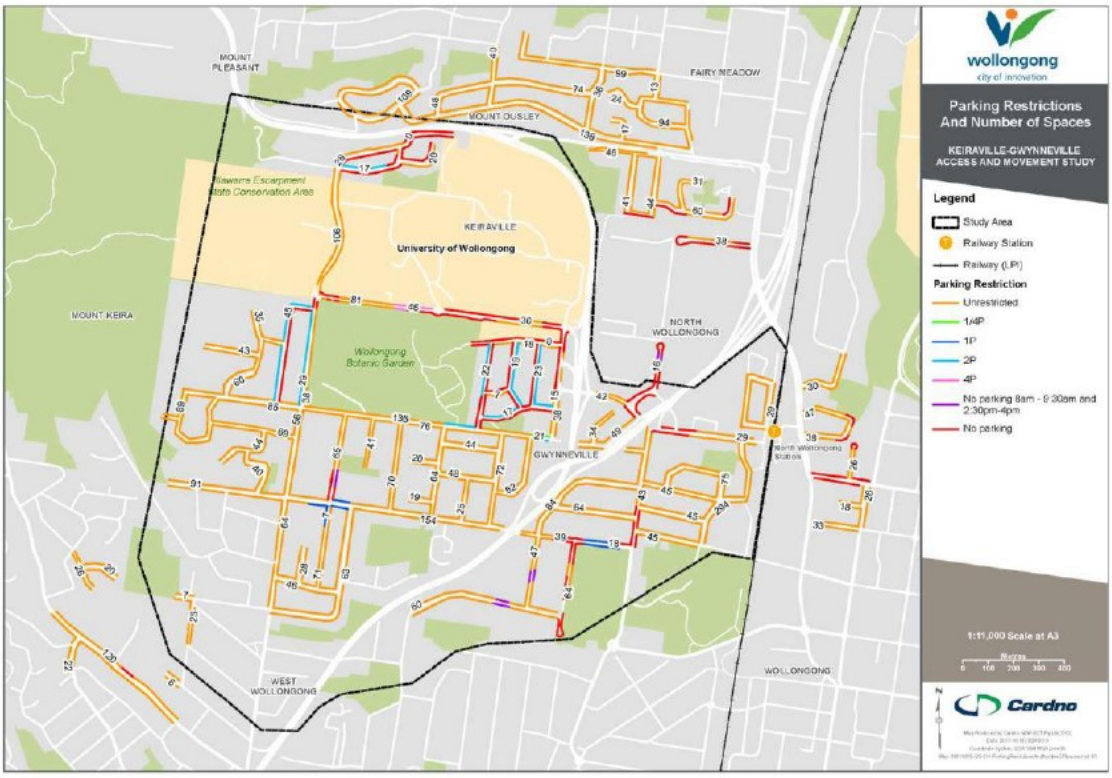
In 2017, parking utilisation data was collected from a sub-contractor at 10am on 14 February, 7 March and 4 April. On 19 September 2017, Cardno's audit team completed parking utilisation audits for the remaining streets in the study area. The overflow demand can be seen in the high occupancy of on-street parking up to 1,000m from the campus, as shown below:

5

Parking utilisation within 1km of the campus

The parking management of these on-street bays does not greatly discourage use by students: nearby, on street parking is generally unrestricted or reduced to 2-hour parking only within 400m of the campus (as shown below). This parking is also free, in contrast to parking on-campus, which ranges from $3.50 (for up to 4 hours) to $9.60 (for 6+ hours).

Note that there was very little parking demand observed to the north of the Princes Motorway. This further illustrates the extent of severance created by that road.



Parking restrictions within the Study Area

Current Staff Behaviour

In contrast to the student population, university staff have a much higher ratio of available parking. There are over 1,500 dedicated staff parking bays located in Permit and Reserved areas, not including car pool and specialty bays. This can be compared with a staff population of approximately 2,200 FTEs. Parking utilisation collected as part of the Draft UoW Transport Survey shows staff permit parking (over 900 bays) operates at or above practical capacity across the campus. However, the 600 reserved parking bays (dedicated and guaranteed for individual users) remain only 60% full.

The Draft UoW Transport Survey results show that staff car-as-driver mode share is approximately 43%. This would suggest that the 900 permit bays are sufficient to accommodate this demand and may be acting as a restraint on driving modes. Note that the needs of part-time and casual employees usually result in peak attendance figures being higher than FTEs, which accounts for the higher utilisation.

Recommended Response

The current UoW parking strategy maintains a ratio of approximately 5.4 bays per EFTSL (Effective Full Time Student Load). A review of other university provisions confirms that a ratio of 5.4 bays per student is generally consistent with benchmarking. However, the actual provision of parking for students is well below equivalent benchmarks, resulting in a substantial overspill of demand into the surrounding network.

The provision of permit staff parking appears to be creating a low driving mode share environment and is therefore consistent with the sustainability goals of the University.

Reserved parking is inherently inefficient. Recent parking occupancy survey results (*University of Wollongong Travel Survey, 2017*) suggest that only 60% of bays are occupied during peak periods. This would suggest that as many as 200 bays could be reallocated to student ticket parking without significantly impacting the

availability of reserved parking. It is understood that there are a number of complicating factors that may make reallocation infeasible in the short-term.

The *University of Wollongong Master Plan* (2016) rightly identifies that increasing the parking provision on-site will have an impact on trip generation and local congestion. However, the large number of unrestricted on-street bays in surrounding residential streets reduces the effectiveness of this constraint on trip generation.

It is not considered reasonable to introduce blanket parking restrictions in the area (i.e. 2-hour limits within 1km of the campus); existing demand is much too high to tackle with duration restrictions alone, and the needs of the adjacent land uses vary considerably across the Study Area. Instead, a combination of paid parking, timing restrictions and other management measures is recommended to maintain a controlled level of on-street parking demand.

It is recommended that paid parking be introduced in the vicinity of the University. Pricing would generally be highest adjacent to the university, and starting at about $2.00 per hour (equivalent to or slightly higher than the student rate on-campus), decreasing to zero based on distance and demand.

Pricing should be set at a level such that peak occupancy is maintained at around 90%.

The form of paid parking structure will depend on the individual street, but it is recommended that parking adjacent to the Botanic Gardens would retain a linear payment schedule, supporting relatively short-stay use for recreation purposes, while parking beyond this zone might use a 'fee capped' structure which supports use for long-stay and short-stay parking.

Northfields Avenue functions as a primary connection from the Keiraville area, and the University, to the Princes Motorway. This suggests that construction of high-quality pick-up/drop-off facilities could be highly attractive for drivers, improving traffic and pedestrian safety outcomes in the immediate vicinity.

The impacts of student parking occur only during session periods, with significantly less demand during non-session periods and on weekends. There is potential to vary parking restrictions or pricing to account for these differences, however there are a number of complications:

- Modifications using signage only create complicated regulations that are difficult to comply with. This results in confusion and reduces compliance by visitors, residents, staff and students.
- Manual modification is likely to be overly time-consuming for Council staff.
- Where paid parking is installed, pricing and duration restrictions can be modified as required – clear signage that states "Variable Prices – Check Machine" may be used to improve amenity for visitors outside of session times. However, there is likely to be a degree of additional non-compliance due to this variation.

TAFE NSW Wollongong

Current Behaviour

TAFE students typically attend fewer days on-campus, and attendance is distributed throughout the day and evening. However, students and staff may have a higher driving mode share due to the material requirements of training (equipment etc.).

The TAFE site appears to provide a higher rate of parking than UoW, with a corresponding decrease in the overspill effects into the surrounding residential catchment (as shown in parking surveys). However, the location of the TAFE is also not conducive to overspill, being surrounded by regional roads.

There is a relatively low parking fee of $2/day for student and staff permit parking which may assist to retain parking on-site.

Recommended Response

The TAFE has the potential to create overspill effects in the adjacent residential streets, particularly where evening classes overlap residential use of on-street bays. However, the location of the site geographically constrains parking availability and the nature of coursework limits the opportunity for students to move their vehicles to circumvent duration restrictions.

Therefore, should parking issues arise, a 2-hour parking limit (8am-6pm Mon-Fri) is considered to be sufficient to mitigate the impact.

Wollongong Hospital and Wollongong Private Hospital *(outside of the Study Area)*

Typical parking strategies are described below to assist with planning and management:

Hospitals are intense sources of visitor and staff parking. It is generally expected that parking demands will be catered for on-site and managed via paid parking. Overspill effects can be expected, and should be controlled through short-stay duration restrictions (2-hour parking) and paid parking mechanisms to support the needs of patients and visitors. A large number of residential streets in the vicinity provide unrestricted parking, suggesting that a proportion of all-day staff parking is accommodated in the public realm.

Hospital destinations include a range of shift-work roles, requiring parking on-site to offset reduced public transport opportunities and mitigate safety and security concerns. However, a large proportion of a hospital workforce are employed during standard office hours; high-quality public transport options along with on-site fee payment systems are effective at shifting transport to non-driving modes for these employees.

The close proximity of both hospitals to the Wollongong Station creates excellent opportunities for public transport access via bus, shuttle and rail.

The variable nature of hospital stays means fixed duration parking can create unnecessary stress for patients and visitors. Replacing duration limits with an escalating fee structure could be considered to shift long-stay demand out of nearby streets while allowing visitors to park as long as necessary. A mobile-pay system is suggested wherever length-of-stay is unknown to reduce the risk of unintentional overstays.

However, it is acknowledged that paid parking is unlikely to be supported by residents and this is therefore recommended as an opportunity to be considered in the medium to long-term with a transition phase rather than an immediate action.

Opportunity: Paid parking could be introduced in the vicinity of the Hospital, with duration restricted to 2 hours or with an escalating hourly fee.

Pricing should be set at a level such that peak occupancy is maintained at around 90%.

School Parking

Current Behaviour

Demand for school parking is intense and short-lived, restricted to less than an hour in the morning and afternoon. Generally, staff parking is easily retained on-site, leaving only student pick-up/drop-off activities on-street. The extremely high generation of demand during peak periods often creates safety and network operation issues. Effective management requires extensive intervention from both the Local Government and the schools themselves.

There are several schools in the Study Area, including the Keiraville Public School, Gwynneville Public School, St Brigid's Catholic Parish Primary School, Para Meadows School and Kiera High School.

Recommended Response

Issues with parking around educational establishments are centred around the parking behaviour of parents at drop off and pick up times and the safety issues that result from inconsiderate and illegitimate parking.

Parking around primary schools is generally more problematic than at high schools, although there are peaks and troughs in terms of the number of complaints received and infringements issued.

These issues are problematic for residents living in the vicinity of the schools, with relation to property access, verge and footpath parking, and visual obstructions; for the school children with regard to road safety, and for the parents in terms of the efficiency of their journeys.

The main issues are summarised as follows:

> The lack of parking close to Keiraville Public School meant that people parked on the verge and on the footpaths illegally.
> There is not always a crosswalk for the children and parking reduces the visibility of oncoming traffic.

If it is appropriate for parking to occur in locations further away from the school, it is necessary to ensure that it is safe for children and their parents to access the school, ensuring adequate **paths and crossing facilities** are provided.

> With parking on both sides of the road as well as the illegal parking, road narrowing occurred and resulted in congestion along Gipps Road and Grey Street, which creates significant delays.

Schools could consider appointing **wardens** to assist parents with considerate and formalised parking/drop off facilities, as well as coordinating safe passage of children from the roadside into schools. If such an approach does not produce compliance, rangers can attend the school and issue warnings or infringements as necessary. **Enforcement** should be used as a tool to ensure compliance in conjunction with more positive approaches to parking management.

> The kiss and drive is not effective as it only fits a small number of cars causing parents to circle around the block until the area is free, and people have been known to park in the facility.
This is somewhat mitigated by the 'no parking' in school times, but supply is currently less than demand.

Kiss and drive parking should be monitored to prevent parking, and expanded as required to support demand.

The fact that school start and finish times are so clearly defined means that hundreds of people are arriving and departing a single location within a very short period of time. Staggered start and finish times may help to alleviate parking issues.

It is recommended that Council engage with schools to support behaviour change trials and to monitor progress. Where trials are found to be successful, the Council can support other schools by creating guidance notes that illustrate a working process with case studies.

It is generally accepted that it is impossible to provide sufficient parking for pick up and drop off times. Therefore, the function and management of on street parking surrounding the site becomes more important.

Council could require all schools to produced **Green Travel Plans** and **Parking Management Plans**. Initially these may be secured through planning applications and development approvals however eventually it should be an aspiration that all schools have these plans in place, and the initiatives and outcomes are measured and monitored.

A more comprehensive study could be completed to support the Parking Management Plan. This would evaluate parking utilisation throughout the day in the areas surrounding each of the schools. The results would help identify locations that would be suitable for shared parking, for example outside shops which are not highly utilised until 10am and could be modified to school parking from 8-9am. Council could also provide some guidelines to assist schools in communicating parking availability to parents.

Parking management plans for each school will be very site specific; however, undergoing the process will help schools identify existing parking opportunities and may help them to implement **shared parking** arrangements with underused parking facilities in the vicinity of the school.

Parking for Recreation

Current Behaviour

Two generators are of particular interest within the Study Area, the Wollongong Botanic Garden and the Beaton Park Leisure Centre. These destinations cater for local and regional recreation and can be characterised by a high private vehicle mode share.

Demand can be expected to be highest on weekends and school holidays, outside of peak times for other high-generating sources. This reduces the potential for conflict with other land uses; however, parking demand extending from the UoW campus is likely to restrict access to the Botanic Gardens during weekdays.

Parking is provided in off-street parking areas at both of these destinations. However, peak usage is likely to overflow into the surrounding road network.

Recommended Response: Beaton Park Leisure Centre

Issues have been identified at this location related to the general availability of parking. This is particularly a problem on the weekend, due to sporting activities and during events. Observed informal parking even during weekdays illustrates the lack of sufficient on-site parking to cater for demand.

The proximity of the Beaton Leisure Centre, Wollongong Tennis Club and the Illawarra Basketball Association suggests that there may be opportunities to provide reciprocal parking, by agreement, to increase parking supply during peak periods. Alternatively, a formal arrangement could be maintained between these organisations, facilitated by Council, to create a common overflow car park for use during peak times.

When there are special events taking place that occur sporadically throughout the year, a **special event parking management plan** should be produced and implemented by the Council.

A combination of parking wardens, event parking permits for organisers, drop off/pick up points and way finding tools can be used to ensure a satisfactory experience for visitors.

The nature of this site is that peak demand for parking can often be limited to a couple of very specific times during the week. Although it is obviously important to provide a quantum of parking for these land uses, it is not efficient to aim to cater for peak demand.

Council should consider improving the opportunities for overflow parking (through facilitating agreements with demand generators) to improve peak accessibility and increase safety in the area.

The lack of parking availability during peak use can mean that heavy sports equipment needs to be transported long distances.

Improved drop off facilities should be considered for the existing facilities.

Facility users may not be aware of alternative parking locations and parking congestion occurs in the immediate vicinity, causing safety issues for both users and residents.

It may be appropriate to implement **parking restrictions** such as timed or paid parking in certain areas, to relocate staff to the periphery of the Centre or off-site.

Recommended Response: Wollongong Botanic Garden

The Wollongong Botanic Garden functions as a regional recreation area with a high level of demand both from local residents and visitors from other suburbs. The parking demand generated by these users can be relatively high, but generally occurs outside of other demand peaks.

Appropriate **wayfinding signage** and transport information is of high importance, as visitors may not be familiar with the area. This information will empower users to identify the most appropriate transport service or parking location.

In the event that sufficient parking cannot be provided to cater for the daily peak demand, **paid parking** should be introduced. This acknowledges that the area is an important and sensitive environment, and the provision of additional parking comes at a cost to amenity and natural heritage.

Retail Centre Parking

Current Behaviour

The Keiraville and Gwynneville Village Centres are both located approximately 1km from the UoW campus, and as such are at the periphery of the generated walking catchment. It is therefore unlikely that there is a great deal of impact from students parking in shopper zones.

Retail centres generally must consider the needs of visitors and staff. The parking hotspot shown on the parking utilisation map in the vicinity of the Keiraville Village Centre suggests that this area is heavily used by visitors. It is noted that bays are generally restricted to 1-hour parking in this vicinity.

Additional off-street parking within the Village Centres is available for use by employees and visitors.

Recommended Response

Parking issues in commercial centres are a concern for businesses; they fear loss of revenue as customers are turned away.

The Council should implement a **parking user priority** in its commercial centres to help support growth and intensification. This would involve prioritising parking among the following types:

- Loading
- Public Transport
- Drop-off/pick up
- Short to medium stay
- Motorcycle/Scooters/Cyclists
- Disability permit holders

Consideration for other specialty uses (e.g. banks, taxis, emergency vehicles, deliveries etc.) should be given, depending on the requirements of adjacent land uses.

Long stay commuter parking should be confined to off-street facilities, preferably in consolidated areas at the periphery of the Centre.

Issues resulting from of the amount of available parking and periods of high demand can be managed through timed restrictions and implementation of paid parking, where appropriate.

The primary use of on-street parking should be for short-stay visitor parking, particularly in and around activated streets. This **parking should be time-restricted** to avoid illegitimate commuter parking or priced on a demand-sensitive basis to promote vacancies. These could be altered during times of **peak demand** such as at Christmas to encourage turnover.

Longer restrictions beyond 2P are suitable **only** for the fringes of a retail centre and accompanied by regular and consistent **enforcement**. Non-compliance for free 3P and 4P parking bays is very high by employees, where these bays are located adjacent to the business.

Paid parking could be considered in areas of high demand, as a tool alongside parking restrictions.

Residents and Residential Visitors

Current Behaviour

It is expected that on-street parking requirements for resident vehicles are relatively minimal where the majority of residences are single-unit dwellings with ample on-site parking. However, multi-unit developments catering for University students from the UoW campus or other demographics may create on-street demand where vehicle ownership exceeds on-site supply.

Residential *visitor* parking is generally provided by the on-street environment, which is the main use of such parking in residential neighbourhoods. While there may be conflicts between residential visitors and other users, it should be noted that residential visitation primarily occurs in the evening, minimising the overlap of demand with other user groups.

Recommended Response

Issues related to parking in residential areas (particularly in high-density residential and mixed use areas) commonly falls under one of the following types:

> Residential parking in visitor bays
> Hazardous or illegitimate parking on verges, footpaths and crossovers.
> Infill in traditional low-density neighbourhoods resulting in an increased visitor demand for on-street parking.

It is recommended to **review enforcement practices** to ensure that regular patrols are taking place that encourage compliance with existing restrictions. Other regulatory practices such as **timed parking or limits on visitor parking** are likely to be necessary alongside rigid enforcement.

Residential parking permit schemes can be introduced where the availability of on-street parking has become an issue. It should be recognised that such schemes shift the burden of the cost to park the vehicle from the owner to the Council. However, during the transition to a paid parking scheme, a short-term (3-5 years duration) residential parking system is reasonable to allow residents an opportunity to adjust.

Opportunity: A short-term scheme would be attached to an escalating monthly fee, increasing at an agreed rate for the life of the permit system. (e.g. $50/month in year 1, $75/month in year 2, etc.).

If a long-term parking permit scheme is unavoidable, these permits should attract a fee commensurate with their value.

Strata bodies can and do issue their own permits to their tenants and this is seen as an effective way to enforce parking restrictions, and they should be encouraged to undertake this role wherever possible to alleviate pressure on City rangers.

It is recognised that resident parking schemes are unlikely to be supported by Council and residents, however will eventually be required to manage demand for limited on-street parking spaces. These recommendations should therefore be viewed as an ultimate plan, which could be achieved over time through a phased rollout. This could be implemented in critical sections at first to determine impacts, and utilisation surveys could be undertaken to monitor the outcomes.

Commuter Parking

Existing Behaviour

The North Wollongong Station is located at the edge of the Study Area. There are a small number of formal commuter parking bays immediately adjacent to the Station (Porter Street, west of the Station), but commuters appear to park on-street along Porter Street and within the local residential neighbourhood (Hindmarsh Avenue, Railway Crescent and Crawford Avenue.

Given that the North Gong Shuttle runs direct from the Station to the UoW campus, a portion of these bays may be consumed by students and staff from the University, as well as other commuters taking the train from North Wollongong Station.

Recommended Response

While there is generally an under-provision of parking adjacent to the North Wollongong Station, currently few land uses are adversely affected by commuter over-spill into the surrounding streets. However, future redevelopment of the Station surrounds could create a nexus for short-stay demand throughout the day. If this should occur, unrestricted parking should be converted into time-restricted and/or paid parking to support retail shopping, with consideration for an expansion of commuter parking either adjacent to the Station or in a peripheral location accessible by shuttle services.

Parking Management Plan

The following map depicts a potential on-street parking management plan reflecting the recommendations of the above sections.

The intent of this plan is to reduce on-street parking demand by UoW students through imposition of paid parking, simultaneously improving access to the Botanic Gardens. The time-restrictions in minor residential streets assist in increasing capacity for daytime visitation without additional costs. Minor changes adjacent to the Station relocate commuter parking away from minor streets

Overall, this Plan retains free all-day parking within the higher-order road network and areas beyond the influence of high-demand generators such as the UoW campus.

The plan demonstrates one way in which the recommendations could be achieved. The introduction of paid parking beyond the university frontage may not align with Council and community visions for the study area, and other alternative plans could be implemented if this particular plan is not deemed appropriate. The implementation of this plan could also be staged over time depending on changes in parking demand and community perceptions relating to paid parking to help transition to this arrangement.

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wollongong
city of innovation
Potential Parking Management Plan
KEIRAVILLE-GWYNNEVILLE ACCESS AND MOVEMENT STUDY
Legend
Study Area
Railway Station
Railway (LPI)
Parking Restriction
Paid parking
$x/hr 8am-6pm
$x/hr 8am-6pm (capped fee)
Time restricted parking
1 hour
2 hours
No Parking (school times)
No Parking (all times)
1:11,000 Scale at A3
Metres
0 100 200 300 400
Cardno
MOUNT PLEASANT
FAIRY MEADOW
MOUNT OUSLEY
KEIRAVILLE
University of Wollongong
MOUNT KEIRA
Wollongong Botanic Garden
NORTH WOLLONGONG
North Wollongong Station
WOLLONGONG
WEST WOLLONGONG
PARRISH AVENUE
RAMAH AVENUE
GREENSLOPES AVENUE
HAMILTON STREET
BASSETT STREET
SUNNINGHILL CIRCUIT
STANBROOK AVENUE
HIGHBANK PLACE
MOUNT OUSLEY ROAD
DUMFRIES AVENUE
JOBSON AVENUE
LYSAGHT STREET
MONTAGUE STREET
PRINCES HIGHWAY
MEMORIAL DRIVE
ALPHI BLACK DRIVE
SQUIRES WAY
VIRGINIA STREET
BOURKE STREET
EDWARD STREET
KEIRA STREET
VIEW STREET
FLINDERS STREET
CHURCH STREET
CAMPBELL STREET
SMITH STREET
VICTORIA STREET
MARKET STREET
HERCULES STREET
THROSBY DRIVE
GREENACRE ROAD
MACQUARIE STREET
NEW DAPTO ROAD
MERCURY STREET
DENISON STREET
BELMORE STREET
MATTHEWS STREET
HILLCREST STREET
ROSEMONT STREET
DEMPSTER STREET
GILMORE STREET
FISHER STREET
PHILLIPS AVENUE
POULTER STREET
COCHRANE STREET
RESERVE STREET
PARSONS STREET
KEIRA MINE ROAD
MOUNT KEIRA ROAD
IMMARNA AVENUE
BOOYONG STREET
IRAGA AVENUE
LEXBURN AVENUE
BIMBADEEN AVENUE
BANOOL STREET
WOLA AVENUE
AKUNA STREET
ACACIA AVENUE
ALLEN STREET
MEDWAY DRIVE
SPRING STREET

Principles of Parking

Parking management offers a broad and open field of discussion. Often cities try to solve the parking problem by increasing parking supply. By now it has been internationally proven that the provision of more parking spaces induces more traffic.

The following guiding principles have been applied in this Review:

Free parking

Free parking that is available for all has generally been perceived as an ideal objective for both policy and decision makers, with any proposed measures which have sought to constrain demand or determine priority for access bitterly resisted, often in an emotional and irrational way.

This level of emotional response is related to the availability of parking and its significant role and impact on the ability of private individuals to access employment and the range of services and facilities that the community offers. The attitude of many people is that if parking is not readily available and accessible to services and amenities, visitors will choose to go elsewhere.

However, all parking has a cost; in space, in opportunity, in construction, maintenance and enforcement. Where parking is provided free of charge to users, the direct financial costs are borne by the Council and passed on to residents via increased rates, or by businesses and passed onto retailers and consumers through higher rents and prices. The opportunity costs are realised through reduced connectivity (land uses are further apart), decreased local amenity (pedestrian paths, trees), and a higher economic burden for development (the cost of parking infrastructure results in decreased investment in the area).

Support and encourage the use of a range of transport modes

Access for pedestrians, cyclists, public transport users and people with disabilities should be prioritised, and balanced with the needs of the road network, in order to minimise congestion. The support of these modes will help lessen the demand for parking in desirable and well-connected locations.

While the Council only has limited influence over local bus routes, the provision of convenient public transport is a very important aspect of the transport mix, especially if a reduction of traffic generated by private vehicles is desired.

Supply and availability of public parking

Public parking should be located in proximity to major generators and be managed according to a predetermined hierarchy of use. This hierarchy applies primarily to on-street parking but should be considered with respect to the off-street supply and specific provisions within public and private car parks for high priority users.

The use of public parking should be monitored to determine hotspots and low utilisation areas so that refinements to parking restrictions can be made. This will ensure a robust system that maximises efficient use of available parking and thereby minimise the capital investment required to accommodate demand.

Parking management should be used as a tool for traffic demand management

It is understood that a perceived lack of parking availability can create an emotional response in car drivers, particularly when there is no viable alternative to driving. Parking supply management therefore relies upon effective alternatives to driving, through high-quality path infrastructure and public transport, such that the

limitations on parking supply do not reduce the economic viability of the area, or create adverse impacts in the surrounding environment. Provision of wayfinding information can also help raise awareness of little-used parking areas a little further from desirable locations, which could be used if people are willing to walk.

In cities like London and Munich, core areas have relatively low levels of car ownership in spite of greater wealth. This reflects a decreased availability of residential and public parking, offset by a high degree of public transport accessibility and service.

Increases to parking supply

Construction of additional parking spaces should be considered where it facilitates desired activity within an activity centre, and where the associated trips are unlikely to be undertaken by alternative transport modes.

Any increases in public parking supply should be considered in the context of all existing parking, and should be managed in accordance with best-practice design principles.

Interactions with private parking supplies

Parking should be considered as an ecosystem consisting of public and private, on-street and off-street, and considering all of the many needs of those people who use those bays. The optimal parking system would be one where all parking is used efficiently, with the minimum amount of space devoted to parking activities. After all, parking itself only facilitates activity; it does not create any of its own.

Wayfinding and Signage

The effectiveness of parking is greatly improved through supplying better information to users. This information is typically provided in a range of media, including maps, mobile applications, static and dynamic signage and prominent parking information.

A coherent signage strategy is therefore recommended across the study area, identifying off-street car parking supplies and significant on-street parking. This may be implemented through static wayfinding signage displaying route/location and supply numbers, using a design of signage consistent for on-street and off-street.

Parking prices are a strong tool to manage demand

To improve parking management as a tool for traffic demand management, a parking fee structure can be used to preferentially benefit certain target groups, based on the ideal function for a particular car parking location.

For example:

- A one-hour free period supports short trips including shopping and café visits
- A linear per-hour rate effectively penalises long-stay parking while maintaining maximum flexibility for users
- A maximum fee can be used to support employee parking in selected locations – effectively giving them a discount beyond a given duration of stay.

These demand management tools can be used in combination, with restrictions on duration to narrow down the target market.

Parking pricing levels should ideally be set such that demand peaks at approximately 85-90% occupancy. Best-practice implementation involves ‘demand-responsive’ pricing, which increases or reduces fees based on occupancy. This can involve different fees at different times of day, or different days of the week, and

include a mechanism to modify prices on a periodical basis to maximise the utility of the parking. Demand responsive pricing relies on a high degree of good quality occupancy and duration of stay data.

On Street Parking Management

The following describes a methodology used to determine parking restrictions within the on-street environment. It is suggested that any implementation measures are reviewed annually.

- **1P Free Parking:** Time restricted 1-hour parking is best used in retail precincts adjacent to fee off-street parking. Employee usage tends to be very low, though enforcement is difficult given the high turnover.
- **2P Free Parking:** Time restricted 2-hour parking is best used in residential areas, to support visitation throughout the day. This form of parking may also be used where there is moderate commercial visitor demand, to limit use by employees. However, where there is a scarcity of employee parking, free 2-hour parking may be used illegitimately by employees (reparking their vehicle every 2 hours).
- **4P Free Parking:** Time restricted 4-hour parking supports medium-stay uses such as recreational and cultural facilities. However, such parking controls are generally not recommended where these areas are located close to businesses. The incentive for employees and other long-stay users to park in these zones illegitimately (reparking their vehicle every 4 hours), is strong.

4P parking has not been recommended for the Study Area.

- **All day Free Parking:** All-day free parking provides the maximum flexibility for users, but is appropriate only when there is ample parking supply to cater for everyone. Where demand begins to approach 85% or more of supply at peak times, alternative controls should be used to differentiate parking areas.
- **Time Restrictions:** It is recommended that all managed parking be restricted to the 8am-6pm period. For the majority of the network, this can be retained for Monday-Friday only, but in locations where weekend demand is high, parking restrictions should be set for Monday-Sunday. Limiting duration restrictions and or paid parking to daylight hours limits the potential impact on residents and visitors.
- **1P Paid Parking:** Used in retail areas to support high turnover business visitors, and to redistribute longer-stay activates to adjacent off-street public and private car parks.
- **2P Paid Parking:** Used in areas adjacent to retail to support business and medical visitors; specifically excludes use by employees and construction workers and all day parking.
- **4P Paid Parking:** Allows a mixture of short-stay uses; specifically excludes all day parking.

Time limited paid parking has not been recommended for the Study Area.

- **Capped Fee Parking:** Allows for hourly paid parking up to a set duration, with no additional cost beyond this duration. This is intended to create spaces for employees and students to park in the public realm, while still retaining viability for short-stay visitors.
- **First-Hour Free Parking:** Used to promote very short stay uses and encourage rapid turnover of parking. This is particularly valuable as a way to shift parking off-street, and away from the prime on-street locations. Private car parks often utilise this form of parking management to shift cars onto their site, ensuring that customers walk through their establishment and an increase in footfall. Its effectiveness can be diminished if there is free parking in close proximity.

  First-hour free parking does not provide the same level of advantage in on-street environments, particularly where demand is already high. It also has less utility in public car parks, where the trip destination is largely unknown.

First-hour free parking has not been recommended for the Study Area.

Hypothecation of parking revenue

Paid parking fees are an effective measure of managing parking, by increasing the efficient use of a shared resource. The revenue obtained from this form of parking management is, by definition, used to offset the cost of enforcement and installation. Beyond this maintenance cost, paid parking revenues may be 'hypothecated' to improvements in transport and local streetscapes.

This provides direct benefit to the community and additional value over and above the impacts of managed parking alone. International examples show that where revenue is hypothecated to local improvements, patronage of these businesses and land values increase markedly.

Conclusion

This work considers a series of strategic recommendations to support the objectives of the overall Study, as it pertains to parking. This includes consideration for policy, planning, management and enforcement changes as necessary to improve the function of the transport system, reduce impacts on surrounding suburbs, promote the use of sustainable travel modes and ensure that the transport network can adequately accommodate future development.

Yours faithfully

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APPENDIX E

STAKEHOLDER ENGAGEMENT PLAN – DRAFT

Stakeholder Engagement Plan

Keiraville - Gwynneville Access and Movement Study

80018018

Prepared for
Wollongong City Council

26 September 2017

Cardno
Shaping the Future

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1 Introduction

1.1 Purpose

This Stakeholder Engagement Plan (SEP) has been developed for the Keiraville – Gwynneville Access and Movement Study. This SEP aims to describe the communication and consultation approach and activities for the review and assessment stages of the study, and keep key stakeholders informed during project tasks.

The objectives of the Keiraville – Gwynneville Access and Movement Study are:

- To examine and document the existing and future potential operation of the traffic and transport system within the suburbs of Keiraville and Gwynneville; and
- To develop strategies to improve the transport system, reduce impacts on surrounding suburbs, promote the use of sustainable travel modes and ensure that the transport network can adequately accommodate future development in the area.

1.2 Project background

Wollongong City Council (Council) is undertaking an Access and Movement Study for Keiraville – Gwynneville to improve understanding of existing access and transport demand in the area and to mitigate the impacts of future growth. This will be achieved through implementation of traffic and transport strategies to encourage sustainable travel behaviour and ease pressure on the network. Council needs to understand the impact of planned development and infrastructure upgrades on traffic generation, accessibility, parking demand, and the overall transport network.

Access and movement now and in the future is a key concern for Council, as well as local stakeholders. The University of Wollongong (UOW) has recently developed the Wollongong Campus Master Plan which provides a framework to guide the physical development of the campus to 2036. In addition, the community-led Neighbourhood Forum 5 (NF5) group has been heavily involved in a number of strategies and plans for the area including the Council endorsed Keiraville – Gwynneville Implementation Plan, and has been a key advocate for this study.

The Keiraville – Gwynneville area and surrounds will experience significant growth in the coming decades due to planned education and health precinct expansion to capitalise on the region's knowledge based assets, as well as increased housing supply in surrounding areas such as West Wollongong, Metro Wollongong, Figtree, Dapto and Fairy Meadow.

1.3 Study area

The study area encompasses the area between the Princes Motorway (M1), on the northern and eastern boundary of UOW extending south towards Mount Keira Road, east towards the rail corridor and North Wollongong Station, and west towards Mount Keira Summit Park. A number of important destinations in and around the Keiraville – Gwynneville area which generate a high number of trips per day, influencing access and movement demand and behaviour. These include:

- Keiraville and Gwynneville village centres;
- The University of Wollongong (UOW) Campus;
- UOW Innovation Campus (iC);
- Wollongong CBD;
- Wollongong Hospital;
- Wollongong Botanic Garden;
- North Wollongong Station;
- TAFE Illawarra Wollongong Campus;
- Mount Ousley residential area;
- Local schools; and
- Sports and recreation facilities.

Access to these destinations via the road network is supported by major routes such as the Princes Motorway (M1), Princes Highway (A1) and Mount Ousley Road. Active transport links exist to some key destinations, however in general the network is disconnected and contains a number of missing links for pedestrians and cyclists. There are also a number of bus routes in the area providing connections to key destinations.

The study area and the key land uses are shown in **Figure 1-1**.

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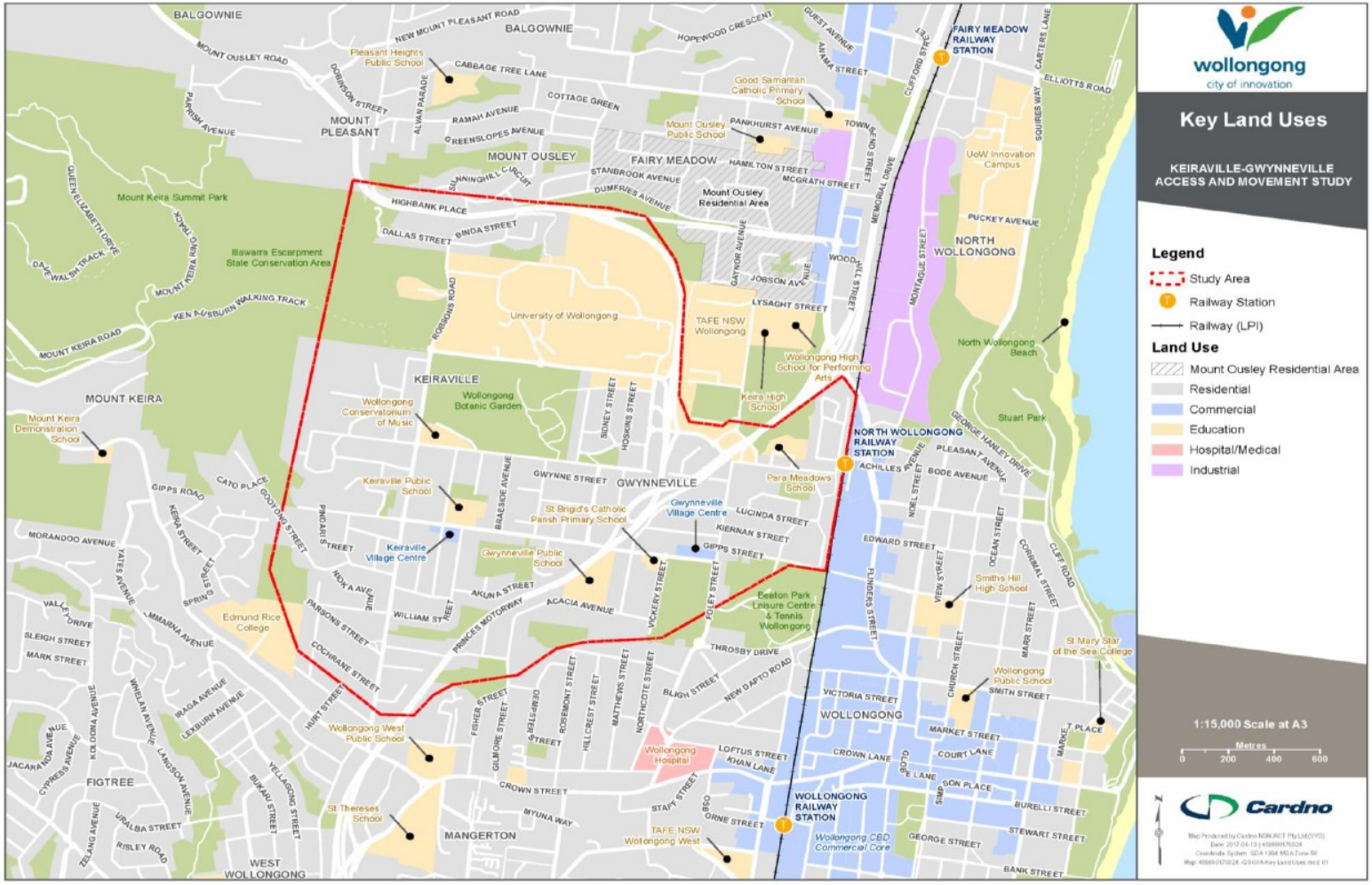
Figure 1-1 Study area and key land uses



1.4 Project milestones

The inception meeting for the project was held on the 9th of August 2017. Three stakeholder workshops are to be held throughout the project to be attended by stakeholder. The future key project milestones are detailed in **Table 1-1**.

Table 1-1 Key project milestones

Milestone	Date
Inception meeting	8 August 2017
Stakeholder Engagement Plan for review by Council	Week starting 14 August 2017
Workshop 1	29 November 2017
Workshop 2	5 February 2017
Workshop 3	1 March 2017
Draft Access and Movement Study	13 March 2018
Presentation to Councillors	14 March 2018
Final Access and Movement Study	3 April 2018

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2 Stakeholder Engagement

2.1 Communication and engagement objectives

The aim of stakeholder engagement for the Access and Movement Study is to ensure that:

- Information on the progress of the project is communicated to key stakeholders in a timely and appropriate fashion;
- Any key issues from stakeholder groups are identified early and are captured in the study during its development; and
- The findings and recommendations of the study are comprehensive and address stakeholder inputs.

2.2 Stakeholders analysis

Stakeholders that have an interest in this project are identified in **Table 2-1**. These stakeholders may either be impacted by the project or may influence or become advocates for the project.

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Table 2-1 Stakeholder list

Stakeholder group	Stakeholder name	Level of impact	Level of influence	Required commitment	Roles and Responsibility	Issues/ potential issues	Recommended communication activities
Key stakeholders							
Government body	Wollongong City Council, Infrastructure Strategy & Planning Division	High	High	High	Project manage study, provide direction to consultant, facilitate communication between all stakeholders	▪ Parking issues ▪ Active transport issues ▪ Public transport issues ▪ Road congestion ▪ Environmental/ heritage constraints ▪ Planned transport upgrades	▪ WCC Project Manager to discuss issues as required
	NSW Roads & Maritime Services (RMS)	Medium	High	Medium	Invited to attend stakeholder workshops, advising on draft report and ongoing analysis, targeted feedback sought on matters affecting State road network operations	▪ Planned upgrades ▪ Bus performance ▪ Road congestion	▪ Face-to-face meeting to discuss known issues and options
Community	Neighbourhood Forum 5 (NF5)	High	High	High	Invite to attend stakeholder workshops, advising on draft report and ongoing analysis	▪ Parking issues ▪ Safety issues ▪ Public transport performance ▪ Road congestion ▪ Environmental/ heritage issues ▪ Active transport issues	▪ Face-to-face meeting prior to workshop to discuss the study broadly, review known issues (the map NF5 created) and invite for 2 reps to attend workshop
Education	University of Wollongong (UOW) – including various internal stakeholders (e.g. administration, student representatives, Sustainable Transport team, UniCentre, halls of residence)	High	High	High	Invite to attend stakeholder workshops, advising on draft report and ongoing analysis, targeted feedback sought on matters affecting access to and operation of campus	▪ Public transport performance ▪ Active transport issues ▪ Parking issues ▪ Road congestion	▪ Face-to-face meeting to discuss known issues and options ▪ Email communications
Stakeholders							
Government body	NSW Department of Planning and Environment (DPE)	Low	Medium	Low	Invited to attend stakeholder workshops, feedback sought on draft report and ongoing analysis	▪ Public transport ▪ Active transport issues ▪ Road congestion	▪ Letter and invite for 1 rep to attend workshops. ▪ Offer to meet to discuss known issues ▪ Email communications
	Public Transport Operators, including Transport for NSW (TfNSW)	Medium	High	Medium	Invited to attend stakeholder workshops, advising on draft report & ongoing analysis, feedback sought on matters affecting public transport operations	▪ Bus performance ▪ Train performance ▪ Active transport issues ▪ Road congestion ▪ Safety issues	▪ Letter and invite for 1 rep to attend workshops. ▪ Offer to meet to discuss known issues ▪ Email communications
	WCC Active Transport Reference Group	Medium	High	Medium	Invited to attend stakeholder workshops, advising on draft report & ongoing analysis, feedback sought on matters affecting active transport participation	▪ Active transport issues ▪ Safety issues	▪ WCC Project Manager to discuss issues as required ▪ Email communications

Stakeholder group	Stakeholder name	Level of impact	Level of influence	Required commitment	Roles and Responsibility	Issues/ potential issues	Recommended communication activities
	Other WCC divisions including Botanic Gardens, Waste, Senior Citizens Centre etc.	Medium	Medium	Medium	Attending stakeholder workshops, advising on draft report & ongoing analysis, targeted feedback sought on matters affecting operations & clients	▪ Environmental/ heritage issues ▪ Public transport issues ▪ Active transport issues ▪ Road congestion	▪ WCC Project Manager to discuss issues as required ▪ Email communications
	Department of Defence, Wollongong Army Reserve Hall & Depot	Low	Medium	Low	Invited to attend stakeholder workshops, feedback sought on matters affecting operations & clients	▪ Road congestion	▪ Letter as per above and invite for 1 rep to attend workshops. ▪ Offer to meet to discuss known issues ▪ Email communications
	Councillors of Wollongong City Council	Medium	High	Medium	Routine community consultation & representation, formal Council responsibilities including voting on resolutions	▪ Parking issues ▪ Active transport issues ▪ Public transport issues ▪ Environmental/ heritage constraints ▪ Planned transport upgrades	▪ Councillor presentation ▪ Project updates by enquiry
Transport operator	Private bus operators (e.g. Premier Illawarra, Dion's etc.), Wollongong Radio Cabs	Medium	High	Medium	Invited to attend stakeholder workshops, advising on draft report & ongoing analysis, feedback sought on matters affecting public transport operations	▪ Bus performance issues ▪ Public transport issues ▪ Road congestion	▪ Offer face-to-face meeting to discuss known issues and options, if cannot attend workshops.
Community	Keiraville - Gwynneville Residential community	Medium	Medium	Medium	Invited to attend stakeholder workshops, feedback sought on draft report & ongoing analysis	▪ Road congestion ▪ Parking issues ▪ Public transport issues ▪ Safety issues ▪ Environmental/heritage constraints	▪ Letter to all residents about study ▪ Have your Say page with mapping tool and feedback form ▪ EOIs invited to attend workshop (10 places available for residents)
	Bicycle User Group (iBug)	Medium	High	Medium	Invited to attend stakeholder workshops, advising on draft report & ongoing analysis, feedback sought on matters affecting bicycle use	▪ Active transport issues ▪ Safety issues ▪ Road congestion	▪ Letter to IBug, as per above and invite for 1 rep to attend workshops
	Community organisations & facility operators (e.g. Wollongong Workshop Theatre, Wisemans Park Bowling Club, St Brigid's Catholic Church, Omar Mosque, St John's Catholic Church)	Medium	Medium	Medium	Invited to attend stakeholder workshops, feedback sought on matters affecting operations & their community members	▪ Parking issues ▪ Active transport issues ▪ Public transport issues ▪ Environmental/ heritage constraints ▪ Planned transport upgrades	▪ Letter as per above and invite for 1 rep to attend workshops. ▪ Offer to meet to discuss known issues
	Friends of Wollongong Botanic Garden	Medium	Medium	Low	Invited to attend stakeholder workshops, feedback sought on matters affecting operations & clients	▪ Parking issues ▪ Active transport issues ▪ Public transport issues ▪ Environmental/ heritage constraints ▪ Planned transport upgrades	▪ Letter as per above and invite for 1 rep to attend workshops. Offer to meet to discuss known issues
Private business	Keiraville and Gwynneville business operators	High	Medium	Medium	Attending stakeholder workshops, advising on draft report & ongoing analysis, targeted feedback sought on matters affecting local business community	▪ Parking issues ▪ Road congestion ▪ Active transport issues ▪ Public transport issues	▪ Visit businesses with letter about study, gather any known issues on the spot. EOIs invited to attend workshop (10 places available)
Education	TAFE Illawarra (Wollongong campus)	Low	Medium	Low	Invited to attend stakeholder workshops, feedback south on draft report and ongoing analysis	▪ Parking issues ▪ Road congestion ▪ Public transport issues	▪ Letter as per above and invite for 1 rep to attend workshops.

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Stakeholder group	Stakeholder name	Level of impact	Level of influence	Required commitment	Roles and Responsibility	Issues/ potential issues	Recommended communication activities
						▪ Pedestrian and cycling issues ▪ Safety issues	▪ Offer to meet to discuss known issues ▪ Email communications
	Schools (including Keiraville Public School, Gwynneville Public School, St Brigid's Catholic School, Para Meadows School, Keira High School, Wollongong Performing Arts High School)	High	Medium	Medium	Invited to attend stakeholder workshops, feedback sought on matters affecting school communities	▪ Parking issues ▪ Road congestion ▪ Public transport issues ▪ Active transport issues ▪ Safety issues	▪ Visit schools with letter and gather know issues. Invite to attend workshop.
	Other educational establishments (e.g. Wollongong Conservatorium of Music, child care centres)	Medium	Medium	Low	Invited to attend stakeholder workshops, feedback sought on matters affecting operations & clients	▪ Parking issues ▪ Road congestions ▪ Public transport issues ▪ Active transport issues ▪ Safety issues	▪ Visit with letter and gather known issues. Invite to attend workshop.

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2.2.1 Consultation and approvals

The Cardno team, where appropriate, will consult with the above groups (and others as may be identified) regarding the project with the approval of WCC. Consultation outcomes will be recorded in meeting minutes and in a project comments log which will summarise comments, actions and responses.

2.3 Key messages

The key messages employed during the three stakeholder workshops include:

- Workshop 1:
  - The objectives of the Keiraville-Gwynneville Access and Movement Study;
  - Findings from the background review;
  - Identified issues and constraints relating to the current transport network; and
  - Findings of the crash analysis.

Workshop 1 will provide a brainstorming opportunity with the stakeholders. The Aimsun traffic model will also be summarised and presented at the workshop. The workshop will provide the stakeholders an opportunity to provide input into the study, issues and potential strategies.

- Workshop 2:
  - Presentation of initial analysis and obtain feedback from key stakeholders;
  - Draft strategies and plans for the transport network; and
  - Outputs from the traffic mode.

Workshop 2 is a refining session with stakeholders and will provide an opportunity for the stakeholders to provide input in draft strategies.

- Workshop 3:
  - Present findings of finalised strategies, upgrades and plans; and
  - Identify a prioritised scheme for recommended upgrades, which will then be fed into the development of an implementation plan.

Workshop 3 will provide an opportunity for stakeholders to prove input into the priorities scheme for recommended upgrades. This will then be fed into the implementation plan.

2.4 Communication and engagement tools and techniques

The engagement tools and techniques to be used to communicate include:

- Letter to residents and other stakeholders;
- Have Your Say page, with mapping tool, feedback from, document library (including a FAQ);
- Face-to-face meeting with key stakeholders via workshops and meetings; and
- Email correspondence and project comments log (as mentioned in Section 2.3 above).

2.5 Communication protocols

Communication with the stakeholders will be conducted in liaison with WCC and the WCC Community Engagement Team. The general protocol for the workshops is:

- WCC to invite all relevant stakeholders and organise workshop meeting times, location and venue;
- The WCC Project Manager and the Cardno Project Manager will attend some stakeholder meetings together, as agreed. Cardno will record meeting minutes and update the project comment log. For some stakeholders WCC alone will undertake the meetings.

2.6 Reporting and outcomes

Cardno will prepare a summary section in the Access and Movement Study, which will document all consultation activities throughout the project, including inputs received and the outcomes of stakeholder workshops.

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A copy of all meeting minutes and the project comments log will be included as an appendix to the report.

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APPENDIX F

CONSOLIDATED COMMUNITY COMMENTS

WS1 Community Expectations			
No.	Mode	Location	Expectations
1	Road	Gooyong St	Speed hump or school zone with speed camera
2	Pedestrian	Gooyong St	Footpath on the street
3	Road	Everywhere	"No parking" signs closer to corners of all streets to increase visibility
4	Parking	Rosedale Ave	School pick-up designated zones Residential only parking
5	Parking	Rosedale Ave	Residential only parking
6	All	UOW	University annually reviews/audits success of access movement strategies
7	Pedestrian + Cycling	All	Increase number of people walking and cycling - make it a priority over car use
8	Parking	Keiraville and Gwynneville	Better parking amenity for residents and businesses
9	All	Keiraville and Gwynneville	Connections from study area to north Wollongong
10	Parking	All	Resolve parking issues and more marked parking
11	NA	NA	A vision document of direction with proposed fixes and output to D.C.P
12	Road	University Avenue	Future major interchanges - what is the plan with University Avenue low bridge
13	Road	Keiraville and Gwynneville	Defining roadway so parking doesn't block traffic flow
14	NA	NA	Criteria for assessing priorities of projects
15	NA	NA	Issues are considered and addressed
16	Parking	UOW	Parking at the uni, commerical properties and multi-unit dwellings is accounted for in the D.C.P
17	NA	Keiraville and Gwynneville	Have livable suburbs
18	Public transport	Keiraville and Gwynneville	Support infrastructure for modal shift to active and public transport
19	NA	Keiraville and Gwynneville	Infrastructure list for state government investment and cooperation between government agencies
20	NA	NA	Set criteria to prioritise for these actions
21	Road	Keiraville and Gwynneville	Reduce traffic speed and volume through feeder streets
22	All	Keiraville and Gwynneville	Better communication with uni, council and community
23	Pedestrian	Keiraville and Gwynneville	Safer crossing at Keiraville and Robsons Rd, Gwyneville and Berkley Rd
24	Parking	UOW	Transparency from uni on student numbers, parking availability and survey results
25	Parking	Botanic Gardens	Parking for Botanic Garden tourists
26	Parking	UOW	University to take responsibility for affordable and sufficient parking for staff and students
27	All	Keiraville and Gwynneville	Balance resident and student needs equally
28	NA	Keiraville and Gwynneville	University recognises its important role as a member of the community
29	Parking	Keiraville and Gwynneville	Carrpark space marking on street to manage parking
30	Parking	Keiraville and Gwynneville	Resident permit parking scheme / lined markings on residental streets
31	Parking	Keiraville and Gwynneville	Greater ranging patrols
32	Cycling	Keiraville and Gwynneville	Improved shared cycleway network off road
33	Public transport	Keiraville and Gwynneville	Maintain free shuttle bus
34	All	Keiraville and Gwynneville	To ensure there is no conflict in planning with RMS projects
35	Road	Keiraville and Gwynneville	Change habits of driving
36	All	Keiraville and Gwynneville	Solutions don't create secondary problems
37	Cycling	Keiraville and Gwynneville	Improve cycle links
38	Parking	Keiraville and Gwynneville	Increase turnover near shops
39	Parking	Gwynneville/Keiraville shops	More parking needed
40	Parking	Vickery Street	More available parking

WS1 Transport Solutions			
No.	Mode	Location	Solutions
1	Parking	Gwynneville village centre	Optimise parking signage to increase parking and safety
2	Parking	Gipps Street	Widen street with angle parking on southern side
3	Pedestrian	Gipps Road, Gwynneville village	Remove pedestrian refugee island
4	Parking	Vickery Street	Optimise car parking (pave/lines) on eastern side
5	Parking	Keiraville and Gwynneville	Use technology / future technology for parking management - e.g. parking meters that give over-stay alters and automatic fines
6	Public transport	Keiraville and Gwynneville	Better integration of public transport network through better connections (links and transfers) - transport hub interchanges
7	Active transport	Keiraville and Gwynneville	Improve infrastructure to encourage active transport for main traffic generators - UOW, Gwynneville centre, Keiraville, hospital, TAFE, Botanical Gardens
8	Parking	Keiraville and Gwynneville	For business districts: - Parking meters for car turnover and control parking behaviour - Strategies to eliminate revenue raising notion e.g. have first 30 mins free
9	Parking	Keiraville and Gwynneville town centres	Resdiential parking solutions: - Timed parking - Residential parking scheme - One street side for short term parking and the other for residential sticker parking
10	Parking	Wollongong TAFE	Parking infrastructure: TAFE land parking multi-storey carpark for UOW, TAFE, north Wollongong station, Sydney commuters
11	Parking	UOW	Provide more parking or kiss 'n' ride at university
12	Pedestrian	Keiraville and Gwynneville	More footpaths e.g. port conservatorium
13	Road	Beaton Park	Various needs at Beaton Park like school carnival days very busy
14	Train	North Wollongong Station	Improve train timetabling to address car parking around station
15	Parking	Keiraville and Gwynneville	Ensure new developments have enough parking
16	Road	Keiraville and Gwynneville	Signage for drivers to increase awareness of other travel options
17	Parking	Keiraville and Gwynneville	Line marked spaces on streets with consideration of resident parking scheme
18	Pedestrian	Robsons Road	Assess crossing locations on Robsons Road junctions to provide additional safe crossing
19	All	Keiraville and Gwynneville	Think futuristically of using technology, for example – technology based parking meters which give over-stay alters and possible automatic fining
20	Road	John Street	Provide speed hump on John Street for traffic calming
21	Road	John Street	There should be no left turn from John Street to increase safety

Business Visit 06.11.2017

No.	Mode	Business	Issue	Solutions
1	Parking	Friendly Grocer	- Delivery truck / cleanaway trucks - No disabled access - BWS Delivery truck blocks access - Car park is not timed and parents of school children park there	
2	Pedestrian	Zanders Café	Condition of footpath on Gipps Road is a concern - people are tripping over especially the eldering	
3	Parking	The White Rabbit	- Parking on eastern side of Grey Street, adjacent to Zanders Café is untimed - Monday is bin day and impacts on parking - Liquor licence - disabled toliet and ramp (owner Martin Aguis would like someone to visit regarding this issue)	Parking near Zanders Café should be timed for at least 4 spots
4	Parking	Keiraville Pharmacy	- Parking is a problem particularly with compliance - Disabled parking needed - Timed parking on opposite side of Grey Street	Rangers to patrol area more often
5	Parking	Australia Post	- Parking enforcement - Poor parking practices	- Marked bays may help with poor parking practices - Shorter length for parking zones
6	Parking Road	BWS	- Truck access - Parking	
7	Parking	Gwynneville shops	- Increased traffice and no increase in parking - Extension of parking required - Masonic building was supposed to provide off street parking but not sure this is done - Private car parks - people visiting Senior Citizens Centre often stay longer than allowed	

Businesses that provided feedback were:
- Friendly Grocer
- Zanders Cafe
- The White Rabbit
- Keiraville Pharmacy
- Australia Post
- BWS

Issues - Road

No.	Location	Issue/Comment	Number of times issue raised	Suggested Solution
1	Eastern St and Gipps Rd	Speeding vehicles and high chances of traffic accidents	2	Roundabout needed in the corner of Gipps Road and Eastern Street
2	Gipps Rd rail crossing	Open up level crossing to north going across Gipps St like Corrimal and Woonona	1	
3	All	Abandoned cars (primarily foreign uni students returning home)	1	Education at uni to repurchase and sell used cars
4	Robsons and Dallas	Need roundabout	1	
5	North of Gipps Rd	No standing sign on all street corners north of Gipps Rd	1	
6	Gooyong	Speeding cars uphill/downhill and cut corners - danger to preschoolers exiting driveways, children playing in the street and people walking to the park	6	Speed bump, draw a centreline marking, traffic calming needed
7	Gipps st Bridge	Speeding cars when entering Gwynneville Village	1	Speed humps at the western end of Bridge on Gipps St, Gwynneville, to slow down cars
8	Gipps Rd at Gwynneville shops	Road needs to be widened by 1200mm to accommodate increased traffic	1	Take some of Wisemen's Park to do this
9	College View	If there is an emergency evacuation from College View Estate the one road in/out is of concern	1	
10	Mt Ousley Rd	Monitor truck noise on Mt Ousley	1	
11	Mt Ousley	Major access to uni over Mt Ousley Rd is required	2	
12	Bulwarra	Wide dangerous junction, cars not following road markings, speeding through junction	1	Better junction marking, narrow junction and reduce speed
13	Gooyong	Long steep section of Gooyong St is a safety hazard with speeding vehicles	1	
14	Freeway at Gipps St overpass	Excessive and illegal use of exhaust brakes by trucks as they slow down because of no inbound speed cameras on freeway. The exhaust brake noise travels far since speed camera has been erected and increased truck movements from Port Kembla car terminal	1	Erection of sign outlining need to limit or do not use exhaust brakes in built up areas.
15	Porter and Foley	Keep Clear' on the intersection of Porter + University st near up coming traffic light	1	Keep Clear on the intersection of Porter+ University st near up coming traffic light
16	Murphys and Rosedale	Dangerous exit from Rosedale Ave to Murphy's Ave (accident inevitable) - have written to council	1	
17	Braeside at Murphys	Dangerous exit from Braeside Ave to Murphy's Ave	1	
18	Grey St	Traffic and parking	1	
19	Vickery St and Acacia Rd	Fast and dangerous drivers are endangering the lives of children and adults	1	Speed bumps
20	Eastern and Gwynne	Vision on right turn from Gwynne to Eastern limited by parking	1	Move no parking back further from the corner
21	Vickery St	Danger to children from road users - all schools will have flashing lights by 2015 but this is NOT enough. Keep all our kids safe	3	- Pedestrian crossing to keep kids safe - Children crossing St Brigid's Primary School - Zebra crossing - Speed humps - Clearer signage
22	John Street	John Street is narrow when cars park on both sides of street	1	John Street should be one-way only
23	Mt Ousley	The Mount Ousley Road exit ramp roundabout is congested and dangerous in peak times.	4	Build overpass from mt ousley rd to north side of uni
24	Northfields Avenue	Kiss and drop are needed at locations such as Northfields Avenue and library carpark.	4	
25	Keiraville and Gwynneville	Uni students are parking across driveways and it is difficult to see oncoming traffic when exiting driveways	2	
26	Keiraville and Gwynneville	The amount of available parking spaces are reduced by hap-hazard parking	1	Numerous more parking spaces could be achieved if parking parking line-markings were introduced as well as angled parking
27	Keiraville and Gwynneville	Many rural students use Keiraville/Gwynneville as a long term car park until they return home. Wollongong Council needs to develop a comprehensive policy around managing parking in Keiraville/Gwynneville.	1	
28	Keiraville and Gwynneville	Parking around Keiraville and Gwynneville shops at times is a challenge, more ranger patrols would assist with people parking long term.	1	
29	UOW	More building at the uni means that workmen are there at 6.30 and 7 am taking any of the on street parking available, pushing student parking further into our streets.	1	
30	Robsons Road	Street parking on robsons rd between gipps rd and murphy's ave is unattainable for residents during uni hours	1	
31	Keiraville and Gwynneville	Residents and their visitors cannot access parking in their own street	2	
32	Grey Street	Grey street is clogged up with cars from university students, cars there the whole day making it difficult for parents to park close to Keiraville public school to pick up their kids	1	
33	Keiraville and Gwynneville	There is a shortage of parking in the area which will only be exacerbated if the Gong Shuttle starts to charge full fares. This will encourage additional car usage.	1	
34	UOW	A multi-storey car park should be built on University land in the Mount Ousley Interchange project, which could be used by a variety of users and so it would be an excellent and enduring contribution to the local community by the University.	2	It would be an opportunity to encourage car pooling by commuters and reduce the pressure on other access points to the University. It could also be an alternative location for an additional bus interchange.
35	Keiraville and Gwynneville	Parking rangers are needed to regulate people parking across driveways	5	
36	Mountview Avenue	Students park here all days (sometimes for days) and walk through the park to the free bus from North Gong station. No available on street parking for residents or visitors during the week.	1	
37	Harkness Avenue	Harkness Avenue is effectively made one-way due to cars parked on both sides, forcing only one car at a time to pass	4	
38	All	Marked, time restricted parking needs to be extended to many more residential streets in the area.	1	
39	Murphys Avenue	entering and leaving driveways and side streets along the length of Murphys Avenue is extremely dangerous due to lack of line of sight because of parked cars	1	
40	Grey Street	Grey Street should have timed parking as uni Park here all day and hard to pick kids up during school times	2	Parking should be made to be 1 hr parking between 2:45pmo and 3:45pm on school days around Keiraville Public School
41	Eastern Street	Hard to see when turning out as cars park too close to corner and dangerous to cross road	2	
42	Cosgrove Avenue	Cosgrove Avenue is used as a parking lot by UOW students and has high vehicle speeds	1	
43	All	Some property owners have converted garages into student accommodation eliminating off street parking, creating multiple student occupancies with not enough off or no off street parking where every resident owns a car	1	
44	Hillview Avenue	Cars are parked regularly on the corner of Foley Street and Hillview Avenue, making it difficult to enter and leave the road	1	A "no stopping sign" should be placed here
45	Gipps Road at Gwynneville shops	Gipps rd needs to be widened by 1200mm to accommodate increased traffic - taking some of Wisemans park	1	
46	Gipps Rd and Vickery	Make Gipps Rd East/Frances St/Vickery St roundabout a one way system	1	
47	Gipps Road and Murphys Avenue	Make Gipps Road one way and Murphys Avenue the other way	1	
48	Porter Street roundabout	Heading north onto roundabout unable to proceed 8:30 - 9:30am	1	
49	Gipps Road		1	Open up Gipps road at rail crossing to ease traffic movement
50	Gipps Street near Gooyong Street	Maintain the 'No Through' state of Gipps Road past Pindari Street. Not joining with the side street of Gipps Road	1	
51	Gipps Road and Murphys Avenue		1	Marked parking bays on major traffic routes e.g. Murphys, Gipps, etc
52	Eastern Street and Murphys Avenue		1	Line parking bays in Eastern St and Murphys Ave
53	Gipps Road near Fairy Street	When unit/townhouse development involves numerous tenants, consider the number of garbage bins to be emptied as many end up as traffic hazards, not to mention the traffic flow on the busier streets when bins are being emptied	1	
54	Gwynne Street	Proposed development a no 6 Gwynne st Gwynneville - we believe it is a commercial development, traffic issues, sets a precedent for boarding houses within residential areas, safety and privacy issues for residents and preschool, flood zone	1	
55	Foley Street and Gipps Road	Right turn lane from Foley Road into Gipps Road when travelling south	1	
56	Gipps Road and Vickery Street	Congestion around Gipps Road at St Brigids pick up time	1	
57	Robsons Road	Volume and speed of traffic especially on downhill sections on the north and south of Gipps Rd intersection	1	Extend school zone to to p of the hill on southern and northern side of the road
58	Robsons Road	Cars turning to head south on Robsons Rd from Gipps Rd intersection don't see pedestrians wanting to cross Robsons Rd on the southern side of roundabout	1	Extend school zone west on Gipps Rd to western side of the intersection with Robsons Rd
59	Gipps Rd	Poor road markings especially on pedestrian crossing next to the school and Keiraville shops	1	Road markings and repaint pedestrian crossing
60	Keiraville and Gwynneville	Road are very congested around early mornings, school drop offs and pick up times from 3pm to 5pm. The traffic can be chaotic and makes it difficult to enter or exit Gipps Road, Gwynneville.	1	
61	Keiraville and Gwynneville	Traffic congestion around Keiraville public and St Brigid school AND the villages. I see school parents doing illegal U-turns on the corner of Gipps & William St every day, also out front of St Brigid church, plus mothers driving up onto area reserved for funeral rehearsals. (The previous principal was quite involved and stood with parents who breached the rules)	1	Dedicated 'drop and go' area at each school, in the side streets, not on Gipps Rd
62	Keiraville and Gwynneville	Parents crossing roads in heavy traffic with small children instead of using the lollipop crossings	1	Whole area as a 40 km per hour zone, not just school areas.
63	John Street		1	Set up John Street as a 40km/h speed zone
64	Robsons Road	There are sight distance issues on Robsons Road	1	
65	Foley Street	Foley Street has been observed to be a rat-run into town	1	

Issues - Parking

No.	Location	Issue/Comment	Number of times raised	Suggested Solution
1	Mauriview Avenue	No street parking for residents or visitors during the week because students park for the day or up to days Parking across driveways and too close to street corners	2	
2	Corner of Eastern and Moore St (especially around St John's Anglican Church) Dallas Street Murphy's Ave	Parking problem during the week in Autumn and Spring uni seasons	4	- Parking restrictions limited to Autumn and Spring uni session for students and staff - Park at the innovation campus
3	Harkness Street	Parking on both sides of road make it narrow and dangerous	2	
4	Gwynneville shops	Unknown parking under the Masonic Centre Gwynneville needs more parking	5	Masonic Centre- needs more advertisement/signposts
5	Keiraville shops	More parking needed or short term parking spaces to keep the cars moving and encourage those at the coffee shops to park further away	2	Restricted parking limited to 1 hr reinforced radius 100m from Gipps rd and Grey street
6	Dallas Street Grey Street College View Georges Avenue	- Residents parking during no parking times - Resident only parking permits in college view estate - Resident parking permits on days off work cannot have friends/tradesmen/ect call as no parking spaces	5	Parking needs to be monitored on street outside school Resident parking permits in streets affected by uni parking
7	Porter Street			Use vacant land on Porter St at the railway for commuter parking
8	Dallas Street Grey Street College View Georgina Avenue	2hr parking should be removed	4	
9	Greenacres Road	Parking - people parking and accessing buses preschool drop off	1	
10	Mt Ousley Road	Bring back the curtsey on Mt Ousley Road	1	
11	Gwynneville shops	Dedicated parking is required at Gwynneville shops	1	
12	Keiraville and Gwynneville	Boarding houses should be limited due to the impacts on street parking	5	STRATA regulations on boarding houses
13	Cosgrove Avenue	Residents have difficulty finding parking during the day Students parking illegally on the corner reducing visibility entering the street	2	
14	Rosedale Avenue	Rosedale Avenue never gets council re-seeger due to cars parked - big tree hitter issue	1	
15	Rosedale Avenue near entrance to Keiraville School		2	Children drop off and collect parking signs AM/PM
16	Vickery Street	There is little parking because illness people using oval uni students people visiting new shops on top of parents dropping off and picking up students More parking is needed for parents at all and pensioners at St Brigids - parking is taken up by people at shops and illness at Woonona Park	2	
17	Vickery Street	Before and after school parents of children - complete bedlam usually - many park partially across driveways making it impossible for residents to get in or out	1	
18	Beaton Park Woonona Park Church Mosque UOW	Overflow of parking into local streets	4	Use The Snakepit Stadium for uni parking and make uni busses stop near here
19	Sebastian streets	Completion for parking around free shuttle bus stops with uni students and CBD commuters	2	
20	Keiraville and Gwynneville including Crawford Avenue	Uni student/s are parking across driveways and it is difficult to see oncoming traffic when exiting driveways	7	
21	Keiraville and Gwynneville	The amount of available parking spaces are reduced by hap-hazard parking	1	Numerous more parking spaces could be achieved if parking parking line-marking's were introduced as well as angled parking
22	Keiraville and Gwynneville	Many rural students use Keiraville/Gwynneville as a long term car park until they return home Wollongong Council needs to develop a comprehensive policy around managing parking in Keiraville/Gwynneville	1	
23	Keiraville and Gwynneville	Parking around Keiraville and Gwynneville shops at times is a challenge more ranger patrols would assist with people parking long term	1	
24	UOW	More building at the uni means that workmen are there at 6:30 and 7am taking any of the on street parking available pushing student parking further into our streets	1	
25	Ralsona Road	Street parking on ralsona rd between gipps rd and murphy's ave is unutilisable for residents during uni hours	1	
26	Keiraville and Gwynneville	Residents and their visitors cannot access parking in their own street	3	
27	Grey Street	Grey street is clogged up with cars from university students cars there the whole day making it difficult for parents to park close to Keiraville public school to pick up their kids	1	
28	Keiraville and Gwynneville	There is a shortage of parking in the area which will only be exacerbated if the Gong Shuttle starts to charge full fares This will encourage additional car usage	1	
29	UOW	A multi-storey car park should be built on University land in the Mount Ousley Interchange project which could be used by a variety of users and as it would be an excellent and enduring contribution to the local community by the University Could also be an alternative location for an additional bus interchange	2	It would be an opportunity to encourage car pooling by commuters and reduce the pressure on other access points to the University
30	Mauriview Avenue	Student park here all days sometimes for days and walk through the park to the free bus from North Gong station No available on street parking for residents or visitors during the week	1	
31	Harkness Avenue	Harkness Avenue is effectively made one-way due to cars parked on both sides barely enough for car at a time to pass	4	
32	All	Marked time restricted parking needs to be extended to many more residential streets in the area	1	
33	Murphys Avenue	entering + leaving driveways and side streets along the length of Murphys Avenue is extremely dangerous due to lack of line of sight because of parked cars	1	
34	Grey Street	Grey Street should have timed parking as uni Park here all day and hard to pick kids up during school times Parking should be monitored	5	Parking should be made to be 1hr parking between 2.45pm and 3.45pm on school days around Keiraville Public School Provide a flat 25km road hump on Gipps Rd near Ralsona Rd intersection when approaching from the east to slow traffic approaching roundabout Change parking signs opposite the school on western side of Grey St to No Parking / school zone times like the eastern side of Grey St
35	Eastern Street	Hard to see when turning out as cars park too close to corner and dangerous to cross road	1	
36	Cosgrove Avenue	Cosgrove Avenue is used as a parking lot by UOW students and has high vehicle speeds	1	
37	All	Some property owners have converted garages into student accommodation eliminating all street parking creating multiple student occupancies with not enough off or no off street parking where every resident owns a car	1	
38	Hillview Avenue	Cars are parked regularly on the corner of Foley Street and Hillview Avenue making it difficult to enter and leave the road	1	A "no stopping sign" should be placed here
39	Porter Street		1	Use vacant land on Porter st at the railway for commuter parking
40	Everywhere - Georgina Avenue College View Estate Ralsona Road opposite Koolabong Oval Keiraville	Residents parking permit is required Keiraville Parking - mirco system as in Sydney - residents get a permit for free parking and everyone else during the week has to pay	5	Resident stickers
41	Innovation campus		1	Have UOW students park at the Innovation Campus and get bus from there
42	Rosedale Avenue		1	Install parking signage to allow parents to drop off and pick up their kids
43	Georgina Avenue	Georgina Ave should become a one-way street - too difficult with the students parking outside of the homes for 2 cars on either side to drive down	1	
44	Dallas Street	Residents should receive parking stickers	1	
45	Keiraville and Gwynneville town centres		1	Make shorter parking times at the shops to increase turnover Widening of Gipps rd at Southern side of Gwynneville shops to accommodate more car spaces
46	Keiraville Primary	Make a designated drop off zone for school parents (such as 2 min drop off and pick up)	1	
47	Ralsona Road - opposite Koolabong Oval Gipps Road	Rangers to check regularly for parking People park the wrong way here Should park near to kerb because it is a busy road but many don't Rangers to check where parking is timed	2	
48	Gipps Road Shops - Gwynneville	Angle parking is required opposite shops in Gipps Road Gwynneville	1	
49	Gipps Road near Terry Street	When units/townhouse development involves numerous tenants consider parking allotment not on street	1	
50	Gipps Road		1	Parking at Gipps Road Keiraville/Gwynneville painted lines as a guide to drivers parking. This would allow more cars to be parked
51	South of High schools- north and of Foley's Lane		1	Dalenton bosn behind the high school to be added parking and linked to free bus or uni local bus route
52	Gwynneville free bus stop	Lack of parking for free bus - bringing all day parking through Gwynneville	1	
53	John Street	Gipps Street to Murphy Avenue - parking especially on corner - not enough parking for parents at the gardens	1	
54	Keiraville and Gwynneville	Park and ride facilities should be considered in Keiraville and Gwynneville	1	
55	Paulsgrove Street	Parking on one side of Paulsgrove Street	1	
56	North Wollongong Station	Car parking at the station	2	
57	UOW	Uni should have to provide parking as part of any new development	1	
58	All	Limit the number of cars per household	1	
59	North-west corner of Gipps Street and Grey street		1	Use vacant land on NW cnr Greygipps for much needed parking
60	Corner of Murphys Avenue and Rosedale Avenue	Corner of Murphy's Avenue and Rosedale Avenue - due to parked cars both sides of rosedale and close to corners on Murphys Avenue very dangerous entering and leaving rosedale during peak uni hours - accident inevitable	1	
61	Rosedale Avenue	Parking should be only located on one side of Rosedale Avenue	1	
62	Eastern Street - St Johns	Give St Johns Church parking bays to use when they are expecting visitors on special occasions like funerals	2	
63	Keiraville and Gwynneville	Parking at Gwynneville on Gipps Road near Waterman's Parking Bowling Club as over-crowded and blocking driveways It is congested in the afternoons from 3pm to 5pm	1	
64	Keiraville and Gwynneville	Insufficient parking especially in Beaton Park and extra parking is needed most during events	2	
65	Keiraville and Gwynneville	Parking in the streets around the university areas is very congested making it difficult to drive in the area	1	The university should be providing more parking onsite for students and the Council should have better signage on streets in regards to parking areas and stopping
66	Keiraville and Gwynneville	Difficult to exit streets around the Botanical Garden because all the parked cars	1	
67	Keiraville and Gwynneville	Cycling too dangerous with university parking nightmare	1	
68	Keiraville and Gwynneville	Put in pad parking meters for maybe $5 per day around the university they need to provide additional free bus to encourage students onto public transport But not the village shops	1	
69	Masonic Centre		1	Parking signs should be dynamic at town centres and at Masonic Centre
70	North Wollongong Station		1	Recommend council buy out one of the used car sales yards on the princes highway and build a large scale car park on it for commuters travelling to sydney on train

Issues - Public Transport

No.	Location	Issue/Comment	Number of times issue raised	Suggested Solution
1	Crawford Avenue	Vehicles speed on Crawford Avenue	1	
2	Crawford Avenue	Bus (#10?) too large for the street, taking up both lanes, and the turns - runs residents off the road	1	
3	Crawford Avenue	Vehicles parked over white lines make it difficult for buses to maneuver on bends		
4	Everywhere	Changing free shuttle bus to paid service will add congestion	1	
5	Keiraville and Gwynneville	The free shuttle bus is an excellent innovation and should be maintained as it encourages public transport use rather than driving and congesting roads and parking	7	
6	Cochrane Street	Parked cars on both side of Cochrane Street make it difficult for buses to navigate	1	
7	Robsons Road	Bus stop shelters are needed on Robsons Road	1	
8	UOW	Centralise pick up - bus into the uni from outlaying areas for student travel	2	
9	North Wollongong Station	Train services are infrequent, and only arrive once per hour in both directions, causing many students to wait a long time for the next service. Extend the free bus service to Porter Street and North Wollongong station	2	
10	Keiraville Shops	Tram of shuttle bus to service retail areas in Keiraville and Gwynneville	1	
11	North Wollongong Station	Light rail between North Wollongong station and UOW	1	
12	South of High schools- north end of Foleys Lane		1	
13	Braeside Avenue area	Extend the free bus service to assist elderly and disables e.g Braeside close, Gipps Rd, or have more free bus routes	1	
14	Robsons Road and Gipps Road, Robsons Road and Northfields Avenue, Keiraville and Gwynneville	More free buses	3	
15	Gywnneville and Keiraville Shops	Shuttle bus does no service stops Free bus to service Gwynneville and Keiraville Shops	3	
16	North Wollongong Station	Shuttle bus to include North Wollongong Railway station on weekdays and weekends. It is very difficult to park on weekdays, especially after 9:00am.	2	
17	Botanic Garden - Gipps Road	Bus should go to Botanic Gardens - seen in other cities timetables from city to botanic gardens via…	1	Provide more park and ride locations in the surrounding suburbs Identify what percentage of staff/students would be willing to mode shift to using a bus if a 'free bus' connecting Keiraville/Gwyneville to say Figtree/Cordeaux Heights/Mount Keira was implemented
18	Foleys Street near Porter Street	Extra free bus stop near corner of Foleys Street/Porter Street - many students live in that area	1	
19	Everywhere	Bike racks on buses	1	Discuss with the bus company on whether re-routing the No.10 service would benefit more of the community and/or relocate the bus shelter in Cochrane Street to where it can be better utilised on Robsons Road.
20	Everywhere	Shuttle bus route extension via Keiraville (to Uni and Figtree/Mangerton/West Wollongong)	1	
21	Northfields Ave	Light rail between the uni and the city. The free bus wont be free forever as it is government funded	1	
22	John St area, Gipps Street	Buses for rate payers for John Strret and Gipps Street	2	
23	NW Cnr of Foleys Street and Gipps Road	Move bus stop up Foley Street or in front of Bowls. Too congested being too much traffic and foot traffic in servo carpark	1	
24	Everywhere	Even with better than average bus routes in Keiraville and Gwynneville its still hard to bus it on weekends and public holidays - can this be improved	1	Detention basin behind the high school to be added parking and linked to free bus or uni local bus route
25	Robsons Road and Gipps Road		1	Provide a tram/light rail up Gipps Road and Robsons Road
26	Beaton Park	Shuttle bus - put schematic diagram in buses which shows route and parking areas. Parking at Beaton park Basketball stadium should be promoted and get cars off the streets	1	
27	Everywhere	Appropriate bus stops are needed within suburbs of Keiraville and Gwynneville	1	
28	Keiraville and Gwynneville	Need additional services to the Illawarra. The trains are full on any given day, even Saturday and Sunday mornings at 7am, it's great to see our people traveling to Sydney for leisure, but standing for 1.5 hours is unacceptable. I commuted to Sydney 30 years ago and train travel has not improved here since then.	1	
29	North Wollongong Station	Stops have been removed at Fairy Meadow causing commuters to park at North Wollongong Station	1	

Issues - Pedestrian				
No.	Location	Issue/Comment	Number of times issue raised	Suggested Solution
1	Murphys Avenue	Pedestrians are forced to walk on road which is dangerous during the week due to traffic Footpath along the street to Sperring Park to Botanical Gardens and Conservatorium Footpath for strollers and wheelchair access to the Gardens Footpath on the botanic garden side of murphys ave	7	Footpath
2	Greenacres Road	Need footpath despite very high pedestrian volume and wheelchairs (Greenacres) Foothpaths needed to make Greenacres accessible in all weather for disabled access to Green bus	2	
3	Robsons Road	Footpath needed on western side of Robsons Road	3	
4	Vickery Street	Pedestrian crossing is needed for school children	1	- Pedestrian crossing to keep kids safe - Children crossing St Brigid's Primary School - Zebra crossing - Speed humps - Clearer signage
5	Gipps Road and Robsons Road	Safe crossing needed across Robsons road for school children and encourage walking/cycling in Keiraville generally	1	
6	Balgownie	Pedestrian access to UOW is needed from Balgownie	1	
7	Gwynneville town centre	Raised Crossings are needed at each end of Gwynneville shopping centre	1	
8	Botanic Garden	Improved footpaths are required for prams connecting to the gardens Access for elderly in car park of the South Coast Writers Centre is poor with uneven ground (south west end of the Gardens)	3	
9	Rail crossing between Throsby and North gong station	Another rail crossing between Throsby Drive and North Wollongong station for pedestrians and cyclists	2	
10	Keiraville Shops, Uni, City, Beach	Footpaths to university, city, and beach from Keiraville shops	1	
11	Throsby Drive	Foopath on northern side of Throsby Drive from traffic lights to Flinders St	1	Get rid of road island near bowling club
12	Eastern Street	More footpaths on the western side of Eastern St	1	
13	Gipps Road and Robsons Road	Footpath to the conservatorium of Music	1	
14	Gipps Road at railway	Limited opportunities for pedestrains and cyclists to cross railway line - open underpass at Gipps Road. Tramway bridge fails pedestrains. Only crossing points currently at Smith St underpass, tramway bridge, and North Wollongong rail stations overpass	1	
15	Throsby Drive and Flinders Street	Better connections from Gwynneville to the beach/city roundabout by bunnings cuts off pedestrian access	1	
16	Northwest corner of Foleys Street and Gipps Road	In this city of innovation couldn't we find something bettern than concrete and tar to surface our walkways. Big safety issue for aged walkers	1	
17	Murphys Road	Footpath on murphys rd from Robsons rd to Eastern St	2	
18	Everywhere	wayfinding signage between north gong station and iC for cyclists and pedestrians	1	
19	Everywhere - Murphys Avenue	Any new pedestrian or cycleways should be shared paths where practical Shared paths needed on Murphys Ave	2	
20	Northfields Avenue pedestrian overpass	Access to Northfields Ave 'Curly Whirly' overpass is dangerous for cyclists and pedestrians - extent curly whirly to other side of uni entrance	1	
21	Overpass from Uni to TAFE	Texture coat paint has worn off overpass bridge - extremely slippery	1	
22	Williams Street and Grey Street	Proper footpaths for walking on instead of the road - Williams St and Grey St	1	
23	Gipps Road at railway	Pedestrian Bike path under rail at Gipps street - doubles as flood bypass	1	
24	Everywhere	Fix pathways first but we need more Clean up footpaths etc - round Gwynneville shops - maintain plants etc	2	
25	Keira Oval	Very wet on hill and was used by uni students and residents for access to Mt Keira - would love a path	1	
26	Western corner of Robsons Road and Northfields Avenue	Maintain walking trails - Osborne track and trail to Mt Pleasant and trails to Mt Keira (this trail is part of Keiraville)	1	
27	Everywhere	A walk/path from the mountains to the sea - stroller and bike friendly	1	There is no underpass at this point - might mean that one is suggested
28	Spearing Park (is this the right name?) on Spearing Avenue	Needs footpath - too hard to push strollers, wheelchairs over this section	1	
29	Everywhere	Footpath that are even for the elderly, young & everyone. Bad accidents have happened due to uneven footpaths	2	
30	Greenacre Road	Street lighting along Greenacre rd is terrilbe and this is a popular pedestrian walkway - also need paths	1	
31	Western corner of Robsons Road and Northfields Avenue	Repair some of the track - widen if a it more so that more than one person can walk up there at a time	1	
32	Eastern end of Greenarce Road Reserve/Tramways near Vickery Street	Path through here is washed out and difficult to push a stroller through. Nearly toppled the stroller over going down to the bridge to Greenaoes Rd - cut through is very handy.	1	
33	Western corner of Robsons Road and Northfields Avenue	Remove the trees near the roundabout on 2 Robsons Road very difficult to walk along the track. Walking path - need to walk on the road because of the trees	1	Footpath that are even and flat. i.e. Safe to walk on
34	North Wollongong Station	Footpaths are disconnected	1	
35	Botanic Garden	Another entrance to Botanic Garden to encourage wider use East public access	3	
36	Greenacre Road	Street lighting along Greenacre rd is terrilbe and this is a popular pedestrian walkway - also need paths	1	
37	Keiraville and Gwynneville	There are insufficient pathways, almost zero	1	
38	Keiraville and Gwynneville	There are a lack of footpaths and the conditions of existing footpaths are in very poor condition, creating a trip hazard.	1	
39	Keiraville and Gwynneville	Would like to see more pathways around key areas. Wollongong university should PAY or at least contribute given that they are consuming the suburb		
40	Crawford Avenue	There are lacking footpaths at the northern end of Crawford Avenue	1	

Issues - Cyclist

No.	Location	Issue/Comment	Number of times issue raised	Suggested Solution
1	UOW	Greater integration of bike plans for the local community (idea from uni)	1	Promote cycling and create bikes paths and be supported in our plans
2	UOW		1	Promote UOW cycling promotions to local community and show support in local plans
3	Robsons Rd	Cycle path required all the way up and down Robsons Road to try and alleviate some of the traffic	1	
4	Everywhere - Gipps rd to Stuart Park, cnr of Robsons and Northfields Rd, Gipps Rd to City Beach, Uni,	Dedicated bicycle paths from Keiraville to City, Beach, and University Cycleway Uni - to CBD, Stuart Park, North and South Beach Cycleway down Gipps Rd throught to Stuart Park Innovation Campus	7	
5	Gipps Road		1	Proposed cycleway will prevent parking between 6am - 6pm on Gipps Rd
6	Mt Pleasant and Mt Ousley	New cycleway footbridge from Mt Pleasant over Mt Ousley road to University	1	
7	Gipps Road near Freeway overpass	Free bike exchange system around the suburbs	1	
8	Mt Keira	Plan summit access via adjoining suburbs that have interconnecting cycleways and footpaths Promote Mt Keira as cycle destination	2	
9	Entrance to Uni at Irvine & northfields, Everywhere	Bikes for hire - as per paris with their velo systems Free/Hire bike scheme - may need lockers, not just racks OR shop fron @ keiraville, gwynneville, uni	3	
10	Botanic Garden	Footpaths and cycleways to the Botanic Gardens	1	
11	Porter St	Footpaths needed in Porter st which can be used as a cycle path	1	
12	Keiraville Shops, Gwynnevill Shops, Gipps Road at the north-west corner with Grey Street	Parking for bikes	3	
13	Everywhere, Thorsby Drive	Cycle paths to continue rather than stop eg Throsby Drive - there is no footpath and no bicycle path Cycle paths on northern side of Throsby Drive from traffic lights to Flinders St	3	
14	Gipps Rd and Freeway	Create an on road bike land on Gipps road over the freeway	1	
15	Uni on Northfields	Bike path goes nowhere from here - stops at the Uni bus stop	2	
16	Gipps Road at railway	Limited opportunities for pedestrains and cyclists to cross railway line - open underpass at Gipps Road. Tramway bridge fails pedestrains. Only crossing points currently at Smith St underpass, tramway bridge, and North Wollongong rail stations overpass	1	
17	Everywhere	Council to clean bike paths more often of glass and low hanging trees	2	
18	Everywhere		1	Cyclepaths following watercourses could solve problem of disjointed cycle paths (away from roads). Waterways provide a direct route
19	Everywhere	Cycling connections from Uni to Figtree	1	
20	Everywhere	Cyclists ring your bell' signs	1	
21	Everywhere	wayfinding signage between north gong station and iC for cyclists and pedestrians	1	
22	Everywhere - Murphys Ave	Any new pedestrian or cycleways should be shared paths where practical Shared paths needed on Murphys Ave	2	
23	Northfields Curly Whirly - fwy overpass access	Access to Northfields Ave 'Curly Whirly' overpass is dangerous for cyclists and pedestrians - extent curly whirly to other side of uni entrance	1	
24	Botanic Garden	Support bike though botanic gardens on designated route	1	
25	Everywhere	Cyclists facilities between Gwynneville and coast, non existent, family friendly, cycles on bus (at least 4)	1	
26	Gipps Rd at railway	Pedestrian Bike path under rail at Gipps street - doubles as flood bypass	1	There is no underpass at this point - might mean that one is suggested
27	Nyrang Park	Link a cycleway through here to make a safe route to Beaton Park, North Gong station, Wollongong City, and beach etc	1	
28	Greenacre Rd Reserve	Cycleway through tramway. Repair potholes. Remove weeds to allow open park land environment	1	
29	Keiraville and Gwynneville	Have lived in Gwynneville for 25 years. Would love to see uni student riders wear helmets and use bike lights	1	
30	Keiraville and Gwynneville	Insufficient cycle ways for people to travel to and from Gwynneville to the hospital, university or Wollongong	1	
31	Keiraville and Gwynneville	Bicycles shouldn't be on roads because they are a danger	1	
32	Keiraville and Gwynneville	Cycling too dangerous with university parking nightmare	1	
33	North Wollongong Station	Cycling north on Porter Street from North Wollongong Station is dangerous for cyclists travelling to Tafe and UOW as they are required to cross dangerous intersections	1	Bicycle path should be relocated to other side of road for increased safety
34	North Wollongong Station	Bicycles get vandalised at North Wollongogn Station	1	Provide more secure bike parking at North Wollongong Station

Issues - Other

No.	Location	Issue/Comment	Number of times issue raised	Suggested Solution
1	Shared path next to TAFE oval	Clean up along freeway around uni and TAFE	1	
2	Keiraville Primary	Cars need to cross intersection before Lollipop lady steps into traffic	1	Training for Lollipop lady
3	Everywhere, College View area, Gywnne Street	Keep boarding house style out of small streets - we are a village Parking is a disaster Noise issues	5	
4	Everywhere	There should be a duty of care or an ombudsmen about the complaints for bad behaviour of uni students	1	
5	Gipps Road near Fairy Street	When unit/townhouse development involves numberous tenants, consider the number of garbage bins to be emptied as many end up as traffic hazards, not to mention the traffic flow on the busier streets when bins are being emptied	1	
6	Everywhere	Iconic walk from Mt Keira to the sea via Botanic Garden	2	
7	Gwynne St	Proposed development a no 6 Gwynne st Gwynneville - we believe it is a commercial development, traffic issues, sets a precident for boarding houses within residential areas, safety and privacy issues for residents and preschool, flood zone	1	
8	All	Limit number of car per house eg - we have local house with 6 cars belonging to boarders	1	
9	Everywhere	Bicycles and pedestrians should have right of way - not cars	1	
10	All	RMS/UOW/WCC/NF5 joint submission to Bike plan - source doc for future workshops from Jacqui @ UOW	1	
11	In the bushland north west from end of Gooyong St	Utilise the great features of the escarpment more effectively. Make Keiraville a hub for outdoor activities, such as proper (and maintained) mtb trails. Move 'lost' walking trails. Generate activities leading to revenue etc back to WCC to help pay for upkeep.	1	
12	Eastern end of Greenarce Rd Reserve/Tramways near Vickery St	The walk way which exits to Vickery Street needs to have 'bark chips' or gravel put down as becomes very muddy	1	
13	Western corner of Robsons Road and Northfields Avenue	Need to clear as much lantana as possible	2	
14	Gwynneville and Keiraville area, Throsby Drive to Acacia Ave via Wisemans Park	Keep traffic away from Beaton Park, Wisemans Bowling club and St Brigids School	1	Improve safety and access - give access to Keiraville and West Wollongong without having traffic going through Gwynneville shopping area
15	UOW		1	UOW should educate students on the best ways to travel to campus and promote the use of active and public transportr. This can be done especially for first year students.
16	All		1	Suggested strategies should align with future government
17	Koolabong Oval	Plans/Events at Koolabong oval are set to increase. Road network will suffer accordingly	1	
18	Everywhere	Car-centric community - students still choose to drive	1	
19	UOW		1	UOW should be responsible for reducing students parking in suburbs
20	Traffic model	Traffic model boundary is too limited - Greenacre Road, Vickery Street, Berkeley Road, Acacia Avenue - if parking spreads this will cause an issue for Gwynneville School	1	

APPENDIX G

COUNCIL IDENTIFIED ACTIONS IN RESPONSE TO COMMUNITY COMMENTS

Draft actions in response to community comments

Traffic

Potential intersection improvements

- Gilmore Street and Fisher Street - Pedestrian Refuges (Completed 2018/19)
- Robsons Road Gipps Road - Pedestrian Refuge (Completed 2018/19)
- Robsons Road and Northfields Avenue (University VPA)
- Eastern Street and Gipps Road
- Porter Street and University Avenue
- Bulwarra Street and Pindari Street
- Murphys Avenue and Rosedale Avenue
- Murphys and Braeside Avenue
- Murphys Avenue and Eastern Street
- Eastern Street and Moore Street
- Foley Street, Gipps Road and Porter Street
- Robsons Road and Gipps Road

Potential locations for traffic calming

- Gipps Road at Motorway bridge
- Vickery Street
- Acacia Avenue
- Robsons Road
- Gooyong Street
- Murphys Avenue
- Francis Street
- Gwynneville shops
- William Street
- Robsons Road and Murphys Avenue
- Robsons Road and Gipps Road
- Bulwarra Street
- Berkeley Road and Gipps Road

Review safety around schools

- St Brigid's School
- Keiraville Public School
- Gwynneville Public School
- Wollongong West Public School
- Edmund Rice College
- St Therese School
- Keira High School
- Wollongong High School for Performing Arts
- Para Meadows School
- Mount Keira Demonstration School

Guardrail – New

- University Avenue – Memorial Drive to Porter Street east side. (Completed 2018/19)

Public Transport

- Bus Shelter 113 Robsons Road (Construction 2019/20)

Maintain and further promote

- Keiraville/Gwynneville Shuttle
- North Wollongong Shuttle
- Wollongong Shuttle

Parking

Implement Marked Parking Bays

- All suburbs in study area

Review timed parking

- University of Wollongong
- Botanic Garden
- Keiraville shops
- Gwynneville shops
- North Wollongong Station
- Keira High School
- Wollongong Performing Arts High School
- Edmund Rice College

Review Ranger patrols

- All suburbs in study area

Cycling/Pedestrian

Include suggested footpath locations in future programs

- Botanic Garden Rainforest walk. (Completed 2018/19).
- Murphys Avenue - Robsons Road to Grey Street southern side. (Design completed 2018/19 Construction 2019/20).
- Robinson Park - Crawford Avenue to Mountview Avenue. (Construction 2020/21).
- Crawford Avenue – Porter Street to #3 east side. (Design completed 2018/19 Construction 2019/20).
- Railway Crescent - Porter Street to Hindmarsh Avenue; east side. (Design completed 2018/19 Construction 2019/20).
- Hindmarsh Avenue - Railway Crescent to Porter Street; south side. (Design 2018/19 Construction 2019/20).
- Kiernan St; Foley St to Crawford Ave; south side (Design 2018/19 Construction 2019/20).
- Murphys Ave – Robsons Rd to Grey St. (Construction 2019/20)
- Robinson Park – Crawford Ave to Mountview Ave. (Construction 2020/21)
- Reserve St – Gilmore to Robsons Rd south side (Construction 2021/22)
- Botanic Garden $100,00 (Included in University VPA)
- Robsons Road and Northfields Avenue – western side (Included in University VPA)
- Robsons Road – western side
- Greenacres Road
- Eastern Street – western side
- Gipps Road and Robsons Road – Conservatory of Music
- William Street and Grey Street
- Keira Oval
- Spearing Park

Include suggested shared path locations in future programs

- Keiraville Town Centre Bicycle Parking. (Completed 2018/19).
- Gwynneville Town Centre Bicycle Parking. (Completed 2018/19).
- Porter Street and Crawford Street. (Completed 2018/19).
- Fisher Street; Phillips Avenue to Gilmore Street; west side. (Completed 2018/19).
- Reserve Street; Gilmore to Robsons; south side. (Completed 2018/19).
- Crawford Avenue; Porter Street to Hay Street access. (Design 2019/20 Construction 2020/21, 2021/23).
- Porter Street: Hindmarsh Ave to Flinders St. (Construction 2019/20)
- Gipps Road at railway
- Gipps Road to Stuart Park
- Nyrang Park

APPENDIX H

SCHEDULE OF NON-COMPLIANT PEDESTRIAN CROSSINGS

Schedule of non-compliant crossings

ID	Type	Location	Non-compliance
Z1	Zebra crossing	UOW (NW of Building 38)	Lack of 'No Stopping' signs on the approaches and lack of pedestrian crossing signage.
Z2	Zebra crossing	UOW (South of Building 38)	Lack of 'No Stopping' signs on the approaches, width is less than 3.6m and the kerb ramps do not align.
Z3	Zebra crossing	UOW (adjacent to the Sydney Business School)	Lack of 'No Stopping' signs on the approaches and the width is less than 3.6m.
Z4	Zebra crossing	UOW (adjacent to "Uni Active")	Lack of 'No Stopping' signs on the approaches.
R1	Pedestrian refuge	Northfields Avenue at Robsons Road	Length is less than 3m and retroreflective markers are not provided.
R2	Pedestrian refuge	Northfields Avenue/UOW entrance (West approach)	Length is less than 3m, retroreflective markers are not provided and kerb ramps do not align.
R3	Pedestrian refuge	Northfields Avenue/UOW entrance (North approach)	Length is less than 3m and kerb ramps do not align.
R4	Pedestrian refuge	Northfields Avenue/UOW entrance (East approach)	Length is less than 3m retroreflective markers are not provided and kerb ramps do not align.
R5	Pedestrian refuge	Northfields Avenue east of the UOW bus stops	Insufficient 'No Stopping' signage at correct locations and kerb ramps do not align.
R6	Pedestrian refuge	Northfields Avenue adjacent to the P8 Unicentre Carpark	Width is less than 2m.
R7	Pedestrian refuge	Northfields Avenue/Irvine Street (West approach)	'No Stopping' signage at incorrect location on the approach.
R8	Pedestrian refuge	Northfields Avenue/Irvine Street (North approach)	Length is less than 3m and insufficient 'No Stopping' signage on the approach.
R9	Pedestrian refuge	Northfields Avenue/Irvine Street (East approach)	Length is less than 3m and insufficient 'No Stopping' signage on the approach.
R10	Pedestrian refuge	Irvine Street/University Avenue (North approach)	Length is less than 3m, insufficient 'No Stopping' signage on the approach and no kerb ramp on the western side.
R11	Pedestrian refuge	Irvine Street/University Avenue (East approach)	Length is less than 3m and insufficient 'No Stopping' signage length on the approach.
R12	Pedestrian refuge	Irvine Street/University Avenue (South approach)	Width is less than 2m and length is less than 3m .
R13	Pedestrian refuge	University Avenue/M1 Ramps (East approach)	Length is less than 3m, insufficient 'No Stopping' signage length on the approach and no kerb ramp on the northern side.
R14	Pedestrian refuge	University Avenue roundabout NE of College Place (West approach)	Width is less than 2m and length is less than 3m .
R15	Pedestrian refuge	University Avenue roundabout NE of College Place (East approach)	Width is less than 2m, length is less than 3m and kerb ramps are not aligned.
R16	Pedestrian refuge	University Avenue/Foleys Lane (West approach)	Width is less than 2m, length is less than 3m and insufficient 'No Stopping' signage length on the approach.
R17	Pedestrian refuge	University Avenue/Foleys Lane (North approach)	Length is less than 3m and kerb ramps do not align.
R18	Pedestrian refuge	Robsons Road/Murphys Avenue (South approach)	Length is less than 3m, incorrect linemarking, insufficient 'No Stopping' signage length on the approach and lack of retroreflective markers.
Z5	Zebra crossing	Gipps Road/Grey Street (East approach)	Insufficient 'No Stopping' signage length on approach.
C1	Children's crossing	Gipps Road between Berkeley Road and Vickery Street	Width is less than 3.6m and incorrect placement of 'No Stopping' signs, posts and linemarking.
R19	Pedestrian refuge	Gipps Road/Vickery Street (East approach)	Length is less than 3m and insufficient 'No Stopping' signage length on the approach.
R20	Pedestrian refuge	Gipps Road west of Foley Street	Length is less than 3m.
R21	Pedestrian refuge	Gipps Street/Foley Street (North approach)	Length is less than 3m, width is less than 2m, insufficient 'No Stopping' signage length on the approach and incorrect linemarking.
C2	Children's crossing	Vickery Street south of Gipps Road	Insufficient 'No Stopping' signage length on the southern approach.
C3	Children's crossing	Berkeley Road between Gipps Road and Acacia Avenue	Insufficient 'No Stopping' signage length on the southern exit.
R22	Pedestrian refuge	Robsons Road/William Street (North approach)	Length is less than 3m, missing retroreflective markers, lack of 'No Stopping' signage provided.
R23	Pedestrian refuge	Robsons Road/William Street (South approach)	Length is less than 3m, missing retroreflective markers, lack of 'No Stopping' signage provided.

File: PR-005.04.01.789 Doc: IC19/722

ITEM 3 LEASE OF BELLAMBI SURF LIFE SAVING CLUB

The Bellambi Surf Life Saving Club (SLSC) building is located on Crown land known as Bellambi Point Reserve (R88075) as described in Attachment 1. Bellambi SLSC Inc has a current licence agreement with Council for the Bellambi SLSC building which is due to expire on 28 February 2020.

Pursuant to Clause 70(2)(c) of the Crown Land Management Regulation 2018, it is proposed that Council, as Crown Land Manager, grant Bellambi SLSC Inc a 21 year lease for it to continue to validly use and occupy the Bellambi SLSC building.

RECOMMENDATION

1 Council grant a 21 year lease of Crown land known as the Bellambi Surf Life Saving Club building, on part Lot 7017 Crown DP 1057474, being part Bellambi Point Reserve (R88075), Morgan Place, Bellambi to Bellambi Surf Life Saving Club Inc on terms outlined in the draft lease – refer Attachment 2.

2 Council delegate to the General Manager the authority to finalise and execute the lease and any supplementary documentation required to give effect to this resolution.

3 Council grant authority for the use of the Common Seal on the lease and any other documentation, should it be required to give effect to this resolution.

REPORT AUTHORISATIONS

Report of: Lucielle Power, Manager Property + Recreation (Acting)
Authorised by: Kerry Hunt, Director Community Services - Creative and Innovative City

ATTACHMENTS

1 Site Plan
2 Draft Lease

BACKGROUND

Bellambi SLSC was formed in January 1909 and as such it remains one of the oldest surf clubs in the Illawarra. The club faded out during World War I and did not become active again until the 1929-30 season when it affiliated with the National Council (now known as Surf Life Saving Australia).

The first surf club building at Bellambi was built in the 1930s and was affectionately known as “the Hut”. A new building was later built in the 1960s and the current surf club was officially opened in 1981.

Volunteer lifesavers from the surf club patrol Bellambi Beach on Sundays and Public Holidays between mid-September and April. Patrols start at 10am and finish at 5pm during the season. Council lifeguards patrol the beach on weekdays and Saturdays between April and September. Bellambi SLSC also provides surf safety programs, junior activities and is a very family-oriented club with many community groups also utilising the surf club building.

PROPOSAL

It is proposed to grant a lease to Bellambi SLSC Inc for it to continue to validly occupy and use the Bellambi Surf Club building.

As this tenure affects Crown land, appropriate Aboriginal Land Rights and Native Title considerations have been carried out.

To assess the risk of a successful Aboriginal Land Rights claim, a Risk of Transfer Assessment was completed on 8 January 2020 and resulted in a low risk of transfer rating.

Additionally, Council’s Native Title Officer has provided written advice dated 13 May 2019 concluding the proposed 21 year lease of Bellambi SLSC does not affect Native Title and its tenure is therefore valid.

Should the above Aboriginal interests result in an alternative outcome, appropriate Native Title and Aboriginal Land Rights clauses have been included in the draft lease to mitigate any loss or exposure to Council in this regard; refer Clause 19 in particular.

Council's Property Lawyer has prepared the proposed draft lease for a 21 year term adopting the surf club lease template negotiated and approved by Surf Life Saving NSW and Surf Life Saving Illawarra. It has been further advised that given an existing licence with Bellambi SLSC Inc was in effect prior to 1 July 2018, Council is entitled to grant the proposed lease in accordance with Clause 70(2)(c) of the Crown Land Management Regulations 2018.

CONSULTATION AND COMMUNICATION

- Bellambi SLSC Inc
- Surf Life Saving NSW
- Consultation has been undertaken with appropriate Council divisions.

The surf club draft lease is based on the Crown Lands surf club lease template with amendments by Council's Property Services Section with legal guidance from Council's Legal Services. It has been the subject of rigorous consultation with various external parties including Surf Life Saving NSW and Crown Lands.

PLANNING AND POLICY IMPACT

This report contributes to the delivery of Our Wollongong 2028 goal "Participation in recreational and lifestyle activities is increased."

It specifically delivers on core business activities as detailed in the Service Plan 2019-20 "Provide statutory services to appropriately manage and maintain our public spaces."

The lease does permit the club to sublease part of the premises for a commercial operation, but any sublease is subject to Council's consent and any proposed activity would have to follow Council's usual development application and consent process. It is noted that in 2019 an agreement was reached with the club, that in lieu of works undertaken onsite, a contribution from the sub-letting of the kiosk would be made to Council pending the execution of a formal Commercial Agreement as required pursuant to the terms of the proposed lease. This arrangement will be formalised on completion of the Commercial Agreement.

FINANCIAL IMPLICATIONS

Council will be responsible for any structural maintenance and will also be responsible for the building insurance of the surf club building, these costs are already built into forward budgets.

Bellambi SLSC will be responsible for all outgoings and for maintenance and renewal of the building as outlined in the Leased Buildings Maintenance Responsibility Schedule in the draft lease; refer Schedule 3 of lease. The club will also be responsible for obtaining $20M Public Liability Insurance.

A rental of $705 (GST inclusive) per annum applies as per Council's fees and charges for community and sporting groups for the 2020-21 financial year and the club will also pay $182 (GST inclusive) towards the cost of preparing the lease in accordance with Council policy.

CONCLUSION

The proposed lease will formalise the existing use and occupation of the Bellambi SLSC building. It outlines the ongoing maintenance responsibilities and outgoings of both parties for the 21 year term. It also clearly identifies that any potential commercial income Bellambi SLSC may generate that Council expects, in good faith, that the club will use that additional rental income to fund its obligations under the lease.

JACOBS
Staithes Mews
Imagery © Jacobs & Aerometrex (2018)
Proposed Leased Area
Bellambi Surf Life Saving Club
Proposed Leased Area over Crown Land
wollongong
city of innovation
N
GIS ref.: gi11328_Bellambi
Printed: 22/01/2020
Aerial Photography: 2018
Scale 1:1,000
Metres
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Form: 07LC
Release: 1.0

LEASE BY A CROWN LAND MANAGER

Part 3 Crown Land Management Act 2016
Real Property Act 1900

Leave this space clear. Affix additional pages to the top left-hand corner.

PRIVACY NOTE: Section 31B of the Real Property Act 1900 (RP Act) authorises the Registrar General to collect the information required by this form for the establishment and maintenance of the Real Property Act Register. Section 96B RP Act requires that the Register is made available to any person for search upon payment of a fee, if any.

(A) **TORRENS TITLE**	Part Lot 7017 in DP1057474 being premises known as Building 1, Bellambi Surf Life Saving Club at 1A Morgan Place, Bellambi NSW 2500 (the "**Premises**")
(B) **LODGED BY**	Document Collection Box; Name, Address or DX, Telephone, and Customer Account Number if any; Reference: **CODE LC**
(C) **REGISTERED PROPRIETOR**	The State of New South Wales
(D) **LESSOR (Land Manager)**	Wollongong City Council ABN 63 139 525 939
(E) **LESSEE**	Bellambi Surf Life Saving Club Incorporated ABN 31 559 131 560
(F)	**TENANCY:**

The Lessor leases to the Lessee the Premises referred to above subject to the provisions of this Lease.

(G) 1. **TERM** 21 years 2. **COMMENCING DATE**: 1 March 2020 3. **TERMINATING DATE**: 28 February 2041

4. With an **OPTION TO RENEW** for a period of N/A years set out in clause N/A of N/A
5. Together with and reserving the **RIGHTS** set out in Annexure A.
6. Incorporates the provisions or additional material set out in **ANNEXURE A, including Schedules 1, 2 and 3**
7. Incorporates the provisions set out in N/A
8. The **RENT** is set out in Item No. 6 of Schedule 1 to Annexure A.

DATE

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Page 2 of a lease by the Crown Land Manager to Bellambi Surf Life Saving Club

(H) **Execution by the Land Manager**

I certify that I am an eligible witness and that an authorised officer of the lessor signed this dealing in my presence. [See note* below].

Certified correct for the purposes of the Real Property Act 1900 by the authorised officer named below.

Signature of witness:		Signature of appointee:	
Name of witness:		Name of appointee:	Greg Doyle, General Manager
Address of witness:	c/- 41 Burelli Street, Wollongong NSW 2500	Authority:	Wollongong City Council s.377 of the Local Government Act 1993 (NSW)

CONSENT NOT REQUIRED

By executing this Lease, the Land Manager certifies that the Lease does not require Minister's Consent and is entered into in accordance with the requirements of the Crown Land Management Act 2016.

Certified correct for the purposes of the Real Property Act 1900 and executed on behalf of the Association named below by the authorised person(s) whose signature(s) appear(s) below pursuant to the authority specified.

Association:	Bellambi Surf Life Saving Club Incorporated ABN 31 559 131 560		
Authority:	s.22(1) of the Associations Incorporation Act 2009 (NSW)		
Signature of authorised person:		Signature of authorised person:	
Name of authorised person:		Name of authorised person:	
Office held:		Office held:	

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ANNEXURE "A"

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THIS LEASE is made on and commences on the Commencement Date.
BETWEEN THE LESSOR whose name, address and ABN appear in **Item 1** (**Lessor**)
AND THE LESSEE whose name, address and ABN appear in **Item 2** (**Lessee**)

RECITALS

A. The Land is reserved or dedicated under the Act by virtue of the Gazette notification specified in Item 11 for the purpose or purposes set out in Item 11.
B. The Lessor is appointed as the Crown Land Manager under the Act.
C. The Lessor has agreed to lease the Land to the Lessee on the terms and conditions set out in this Lease.

OPERATIVE PROVISIONS

1. DEFINITIONS AND INTERPRETATION

1.1. Definitions

In this Lease:

Act means the *Crown Land Management Act 2016* (NSW).

ALR Act *means the Aboriginal Land Rights Act 1983* (NSW).

Amenities Room means the Lessor's amenities room located in the north-east side of the ground floor of the Premises.

Approval means authorisation, approval, consent, licence, permission and the like.

Authority includes any government, local government, statutory, public or other Person, authority, instrumentality or body having jurisdiction over the Land, the Premises or any part of it or anything in relation to it.

Business Day means any day (except a Saturday, Sunday or public holiday) on which banks are open for business in Sydney, New South Wales.

Claim includes any claim, demand, remedy, suit, injury, damage, loss, Cost, liability, action, proceeding and right of action.

Clause means a clause of this Lease, and Sub-Clause has a similar meaning.

Commencement Date means the date set out in Item 4.

Commercial Parameters means whether the proposed operation:

a. is a separate, standalone occupation of part of the Premises;
b. is conducted by a for-profit entity which is completely legally separate from the Lessee;
c. limits, inhibits or restricts the access or enjoyment of the Premises by the public.

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Cost includes any cost, charge, expense, outgoing, payment or other expenditure of any nature whatever.

Council means the council of an area, and includes an administrator.

Default Rate means the interest rate set by the Lessor's Bank for the time being as its benchmark rates for overdrafts of one hundred thousand dollars ($100,000.00) or more.

Fundraising means a fundraising appeal as defined by section 5 of the Charitable *Fundraising Act 1991*, which is conducted in accordance with the requirements of that Act applicable to a fundraising appeal.

Further Obligations means any obligations of the Lessee set out in Schedule 2.

Further Term means the further term or terms, if any, as set out in Item 8.

Gambling has the same meaning as prescribed in the *Unlawful Gambling Act 1998* NSW and excludes Fundraising.

GST means any consumption, goods and services or value added tax, by whatever name called, imposed, levied or collected by any Federal or State Government which operates at any time or times during the Term or any renewal or overholding of the Lease including, without limitation, GST as defined in the GST Act and any replacement tax.

GST Act means *A New System (Goods and Services Tax) Act 1999.*

Hazardous Materials includes any substance, material, thing, component or element which is hazardous, a contaminant or a pollutant to persons or property.

Improvement means any building, structure, fixture, fitting, plant, equipment, partition, sign or other material, or article or chattel, which is erected, installed or put in or on the Land.

Insured Sum means the amount set out in Item 10.

Item means the relevant item in Schedule 1.

Land means the land described in Item 3 and all rights, easements and appurtenances usually and normally enjoyed with that land and all Lessor's Improvements.

Law includes any requirement of any statute, rule, regulation, proclamation, ordinance or local law, present or future, and whether State, Federal or otherwise.

Lessee means the Lessee named in this Lease and includes in the case of a:

a. corporation the Lessee, its successors and permitted assigns;

b. natural person the Lessee, his executors, administrators and permitted assigns.

Lessee's Employees means each of the Lessee's employees, agents, contractors, invitees or others (whether with or without invitation), sublessees, licensees and

concessionaires or others (whether expressly or impliedly) who may at any time be in or upon the Land.

Lessee's Improvements means any Improvements undertaken by the Lessee in accordance with this Lease but does not include those Improvements listed in Item 13.

Lessor means the Lessor named in this Lease and the person for the time being entitled to the Lease reversion when the Lease ends.

Lessor's Agents means the employees, contractors, agents and any other Person appointed from time to time by the Lessor as agent of the Lessor.

Lessor's Improvements means the Improvements listed in Item 13.

Minister means the Minister having responsibility for the administration of the Act or such other Minister of the Crown or Authority to whom responsibility for this Lease may at any time be given.

Minister's Agents and Officers includes any person, committee or delegate (including any statutory authority or statutory body corporate or committee for the time being responsible for the administration, care and management of the Land) from time to time responsible for carrying out functions, including the functions of the Minister, under this Lease.

Name and Notice Address means the name and address in Item 9 as it may be changed from time to time.

Notice means any notice or other written communication.

NT Act means the Native Title Act 1994 (Cth) or the Native Title Act 1994 (NSW) as applicable.

Party means a party to this Lease.

Patrol Season means beaches are patrolled from the start of the September school holidays until the end of the April school holidays each year. Council lifeguards patrol from Monday to Saturday, and volunteer lifesavers patrol on Sundays and public holidays.

Permitted Use means the permitted use of the Land set out in Item 7.

Person includes any corporation and vice versa.

Premises means the Land and the Lessee's Improvements.

Proposed Work means any renovation, demolition, construction of or to any Improvement on the Land and any activity which physically alters the structure of the Premises.

Public Toilets and Showers means the public toilets and showers located in the north facing side of the ground floor which is excluded from the Premises.

Rates and Taxes means all existing and future rates (including any special rates or levies) taxes (including land tax on a single holding basis), duties, charges,

assessments, impositions and outgoings whatsoever now or at any time imposed, charged or assessed on or against the Land or the Lessor or the Lessee or payable by the owner or occupier of the Land.

Rent means the amount of the annual Rent set out in Item 6.

Requirement includes any lawful Notice, order or direction received from or given by any Authority or under any Law, in writing or otherwise, and notwithstanding to whom such Requirement is addressed or directed but if not addressed to the Lessee then the Lessee must be given a copy.

Services means all services installed or to be installed and connected to the Premises including, without limitation, gas, electricity, telephone and telecommunication, water, sewerage and drainage.

Supply means the supply of any good, service or thing by either Party under this Lease.

Term means the term of this Lease in Item 5 commencing from and including the Commencement Date.

this Lease or ***the Lease*** means this lease and includes all schedules, appendices, attachments, plans and specifications, annexures and exhibits to it.

1.2. Interpretation

1.2.1. The singular includes the plural and vice versa.

1.2.2. A gender includes the other gender.

1.2.3. An obligation imposed by this Lease on more than one Person binds them jointly and severally.

1.2.4. Every covenant by the Lessee includes a covenant by the Lessee to procure compliance with the covenant by each of the Lessee's Employees.

1.2.5. A reference to legislation includes a modification or re-enactment of it, a legislative provision substituted for it or amendment of it and a regulation, rule or statutory instrument issued under it.

1.2.6. This Lease must be interpreted so that it complies with all Laws applicable in New South Wales. Any provision must be read down so as to give it as much effect as possible. If it is not possible to give a provision any effect at all, then it must be severed from the rest of the Lease. If any provision or part of it cannot be so read down, such provision or part shall be deemed to be void and severable and the remaining provisions of this Lease shall not in any way be affected or impaired.

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1.2.7. Unless otherwise stated, no provision of this Lease limits the effect of any other provision of this Lease. "Including" and similar expressions are not and must not be treated as words of limitation.

1.2.8. A reference to the Land, Premises or anything includes the whole and each part of it.

1.2.9. The Lessor and the Lessee agree that:

a. the terms contained in this Lease constitute the whole of the agreement in respect of the Land and Premises between the Lessor and the Lessee and all previous negotiations and agreements are negatived;

b. no further terms are be implied or arise between the Lessor and the Lessee by way of collateral or other agreement made by or on behalf of the Lessor or by or on behalf of the Lessee on or before or after the execution of this Lease, and any implication or collateral or other agreement is excluded and negatived;

c. no information, representation or warranty by the Lessor or the Lessor's agents was supplied or made with the intention or knowledge that it would be relied on by the Lessee in entering into this Lease; and

d. no information, representation or warranty has been relied on by the Lessee in entering into this Lease.

1.2.10. Headings and the index to this Lease are for guidance only and do not affect the interpretation of this Lease.

1.2.11. If a reference is made to any Person, body or Authority and that Person, body or Authority has ceased to exist, then the reference is deemed to be a reference to the Person, body or Authority that then serves substantially the same or equivalent objects as the Person, body or Authority that has ceased to exist.

1.2.12. Reference to the President of a Person, body or Authority must, in the absence of a President, be read as a reference to the senior officer or equivalent employee for the time being of the Person, body or Authority or such other Person fulfilling the duties of President.

1.2.13. A reference to "writing" or "written" and any words of similar import include printing, typing, lithography and any other means of reproducing characters in tangible and visible form, including any communication effected through any electronic medium if such communication is subsequently capable of reproduction in tangible or visible form.

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1.2.14. A reference to "corporation" and any other words or expressions used or defined in the Corporations Act 2001 (Cth), unless the context otherwise requires, has the same meaning that is given to them in the Corporations Act 2001 (Cth).

1.2.15. This Lease is governed by New South Wales law. The Parties irrevocably submit to the non-exclusive jurisdiction of the courts of that State and courts of appeal from them. Except as expressly agreed in writing by both Parties or for an action required at a federal level, each Party waives any right it has to object to an action being brought in any court outside New South Wales including, without limitation, by claiming that the action has been brought in an inconvenient forum or that those courts do not have jurisdiction.

1.2.16. If the day or last day for doing anything or on which an entitlement is due to arise is not a Business Day, the day or last day for doing the thing or date on which the entitlement arises for the purposes of this Lease shall be the next Business Day.

1.2.17. Each provision of this Lease continues to have full force and effect until it is satisfied or completed.

1.2.18. Where a word or phrase is defined, its other grammatical forms have a corresponding meaning.

1.2.19. A reference to an agreement or a document is to that agreement or document as amended, novated, supplemented, varied or replaced from time to time except to the extent prohibited by this Lease.

1.2.20. A reference to a Clause or Sub-Clause followed by a number refers to the relevant numbered Clause or Sub-Clause in this Lease.

1.3. Minister's delegations

1.3.1. If this Lease refers to an action, Approval or other thing to be done by, or matter to be considered by the Minister, the reference to the Minister shall be deemed to include a reference to the Minister's Agents and Officers.

1.3.2. The Minister may appoint any person as the Minister's delegate to exercise all powers conferred by this Lease on the Minister expressly, including without limitation, the power to give any Approval under this Lease.

1.3.3. The Minister may change the appointment at any time.

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2. EXCLUSION OF STATUTORY PROVISIONS

2.1. Moratorium

To the extent permitted by law, the application to this Lease or to any Party of any Law or any Requirement or any moratorium having the effect of extending or reducing the Term, reducing or postponing the payment of Rent or any part of it or otherwise affecting the operation of the terms of this Lease or its application to any Party is excluded and negatived.

2.2. Exclusion of statutory provisions

2.2.1. The covenants, powers and provisions implied in leases by virtue of sections 84, 84A, 132, 133, 133A and 133B of the Conveyancing Act 1919 do not apply or are not implied in this Lease and are expressly negatived except in so far as the same or some part or parts of it are included in the covenants contained in this Lease. The use in this Lease of any words in any of the forms of words contained in the first column of Part II of the Fourth Schedule to the Conveyancing Act 1919 shall not imply any covenant under section 86 of that Act.

2.2.2. Part 4 of the Civil Liability Act 2002 (NSW) does not apply to this Lease.

3. LEASE OF LAND

3.1. Lease of Land for Term

The Lessor leases the Land to the Lessee for the Term.

3.2. Lessor's reservations

The Lessor reserves the right for the Lessor and the Lessor's Agents to:

a. enter the Land as expressly provided for in this Lease; and

b. create any registered or unregistered easement or other right over the Land.

3.3. Lessor's exercise of rights

In exercising its rights reserved under clause 3.2, the Lessor must use reasonable endeavours (including where possible providing reasonable notice to the Lessee of a proposed exercise of those rights) to minimise interference to the Lessee.

3.4. Ownership of Lessee's Improvements

Despite anything else in this Lease and without affecting the Lessee's obligations under this Lease, all buildings and structures erected on the Land, including the Lessee's Improvements are and will remain the property of the Lessor.

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4. RENT

4.1. Lessee to pay Rent

The Lessee covenants to pay the Rent:

a. at the times and in the manner set out in Item 6 without demand by the Lessor;

b. without any abatement, deduction or right of set-off; and

c. to the Lessor at the address set out in Item 12 or to any other address or in any other way the Lessor directs the Lessee by Notice.

4.2. Apportionment of Rent

If the Commencement Date is not the first day of a rent period, the first and last instalments of Rent will be apportioned on a pro-rata daily basis for the periods from:

a. the Commencement Date to the first day of the next rent period;

b. the first day of the last rent period of the Term until the date on which the Term expires.

5. RATES AND TAXES AND GST

5.1. Lessee to pay Rates and Taxes

If payable and subject to any exemption applied for and provided under **clause 5.5**, the Lessee must pay the Rates and Taxes to:

a. the assessing Authority on time if assessed directly against the Lessee or the Land; but otherwise;

b. the Lessor by the date which is 10 Business Days before the due date for payment if the Lessor must pay the Rates and Taxes and has given the Lessee a copy of the notice at least 10 Business Days before then.

5.2. Lessee to produce receipts

If requested by the Lessor, the Lessee must produce receipts to the Lessor evidencing payment of the Rates and Taxes by the due date for payment if the Lessee is required to pay them to the assessing Authority.

5.3. Pro-rata apportionment

If necessary, the Rates and Taxes will be apportioned on a pro-rata daily basis at the beginning and at the end of the Term.

5.4. Goods and Services Tax

5.4.1. If GST is or will be or is purported to be payable on any Supply the Party receiving the Supply must pay the Party making the Supply a sum equal to any GST payable by the supplier for that Supply.

5.4.2. To the extent that one Party is required to reimburse the other Party for costs incurred by the other Party, those costs do not include any amount in respect of GST for which the Party is entitled to claim an input tax credit.

5.4.3. A Party's obligation to pay an amount under this Clause is subject to a valid tax invoice being delivered to that Party. For the avoidance of any doubt, the Rent and all other payments under this Lease are exclusive of GST.

5.5 Exemption

The Lessee may apply for exemption from payment of Rates and Taxes under any relevant policy of the assessing Authority.

6. COST OF SERVICES

Unless otherwise agreed with the Lessor, the Lessee must pay Costs for all Services (including any special, additional or unusual Services separately supplied, metered, consumed or connected as appropriate in, to or on the Land or the Premises):

a. by direct payment on or before the due date if assessed directly against the Land or the Premises; but otherwise

b. by reimbursing the Lessor by the date which is 5 Business Days before the due date for payment if the Lessor has given a copy of the Notice to the Lessee at least 10 Business Days before then.

7. COSTS

7.1. Costs to be borne by each party

Each party will bear their own reasonable legal and other Costs including the costs of valuers, quantity surveyors and other consultants engaged by a party of and incidental to:

a. $182.00 representing the negotiation, preparation and execution costs of this Lease;

b. any variation, extension, surrender or termination of this Lease otherwise than by effluxion of time.

7.2. Costs of Lessor to be borne by Lessee

Without limiting any other provision of this Lease, and unless otherwise agreed in writing between the parties, the Lessee is to bear the Lessor's reasonable costs of and incidental to:

a. the preparation of this Lease in the sum of $178.00 (GST inclusive);

b. any Approval required under this Lease;

c. any assignment or subletting for which the Lessor's Approval is required by this Lease; and

d. any default by the Lessee or the Lessee's Employees in observing or performing any covenants contained or implied in this Lease.

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8. INTEREST

8.1. Payment

The Lessee must pay to the Lessor on demand as a debt due interest at the Default Rate on any Rent or other moneys which the Lessee has not paid on and from the due date for payment.

8.2. Calculation

Interest is to be calculated daily from the due date and is to continue until the overdue money is paid. The interest will be capitalised on the last day of each month and may be recovered in the same way as Rent in arrears.

8.3. No prejudice

If the Lessor requires the Lessee to pay interest, it is without prejudice to any other rights, powers and remedies which the Lessor may have under this Lease or at law.

9. USE OF PREMISES

9.1. Permitted Use and Negative Covenants

The Lessee must not:

a. use the Premises for any purpose other than the Permitted Use;

b. except as provided for in clause 9.5, use or allow the Premises to be used for any commercial or profit-making purpose which is not Fundraising;

c. do anything in or on the Premises which in the reasonable opinion of the Lessor causes or may cause nuisance, damage, disturbance or danger to the Lessor or members of the public using the Reservation referred to in Item 11 of Schedule 1;

d. other than as necessary for the Permitted Use, use or allow the use of any radio, television or other sound producing equipment at a volume that can be heard outside the Premises except with the prior written Approval of the Lessor which is not to be unreasonably withheld but may be given conditionally;

e. other than as necessary for the Permitted Use, affix any television or radio mast or antennae, satellite dish or any other communication device to any part of the Premises except with the prior written Approval of the Lessor which is not to be unreasonably withheld but may be given conditionally;

f. write, paint, display, hang or affix any sign, advertisement, placard, name, flagpole, flag or notice on any part of the Premises except with the prior written Approval of the Lessor which is not to be unreasonably withheld but may be given conditionally. The Lessee acknowledges that it will be reasonable for the Lessor to withhold approval for any sign, advertisement, placard, name, flagpole, flag or notice that does not directly relate to the Permitted Use;

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g. overload the floor, walls, roof or any other part of the Premises, or, bring onto or remove from the Premises any plant or heavy equipment which by reason of its weight or vibration in its operation or in any way is likely in the reasonable opinion of the Lessor to cause damage to any part of the Premises or the Services;

h. except to the extent that they are necessary for the Permitted Use and then only in compliance with any Law or Requirement and in such quantities as are reasonably appropriate, store Hazardous Materials on or in the Premises;

i. install any equipment or system in the Premises that overloads or may overload the electrical or other Services to the Premises;

j. allow a person to reside on the Premises;

k. use the Premises for an illegal purpose;

l. burn any rubbish or waste on the Premises other than the burning of vegetation in accordance with all necessary permits;

m. use the Premises in conjunction with a hotel liquor licence, general bar licence or small bar licence within the meaning of the *Liquor Act 2007*. Nothing in this Lease otherwise prevents the Lessee from selling or providing liquor (within the meaning of the *Liquor Act 2007*) in connections with the Permitted Use or Fundraising activities provided they have obtained a requisite licence from NSW Casino, Liquor and Gaming Control Authority;

n. sell or allow food to be sold on the Premises without first obtaining a Food Registration Licence from Wollongong City Council;

o. permit smoking in any part of the Premises; or

p. use the Premises for any type of Gambling.

9.2. Lessee's positive covenants

The Lessee at its Cost must:

a. at all times carry out the Permitted Use in a business-like and reputable manner;

b. comply with the conditions of any and all development consents relating to the Premises;

c. comply, and ensure the Lessee's Employees comply with the requirements of all relevant Wollongong City Council policies as amended from time to time affecting the Lessee's Permitted Use of the Premises;

d. keep the Premises clean and not permit any accumulation of useless property or rubbish on them, and dispose of waste at the Lessee's cost at a waste disposal depot;

e. keep the Premises free of pests, insects and vermin;

f. provide the Lessor (and keep updated when it changes) with the name, postal

address, e-mail address, telephone and facsimile transmission numbers of a person or persons to contact during and after business hours if an emergency arises which affects the Premises;

g. keep the Premises locked and secure at all times it is not being used by the Lessee;

h. obtain, maintain and comply with all Approvals from all Authorities which from time to time are necessary or appropriate for the Lessee's occupation and use of the Premises;

i. maintain documented risk management identification and treatment programs for the Premises and the Services, which must be produced to the Lessor upon demand;

j. arrange for the regular and efficient removal from the Premises of its refuse and rubbish;

k. if a notifiable infectious illness occurs in the Premises, promptly give Notice to the Lessor and all relevant Authorities and thoroughly fumigate and disinfect the Premises to the satisfaction of the Lessor and all relevant Authorities;

l. permit the Lessor or the Lessor's servants or agents with or without vehicles and equipment, workmen or others at all times to enter the Land for fire protection and suppression purposes;

m. keep the Premises locked and secure at all times it is not being used by the Lessee or the Lessor;

n. make accessible at all times to the Lessor and the Lessor's employees or agents the Amenities Room; and

o. comply with the Further Obligations.

9.3. No warranty as to use

9.3.1. The Lessor gives no warranty (either present or future) that the Land or the Premises are fit for the Permitted Use.

9.3.2. The Lessee has entered into this Lease with full knowledge of and subject to any prohibitions or restrictions contained in any Law or any Requirement on how the Land or the Premises may be used.

9.4. Fundraising activities

The Lessee may conduct Fundraising activities as part of and relating to the Permitted Use.

9.5. Commercial operation

9.5.1. Where:

a. the Lessor has provided prior consent in writing to the use of the Premises for a profit making purpose which is not part of the Permitted

Use or Fundraising (**Commercial Operation**); and

b. the profit making purpose of the Commercial Operation falls within the Commercial Parameters;

the Lessor may require the Lessee to enter into a separate written agreement in respect to that Commercial Operation to allow that Commercial Operation to be validly undertaken from the Premises (**Commercial Agreement**).

9.5.2. The Parties agree that the Commercial Agreement must be negotiated in good faith and will provide that all revenue raised from the Commercial Operation must be used by the Lessee to fund its obligations under this Lease.

9.5.3. Despite anything else in this Lease, the Lessee must not use the Premises or any part of them for a Commercial Operation unless the parties have entered into a Commercial Agreement as contemplated in clause 9.5.1(a) above.

9.5.4. A proposed Commercial Operation must not:

a. be the most substantial or significant use of the Premises;

b. conflict with the Permitted Use or the Lessor's Council Lifeguard Operations; and/or

c. materially adversely affect the carrying out of the Permitted Use on the remainder of the Premises by the Lessee.

9.5.5. If the parties enter into a Commercial Agreement, then the Lessee must, whenever reasonably requested by the Lessor, demonstrate to the Lessor's reasonable satisfaction that all revenue raised from the Commercial Operation is being used to fund the Lessee's obligations under this Lease. Without limiting the preceding sentence, the Lessor may audit the Lessee to ensure financial compliance in this regard and the Lessee must produce all relevant documents and items to enable the Lessor to do so.

9.5.6. Should the Lessee breach any of its obligations under this clause 9.5, the Lessor may terminate any Commercial Agreement or other agreement between the parties in respect to the Commercial Operations.

9.5.7. Nothing in this clause 9.5 affects the Lessee's obligation to comply with clause 17.1.

9.6. Uses required by Lessor for other reservation purposes

Not used

9.7. Cost incurred by Lessor

Without limiting clause 10.2, unless otherwise agreed with the Lessor, the Lessee must pay to the Lessor on demand as a debt due the Cost incurred by the Lessor of doing any work or other thing to the Premises which may become necessary because

of the non-compliance of the Lessee or of the Lessee's Employees with any Law or Requirement or any provision of this Lease.

10. COMPLIANCE WITH LAWS AND REQUIREMENTS

10.1. Compliance with Laws

10.1.1. The Lessee at its Cost must comply with all Laws and Requirements relating to the Land, the Premises, the Services, the Permitted Use, and the Lessee's occupation and use of the Premises. If the Lessee receives any Notice from an Authority, the Lessee must immediately provide a complete copy of it to the Lessor.

10.1.2. Before complying with any Law or Requirement, the Lessee must (if required by that Law or Requirement):

a. obtain the written Approval of the Lessor which is not to be unreasonably withheld; and

b. observe the provisions of this Lease.

10.2. Lessor may comply with Laws if Lessee defaults

If the Lessee fails to do so, the Lessor may comply with any Law or Requirement referred to in this clause 10 either in part or whole. If the Lessor does this:

a. any Costs incurred by the Lessor must be paid or reimbursed to the Lessor by the Lessee as a debt due;

b. it is without prejudice to any of the Lessor's other rights in respect of non-compliance by the Lessee with its obligations under this Lease.

11. MAINTENANCE, REPAIRS, ALTERATIONS AND ADDITIONS

11.1. General repairing obligation

11.1.1. The Lessee must at its Cost during the Term, and any holding over period, keep the Premises in good repair and condition and clean and tidy as if it were the fee simple owner of the Premises, and must bear all costs of maintaining and repairing the interior of the Premises and the Services that are required to keep the Premises in good repair and condition.

11.1.2. Despite the requirements of clause 11.1.1, each Party is to assume the responsibility attributed to them under the *Maintenance Schedule* attached to this Lease at Schedule 3.

11.1.3. Despite the requirements of clause 11.1.2, the Lessee is required to reimburse the Lessor for the cost of 6 monthly fire inspection and test and the replacement of damaged or neglected fire safety equipment.

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11.2. Lessor's right of entry

The Lessor or the Lessor's Agents may enter the Premises in the following circumstances:

a. at reasonable times on giving to the Lessee 2 days prior notice:
   i. to view the state of repair and condition of the Premises and Services;
   ii. to determine compliance with this Lease by the Lessee; or
   iii. in accordance with clause 11.4, to carry out works and repairs;
   iv. for the purpose of complying with the terms of any present or future legislation affecting the Land and or Premises, or to comply with any notice served on the Lessor or Lessee by any competent Authority for which the Lessee is not responsible in terms of this Lease; and
b. at any time and for any purpose without notice if the Lessor reasonably considers entry is required in the case of an emergency.

11.3. Enforcement of repairing obligations

11.3.1. The Lessor may serve on the Lessee a Notice:
   a. specifying any failure by the Lessee to carry out any repair, replacement or cleaning of the Premises or the Services which the Lessee is required to do under this Lease; and
   b. requiring the Lessee to carry out the repair, replacement or cleaning within a reasonable time specified in the Notice.

11.3.2. If the Lessee does not comply with the Notice, the Lessor may elect to carry out such repair, replacement or cleaning and any Costs incurred by the Lessor must be paid by the Lessee.

11.4. Lessor may enter to repair

11.4.1. The Lessor, the Lessor's Agents and others authorised by the Lessor may at all reasonable times after giving the Lessee reasonable written notice enter the Land and the Premises to carry out any works and repairs in the circumstances set out below.

11.4.2. The circumstances for entry are any one or more of the following:
   a. to carry out any repairs on or to the Premises or the Services, which relate to anything which the Lessor is obliged or entitled to do under this Lease;
   b. if an Authority requires any repair or work to be undertaken on or to the Premises or the Services which the Lessor is required to do;
   c. if the Lessor elects to carry out any repair work which the Lessee is required or liable to do under this Lease by any Law or by any Requirement but fails to do so within the time specified or otherwise

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allowed for that work to be done, any Costs incurred by the Lessor must be paid by the Lessee.

11.5. Alterations to Premises

11.5.1. Subject to this Lease, the Lessee must not and must not permit any other person to carry out any Proposed Work without the Lessor's prior written Approval which must not be unreasonably withheld or delayed.

11.5.2. In seeking the Lessor's Approval the Lessee must submit plans and specifications of the Proposed Work for the Approval of the Lessor and such other information relating to the Proposed Work as is reasonably required by the Lessor.

11.5.3. Any Approval given by the Lessor to the Lessee for the Proposed Work is subject to the Lessee satisfying conditions of the Approval and the following requirements:

a. any Proposed Work must be supervised by a Person approved by the Lessor;

b. any Proposed Work must be executed promptly and continuously in a proper and workmanlike manner, using the materials and by contractors or tradesmen approved by the Lessor, in accordance with all Laws and Requirements;

c. the Lessee must pay on demand all reasonable Costs incurred by the Lessor in considering or inspecting the Proposed Work and its supervision, including the reasonable fees of architects, engineers or other building consultants reasonably engaged by or on behalf of the Lessor;

d. the Lessee must obtain and keep current and comply with all necessary Approvals from all Authorities necessary to enable any Proposed Work to be lawfully effected, and must on request by the Lessor produce for inspection by the Lessor copies of all such Approvals; and

e. on completion of the Proposed Work the Lessee must immediately obtain and produce to the Lessor, any unconditional certificates of compliance or of satisfactory completion issued by relevant Authorities and, a certificate by a consultant approved by the Lessor that the Proposed Work has been carried out in accordance with the plans and specifications approved by the Lessor.

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11.6. Notice to Lessor of damage, accident etc

The Lessee must immediately give Notice to the Lessor of any of the following of which the Lessee has actual or constructive notice:

a. damage however caused;
b. accident to or defects in the Premises or the Services; or
c. circumstances likely to cause any damage or injury occurring within the Premises;
d. fault in the Services; or
e. Notice from any Authority.

11.7. If, in the opinion of the Lessor, the Premises have reached the end of their useful life and is not worth the cost of repairing, the Lessee cannot require the Lessor to replace or repair the Premises.

12. ASSIGNMENT AND SUBLETTING

12.1. The Lessee may not sublet, assign this Lease or part with possession of the Premises or any part of them without the prior written consent of the Lessor. The Lessor will not unreasonably withhold its consent.

12.2. If the Lessee is a corporation, it will be treated as assigning this Lease, for the purposes of sub-clause 20.1, if the person or persons who beneficially own or control a majority of its voting shares at the commencement of this Lease cease to do so, except as a result of transmission on the death of a shareholder. This clause will not apply if the Lessee is a corporation, the voting shares of which are listed on a Stock Exchange in Australia.

12.3. The Lessee is to pay the Lessor's reasonable legal and other costs relating to considering and giving consent, including any costs which the landlord incurs in making inquiries as to the respectability, solvency, responsibility, stature, experience and capability of any proposed subtenant or assignee or the person to whom possession is to be transferred.

12.4. The Lessee may not mortgage or charge this Lease or any estate or interest in the leased Premises.

12.5. Acceptance of Rent by Lessor

The acceptance by the Lessor of any Rent or other payment from any Person other than the Lessee does not constitute an acknowledgment by the Lessor that it recognises that person as the authorised assignee or sub-lessee.

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13. INSURANCE AND INDEMNITIES

13.1. Insurances to be taken out by Lessee

The Lessee must effect and maintain at the Lessee's Cost:

a. a standard public liability insurance policy endorsed to extend the indemnity under the policy to include the Lessee's liability under Clause 13.5. The policy must:
   i. be for an amount of not less than the Insured Sum or such higher amount as the Lessor may reasonably require in respect of any single occurrence; and
   ii. be on terms that the insurer waives all rights of subrogation against the Lessor;
b. insurance for all Lessee's property and Lessee's Improvements;
c. workers compensation insurance for an amount required to comply with Lessee's obligations under the Workers Compensation Act NSW as amended from time to time; and
d. any other insurance reasonably required by the Lessor or as set out in Schedule 2.

13.2. Lessee's insurance obligations

The Lessee must:

a. ensure that all policies of insurance effected by the Lessee under this clause 13 are taken out with:
   i. an insurance office or company authorised by the Australian Prudential Regulation Authority to conduct new or renewal insurance business in Australia; and/or
   ii. Lloyd's of London Syndicates; or
   iii. as otherwise approved by the Lessor;
b. on the Commencement Date and on request from the Lessor, produce to the Lessor a certificate of currency; and
c. pay all premiums and other money payable in respect of the insurance policies when they become due and payable.

13.3. Council's Power

In the event that the Lessee does not effect and maintain the policies identified above, the Lessor may effect the policy and recover the premium from the Lessee as a charge under the Lease.

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13.4. Lessor's insurance obligations

The Lessor must effect and maintain at the Lessor's Cost building insurance for the Premises.

13.5. Non-vitiation of policies

The Lessee must not do anything, in, to or on the Premises and must use its best endeavours not to allow anything to be done, which may vitiate or render void or voidable any Lessee's insurances or any condition of any insurance taken out by the Lessor of which the Lessee has been made aware in respect of the Premises or any property in or on it.

13.6. Exclusion of Lessor's liability

13.6.1. The Lessee acknowledges that all property (excluding the Lessor's property in the Amenities Room) which may be in or on the Premises will be at the sole risk of the Lessee and the Lessor will not be liable for any Claim that the Lessee or the Lessee's Employees or any Person claiming by, through or under the Lessee may incur or make or any which arises from:

a. any fault in the construction or state of repair of the Premises or any part of it; or

b. the collapse of the Premises irrespective of the cause; or

c. any defect in any Services; or

d. the flow, overflow, leakage, condensation or breakdown of any water, air-conditioning, gas, oil or other sources of energy or fuel, whether from the roof, walls, gutter, downpipes or other parts of the Premises.

13.6.2. The Lessee agrees that the Lessor will not be responsible for and releases the Lessor, and the Lessor's Agents from liability in respect of any:

a. Claim relating to any property of the Lessee or any other Person in or on the Premises or any part of it however occurring; or

b. death, damage or injury to any Person or property in on or under the Premises or on any land near it suffered as a direct consequence of the construction, operation, presence or maintenance of the Premises and including, without limitation, damage or injury to any person or property resulting from any collision with or the collapse of the Premises.

13.7. Indemnities

Despite:

a. any Claims having resulted from anything which the Lessee may be authorised or obliged to do under this Lease; and/or

b. at any time any waiver or other indulgence having been given to the Lessee in

respect of any obligation of the Lessee under this clause 13,

the Lessee will indemnify and keep indemnified the Lessor and the Lessor's Agents from and against all Claims for which any of them will or may be or become liable, during or after the Term, in respect of or arising from:

i. any breach of this Lease by the Lessee;

ii. any cause whatever in respect of damage or injury to the Premises, to any property or to any Person or the death of any Person inside or outside the Premises caused or contributed to by any neglect or default of the Lessee or the Lessee's Employees under this Lease or by the use of the Premises by the Lessee or by the Lessee's Employees including, without limitation, injury or death to any Person or property resulting from any collision with or collapse of the Premises;

iii. the negligent or careless use or neglect of the Services and facilities of the Premises by the Lessee or the Lessee's Employees or any other Person claiming through or under the Lessee or of any trespasser while such trespasser is in or on the Premises caused or contributed to by any default or negligent act or omission of the Lessee;

iv. overflow or leakage of water (including rain water) or from any Services whether originating inside or outside the Premises caused or contributed to by any act or omission on the part of the Lessee or the Lessee's Employees or other Person claiming through or under the Lessee;

v. failure of the Lessee to give Notice to the Lessor of any defect in any of the mechanical or any other Services in the Premises within a reasonable time of the Lessee becoming aware of it; and

vi. damage to plate, float and other glass caused or contributed to by any act or omission on the part of the Lessee or the Lessee's Employees.

14. DAMAGE AND DESTRUCTION

14.1. Lessee to reinstate Premises

If the Premises or any part of them are at any time suffer minor damage then the Lessee must expeditiously re-instate the Premises and make them fit for the occupation and use by the Lessee as if it was Proposed Work, other than where the damage or destruction is a direct result of a party other than the Lessee or an action or failure to act by the Lessor. For the purposes of this clause, “minor damage” means damage that is less than $20,000.00 to repair, or such amount the Lessor advises is the excess payable from time to time under its applicable building insurance for any one event.

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14.2. Obligation to reinstate is absolute

Subject to Clause 14.1 above, the Lessee's obligation to reinstate the Premises applies irrespective of how the damage and destruction occurred and irrespective of whether any policy of insurance required or effected for the Premises not taken out or is avoided or payment refused or reduced.

14.3. Rent and Rates and Taxes

Unless otherwise agreed between the parties in writing the Lessee must continue to pay the Rent and the Rates and Taxes even if the Premises are destroyed or damaged.

15. LESSOR'S COVENANT

If the Lessee pays the Rent and observes and performs in a timely fashion the covenants and conditions on its part contained in this Lease, the Lessee may occupy and enjoy the Land during the Term without any interruption by the Lessor or by any Person claiming through the Lessor except as provided in this Lease.

16. TERMINATION AND DEFAULT

16.1. Termination under section 3.43 of the Act

16.1.1. The Lessor and Lessee acknowledge that, subject to clause 16.2(b), this Lease will terminate under section 3.43 of the Act if the Land is revoked or that part of the Land is revoked that comprises the whole or part of the Premises unless the revocation notification otherwise provides.

16.1.2. Where only part of Premises is affected by a revocation or proposed revocation the parties undertake to consult with each other to determine if an agreement under section 3.43(2) can be reached for the continuation of this Lease in respect to that part of the Premises not affected by the revocation.

16.1.3. The Lessee expressly acknowledges that as provided by section 3.43 of the Act no compensation is payable in respect of the termination of this Lease by the operation of section 3.43 and no compensation shall be payable.

16.2. Events of default

The following are events of default:

a. if the Rent or any other money payable under this Lease is not paid within 30 days of the due date for payment whether legally demanded or not;

b. if the Lessee at any time fails to perform or observe any of its obligations under this Lease;

c. if the Lessee is a company and the Lessee:

i. enters into any compromise or arrangement with any of its creditors or if an application is made to any court for an order summoning a meeting of creditors;
ii. has a receiver or receiver and manager or administrator or controller appointed of any of its assets;
iii. is wound up or dissolved or notice is given of intention to propose a resolution for winding up or an order is made or resolution passed or an application is made for winding up or dissolution;
iv. has a resolution passed by the directors that in their opinion the company can no longer continue its business;
v. calls a meeting of its creditors under the *Corporations Act 2001*;
vi. is placed under official management or if the members determine to convene a meeting of creditors for the purpose of placing the company under official management;
vii. has an inspector appointed under the *Australian Securities and Investments Commission Act 1989*;
viii. is unable to pay its debts as and when they fall due;
ix. makes an assignment for the benefit of or enters into an arrangement or composition or a moratorium whether formal or informal with its creditors or financiers; or
x. has a provisional liquidator or a liquidator by any means appointed;

d. if any execution exceeding ten thousand dollars is issued, levied or enforced against the Lessee or on any of the assets of the Lessee unless such execution is fully paid or satisfied within seven days from the date of the issue, levy or enforcement, or appropriate legal proceedings to invalidate the execution are taken within seven days of the issue, levy or enforcement; and

e. if the Lessee is a natural person and becomes or is made bankrupt or makes any assignment of his estate or any part of it for the benefit of creditors or otherwise seeks relief under or takes advantage of any Law for the time being in force relating to bankruptcy or insolvent debtors or causes or permits his goods to be levied on or under any execution or other legal process.

16.3. Forfeiture of Lease

If an Event of Default occurs the Lessor may, without prejudice to any other Claim which the Lessor has or may have against the Lessee or any other Person at any time re-enter into and upon the Land and Premises or any part of it in the name of the whole and thereupon this Lease will be absolutely determined.

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16.4. Lessor may rectify

If the Lessee is in default under this Lease and fails to commence to rectify that default within 7 days of the Lessor notifying the Lessee in writing of that default and requiring its rectification or, having commenced, fails to expeditiously complete that rectification within a reasonable time, the Lessor may, but will not obliged to, remedy at any time without further notice any default by the Lessee under this Lease. If the Lessor so elects all reasonable Costs incurred by the Lessor (including legal costs and expenses) in remedying the default will constitute a liquidated debt and must be paid by the Lessee to the Lessor on demand.

16.5. Waiver

16.5.1. The Lessor's failure to take advantage of any default or breach of covenant by the Lessee will not be or be construed as a waiver of it, nor will any custom or practice which may grow up between any of the Parties in the course of administering this Lease be construed to waive or to lessen the right of the Lessor to insist upon the timely performance or observance by the Lessee of any covenant or condition of this Lease or to exercise any rights given to the Lessor in respect of any such default.

16.5.2. A waiver by the Lessor of a particular breach is not deemed to be a waiver of the same or any other subsequent breach or default.

16.5.3. The demand by the Lessor for, or subsequent acceptance by or on behalf of the Lessor of, Rent or any other money payable under this Lease will not constitute a waiver of any earlier breach by the Lessee of any covenant or condition of this Lease, other than the failure of the Lessee to make the particular payment or payments of Rent or other moneys so accepted, regardless of the Lessor's knowledge of any earlier breach at the time of acceptance of such Rent or other moneys.

16.6. Tender after determination

If the Lessor accepts money from the Lessee after the Lessor ends this Lease the Lessor may (in the absence of any express election of the Lessor) apply it:

a. firstly, on account of any Rent and other moneys accrued and due under this Lease but unpaid at the date the Lease is ended; and

b. secondly, on account of the Lessor's Costs of re-entry.

16.7. Essential terms

The Lessor and the Lessee agree that each of the following covenants by the Lessee are essential terms of this Lease:

a. pay the Rent;

b. keep the Premises open for use;

c. carry on the Permitted Use;

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d. comply with Laws and Requirements;
e. repair and maintain and, if necessary, reinstate or demolish the Lessee's Improvements;
f. subject to clause 12.1, not assign this Lease or sub-let the Land or Premises or any part of it;
g. hold affiliation with Surf Lifesaving NSW;
h. take out and keep current those insurances required to be taken out by the Lessee;
i. pay or reimburse Rates and Taxes; and
j. remove the Lessee's Improvements at the end of this Lease unless the Lessor specifically requires otherwise by notice in writing to the Lessee.

16.8. Damages for breach

The Lessee covenants to compensate the Lessor for any breach of this Lease and the Lessor may recover damages from the Lessee for any breach. The Lessor's entitlement under this Clause is in addition to any other remedy or entitlement to which the Lessor is entitled (including the right to terminate this Lease).

16.9. Repudiation by Lessee

Without limiting clause 16.8 or any other provision of this Lease, the Lessee covenants to compensate the Lessor for any loss or damage suffered by the Lessor by reason of the Lessee's conduct (whether acts or omissions) constituting a repudiation of this Lease or of the Lessee's obligations under this Lease.

16.10. Acts by the Lessor not to constitute forfeiture

The Lessor's entitlement to recover damages shall not be affected or limited if any of the following events occur:

a. the Lessee abandons or vacates the Land and or Premises;
b. the Lessor elects to re-enter the Land and or Premises, or to terminate the Lease;
c. the Lessor accepts the Lessee's repudiation; or
d. the Parties' conduct (or that of any of their servants or agents) constitutes a surrender by operation of law.

16.11. Mitigation

Nothing in this Clause will operate to relieve the Lessor of any obligation which would otherwise apply to mitigate any loss or damage suffered by the Lessor.

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17. DETERMINATION OF TERM

17.1. Lessee to yield up

17.1.1. When this Lease ends, the Lessee, at its Cost, must:

a. unless otherwise required by the Lessor, remove the Lessee's Improvements in a proper and workmanlike manner in compliance with the requirements of all Authorities and to the satisfaction of the Lessor; and

b. remove all loose items from the Premises.

17.1.2. If the Lessor does not require the Lessee to remove the Lessee's Improvements or particular improvements specified by the Lessor, those improvements will revert to and become the absolute property of the Lessor (except for the Lessee's trade fixtures, fittings and chattels) without any payment or compensation.

17.2. Lessee not to cause damage

17.2.1. The Lessee must not cause or contribute to any damage to the Land or Premises in the demolition and removal of the Lessee's Improvements.

17.2.2. If the Lessee causes any such damage in the demolition and removal of the Lessee's Improvements, the Lessee must make good any such damage and must leave the Land and Premises in a condition that is acceptable to the Lessor and all Authorities.

17.2.3. If the Lessee fails to do so within a reasonable time, the Lessor may make good any such damage at the Cost of and as agent for the Lessee and recover from the Lessee the reasonable cost to the Lessor of doing so as a debt due payable on demand.

17.3. Failure by Lessee to remove the Lessee's Improvements

If the Lessee fails to remove the Lessee's Improvements and loose items in accordance with this clause 17 or if the Lessor re-enters the Land and or Premises, the Lessor at the Lessor's option (without prejudice to any action or other remedy which the Lessor has) may do any one or more of the following:

a. demolish and remove the Lessee's Improvements and remove the Lessee's loose items;

b. without being guilty of any manner of trespass, cause any of the Lessee's property to be removed and stored in such manner as is reasonable at the risk and at the Cost of Lessee and/or at the option of the Lessor sell it as the attorney of the Lessee and appropriate the proceeds of sale in payment of any Rent or other money owing by the Lessee to the Lessor and pay any residue without

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interest to the Lessee;

c. treat the Lessee's property as if the Lessee had abandoned its interest in it and it had become the property of the Lessor, and deal with it in such manner as the Lessor thinks fit without being liable in any way to account to the Lessee for them;

d. recover its costs from the Lessee on demand as a debt due.

17.4. Lessee to indemnify and pay Lessor's Costs

Without limiting clause 13.5, the Lessee must indemnify and keep indemnified the Lessor in respect of any reasonable Costs incurred by the Lessor under clause 17.3 and also in respect of all Claims which the Lessor may suffer or incur at the suit of any Person (other than the Lessee) claiming an interest in the Premises or the Lessee's property by reason of the Lessor acting in any manner permitted in this clause 17.

17.5. Earlier breaches

The ending of this Lease does not prejudice or affect any rights or remedies of the Lessor against the Lessee in respect of any earlier breach by the Lessee of any Lease covenants and conditions.

18. MISCELLANEOUS

18.1. Notices

18.1.1. Any Notice served or given by either Party under this Lease will be valid and effectual if signed by either Party or by any director, alternate director, secretary, executive officer, attorney, managing agent, Authorised Officer or solicitors for the time being of that Party or any other Person nominated from time to time by that Party.

18.1.2. Each Party must immediately provide the other Party with a Notice containing full particulars of the address and facsimile information of the Party giving the Notice and must update such notice in the event of any change.

18.1.3. Any Notice required to be served or which the Lessor may elect to serve on the Lessee shall be sufficiently served if:

a. served personally;

b. sent by facsimile transmission; or

c. forwarded by prepaid security post to the Lessee at its address in this Lease.

18.1.4. Any Notice required to be served on the Lessor shall be sufficiently served if:

a. served personally;

b. sent by facsimile transmission; or

c. forwarded by prepaid security post addressed to the Lessor to the

Name and Notice Address.

All such Notices must be addressed to the Lessor at that address or at such other address as the Lessor from time to time nominates.

18.1.5. Any Notice is deemed to have been duly served if given:

a. by post, two Business Days after the day it was posted;

b. by facsimile, at the time of transmission to the Party's facsimile number unless the time of dispatch is later than 5.00 p.m. at the place to which the facsimile transmission is sent in which case it shall be deemed to have been received at the commencement of business on the next Business Day in that place. A copy of any Notice sent by facsimile transmission must also on the date of dispatch be sent by mail to the Party to whom it was sent by facsimile transmission;

c. personally, on the date of service.

18.2. Holding over

If the Lessee continues in occupation of the Land after the Term has expired without objection by the Lessor:

a. the Lessee will be deemed a Lessee on the terms of this Lease from month to month for a period not exceeding 12 calendar months, at a rent to be agreed and failing agreement at a rent to be determined by a qualified valuer acting as an expert and not as an arbitrator and his costs must be paid equally by the Parties;

b. either Party may end the Lease by giving to the other Party at any time one month's Notice.

18.3. Set-Off

If the Lessee defaults in the payment of the Rent, the Rates and Taxes or any other money payable under this Lease to the Lessor or any Authority, the Lessor may set-off that amount against any moneys which may from time to time be payable by the Lessor to the Lessee on any account whatsoever but any set-off will not relieve the Lessee from its default for any non-payment of the Rent, the Rates and Taxes or other moneys under this Lease.

18.4. Easements

18.4.1. The Lessor may grant rights of support and enter into any arrangement or agreement with any party with an interest in any adjacent land or with any Authority as the Lessor thinks fit for the purpose of:

a. public or private access to the Land;

b. support structures erected on adjoining land; or

c. the provision of Services.

18.4.2. The Lessor must not exercise any rights under this Clause if it substantially and permanently derogates from the enjoyment of the rights of the Lessee under this Lease.

18.5. Waiver

No waiver by one Party of a breach by or on behalf of the other Party of any obligation, provision or condition of this Lease expressed or implied shall operate as a waiver to or of any other breach of the same or any other obligation, provision or condition of this Lease expressed or implied.

19. ABORIGINAL LAND RIGHTS AND NATIVE TITLE CLAIM

19.1 The Lessee acknowledges and accepts that the Land and Premises which is the subject of this Lease is subject to claims pursuant to ALR Act and the NT Act and remains undetermined.

19.2 Should investigations reveal that the Land and/or Premises is or was claimable Crown land within the meaning of the ALR Act when the claims were made, the Land and/or Premises will be granted to the relevant Aboriginal Land Council and the Lease will be terminated from the date of the grant.

19.3 The parties agree that the Lessor may elect to terminate this Lease immediately upon the making of an approved determination under the NT Act that native title exists in relation to the Lease, in part or in whole, without any further notice or action.

19.4 Except as may be expressly provided for in this Lease, the Lessee acknowledges and agrees that the Lessee is bared from making any Claim against the Lessor in respect of this Clause 19 generally and will not be entitled to any compensation, costs or damages in respect of the termination/variation of this Lease by the operation of this Clause 19.

20. EARLY TERMINATION RIGHT

20.1. Despite anything else in this Lease, if the Lessor after consultation with the Lessee reasonably and in good faith considers the location of the Premises represents a danger to persons or property, then the Lessor may by written notice to the Lessee terminate this Lease on a date specified in the notice, which date must not be less than 6 months after the date of the notice.

20.2. No compensation is payable from the Lessor to the Lessee as the result of termination of this Lease under Clause 20.1.

20.3. For the avoidance of doubt:

a. if the Lessor issues a notice in compliance with Clause 20.1, this Lease

terminates on the date specified in the notice; and

b. the issue of the notice and the termination of this Lease under Clause 20.1 does not affect any of the rights or obligations of the parties under this Lease that arise prior to the termination.

21. SPECIAL CONDITIONS

The Special Conditions set out in Schedule 2 form part of this Lease and are additional to and override any other provisions in this Lease if they are inconsistent with the other provisions of this Lease.

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SCHEDULE 1

ITEM 1	**LESSOR:**	Wollongong City Council 41 Burelli Street WOLLONGONG NSW 2500 ABN 63 139 525 939
ITEM 2	**LESSEE:**	Bellambi Surf Life Saving Club Inc. PO Box 28 CORRIMAL NSW 2518 ABN 31 559 131 560
ITEM 3	**LAND:**	Part Folio Identifier 7017 in Crown DP1057474 being premises known as Building 1, Bellambi Surf Life Saving Club, excepting the Public Toilets and Showers and Amenities Room, at 1A Morgan Place, Bellambi NSW 2500
ITEM 4	**COMMENCEMENT DATE:**	1 March 2020
ITEM 5	**TERM:**	21 years
ITEM 6	**RENT:**	$705.00 per annum including GST payable annually in advance and varied annually according to Council's Community & Sporting Group annual rental.
ITEM 7	**PERMITTED USE:**	Surf Life Saving Club and associated activities including Fundraising and any Commercial Operations that are the subject of a written agreement as required by clause 9.5(a) of this Lease.
ITEM 8	**FURTHER TERM:**	Not Applicable
ITEM 9	**NAME AND NOTICE ADDRESS:**	**Lessor:** Manager Property Services Wollongong City Council 41 Burelli Street WOLLONGONG NSW 2500 council@wollongong.nsw.gov.au **Lessee:** The President Bellambi Surf Life Saving Club Inc. PO Box 28 CORRIMAL NSW 2518 president@bellambislsc.com.au

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ITEM 10	**INSURED SUM & INSURANCES:** **Public Liability Insurance**	$20 million
ITEM 11	**RESERVATION/ DEDICATION:**	Crown Reserve R88075 Bellambi Point Reserve for Public Recreation
ITEM 12	**PAYMENT ADDRESS:**	41 Burelli Street WOLLONGONG NSW 2500
ITEM 13	**LESSOR'S IMPROVEMENTS:**	Nil
ITEM 14	**EXCLUDED LESSEE'S IMPROVEMENTS**	Not Applicable

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SCHEDULE 2
Special Conditions

1. BENEFIT OF LESSEE'S COVENANTS

In the event of a person other than the Lessor becoming entitled to receive the rents hereby reserved either by operation of law or otherwise such person shall have the benefit of all covenants and agreements on the part of the Lessee hereunder and the Lessee at the cost of the Lessor shall enter into such covenants with such other person in this regard as the Lessor may reasonably require.

2. MANAGING AGENT

The Lessor may from time to time appoint a Managing Agent to manage the Building and/or Premises and any Managing Agent so appointed shall represent the Lessor in all matters relating to this Lease except insofar as the Lessor shall otherwise in writing direct and provided always that any communication from the Lessor shall to the extent of any inconsistency supersede any communication from the Managing Agent.

3. POWER OF ATTORNEY

The Lessee hereby irrevocably makes, nominates, constitutes and appoints the Lessor and its nominee or nominees and their substitute or substitutes jointly and severally to be the true and lawful Attorney or Attorneys of the Lessee to act any time after the power to re-enter herein contained shall have become exercisable or shall have been exercised (a sufficient proof whereof shall be the statutory declaration of any officer of the Lessor duly authorised by the Lessor in that behalf) to execute and sign a transfer or a surrender of this Lease and to procure the same to be registered for this purpose to use the name of the Lessee and generally to do, execute and perform any act, matter or thing relative to the Premises as fully and effectually as the Lessee could do in and about the Premises AND the Lessee hereby covenants to ratify and confirm all and whatsoever the said Attorney or Attorneys shall lawfully do or cause to be done in or about the Premises.

4. EQUIPMENT FAILURE

Non Liability for Failure of Equipment

4.1 The Lessee agrees that the Lessor shall not be responsible for and shall incur no liability in respect of any failure of any of the equipment or machinery for the time being in the Building (including without limiting the generality thereof any air-conditioning system, ventilation system) or for the ineffectual operation thereof or for any of that equipment or machinery not working for any reason (other than due to a direct failure of the Lessor) or

for any damage or loss occasioned or arising in consequence thereof to the Lessee or to any person claiming by through or under the Lessee. The Lessor is under no obligation to have operating or to repair or maintain any of such equipment or machinery. The Lessee shall indemnify and keep indemnified the Lessor from and against all actions, claims, costs, damages, decrees, demands, expenses, judgments, losses, orders, proceedings, summons, suits and writs of any nature whatsoever arising out of or in consequence of any of the matters aforesaid.

4.2 The liability and obligations imposed by Clause 4.1 above does not extend to inherent structural defects within the Premises known or that ought to have been reasonably known by the Lessor.

5. PRINCIPAL CONTRACTOR OBLIGATIONS

5.1. Definitions

For the purposes of this clause:

Lessee's Contractor means any contractor engaged by the Lessee to undertake the work.

WHS Principal Contractor means the person deemed to be the principal contractor in accordance with clause 293 of the WHS Regulation.

WHS Regulation means the Work Health and Safety Regulation 2011 (NSW) and includes amendments, re-enactments and replacements of it.

Work means any construction work to which Chapter 6 of the WHS regulation applies and which is commissioned by or on behalf of the Lessee, and for the avoidance of doubt whether or not directed or approved by the Lessor or in accordance with this Lease, or another Tenancy Document.

5.2. Principal Contractor

5.2.1. Where any work is to be undertaken under or in connection with the Premises during the Term or during the term of any option period, the Lessee acknowledges that, subject to other provisions of this Lease, in accordance with clause 293 of the WHS Regulations it is the WHS Principal Contractor.

5.2.2. The Lessee may authorise the Lessee's Contractor to have management and control of the workplace where the work will occur and to discharge the duties of the principal contractor under the WHS Regulation.

5.3. Acknowledgement by Lessee

The Lessee acknowledges that, where it is the WHS Principal contractor for the work, it must discharge all responsibilities as the WHS Principal Contractor for the work done, performed or commenced until the expiry or termination of this Lease.

5.4. Obligation to comply not limited

The Lessee's compliance with the WHS Regulation in performing its obligations under this clause 5.1 is in addition to, not in substitution for, the Lessee's obligation to comply with any other Laws and Requirements.

5.5. Signage

The Lessee must ensure that when any work is carried out, signs that are clearly visible from outside the premises are placed on the Improvements:

a. identifying the Lessee or the Lessee's Contractor (as the case may be) as the WHS Principal Contractor

b. stating the contact telephone numbers including an after-hours number of the Lessee or the Lessee's Contractor (as the case may be), and

c. showing the location of any site office.

5.6. Assistance of Lessor

The Lessee must do all things to assist the Lessor in discharging any obligations that the Lessor may have under the WHS Regulation in respect of the Premises.

5.7. Compliance with directions

The Lessee must immediately comply with directions on safety issued by any relevant Authority or by the Lessor.

5.8. Indemnity

The Lessee will, on and from the earliest of the date of this Lease, the Commencement Date or the date the Lessee is given access to the Premises, to the extent permitted by law, indemnify the Lessor against all Claims and Costs arising from or incurred in connection with a breach by the Lessee of this clause or of the obligations applicable to the WHS Principal Contractor under the WHS regulation.

6. LESSOR'S CAPACITY AS AUTHORITY

6.1. The Lessee acknowledges and accepts that in addition to Wollongong City Council, being the Lessor under this Lease, is also an Authority and is charged with the responsibility of administering and enforcing the provisions of Laws including without limitation various statutes, regulations, proclamations, ordinances, by-laws and planning instruments.

6.2. Nothing in this Lease shall be construed so as to in any way restrict or otherwise affect or fetter the Wollongong City Council's powers, obligations and discretions under any Laws or otherwise as a an Authority, and any conduct of Wollongong City Council in its capacity as an Authority will not constitute a breach of any of the Lessor's obligations under this Lease.

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6.3. The Lessee must not:

a. do or suffer to be done any act;

b. neglect or omit to do any act; or

c. permit any other person to neglect or omit to do any act,

where such conduct, neglect or omission may obstruct Wollongong City Council from performing its obligations under this provision and the Lessee must indemnify the Wollongong City Council against any costs, Claims or expenses suffered by the Lessor as a result of such conduct, neglect or omission.

7. EXCLUDED AREA

7.1 Despite all other provisions in this Lease, the Lessee acknowledges that the Amenities Room and Public Toilets and Showers are excluded from the Premises and must allow for full and free access by the Lessor's agents and employees to provide ocean lifeguard services throughout the Patrol Season and, in particular, must allow for free and unfettered access to the Amenities Room and Public Toilets and Showers.

8. MAJOR STORM EVENT

8.1. Despite all provisions in this Lease, the Lessee acknowledges that if a Major Storm Event occurred that the Lessee will allow for full and free access by the Lessor's agents and employees to provide ocean lifeguard services throughout the Patrol Season.

8.2. The Lessee will also provide any reasonable storage and amenities to the Lessor at no cost and that is deemed required by the Lessor for the continued operation of the ocean lifeguard services and for a length of time decided upon by the Lessor.

8.3. For the purposes of this Special Condition 8, a 'Major Storm Event' means an event or force of nature that causes catastrophic consequences to the effective operation of the beach lifeguard office.

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SCHEDULE 3

FORM LEASED BUILDING MAINTAIN/REPLACE RESPONSIBILITY

NAME:	BELLAMBI SLSC			BUILDING:	B02039 BELLAMBI SURF LIFE SAVING CLUB BUILDING EXCLUDING PUBLIC TOILET AND SHOWERS AND COUNCIL LIFEGUARD AMENITIES ROOM					
ITEM	**RESPONSIBILITY**					**ITEM**	**RESPONSIBILITY**				
	MAINTAIN			REPLACE			MAINTAIN			REPLACE	
Description	Applic	WCC	Lessee	WCC	Lessee	Description	Applic	WCC	Lessee	WCC	Lessee
STRUCTURE						**UTILITIES PAST THE POINT OF CONNECTION**					
Windows	Yes	☒	☐	☒	☐	Electrical	Yes	☐	☒	☐	☒
Walls	Yes	☒	☐	☒	☐	Gas	N/A	☐	☐	☐	☐
Roof	Yes	☒	☐	☒	☐	Water	Yes	☐	☒	☐	☒
Floor	Yes	☒	☐	☒	☐	Sewer	Yes	☐	☒	☒	☐
Balustrade	Yes	☒	☐	☒	☐	Septic Tank (emptying)	N/A	☐	☐	☐	☐
Decking incl ramp & stairs	Yes	☒	☐	☒	☐	Grease Trap (emptying)	Yes	☐	☒	☐	☒
MINOR MAINTENANCE						**APPURTENANCE ITEMS**					
Cleaning, including windows	Yes	☐	☒	☐	☒	External lighting	Yes	☒	☐	☒	☐
Gutter and eave cleaning	Yes	☒	☐	☒	☐	Solar Panels	N/A	☐	☐	☐	☐
Plumbing (minor)	Yes	☐	☒	☐	☒	Water Tanks	Yes	☐	☒	☐	☒
SLSC Hot Water System mini-boil system/s Commercial Hot Water System mini-boil system/s	Yes Yes	☒ ☐	☐ ☒	☒ ☐	☐ ☒	Sheds/Containers /Shelters	N/A	☐	☐	☐	☐
Lights (incl bulb replacement)	Yes	☐	☒	☐	☒	**INSURANCE**					
Windows - glass replacement	Yes	☐	☒	☐	☒	Building – above WCC excess as nominated	Yes	☒	☐	☒	☐
External Doors including jambs and hardware including locks and hinges	Yes	☒	☐	☒	☐	Building – below WCC excess as nominated	Yes	☐	☒	☐	☒
Internal Doors including jambs and hardware including locks and hinges	Yes	☐	☒	☐	☒	Public Liability	Yes	☐	☒	☐	☒
MECHANICAL						Artworks/Memorabilia	Yes	☐	☒	☐	☒
Air Conditioning	N/A	☐	☐	☐	☐	Contents, excl Art	Yes	☐	☒	☐	☒
De-Humidifying	N/A	☐	☐	☐	☐	**SECURITY INCLUDING**					
Pumps	N/A	☐	☐	☐	☐	Install	Yes	☒	☐	☒	☐
Cool Room Servicing	N/A	☐	☐	☐	☐	Monitoring – alarm system	Yes	☐	☒	☐	☒
Roller Doors	Yes	☐	☒	☒	☐	Guard response	Yes	☐	☒	☐	☒
Roller Shutters	Yes	☐	☒	☒	☐	Access control, swipe cards/fobs	Yes	☐	☒	☐	☒
Fly Screens	Yes	☐	☒	☐	☒	Pest Control – Eradication of nests	Yes	☐	☒	☐	☒
BUILDING FABRIC						**LANDSCAPE WASTE SERVICES**					
Flooring finishes	Yes	☐	☒	☐	☒	Garden bed	N/A	☐	☐	☐	☐
Kitchen maintenance	Yes	☐	☒	☐	☒	Footpaths	N/A	☐	☐	☐	☐

Kitchen cleaning	Yes	☐	☒	☐	☒	Carparks	N/A	☐	☐	☐	☐
Toilets internal – cleaning and minor repairs	Yes	☐	☒	☐	☒	Driveways	N/A	☐	☐	☐	☐
Toilets Fixed Railings, Soap Dispensers (+keys), Paper Towel and Toilet Roll Holders, shelving, etc	Yes	☐	☒	☐	☒	Fences and gates including locks & hinges	N/A	☐	☐	☐	☐
						General waste bin & liners	Yes	☐	☒	☐	☒
Furniture	N/A	☐	☐	☐	☐	Garden refuse removal	N/A	☐	☐	☐	☐
Blinds, curtains	Yes	☐	☒	☐	☒	Garbage & waste removal	Yes	☐	☒	☐	☒
ITEM	**RESPONSIBILITY**					**ITEM**	**RESPONSIBILITY**				
	MAINTAIN			REPLACE			MAINTAIN			REPLACE	
Description	Applic	WCC	Lessee	WCC	Lessee	Description	Applic	WCC	Lessee	WCC	Lessee
ELECTRICAL						**PAINTING**					
Connection point (EDB)	Yes	☒	☐	☒	☐	External	Yes	☒	☐	☒	☐
Comms and IT within the leased premises and past the point of connection	Yes	☐	☒	☐	☒	Internal	Yes	☐	☒	☐	☒
						Graffiti removal	Yes	☒	☐	☒	☐
						Minor touch-up (internal)	Yes	☐	☒	☐	☒

STATUTORY COMPLIANCE RESPONSIBILITY			**MAINTAIN**		**REPLACE**	
Description	Australian Standard (Latest as at time of executing document)	Applic	WCC	Lessee	WCC	Lessee
Roof Anchor Points – annual inspection and test	AS1891.4:2000	Yes	☒	☐	☒	☐
FIRE						
Emergency Lighting – 6 monthly inspection and test	AS2293.2:1995	Yes	☒	☐	☒	☐
Emergency Exit Doors – annual inspection and test	D2.20 and D2.21 Building Code of Aust	Yes	☒	☐	☒	☐
Evacuation Pathway Annual Inspection	Environmental Protection Authority Reg 2000 Part 9 Div 7	Yes	☒	☐	☒	☐
Fire Extinguishers – 6 monthly inspection and test / 5 yearly	AS2444	Yes	☒	☐	☒	☐
Fire Hose Reels – annual inspection and test	AS2441	Yes	☒	☐	☒	☐
Fire Hydrants and Booster Valves/Pumps – annual inspect and test	AS2419	N/A	☐	☐	☐	☐
Fire Detection Basic-Smoke and Thermal – annual inspection and test battery replacement	AS3786/AS1670.1 Spec E2.2a of Building Code of Australia	N/A	☐	☐	☐	☐
Fire Indicator Panel – monthly inspect and test	AS3786/AS1670.1 Spec E2.2a of Building Code of Aust	N/A	☐	☐	☐	☐
Fire Indicator Panel – monitoring (as required)	AS4428.6 AS1670.3	N/A	☐	☐	☐	☐
EWIS Panel – monthly maintenance	Building Code of Aust 54.9 AS2220 - 1989	N/A	☐	☐	☐	☐
Fire Dampers – annual inspection and test	AS1851 AS1682.1	N/A	☐	☐	☐	☐
Fire Doors – annual inspection and test	Building Code of Aust Spec C3.4 and AS1905-1 1997	Yes	☒	☐	☒	☐
Fire Suppression - sprinklers and 'dump' – monthly inspection and test	Building Code of Aust E1.54 Spec E1.5 Ord 70 part 27a	N/A	☐	☐	☐	☐
Fire Safety Statement	Clause 177 EPA Reg 2000	Yes	☒	☐	☒	☐

STATUTORY COMPLIANCE RESPONSIBILITY			MAINTAIN		REPLACE	
Description	Australian Standard (Latest as at time of executing document)	Applic	WCC	Lessee	WCC	Lessee
ELECTRICAL						
Electrical Distribution Board (Building) – annual inspection and maintenance	AS3000:2007	Yes	☒	☐	☒	☐
Electrical Appliance – test and tag	AS/NZS 3350.2.29:2001	Yes	☐	☒	☐	☒
UPS - annual inspection and testing	Per manufacturer's recommendation	N/A	☐	☐	☐	☐
Power Factor Correction – annual inspection and maintenance	AS/NZ S300:2000	N/A	☐	☐	☐	☐
Transmission Antenna	ARPANSA Act	N/A	☐	☐	☐	☐
Lightning Protection (Building) – annual inspection and maintenance	AS1768:2003 Append B Sect B10.2	N/A	☐	☐	☐	☐

STATUTORY COMPLIANCE RESPONSIBILITY			MAINTAIN		REPLACE	
Description	Australian Standard (Latest as at time of executing document)	Applic	WCC	Lessee	WCC	Lessee
MECHANICAL						
Vertical Transport/Lift – annual inspection and maintenance	AS1735 Workcover Cert Building Code of Aust	N/A	☐	☐	☐	☐
Generator/Pumps – annual inspection and test	AS3100, 2790	N/A	☐	☐	☐	☐
Auto Doors – 4 monthly inspection and test	AS5007 E2	N/A	☐	☐	☐	☐
Air Handling	AS1668.1	Yes	☐	☒	☐	☒
HYDRAULIC						
Hot Water System complex – annual inspection and maintenance	AS3500	N/A	☐	☐	☐	☐
Irrigation - annual inspection and maintenance	AS5200, AS3500, AS2700, AS1319:1994	N/A	☐	☐	☐	☐
RPZ – annual inspection and test	AS2845, AS3500.1	Yes	☒	☐	☒	☐
Grease Traps – annual inspection and maintenance copy to Council Registration and Compliance for Wastewater	EPA, AS3500	Yes	☐	☒	☐	☒
Water Tanks – annual inspection and maintenance, ie filters	AS5200, AS3500,AS2941:2002	N/A	☐	☐	☐	☐
Septic Tanks – annual inspection and maintenance	AS3500, AS1319, AS2700	Yes	☒	☐	☒	☐
Boilers – annual inspection and maintenance	AS3500, Boilers and Pressure Vessels Regs 1954 and AS3788:2001	N/A	☐	☐	☐	☐
TMV–6 monthly –inspection and test	AS3500,AS4032.3,HOSPLAN Code of Practice	Yes	☒	☐	☒	☐
Gas Appliances – critical component maintenance	AS3500	N/A	☐	☐	☐	☐
APPURTENANCE						
Power Poles (Buildings)	AS/NZS4676:2000, AS2209:1994	N/A	☐	☐	☐	☐

WARNING: THIS IS AN IMPORTANT DOCUMENT WHICH CONTAINS BINDING LEGAL OBLIGATIONS. IF YOU DO NOT UNDERSTAND IT, YOU SHOULD CONSULT YOUR LEGAL AND/OR FINANCIAL ADVISOR BEFORE SIGNING.

File: PR-005.01.174 Doc: IC20/18

ITEM 4 PROPOSED ACQUISITION OF LOT 4 SECTION 38 DP 759104, KENNY STREET, WOLLONGONG

This report seeks Council's authority to proceed with the acquisition of land adjoining the Wollongong Cemetery for nominal consideration.

All the land that comprises the Wollongong Cemetery on Kenny Street, Wollongong is Crown Land devolved to Council aside from the middle portion being Lot 4 Section 38 DP 759104 which is vested in the Anglican Church Property Trust Diocese of Sydney ("Anglican Church Trust"). The Anglican Church Trust has proposed a transfer of Lot 4 Section 38 DP 759104 to Council for nominal consideration.

RECOMMENDATION

1 Council authorise the acquisition of Lot 4 Section 38 in DP 759104, as shown attached and subject to the following conditions:

   a Purchase price of $10.00 (plus GST)

   b Each party be responsible for their own legal costs.

2 Council grant authority for the use of the Common Seal of Council on all documents relevant to this matter, should it be required to give effect to this resolution.

REPORT AUTHORISATIONS

Report of: Lucielle Power, Manager Property + Recreation (Acting)
Authorised by: Kerry Hunt, Director Community Services - Creative and Innovative City

ATTACHMENTS

1 Business paper map acquisition of Lot 4 Sec 38 DP 759104
2 Business paper satellite map acquisition of Lot 4 Sec 38 DP 759104
3 Business paper map devolved Crown land surrounding Lot 4 Sec 38 DP 759104

BACKGROUND

Wollongong Cemetery incorporates the following lots:

- Lots 1-5, 7-20 Sec 38 DP 759104
- Part Lot 5, Part Lot 9 Sec 38 Crown Plan 961-330
- Lot 54, 55-56 DP 751299
- Lot 7025 Crown DP 1026284.

Wollongong Cemetery was placed under the trust management of Council in October 1957 and Council has been maintaining the whole of the cemetery since that date.

All the land that comprises the Wollongong Cemetery is Crown Land devolved to Council except for the middle portion being Lot 4 Section 38 DP 759104 which is vested in the Anglican Church Trust.

On 9 June 2017 Council received correspondence from the Parish Council of St Michael's Anglican Church Wollongong ("Anglican Church Wollongong") noting that it has not had any interest in or control of the land since Council commenced management of the cemetery and requesting that Council accept a transfer of the land.

On 14 June 2017 Council wrote to Crown Lands seeking approval to the transfer and seeking advice as to the correct procedure for the transfer. On 2 August 2017 Crown Lands responded that an investigation would be required to determine the correct transfer procedure.

On 6 July 2018 Council received correspondence from Cemeteries & Crematoria NSW advising that even though the land is dedicated under the *Crown Lands Management Act 2016* it cannot be dealt with under that Act, as land granted to a church on trust is not held on behalf of the Crown but rather it is held by the trustees for the purposes of the grant. Cemeteries & Crematoria NSW further advised that the applicable law for the purpose of the transfer is the *Anglican Church of Australia Trust Property Act 1917*.

Legal advice is that Council is under no obligation to accept the transfer but may choose to do so as a strategic decision. It is noted that the subject land forms the central spine of the overall Wollongong Cemetery for which Council holds all records and has been maintaining for many years. It is further noted that the acquisition of the subject land would not result in any changes operationally.

On 6 August 2018 the Anglican Church Wollongong was advised that Council would accept a transfer of the land subject to Council resolution and provided the transfer was effected at no cost to Council.

On 30 October 2019 the Anglican Church Trust confirmed that its board had resolved to transfer the land to Council for nominal consideration.

PROPOSAL

It is proposed that Council acquire Lot 4 Section 38 DP 759104 in line with the conditions outlined in this report.

CONSULTATION AND COMMUNICATION

- Anglican Church Property Trust Diocese of Sydney
- Parish Council of St Michaels Anglican Church Wollongong
- Property & Recreation Division
- Legal Services
- Crown Lands.

PLANNING AND POLICY IMPACT

This acquisition is in accordance with Council's policy "Land and Easement Acquisition and Disposal".

This report contributes to the delivery of the Community Objective objectives 5.1 "There is an increase in the health and wellbeing of our community" and objective 5.5 "The public domain is maintained to a high standard under our Wollongong 2028 goal 5 "We have a healthy community in a liveable city".

It specifically delivers on core business activities as detailed in the Property Services Service Plan 2019−20.

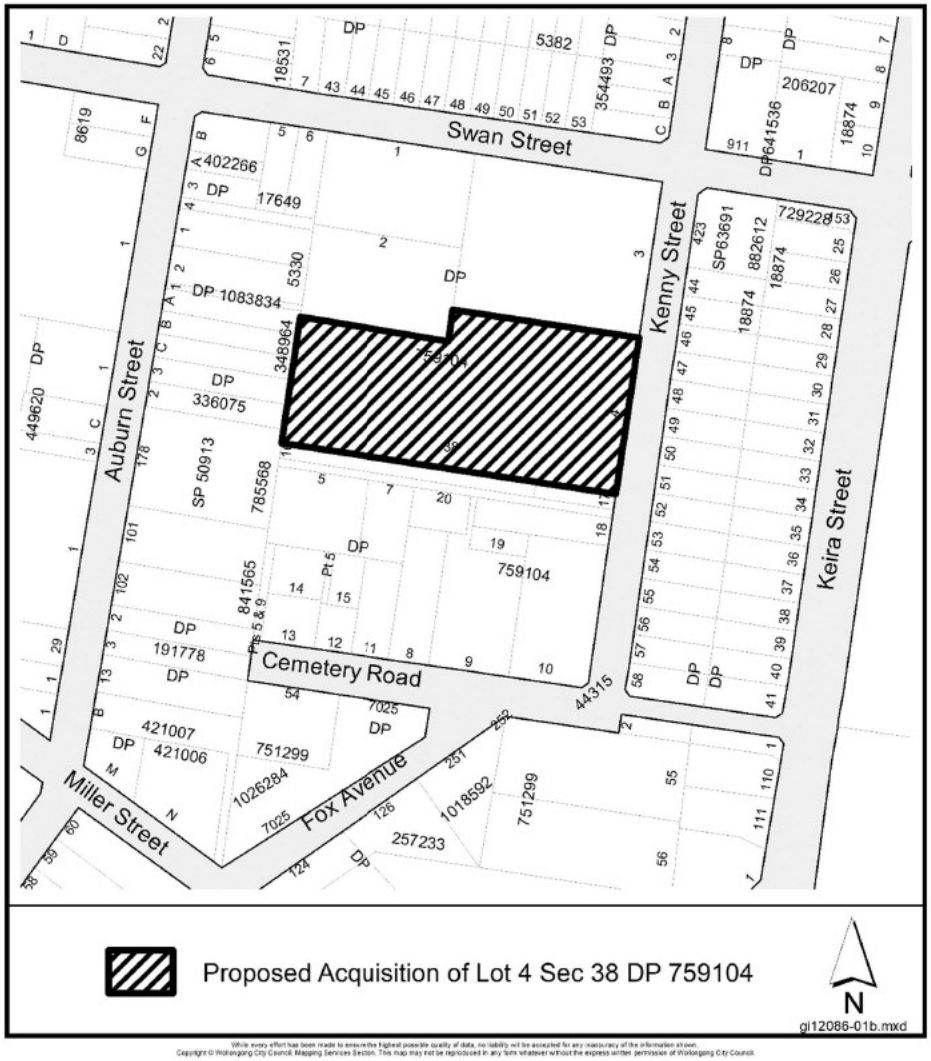
FINANCIAL IMPLICATIONS

Lot 4 Section 38 DP 759104 will be transferred to Council for the nominal sum of $10.00 (plus GST).

Given that Council already manages and maintains Lot 4 Section 38 in DP 759104 as part of the cemetery as a whole, there are no other financial implications associated with the acquisition.

CONCLUSION

Council has been maintaining the entirety of the Wollongong Cemetery since 1957. Acquiring Lot 4 Section 38 DP 759104 will allow Council to formalise its ownership of all the land which comprises the Wollongong Cemetery without resulting in any additional maintenance or operational burden.


Swan Street
Kenny Street
Keira Street
Auburn Street
Cemetery Road
Fox Avenue
Miller Street
759104
Proposed Acquisition of Lot 4 Sec 38 DP 759104
N
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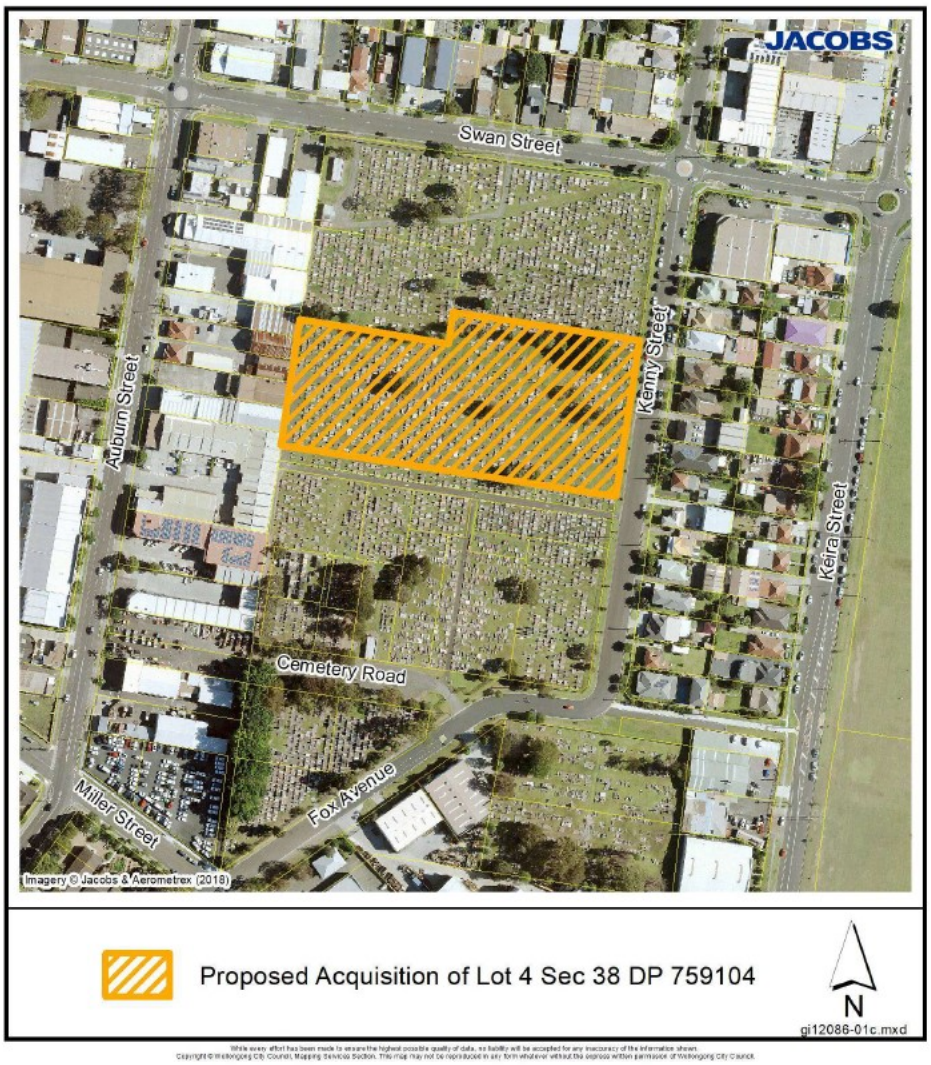

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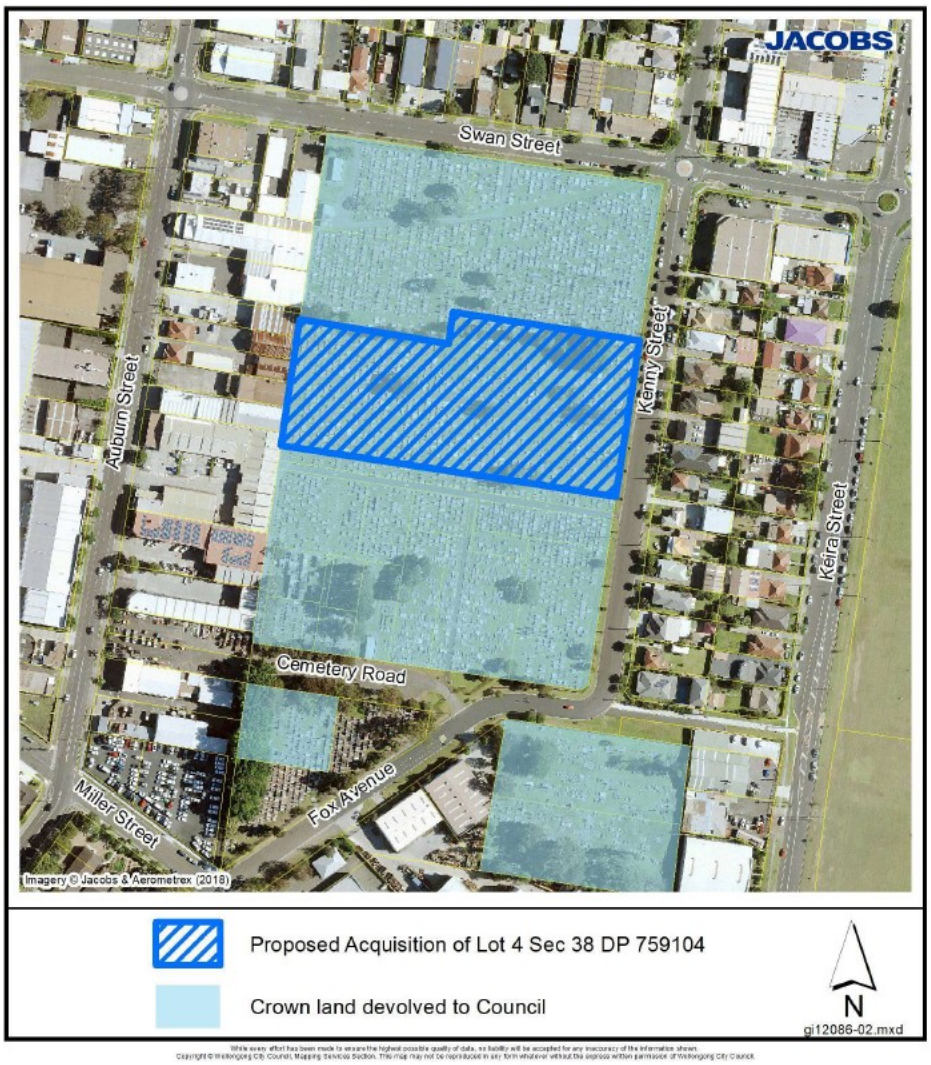

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File: FI-914.05.001 Doc: IC20/37

ITEM 5 POLICY REVIEW: DEBT RECOVERY AND HARDSHIP ASSISTANCE COUNCIL POLICY

This report provides a proposal to add and make changes to provisions in Council's Debt Recovery and Hardship Assistance Council Policy to provide further guidance in relation to debt recovery functions and collections of debt. As part of the Policy review, consideration has been given to how Council can better meet the expectations of our customers in consideration of the Debt Management and Hardship Guidelines released by the Office of Local Government in September 2018.

RECOMMENDATIONS

1 The revised Debt Recovery and Hardship Assistance Council Policy be adopted.

REPORT AUTHORISATIONS

Report of: Brian Jenkins, Chief Financial Officer
Authorised by: Renee Campbell, Director Corporate Services - Connected + Engaged City

ATTACHMENTS

1 Revised Council Policy - Debt Recovery and Hardship Assistance

BACKGROUND

Council's Debt Recovery and Hardship Assistance Council Policy was first adopted by Council on 22 June 2015 and has been reviewed on two previous occasions (25 July 2016 and 3 April 2017) to improve our debt management services. During both of these reviews there have been consideration of better practice and how we can reasonably meet our customer expectations whilst still achieving appropriate levels of recovery measured against the Office of Local Government's annual performance benchmark of 5% for overdue rates and charges.

One of the improvements to the Policy introduced in 2016 was a deferral scheme for eligible pensioners. The scheme allows pensioners to enter into a formal agreement to defer their rate debt against the property until either their passing, pensioner eligibility is lost, or the property is sold. The deferral allows the pensioner to make affordable payments convenient to them without the concern of falling into legal recovery process. There are currently 189 pensioner ratepayers who have signed agreements for the scheme and many others still behind in payment.

One of the issues with deferral both for pensioners, and often potential beneficiaries, is the payment of interest on outstanding debt. The interest payment is currently charged at the same level applied to non-paying owners, which, by intent, is a penalty rate based on the NSW Court interest rate (currently 7.5%). It is considered that this scheme should apply an interest rate to cover the cost of proving deferral rather than a penalty to entice payment. Council's cost of holding the debt can be reasonably set using an external measure published by IPART called the nominal Local Government Discount Rate (currently 3.7%) that reflects Council's cost of capital. Accordingly, the revised Policy incorporates this change.

Since the Policy review in April 2017, Council has been approached on numerous occasions during times when a ratepayer has deceased and the grieving family member has requested Council to place the account on hold until probate or letters of administration have been processed for payment to be made. The changes proposed in the revised Policy include a 12 month interest free period to allow for these legal matters to be finalised to assist with easing the burden during that period.

Under the current Policy, Council enters Judgment to secure the debt after a Statement of Claim has been lodged and the debt remains unpaid after 36 days. The Court allows access to this information to credit reporting agencies, which impacts on a person's credit rating and may affect their ability to obtain credit from financial institutions for a period up to five years. Council's current process and Policy requires notification to the credit reporting agencies when a debt is paid in full. This does not remove the credit listing and may still impact financing in many instances. The only way people can have their credit listing removed is through consent orders being lodged at Court through Council. There were two lines of

thought considered as to the approach Council should introduce into its Policy to allow removal of the credit listing:

1 That Council has an obligation to financial institutions to leaving the judgment on the credit file for five years and that if Council were to lodge consent orders at the Court to remove judgment, this would not show the full credit history of the applicant. Under this consideration, the Policy would allow ratepayers to seek removal through the Debt Recovery and Hardship Assistance Committee. The Committee would consider extenuating circumstances and prior recovery history when deciding to grant the consent orders for removal, or

2 That Council, through the application of its recovery process, has received payment and the debt with Council has been satisfied. Council's Policy objectives have been satisfied and it is not Council's intent to further impact our ratepayers. Under this consideration, the Policy would allow for Council to set aside the judgment debt.

The recommended approach presented in the revised Policy is the latter, where Council would set aside judgment once payment has been made in full.

There are also some minor changes to the Policy to allow consistency with current actions and bring in line some of our processes with community expectations.

PROPOSAL

The following outlines the proposed amendments to the Debt Recovery and Hardship Assistance Council Policy:

- Include 'email' to the channels of communication with the ratepayer(s) and debtor(s).
- Include Pre-Statement of Claim telephone calls and Pre-Judgment notification letter within the legal recovery process.
- Add the criteria of Principal Place of Living within Hardship Assistance, allowing the Debt Recovery and Hardship Assistance Committee to make a more informed decision on each individual case.
- Include debtors to the granting of a moratorium up to 90 days for payment to assist when a natural disaster or significant event has occurred.
- Removal of the clause for payment arrangements: *"The ratepayer must sign the agreement and return it to Council within 14 days of the posting date of the agreement, otherwise the agreement is taken to be not valid"* as this does not reflect current procedure and it is considered that issuing and sending of the agreement to the ratepayer(s) signifies its validity.
- Upon notification of a ratepayer(s) death, Council will grant a 12 month interest free period to allow for probate or Letters of Administration to be processed. After the 12 month period ends or the property is transferred, whichever comes first, interest accrues at the prescribed rate.
- Offer a reduced interest rate equivalent of IPART's nominal Local Government Discounted Rate to eligible ratepayers who have entered into a Pensioner Agreement to Defer Rates, Charges and Interest.
- Amend wording to include: *"Council will communicate with the deferred ratepayer before the debt is 20 years old and prior to commencing legal recovery to secure the debt"*.
- Where legal recovery is unsuccessful, provide Council the option to utilise collection techniques outside the standard legal recovery where warranted and assessed on a case by case basis.
- Setting aside the judgment debt when payment is made in full.

CONSULTATION AND COMMUNICATION

- Legal Services
- Property Division

- Debt Recovery and Hardship Assistance Committee
- A Councillor Briefing has been held to discuss the proposed changes to the Policy

PLANNING AND POLICY IMPACT

This report contributes to the delivery of Wollongong 2022 goal 4 '*We are a connected and engaged community*'

It specifically delivers on core business activities as detailed in the Financial Services Service Plan 2019-2020.

FINANCIAL IMPLICATIONS

Based on information available at present, it is considered that the impact of the discounted interest rate for the deferral scheme would be in the order of $48,000 per annum. It is considered that this adjustment could be managed within the rates management budget offset against rates income. There is potential, over time, that the number may increase with additional pensioners opting into these arrangements, although this does not impact future budgets as this potential growth in interest income is not factored in to the Long Term Modelling. While the Policy change may encourage greater levels of deferral, the discounted rate is intended to provide an income to Council that matches our opportunity cost of funds including the time value of money.

CONCLUSION

The Debt Recovery and Hardship Assistance Council Policy has been revised and is presented to Council for adoption.

DEBT RECOVERY AND HARDSHIP ASSISTANCE COUNCIL POLICY

ADOPTED BY COUNCIL: [TO BE COMPLETED BY GOVERNANCE]

PURPOSE

Council relies on Rates and Charges and fees to fund services and facilities for our community. This Policy sets out the approach that Council will take to recover unpaid monies and ensure the reasonable collection of debts.

POLICY INTENT

- Policy objectives should relate to management intent.
- The Policy should be consistent with other policies adopted by Council.
- Should include statements that represent policy positions.

The main objectives of this Policy are:

1 Recover monies owing in a timely and effective manner to finance Council's operations and ensure effective cash flow management.

2 Provide for a process that is ethical, transparent, compliant with legal obligations, open and accountable.

3 To improve control over debts owed to Council, including overdue rates, fees, charges and interest and to establish a debt recovery approach for the efficient collection of receivables and management of outstanding debts, including alternative payment arrangements and deferrals.

4 To establish guidelines for recognising and assessing hardship applications by applying the principles of fairness, integrity, appropriate confidentiality and compliance to the relevant statutory requirements.

5 The key guidelines that will be utilised are:

a Council aims to collect all monies owed.

b Council will individually assess cases of financial hardship based on evidence.

c Council will not reduce rates or annual charges but will consider alternative available approaches.

d Council will consider arrangements for periodical payment outside the statutory due dates in cases of hardship, extenuating circumstances or other payment schemes implemented by Council.

WOLLONGONG 2028 OBJECTIVES

Our council is accountable, financially sustainable and has the trust of the community.

POLICY

1 Recovery of Overdue Rates and Annual Charges

- Rates and Charges include all amounts charged in accordance with Section 546 of the Local Government Act, 1993 ("the LG Act").
- Rate notices must be issued prior to 31 July each year.

- Instalment notices must be issued to ratepayers paying by instalment one month prior to the instalment due dates, being 31 August, 30 November, 28 February and 31 May.
- Council rates and annual charges are due to be paid in full before 31 August, or by quarterly instalments due 31 August, 30 November, 28 February and 31 May each year, or on specific dates determined through an agreement approved by delegated Council officers.
- Interest will be charged daily in accordance with Council's Revenue Policy after the due date.
- Where payment is overdue and an appropriate payment arrangement has not been agreed, the following recovery actions will be followed:
  - Reminder Notice.
  - Letter of Demand from Council's Solicitor.
  - Where available and appropriate, additional channels of communication can be used to remind ratepayers of outstanding debts. This may include options such as SMS reminders, telephone calls and email communication
- If those processes are not successful in securing payment, legal recovery action will commence. Legal recovery process may include the following:
  - Pre Statement of Claim phone call
  - Statement of Claim
  - Field Calls/Skip Tracing
  - Pre-Judgment notification letter
  - Judgment
  - Garnishee
  - Examination Notices/Summons
  - Writ of property
  - Bankruptcy
  - Sale of Land
  - Late stage/intervention process
- Where legal recovery is unsuccessful, Council may use collection techniques outside of standard legal recovery where warranted on a case by case basis.
- Council retains the discretion to apply the provision of the LG Act relating to sale of land for unpaid rates, charges and interest as stated in Sections 713-726. Section 713 provides that Council, where rates and charges have been unpaid for more than five years, may sell the land to recover those outstanding amounts (excluding vacant land which can be sold with only one year's rates and charges).
  - Council will only sell a rate payers principal place of living after consideration and resolution of Council, and only as a last resort.
  - Whilst the LG Act states Council can buy such land at public auction, any staff directly involved in the sale of land process will not be permitted to bid on behalf of Council at auction. This requirement will be reinforced via separate agreement with relevant staff.
  - Council will endeavour to achieve a fair market price through public auction after appropriate advertising.
  - The reserve price will be set at no less than 80% of the independent valuation attained through the sale of land process.
  - If the land fails to sell at Public auction, under the LG Act the General Manager or delegated officer is empowered to negotiate to sell the land by private treaty but the amount accepted

for sale should be not lower than the highest (non-owner) bid at auction, or at best value where a bid is not offered through the auction.

- Property will not be sold to Council or employees by private treaty outside of auction.

- In the case of corporate ratepayers, Council may commence legal recovery proceedings in the Federal Court of Australia.
- Where an account has incurred legal action and all debts subject to that claim have been paid in full, Council will set aside judgment.
- Legal Costs and expenses incurred in debt recovery actions will be charged against the property (including costs of tracing a person in accordance with section 605 of the LG Act).

2 Recovery of Outstanding Sundry Debts (other than Rates and Charges)

- Council will issue Invoices as required or Invoice Statements monthly.
- Where payment is overdue and an appropriate payment arrangement has not been agreed, the following recovery actions will be followed:
  - Monthly Statements.
  - Letter of Demand from Council's Solicitor.
  - Where available and appropriate, additional channels of communication can be used to inform ratepayers of outstanding debts. This may include options such as SMS reminders, telephone calls and email communication
  - Where available suspension of credit and/or services.
- If those processes are not successful, legal recovery action will commence. Legal recovery process may include the following:
  - Tribunal orders for property leases (eg, Tourist Parks)
  - Statement of Claim
  - Field Calls/Skip Tracing
  - Judgment
  - Garnishee
  - Examination Notices/Summons
  - Writ on property
- Legal Costs and expenses incurred in debt recovery actions will be charged against the Sundry Debtor.
- A Late Payment Fee may be charged where a reminder letter is issued where set in Council's Fees and Charges.

3 Hardship Assistance

- Council recognises that ratepayers and debtors may experience financial hardship in some circumstances in paying rates, annual charges and fees. A ratepayer may be eligible for consideration for hardship assistance in the payment of overdue rates, annual charges, interest and fees where:
  - The person is unable to pay due rates, charges, fees or accrued interest when due and payable for reasons beyond the persons control; or
  - Payment when due would cause the person hardship.
- The LG Act permits Council to exercise the following assistance to ratepayers and debtors:
  - Periodical payment arrangements for overdue rates and charges under Section 564.

- Writing off or reducing interest accrued on rates and/or charges under Sections 564 and 567.
- Waiving, reducing or deferring the payment of the increase in the amount of rate payable because of hardship resulting from a general revaluation of land in the local government area under Section 601.
- Waiving or reducing rates, charges and interest of eligible pensioners under Section 575 and 582.

- Applications under Section 601 of the LG Act because of hardship resulting from a general revaluation of land must be made during the first year a new land value is used for rating purposes. Where an application is made in the first year, an application can also be made in subsequent years of the valuation base date. While Council has the discretion to waive, reduce or defer, Council will only offer a revised payment schedule and interest free periods up to three years to ease the financial stress on the ratepayer.
- While Council has the discretion to waive or reduce rates, charges and interest of eligible pensioners, Council will only offer a revised payment schedule and defer any legal action to ease the financial stress on the pensioner ratepayer.
- To be eligible for consideration of hardship, a ratepayer must complete the Application for Hardship Form and return it promptly to Council with reasonable proof of financial hardship including details of assets, income, liabilities, expenses and such other information required for the Debt Recovery and Hardship Assistance Committee to make an informed decision.
- Each individual case will be considered on its merits. The criteria for assessment will include, but not be limited to, the following:
  - The amount of any rate increase when compared to the average rate increase for the rate category.
  - The amount of rates levied compared to the average rate of the rate category.
  - Income from all sources.
  - Assets owned.
  - Living expenses.
  - Reason for financial hardship.
  - Length of occupancy.
  - Principal place of living.
- The assistance provided will be determined under the legal requirements of the LG Act. A Debt Recovery and Hardship Assistance Committee will review the application and recommend to the General Manager any offer of assistance having regard to the circumstances of the applicant.
- The General Manager can approve or not approve the Committee's recommendation.
- The ratepayer will be informed of a decision in writing and if not satisfied with the outcome can request Council to reconsider its decision within 30 days.
- After Council reconsiders the application and makes a decision, the ratepayer has no further right to appeal.
- Council can make a determination to grant a moratorium up to 90 days where a group/area of ratepayers and sundry debtors affected by a natural disaster or significant event. Applications for approval for this moratorium must be in writing.

4 Periodical Payment Arrangements

- Council may enter into a Payment Arrangement with any ratepayer in accordance with Section 564 of the LG Act.

- Council may grant requests for extensions of time to pay an overdue rate instalment in full provided the extension will not be greater than 30 days after the due date of the rate instalment. Only one extension can be granted to a ratepayer during an annual rating period.
- Council can accept over the telephone payment arrangements for weekly, fortnightly or monthly payments (whether overdue or not).
- Once legal proceedings have commenced against a debtor, only delegated Council officers can determine any payment agreement which must be formalised in writing, subject to the debtor entering into a direct debit arrangement with Council and the debtor agreeing to pay Council's up-to-date legal costs relating to the proceedings. If a debtor objects to the direct debit arrangement, the debtor must provide reasons for their objection in writing and propose an alternative payment method. Council will consider the alternative payment method and will advise the debtor whether it is accepted or rejected.
- Delegated person(s) may approve in writing a periodical payment arrangement for those that are within a 12 month timeframe, any periodical payment arrangements greater than 12 months need to be approved by the Debt Recovery and Hardship Assistance Committee.
- Council may collect the following information during the arrangement process, with this information capable of being used for any debt recovery process:
  - Contact Numbers (Mobile, Work, Home)
  - Employment details
  - Email address

5 Default of Payment Arrangement

- Where a debtor is in default of a payment arrangement (that is, the debtor fails to meet the payments within the timetable agreed), a default letter will be sent to the ratepayer. The default letter will allow the debtor seven days to pay or re-negotiate the payment arrangement.
- Where the debtor fails to comply with the terms of the default letter, Council will commence or reinstate legal proceedings to recover the debt.
- Council will not enter into any further payment arrangements where a ratepayer is in default of a payment arrangement twice within a 12 month period.
- A debtor aggrieved by the above clause may appeal in writing to the Debt Recovery and Hardship Assistance Committee. The Committee must consider the appeal within 30 days of it being received by Council and notify the debtor of its decision.

6 Writing Off Outstanding Debt, Accrued Interest and Costs

- The General Manager is authorised to write off amounts due to Council up to $3,000 with amounts above $3,000 subject to reporting to Council.
- Council applies interest rates to the maximum allowable under Section 566 of the LG Act. However, Council may write off the accrued interest and costs on rates and charges payable by a person(s) under Section 567 of the LG Act and the Local Government (General) Regulation 2005 where
  - The person(s) was unable to pay when the amount became due for reasons beyond the person(s) control; or
  - The person(s) is unable to pay accrued interest for reasons beyond the person(s) control; or
  - Payment of accrued interest would cause the person(s) hardship.
- Upon notification of a ratepayer(s) death, Council will grant a 12 month interest free period to allow for probate or Letters of Administration to be processed. After the 12 month period ends or the property is transferred, whichever comes first, interest accrues at the prescribed rate.

- Council will apply a reduced interest rate equivalent to the IPART discounted interest rate, to those eligible ratepayers who have entered into a formal Pensioner Agreement to Defer Rates, Charges and Interest.

7 Recovery Proceedings against Eligible Pensioners

- Council recognises the large number of pensioner ratepayers in the community and recognises the difficulties some eligible pensioner ratepayers have meeting their rates payments.
- Council has the discretion to accrue rates, charges and applicable interest against a pensioner's property. Written agreement is required from the pensioner ratepayer. Where the eligible pensioner is willing to enter into agreement, Council will:
  - Provide a copy of the Pensioner Agreement Application to Defer Rates, Charges and Interest. The ratepayer must complete the application form in order to prevent legal actions and it is in the best interest of the ratepayer to make small payments where possible.
  - Provide annual rates, instalment and reminder notices showing all outstanding rates, charges and interest.
  - Not commence recovery processes until there is a change in ownership of the property, all eligible ratepayers leave the property (except where the pensioner/s is in a care facility on a temporary basis being less than 12 months), or one or more become ineligible for a pensioner concession. Should any of these events occur, rates, charges and interest will become due and payable.
  - Where a pensioner does not enter into such agreement, Council will advise the pensioner of their right to negotiate a periodical payment arrangement. Where there is no periodical payment arrangement or agreement of deferral recovery action, Council may commence legal action.
  - Due to the constraints set out in accordance in Section 712 of LG Act, Council will communicate with the ratepayer before a debt is 20 years old prior to commencing legal recovery proceedings to secure the debt on the property beyond that point. The costs associated with the legal process will be recovered against the property.

8 Debt Recovery/Hardship Committee

- The Committee will consist of a minimum of four Council officers and be represented from the following divisions:
  - Finance
  - General Counsel
  - Community Cultural and Economic Development and/or Library and Community Services
- The Committee will:
  - determine the dollar amount in which Council will commence legal proceedings for recovery of debt
  - consider applications for waiving of interest and costs
  - consider hardship applications and make recommendations to the General Manager
  - consider applications from those ratepayers who have defaulted on two payment arrangements within a 12 month period
  - be consulted on changes to debt recovery processes and procedures

DEBT RECOVERY AND HARDSHIP ASSISTANCE | COUNCIL POLICY

POLICY REVIEW AND VARIATION

1 Council is to have opportunity to review and adopt, at least once during its Term, each Council Policy.

2 A resolution of Council is required to adopt any variations to this Policy, with the exception of minor administrative changes, such as updates to legislative references, which may be endorsed by the Executive Management Committee (EMC). Endorsement of administrative changes made to this policy by EMC does not alter the requirement for it to be reviewed and adopted by each Term of Council.

ROLES AND RESPONSIBILITIES

Name	Responsibilities
Team Leader – Billing & Recovery	• Billing – rates, instalments, reminders • Provision for doubtful debts / write offs • Billing & Recovery information management • Interest processing and management
Revenue Officer/ Revenue Clerk	• Sundry debtor maintenance • Return mail management • Payment arrangement • Status management • Phone recovery • Legal recovery • Receipt allocation and monitoring • Adjustments / credit notes • Reconciliations • Credit facility management
Debt Recovery and Hardship Committee	• Assess applications to committee • Provide recommendation to the General Manager • Determine legal threshold
Chief Financial Officer	• Approve recommendations of the Debt Recovery and Hardship Committee prior to General Manager sign off
General Manager	• Approve recommendations of the Debt Recovery and Hardship Committee • Approve write offs of up to $3,000.00
Councillors	• Approve write offs over $3,000.00

RELATED PROCEDURES

Reference Materials

- Local Government Act 1993
- Council Rating and Revenue Manual (2007) Office of Local Government
- Debt Management and Hardship Guidelines (2018) Office of Local Government
- Management Policy – Sundry Debt Management
- Management Policy – Rates Processing
- Revenue Policy, Fees and Charges
- Management Policy - Customer Feedback Handling
- Council Policy – Customer Service

DEBT RECOVERY AND HARDSHIP ASSISTANCE COUNCIL POLICY

APPROVAL AND REVIEW		
Responsible Division	Finance	
Date/s adopted	*Executive Management Committee* [updated by policy owner]	*Council* [DD Mmmm YYYY]
Date/s of previous adoptions	22 June 2015 3 April 2017	
Date of next review	[Two years from last adoption]	

File: CO-916.022 Doc: IC19/775

ITEM 6 2020 NATIONAL GENERAL ASSEMBLY OF LOCAL GOVERNMENT - COUNCILLOR ATTENDANCE AND DEVELOPMENT OF MOTIONS

The Lord Mayor Councillor Gordon Bradbery, and Councillors Kershaw, Colacino and Dorahy request Council's approval to attend the 2020 National General Assembly of Local Government in Canberra from 14 to 17 June 2020 and the associated Regional Forum (for the Lord Mayor and Councillor Kershaw) on 13 June 2020.

RECOMMENDATION

1 The attendance of Councillors Bradbery, Kershaw, Colacino and Dorahy at the 2020 National General Assembly of Local Government and Regional Forum in Canberra between 13 and 17 June 2020 be endorsed.

2 Councillors to liaise with the Lord Mayor's Office on submitting Motions for consideration at the Conference.

3 The Lord Mayor be appointed as Council's voting delegate at the 2020 National General Assembly of Local Government.

4 The Lord Mayor and General Manager be delegated the authority to determine any further requests by Councillors to attend the 2020 National General Assembly of Local Government and Regional Forum.

REPORT AUTHORISATIONS

Report of: Todd Hopwood, Manager Governance and Customer Service
Authorised by: Renee Campbell, Director Corporate Services - Connected + Engaged City

ATTACHMENTS

There are no attachments for this report.

BACKGROUND

Convened annually by the Australian Local Government Association (ALGA), the National General Assembly of Local Government (NGA) attracts in excess of 800 Councillors and Mayors each year.

The 2020 NGA is an opportunity for attending Councillors to deliver the views and concerns of Council as well as contribute their own experiences and knowledge to debate on a broad set of national issues, influencing the national policy agenda. The theme of the 2020 NGA is *Working together for our communities* which focuses on the scope and importance of Local Government and its ability to influence and affect change and improvement at the community level.

ALGA has released a Discussion Paper to provide guidance to Councils for the development of Motions for debate at the NGA. The paper provides an overview of policy areas in which the NGA has well-established positions and identifies potential new and emerging policy areas which are being developed by ALGA and require detailed consideration.

Motions are to be lodged online with ALGA by Friday 27 March 2020.

The Lord Mayor and three Councillors are requesting approval to attend, although other Councillors who wish to attend may also nominate.

Motions for debate

To be eligible for inclusion in the NGA Business Papers, and subsequent debate on the floor of the NGA, Council's motions must meet the following criteria:

1 Be relevant to the work of local government nationally.

2 Not be focussed on a specific location or region – unless the project has national implications.

3 Be consistent with the themes of the NGA.

4 Complement or build on the policy objectives of Local Government NSW.

5 Propose a clear action and outcome i.e. call on the Australian Government to do something.

6 Not be advanced on behalf of external third parties that may seek to use the NGA to apply pressure to Board Members, or to gain national political exposure for positions that are not directly relevant to the work of, or in the national interests of, local government.

Motions should be submitted to the General Assembly no later than Friday 27 March 2020.

CONSULTATION AND COMMUNICATION

Consultation was undertaken with the Lord Mayor and Councillors, asking Councillors to indicate interest in attending the conference for inclusion in the report.

Consultation with Councillors will be undertaken to develop and submit any motions for the conference.

PLANNING AND POLICY IMPACT

This report contributes to the delivery of Wollongong 2022 goal 4 "We are a connected and engaged community".

It specifically delivers on core business activities as detailed in the Governance and Administration Service Plan 2019-20.

FINANCIAL IMPLICATIONS

Funds are available within the relevant budget to enable Councillors to attend conferences and meet costs associated with attendance at the National General Assembly of Local Government.

The estimated total cost of attendance at the 2020 NGA of Local Government in Canberra for three delegates including registration and accommodation is $11,087.30. Travel is to be undertaken in accordance with the *Councillors Expenses and Facilities* Policy.

The estimated individual costs of attendance at the 2020 NGA in Canberra are as follows:

Delegate	NGA registration 14-17 June	Regional Forum registration 13 June	Accommodation (nights)		Travel and/or incidentals	Total (excl. GST)
Cr Bradbery	$1,140.00	$204.55	$1,363.64	13-17 June (4)	$200	$2,908.19
Cr Kershaw	$1,140.00	$204.55	$1,363.64	13-17 June (4)	$200	$2,908.19
Cr Colacino	$1,140.00	$204.55	$1,363.64	13-17 June (4)	$200	$2,908.19
Cr Dorahy	$1,140.00	Nil.	$1,022.73	14-17 June (3)	$200	$2,362.73
					TOTAL	**$11,087.30**

CONCLUSION

This report provides an overview of the 2020 NGA conference and details the benefits of Council representation. The report also details the costs associated with sending delegates and presents the request for the Lord Mayor and three Councillors to attend.

File: GCS-50.02.041 Doc: IC19/759

ITEM 7 EXERCISE OF DELEGATIONS OVER THE CHRISTMAS / NEW YEAR PERIOD - TENDERS

At its meeting of 9 December 2019, Council granted delegation to the General Manager and Lord Mayor or Deputy Lord Mayor for the determination of tenders satisfying the necessary legislative criteria, from 10 December 2019 through to 31 January 2020. The purpose of this report is to advise Council on the exercise of such delegation.

RECOMMENDATION

Council note the exercise of delegations by the General Manager and Lord Mayor or Deputy Lord Mayor over the Christmas/New Year period.

REPORT AUTHORISATIONS

Report of: Todd Hopwood, Manager Governance and Customer Service
Authorised by: Renee Campbell, Director Corporate Services - Connected + Engaged City

ATTACHMENTS

There are no attachments for this report.

BACKGROUND

At the ordinary meeting of 9 December 2019, Council considered a report seeking a temporary amendment to delegations with respect to acceptance of tenders across the Christmas/New Year period. The tenders that were anticipated to be determined during this period were included in the report as:

- T19/34 Electrical Distribution Board Inspecting and Testing
- T19/35 Asbestos and Hazardous Materials Surveys
- T19/39 Administration Building Library Lighting Upgrades

Council resolved as follows:

1. *Council note the report on Delegations over the Christmas Period.*

2. *Council delegate to the General Manager and the Lord Mayor, or Deputy Lord Mayor, the authority to accept tenders under Request for Tender processes between 10 December 2019 and 31 January, 2020, with a report on the exercise of such delegation to be provided to the Ordinary Meeting of Council on 24 February 2020.*

Tenders Accepted

In accordance with the delegation granted, the following tenders were awarded by the General Manager and the Lord Mayor or Deputy Lord Mayor.

T19/34 - Electrical Distribution Board Inspection and Testing

This tender was determined on 30 January 2020 and awarded to Amek Engineering Pty Limited in the sum of $269,364.00 (excluding GST).

T19/35 Asbestos and Hazardous Materials Surveys

This tender was determined on 13 January 2020 and awarded to Clearsafe Environmental Solutions Pty Ltd in the sum of $228,000.00 (excluding GST).

T19/39 Administration Building Library Lighting Upgrades

This tender was determined on 20 January 2020 and awarded to Stowe Pty Ltd in the sum of $472,990.00 (excluding GST).

T19/41 - Overhead Power and Electrical Works - Wongawilli Rd Wongawilli

This tender was determined on 30 January 2020 and awarded to ARA Electrical High Voltage Pty Ltd in the sum of $224,965.00 (excluding GST).

PLANNING AND POLICY IMPACT

This report contributes to the delivery of Our Wollongong 2028 goal 4 “We are a connected and engaged community”.

It specifically delivers on core business activities as detailed in the Governance and Customer Service, Service Plan 2019-20.

CONCLUSION

Council authorised the temporary delegation for awarding of tenders under delegation by the General Manager and Lord Mayor or Deputy Lord Mayor across the period. Exercise of such delegation is now reported to Council in accordance with the resolution of 9 December 2019.

File: INI-030.55.016 Doc: IC20/31

ITEM 8 DRAFT QUARTERLY REVIEW STATEMENT - DECEMBER 2019

The draft Quarterly Review outlines progress made to achieve Council's Our Wollongong 2028 Strategic Management Plans, in particular the Delivery Program 2018-21 and Operational Plan 2019-20. It addresses the financial and operational performance of council at the end of the first quarter. The draft Quarterly Review Statement also includes the December 2019 Budget Review Statement.

RECOMMENDATIONS

1 The draft Quarterly Review Statement December 2019 be adopted.

2 The Budget Review Statement as at December 2019 be adopted and revised totals of income and expenditure be approved and voted.

REPORT AUTHORISATIONS

Report of: Leila Hogan, Executive Strategy Manager (Acting)
Authorised by: Renee Campbell, Director Corporate Services - Connected + Engaged City

ATTACHMENTS

1 Draft Quarterly Review Statement December 2019

BACKGROUND

Council's draft Quarterly Review Statement December 2019 outlines the operational and financial performance of Council's Our Wollongong 2028 Strategic Management Plans, in particular the Delivery Program 2018-2021 and Operational Plan 2019-2020.

This report also provides an overview of achievements against priority areas and demonstrates the organisation's performance through the inclusion of performance indicators.

In addition, the draft Quarterly Statement December 2019 details how Council is tracking against its budgets in conjunction with a concise visual summary of Council's financial position at the end of the second quarter.

Significant highlights during the quarter include:

- Council hosted a Civic Reception for their Excellencies the Governor-General the Hon David Hurley AC DSC (Retd) and Mrs Linda Hurley
- Delivery of the Viva la Gong cultural and arts festival
- Reopening of Bellambi Rock Pool
- Council, in partnership with Vision Australia, delivered a Braille map for Luke's Place all-inclusive playground in Corrimal
- Official opening of the new Charles Harper Playground, Helensburgh
- "Karrara Bridge" adopted as the name for the Fowlers Road to Fairwater Drive road link main bridge, and
- Council hosted the Sydney Thunder v Adelaide Strikers Women's Big Bash League (WBBL) cricket match.

CONSULTATION AND COMMUNICATION

Consultation took place with Council's Executive Management Committee and Senior Leadership Team.

PLANNING AND POLICY IMPACT

This report contributes to the delivery of Our Wollongong 2028 Goal 4 *"We are a connected and engaged community"*.

It specifically delivers on core business activities as detailed in the Corporate Strategy Service Plan 2019-20.

FINANCIAL IMPLICATIONS

The December Quarterly review of the financial estimates proposes a range of adjustments that will improve the forecast Operating Result [pre capital] by $0.1M and impact the Funds Result (Available Funds balance) negatively by $0.2M for the year ending 30 June 2020.

The proposed adjustments in the Operating Result [pre capital] predominately reflects the timing of expenses and recognition of revenues that are transferred to Restricted Cash and therefore has a relatively minor impact in Council's Funds Result.

The revised forecasts are inclusive of the recognition of proceeds from the sale of Southern Phone shares and final dividend payment of $876K and $139K respectively. The revised forecasts also propose a corresponding transfer of both these amounts to internally restricted cash with application of these funds to be considered through the planning process. Consistent with a prior resolution of Council, annual dividend proceeds have been held as restricted cash and applied to support natural area projects, The Adopted Operational Plan and Long Term Financial Forecasts currently include approximately $105K of annual income and corresponding level of support to natural area projects.

Supporting Documents – Planning Studies and Investigations

Supporting document budgets were revised at the September Quarterly Review to include budgets for projects in progress at 30 June 2019 into the 2019-20 forecasts. It was recognised at that time that this would create an ambitious target with potentially significant challenge organisationally for these projects to be delivered in full in the current reporting period. The current review has resulted in some minor budget adjustments to reflect expected timing. These will continue to be monitored and, where required, budget changes may be considered through the 2020-21 Annual Planning process.

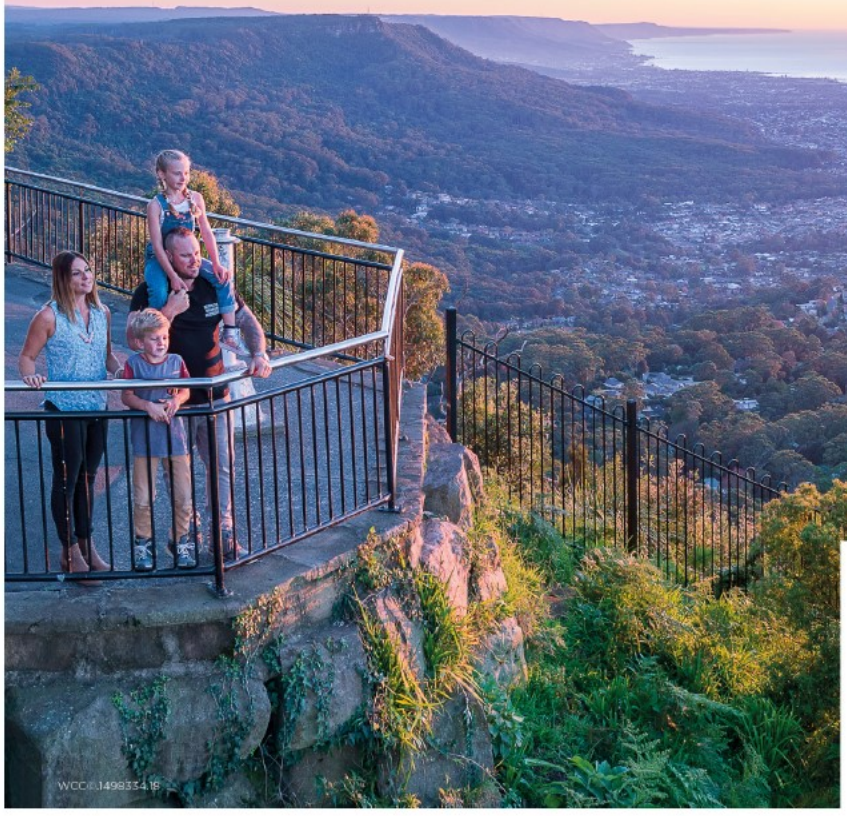
Further details of these are provided in the schedules contained in the attached Quarterly Review Statement.

CONCLUSION

This draft Quarterly Review Statement December 2019 has been prepared following input and assistance from all Divisions. It is submitted for consideration by Council.

OUR WOLLONGONG 2028
DRAFT QUARTERLY REVIEW STATEMENT December 2019

From the mountains to the sea



wollongong
city of innovation

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This Quarterly Review Statement (October to December 2019) reports on progress towards achieving the five Councillor Strategic Priorities from the Delivery Program 2018-21 and Annual Deliverables from the Operational Plan 2019-20.

Highlights and significant progress with key projects from the Operational Plan 2019-20 are reported by the six Community Goals from the Our Wollongong 2028 Community Strategic Plan.

Highlights from this quarter include:

1 Council hosted their Excellencies the Governor-General the Hon David Hurley AC DSC (Retd) and Mrs Linda Hurley.
2 Delivery of the Viva la Gong cultural and arts festival.
3 Reopening of Bellambi Rock Pool.
4 Council, in partnership with Vision Australia, delivered a Braille Map for *Luke's Place* all-inclusive playground in Corrimal.
5 Official opening of the new Charles Harper Playground, Helensburgh.
6 Council hosted the Sydney Thunder v Adelaide Strikers Women's Big Bash League (WBBL) cricket match.
7 Council hosted a delegation from Wollongong's Sister City, Longyan, China to mark the announcement of the Longyan Friendship Garden.
8 "Karrara Bridge" adopted as the name for the Fowlers Road to Fairwater Drive road link main bridge.

Organisational performance is also reported by the inclusion of performance indicators that monitor the status and progress of our Council programs, activities, projects, finances, people and processes. These measures and their comparatives are presented on an annual basis for this Review Statement.

This report includes an overview of how Council is tracking against its budget. It is a concise visual summary of Council's financial situation for the quarter including operational budget, capital budget and expenditure. The Budget Review Statement is included in this report.

I would like to thank all staff and the community for their contributions to the achievements identified in this Quarterly Review and Budget Review Statement. This Review will inform the Annual Report due in November 2020.

Greg Doyle
General Manager

Strategic Priorities
PROGRESS REPORT

Our Councillors have made a commitment to support our organisation and community in making Wollongong a better place to live, work, visit and play. To focus Council's attention to achieve this, Councillors have agreed to five Strategic Priorities. These are outlined in the Delivery Program 2018-21. Progress made in the December 2019 quarter is outlined below:

Activating Our Suburbs

We are committed to enhancing and activating spaces and places across our Local Government Area through sound planning and focused programs.

Our Delivery Program includes an ambitious plan of action to establish our city, towns and villages to be connected and liveable spaces offering a variety of attractions and opportunities for people to work, live, play, learn, visit and invest. Our Program supports a variety of infrastructure spending to enhance recreation, sporting and cultural opportunities.

Project Sponsor: Director Community Services
Project Manager: Manager Community Cultural and Economic Development

Strategic Priority Progress

✓ On Track

Program Achievements

During the quarter, a range of activation initiatives were delivered, including Bellambi and Warrawong neighbourhood projects, Connecting Neighbours Grants program, Paint the Gong REaD activities, improving accessibility of playgrounds, commencement of summer twilight movies and youth programs.

Council has been working with the Australian Social Investment Trust (ASIT), Family and Community Services NSW, Bellambi Neighbourhood Centre and residents of Bellambi to implement projects in the Bellambi area and community led action plans. Projects include artists working with local community groups and schools to create a community art mural and mosaic table and seating to build community connections and amenity at the Bellambi Mews.

Council officers have been working with the Department of Communities and Justice NSW, Mission Australia, Barnardos South Coast and the residents of Warrawong, Bundaleer and Illawong Gardens to host the second Saltwater Festival in Bundaleer early in 2020.

Strategic Priorities PROGRESS REPORT

The Connecting Neighbours Grants program has enabled Council to support projects being delivered by community members in their local suburbs. The Grants program funds ideas generated by the community to bring people together and make neighbourhoods a better place. Underway or delivered in this period are projects in Wollongong, West Wollongong, Dapto, Figtree, Fairy Meadow, Austinmer, Horsley, Mount Pleasant, Berkeley and Warrawong. Applications have been received for a subsequent round of Connecting Neighbours grants, with successful grantees to be notified in early 2020.

Paint the GONG REaD mascot, *Bright Spark*, visited children and parents/carers in suburbs across the region. Reading tents were set up at events in Port Kembla and Dapto facilitating fun educational opportunities for children and allowing discussions with parents/carers on tips for reading to their children.

Council partnered with Vision Australia to design a Braille Map for *Luke's Place* all-inclusive playground in Corrimal. The Braille map at *Luke's Place* and the new Charles Harper Playground in Helensburgh were both officially opened during the quarter.

Council's summer Twilight Movies program has rolled out with 3 free movie events held at Port Kembla (200 attendees), Russell Vale (300 attendees) and Berkeley (250 attendees).

Structured programs were delivered for young people in Bellambi, Corrimal, Cringila, Bundaleer Estate, Warrawong, Koonawarra and Kanahooka. Young people were supported to participate in various community events including Viva la Gong and Spring into Corrimal.

Council's four-year Infrastructure Delivery Program includes a suite of programs and projects that directly respond to our strategies and priorities to activate and enhance our community centres, public domain and open spaces. In addition to the many footpaths, cycleways and open space upgrades, these initiatives include streetscape and public domain improvements in Warrawong, Corrimal, Dapto and Helensburgh Town Centres.

Strategic Priorities PROGRESS REPORT

Urban Greening

Urban Greening forms a significant focus during this Council Term. Our Program includes the implementation of key priorities within Council's Urban Greening Strategy, in conjunction with projects and services that impact sustainability and the quality of our environment.

Project Sponsor: Director Infrastructure and Works
Project Manager: Manager Open Space and Environmental Services

Strategic Priority Progress

✓ On Track

Program Achievements

Key achievements in delivery of the Urban Greening Strategy include priority tree planting program that is on track and aligned with playground shading, capital footpath program delivery, and shading in high need suburbs. The focus of the remaining financial year is to plant at least 250 established trees in Port Kembla, which is on track following successful community engagement and a community planting day in October. The planting day was held at Coomaditchie Lagoon, with five Moreton Bay Fig trees and five established Port Jackson Fig trees planted along the Parkes Street side of the Lagoon.

The overall planting program has achieved tree planting rates exceeding the 2 for every 1 tree removed ratio. Council has made a commitment to stop planting in December through to February 2020 due to Level 2 Sydney Water restrictions. An accelerated planting program will commence during Autumn without impacting total program delivery.

The Urban Greening Technical Manual, and Verge Garden Guidelines have been completed to Draft Stage and is scheduled for completion in March 2020. Data inventory collection currently stands at 15,000 records and growing. Operational staff are using software to plan, prioritise and program tree maintenance works and internal staff workshops are underway to streamline decision making processes. A policy framework for tree planting across the public and private realm is under development.

Strategic Priorities PROGRESS REPORT

West Dapto

We will continue to work in collaboration with key agencies to provide the infrastructure needed to support growth and employment lands within the West Dapto Urban Release Area. This will include coordinated planning for access improvements including new roads and bridges which are needed to support the additional 17,000 future housing lots and 8,500 jobs required over the next 30 years.

Project Sponsor: Director Planning and Environment
Project Manager: Urban Release Manager

Strategic Priority Progress

✓ On Track

Program Achievements

Works on the Fowlers to Fairwater Drive link road continued during the quarter. The project remains on track for a 2020 completion. Council continues to assess Planning Proposal requests, Neighbourhood Plans and Development Applications that facilitate urban development. To date, Neighbourhood Plans have been adopted within Stages 1, 2 and 3 for over 4,350 lots. Neighbourhood Plans to support a further 3,623 lots are currently being assessed. Council Development Application approvals remain at 1,839 new lots. IPART's review of Council's draft West Dapto Development Contribution Plan 2020 was put on hold by IPART on 5 December 2019 pending provision of additional information by Council. Council expects the assessment to recommence in January 2020. Council has requested that IPART consider all public submissions as part of their review. The Contribution Plan review is still targeted for completion by June 2020. Council continues to make representations to the State Government requesting progress on an Illawarra / Shoalhaven Special Infrastructure Contribution determination or similar infrastructure funding mechanism to support Council's ongoing commitment to infrastructure funding at West Dapto.

Implementation of the West Dapto Vision 2018 has progressed. On 9 December 2019 Council adopted a comprehensive revised Chapter D16 West Dapto Urban Release and a revised Chapter B2 Subdivision of the Wollongong Development Control Plan 2009. Council also adopted Open Space Design and Technical Manuals.

Program Risks

Council staff are progressing the biennial review of the West Dapto Section 7.11 (former Section 94 Plan) to ensure the Contributions Plan continues to reflect local infrastructure requirements within the Urban Release Area. This work will also ensure a revised Plan is in place by the end of June 2020, allowing Council to receive sufficient development contributions to meet the high cost of the local essential infrastructure.

Strategic Priorities PROGRESS REPORT

Active Transport and Connectivity

We are planning for, and progressively working towards, an integrated and active transport network with improved connectivity across the Local Government Area. A series of actions will be undertaken across this Term of Council to facilitate the upgrade of our public transport and bicycle networks and pedestrian access. This renewed focus is complemented by a significant investment into our footpaths and cycle ways.

Project Sponsor: Director Infrastructure and Works
Project Manager: Manager Infrastructure Strategy and Planning

Strategic Priority Progress

✓ On Track

Program Achievements

Actions identified within the Wollongong Bike Plan and Wollongong Pedestrian Plan are incorporated into the Infrastructure Delivery Program and operational programs for progressive implementation. Council continues to roll-out the Wollongong City Bike Plan Implementation Program, with projects being developed for submission to Transport for NSW grant funding schemes and utilising Council funding.

A significant review of the Bike Plan has commenced, which will lead to a new 'Wollongong Cycling Strategy 2030'. Scoping and visioning workshops have been held with Councillors, Executive and Council's Walking, Cycling and Mobility Reference Group. Community Engagement commenced in November 2019. The new Cycling Strategy, supported by an accompanying Implementation Plan, will align to the UCI (Union Cycliste Internationale) 'Cycling City Pillars', involve wide stakeholder and public engagement and provide both a publicly accessible Cycling Strategy and associated action plan. The new Strategy's priorities and expectations will align with delivery of the anticipated UCI 2022 World Road Cycling Championships Legacy projects.

The 2019-20 budget included a significant increase for new footpaths and the implementation of actions in the Pedestrian Plan. Discussions will be held in January 2020 Transport for NSW (TfNSW) to discuss funding priorities for active transport projects. Council received grant funding for active transport and connectivity improvements including streetscape upgrades in Helensburgh. Council will seek grant funding through a range of NSW and Commonwealth initiatives to support active transport and connectivity improvements, including streetscape upgrades in commercial centres such as Warrawong and Corrimal. Council also received funding to undertake an initial feasibility assessment to use the Otford Railway Tunnel as a shared pathway or rail trail and is awaiting feedback from TfNSW on future work required under this program.

Strategic Priorities PROGRESS REPORT

Business and Investment

We will continue to grow the Wollongong economy through attracting business, investment, major events, and tourism to the region. We will continue to promote our local advantages, including our proximity to Sydney, supportive business environment, innovative ecosystem, vibrant CBD, and superb liveability to attract businesses and encourage local jobs growth. We will work with key stakeholders, including state and federal governments to further promote our city and attract greater investment in infrastructure and other key assets.

Project Sponsor: Director Community Services
Project Manager: Manager Community Cultural and Economic Development

Strategic Priority Progress

✓ On Track

Program Achievements

The Economic Development Strategy 2019-2029 was officially adopted by Council in September 2019. During the quarter, 2018-2019 local jobs data for the Wollongong Local Government Area for 2018-2019 was released. This is the first indication of how the local employment market is tracking from the base data (2017-2018) used in the Economic Development Strategy 2019-2029. There were an estimated 95,936 jobs in the Wollongong Local Government Area in 2018-2019, an increase of over 1,800 (or 2%) compared to 2017-2018. Considering a downward revision of -450 jobs for 2017-2018, this means 9,100 net new jobs to achieve the jobs target set in the Economic Development Strategy 2019-2029 (ie +10,500 above the original 2017-18 figures).

October marked the launch of new investment attraction brand, Invest Wollongong, at a function attended by the local business community. Building on the work of its predecessor, Advantage Wollongong, Invest Wollongong has a strong focus on highlighting the many benefits of locating a business in Wollongong. This included the release of a new website, a range of marketing collateral and a new stakeholder program. The program is an opportunity for Wollongong's diverse business community to support Invest Wollongong and contribute to attracting more like-minded businesses and individuals to the city. Free to join, businesses who participate in the program will be given the information and support needed to deliver the positive Wollongong message across their networks. A rollout of the first media campaign around the new brand was also completed, targeting publications which are read by tech firms and scale-ups. This campaign resulted in editorial coverage in thirteen [13] publications and sites, with an estimated reach of 1,449,140 people.

Destination Wollongong has secured five [5] sector specific major events as at the end of December 2019 with one [1] to come by end of the 2019-20 financial year. Events that have already been successfully held were the:

- Australian Supercross Championships
- Australian Motorcycle Festival
- NSW Police & Emergency Services Games
- Nutri-Grain Ironman and Ironwoman Series and
- Yours & Owls music festival.

Strategic Priorities PROGRESS REPORT

These events cover the Sport, Motoring, Arts and Adventure sectors. Upcoming events for the remainder of the financial year include 3FEST as part of the Innovation sector. Destination Wollongong is also working to secure a major Food & Beverage event for the region. Council also facilitated delivery of the Women's Big Bash League Cricket Match, Sydney Thunder vs Adelaide Strikers on 20th November at North Dalton Park, with further Cricket NSW events planned for March 2020.

As part of the events concierge service, Council staff managed approximately 173 event enquiries. Twenty-four [24] filming and photography applications were also received and nine [9] event applications were lodged.

Council continues to work closely with the UCI Road World Championship, Local Organising Committee, Wollongong 2022 on planning for this hallmark event.

Operational Plan
2019-20 PROGRESS

The following section provides an overview of Council's progress with delivering Our Wollongong 2028. It provides a summary of progress for 2019-20 Annual Deliverables [Council's programs, projects and activities] and highlights significant progress with annual projects as outlined in the Our Wollongong 2028 Community Goals. This exception based reporting provides an overview of achievements for the December 2019 quarter. The organisation's performance is also reported by the key performance indicators, budget summary information and Budget Review Statement.

The Operational Plan 2019-20 contains 365 annual deliverables across the six Community Goals. Table 1 following outlines how Council is tracking in the December quarter to achieve the annual deliverables for each Community Goal.

Table 1: Annual Deliverable Progress by Community Goal

Goal	On track	Not Scheduled to Commence	Delayed	Deferred	Ongoing / Complete
1 We value and protect our natural environment	87.14%	7.14%	4.29%	0%	1.43%
2 We have an innovative and sustainable economy	93.62%	4.26%	2.13%	0%	0%
3 Wollongong is a creative, vibrant city	89.19%	2.7%	8.11%	0%	0%
4 We are a connected and engaged community	96.67%	1.67%	0%	0%	1.67%
5 We have a healthy community in a liveable city	93.33%	0%	2.5%	1.67%	0.83%
6 We have sustainable, affordable and accessible transport	96.15%	0%	0%	0%	3.85%
Total Annual Deliverable Progress	92.50%	2.50%	2.78%	0.56%	1.11%

*Note: Each Goal does not have an equal number of annual deliverables; therefore, the Annual Deliverable progress totals do not necessarily add up to 100.

Operational Plan 2019-20 Progress continued

Overall 2.78% of Annual Deliverables were reported to be delayed, while 0.56% were deferred. Table 2 below outlines all Annual Deliverables that were reported as delayed or deferred at the end of December 2019.

Table 2

Community Goal	Annual Deliverable	Delayed	Deferred	Comment
1 We value and protect our natural environment	Continue to pursue biodiversity certification of the West Dapto Urban Release Area including offsetting provisions	Y		Council has continued to advocate to the NSW Government for the resolution of funding mechanisms to support the biodiversity certification of West Dapto. The current mechanism available for industry funding of the required conservation measures is through a NSW Government Special Infrastructure Contribution (SIC) plan. In November 2019, the Department of Planning, Industry and Environment (DPIE) advised that Council's application for biodiversity certification could not be supported because it relies on proposed SIC levy which is not currently available. DPIE has not made meaningful progress on finalisation of a SIC for West Dapto for many years. DPIE is reviewing this matter and will provide further advice.

Operational Plan 2019-20 Progress continued

Community Goal	Annual Deliverable	Delayed	Deferred	Comment
	Prepare and implement priority actions of the Coastal Management Plan (CMP) for Lake Illawarra	Y		Council has been granted an extension to complete the CMP and work is progressing according to the agreed timeframe. Negotiations with internal and external stakeholders are progressing to develop an agreed response to community and agency submissions received during public exhibition. It is intended to submit the completed Submissions in Reply Report and final CMP to the Lake Illawarra Estuary Management Committee at their meeting on 26 February 2020 and to Wollongong and Shellharbour City Councils on 6 and 7 April respectively. Councillors of both Councils are being updated on the project status.
	Complete a Climate Change Vulnerability assessment	Y		A requirement of the Global Covenant of Mayors initiative is to identify communities and groups most vulnerable to the impacts of climate change. The project had been delayed pending resolution of an emissions reduction target however it has now recommenced. Scenarios have been established for testing.

Operational Plan 2019-20 Progress continued

Community Goal	Annual Deliverable	Delayed	Deferred	Comment
2 We have an innovative and sustainable economy	Develop a cultural tourism strategy which draws on and celebrates aspects of the city's natural and built heritage, social history and cultural attributes through an interdivisional working party	Y		A draft Cultural Tourism Strategy has been developed. Opportunities for promotion are being built into business as usual and staff will continue to work with Destination Wollongong to deliver key components of the Strategy. Destination Wollongong has been proactive in engaging with members and businesses within the Aboriginal community to enhance the availability of Indigenous products and experiences. In addition, Destination Wollongong is exploring options for heritage related experiences along the Wollongong foreshore.
	Implement public art opportunities at Hill 60 Reserve	Y		Council staff are currently working towards finalisation of required documentation to seek heritage (Aboriginal and European) approvals for all aspects of the project. The Aboriginal Heritage Impact Permit (AHIP) application has been lodged with the Department of Planning, Industry and Environment (DPIE). The draft Heritage Conservation Management Plan has been prepared and is currently been reviewed by Council staff. Two artworks are proposed within the Hill 60 precinct and details prepared by both artists have been included in the documentation to be considered as part of the approvals with DPIE.

Operational Plan 2019-20 Progress continued

Community Goal	Annual Deliverable	Delayed	Deferred	Comment
	Complete upgrade of HVAC at Town Hall and Art Gallery	Y		Council has selected the preferred option for this work and will commence the engagement of specialist HVAC consultants to prepare detailed design documentation for this project early in 2020. The project is currently programmed for construction over the following two financial years.
3 Wollongong is a creative, vibrant city	Support the extension of the Illawarra Sports Stadium (ISS)	Y		Council staff have reviewed findings of preliminary flood studies and confirmed with ISS there are development constraints over the adjoining land to the south of the current structure. Preliminary findings do not support a proposed extension to the south of the building. The ISS Board are now exploring an alternative design adjoining the east boundary of the existing building. A concept plan is now required to inform the necessary flood and traffic studies. Preliminary construction cost estimates are exceeding the level of NSW Government funding ISS were seeking.
	Assist the NSW Environment Protection Authority (EPA) to undertake the Wollongong Local Government Area land contamination literature review	Y		This project is being led by NSW EPA. Council is a member of the working party that reviewed and provided feedback on the draft report. A revised report is yet to be received for final review.

Operational Plan 2019-20 Progress continued

Community Goal	Annual Deliverable	Delayed	Deferred	Comment
5 We have a healthy community in a liveable city	Progress the Bulli Showground Master Plan Stage 2	Y		A significant aspect of the Master Plan addresses future use of the greyhound racing track located within the Showground. Greyhound Racing NSW have delayed strategic announcements relating to the consolidation of NSW race tracks. The uncertainty caused by this delay is impacting development of Stage 2 of the Master Plan.
	Review and implement key priority actions from the Illawarra Regional Food Strategy (IRFS)		Y	The current Strategy and Implementation Plan has expired. Opportunity for future action will be explored through the current review of Council's Sustainability Strategy and the climate change action framework.
	Plan, design and complete the renewal of the downstairs Lifesaving building of the North Wollongong Surf Life Saving Club	Y		The design of the building has been amended to reflect heritage requirements and the project has now been provided with Development Consent. Detailed tendering documentation is being prepared and is progressing to enable tendering during the March 2020 quarter.
	Develop an updated Landscape Master Plan for Stuart & Galvin Parks, North Wollongong		Y	The master planning process has been deferred to better align with the key planning initiatives within the precinct of both Parks.

GOAL 1: WE VALUE AND PROTECT OUR NATURAL ENVIRONMENT

Set an emissions reduction target that is in alignment with the Global Covenant of Mayors compliance requirements

On 9 December 2019, Council resolved to adopt an aspirational emissions reduction target of zero net emissions by 2050 at the community level and net zero emissions by 2030 for Council operations. Council is one of 26 Councils in Australia to commit to greenhouse gas reduction through the Global Covenant of Mayors for Climate and Energy. The City of Wollongong target will be reviewed in five years, with a view to reducing the timeline from 2050 to 2030 in line with Council's target. While Council is not solely responsible for the implementation of actions to achieve the whole-of-city target, Council recognises and adopts a leadership role, and will be working with the community and industry to meet the 2050 target.

To meet the 2030 target, Council will pursue activities to reduce landfill emissions, which account for 85% of Council's emissions, including the Whytes Gully Renewable Energy Facility and a possible roll-out of Food Organics Garden Organics (FOGO) across the city.

Continue implementation of priority actions from the Dune Management Strategy

During the quarter, the Bellambi Beach dune reshaping project was completed to improve line of sight and access for life saving activities. The dune works focused on a 200 metre stretch in front of the Bellambi Beach lifeguard tower. The project involved reshaping higher elevated areas of the dunes and replacing the taller vegetation on the seaward edge with low growing plants to help stabilise the sand. The purpose of this work was to provide Council's Lifeguards and Surf Life Savers better sight over beach users and to make it easier to move lifesaving and rescue equipment on, and off, the beach. The need to reshape the dunes was identified in Council's Dune Management Strategy for Patrolled Swimming Areas and has been planned in consultation with the NSW Department of Planning, Industry and Environment.

The Beach and Dune monitoring program continued, with transects surveyed and photo monitoring at dune project sites every two months. This monitoring will guide the review of the Dune Management Strategy, scheduled to commence in late 2020.

[IMAGE: Bellambi Beach dune reshaping project]

GOAL 1: WE VALUE AND PROTECT OUR NATURAL ENVIRONMENT

Coordinate community environmental programs, including Rise and Shine Program, Clean Up Australia Day, World Environment Day, National Recycling Week, International Composting Week and other waste education activities

During the quarter, work focused on the Rise and Shine Program, which saw volunteer clean-ups at various locations across the city and local schools competing in the Environmental Schools Competition. All participants were recognised at the Annual Rise and Shine Environmental Awards night. The Garage Sale Trail event was held over 19-20 October across 60 sites around the city, with 323 sales/stalls and 4,218 shoppers and sellers. The national event offers an alternative way of selling unused items, encourages people to get to know their neighbours and importantly, diverts significant amounts of material from landfill. It is estimated the weight of items diverted from landfill by being reused locally was 29,674kg. A total of 24 workshops and 9 events/promotions were conducted over the quarter, reaching over 5,000 residents.

[IMAGE: Corrimal Public School P&C Secretary Rhiannon Marshall, Wollongong Lord Mayor Cr Gordon Bradbery AM and P&C Fundraising Coordinator, Jennifer McCormack participating in the 2019 Wollongong Garage Trail.]

Provide opportunities to work with volunteers, community groups and government to actively participate in urban greening

During the quarter, Council staff continued to support the Bushcare, Dunecare and Fiready programs throughout the Local Government Area representing $60,000 worth of volunteer labour this quarter. A major corporate event with DHL was held at William Beach Park, Kanahooka with 2,500 trees planted on 12 October 2019.

GOAL 1: WE VALUE AND PROTECT OUR NATURAL ENVIRONMENT

Continue to deploy Council's Waste and Resource Recovery Strategy

During the quarter, Council continued to deploy Council's Waste and Resource Recovery Strategy. Examples of current projects that are underway include the FOGO Trial across 1,600 homes and the recently signed landfill gas capture contract to capture greenhouse gas at Whytes Gully with a view to power generation. The contract will see additional gas wells installed, which will significantly enhance the landfill gas capture system. Work is expected to commence in February 2020.

Deliver an expanded Heritage Assistance Grant Program

The funding allocation for the Local Heritage Grant Fund was increased from $30,000 to $60,000 for the 2019-2020 financial year as part of the Operational Plan adopted by Council in June 2019. Council has been successful in obtaining an additional $5,500 in funding from the NSW Heritage Fund.

The 2019-20 Fund has been allocated in accordance with Council's Financial Assistance Policy. Twenty-three [23] applications were received with 16 considered to be eligible projects. The funding was allocated with assistance from the Wollongong Heritage Reference Group. A total of $65,500 has been allocated to the 16 eligible projects with a total combined project value of over $153,000. Seven [7] of these projects have already been completed and acquitted, with the remainder to be finalised by the end of May 2020.

Performance Measures

- Participation rate in environmental programs | 16,815 (Q2 2018-19 – 12,304)
- Number of volunteers for Environmental Programs - Greenhouse Park | 21 (Q2 2018-19 – 24)
- Plants Propagated | 16,487 (Q2 2018-19 – 17,700)
- Plants Distributed | 19,930 (Q2 2018-19 – 12,982)
- Tonnes of Rubbish collected from clean-up activities | 10.63 (Q2 2018-19 – 8.63)
- Number of volunteers worked at Bushcare and FIReady sites | 300 (Q2 2018-19 – 496)

GOAL 2: WE HAVE AN INNOVATIVE AND SUSTAINABLE ECONOMY

Contribute to the promotion of tourism in Wollongong through the management of Council's three tourist parks at Bulli, Corrimal and Windang

During the quarter, five new cabins were constructed and installed at Bulli Tourist Park, including three in partnership with TAFE Illawarra. Students built the cabins as part of their Certificate II Construction course, gaining practical experience as part of a long-term relationship between Council and TAFE Illawarra. Over the past 15 years, TAFE students have built over 54 cabins for Council's tourist parks, with the work and skills of students on show to tourist park visitors.

Customer satisfaction with the three parks remains strong. Results of 847 customer surveys completed year to date indicate a rating of excellence across the three parks of 8.9/10.

[IMAGE: TAFE teacher David Morton with students Will Cavenagh, Mackenzie Briscoe and Jordan De Lazzari

GOAL 2: WE HAVE AN INNOVATIVE AND SUSTAINABLE ECONOMY

In partnership with NSW Department of Premier & Cabinet and the University of Wollongong, deliver the Invest Wollongong program to position Wollongong as a superior business location.

October marked the launch of new investment attraction brand, Invest Wollongong, at a function attended by the local business community. Building on the work of its predecessor, Advantage Wollongong, Invest Wollongong has a strong focus on highlighting the many benefits of locating a business in Wollongong. This included the release of a new website, a range of marketing collateral and a new stakeholder program.

A rollout of the first media campaign around the new brand was completed, targeting publications which are read by tech firms and scale-ups. This campaign resulted in editorial coverage in 13 publications and sites, with an estimated total reach of 1,449,140 people, equivalent to an advertising spend of over $40,000. Invest Wollongong's social media presence continues to grow, with almost 1,000 LinkedIn followers now tracking the activities of the partnership. Invest Wollongong hosted a visit from key NSW Government public servants in November as part of a 'famil' tour of the Illawarra organised by Invest Wollongong partner, the NSW Government.

Contribute to the delivery of 'Paint the Town REaD' early literacy program

During the quarter, Council staff ran a reading tent at the Port Kembla moonlight movies. Eighteen [18] children attended the tent for stories over 2 hours and *Bright Spark* (the mascot) engaged with over 20 children while walking around the event. Another reading tent was presented at the Lord Mayor's school starter picnic on 3 November. Over 100 children joined the volunteers in the reading tent for stories, where discussions about the importance of reading to children from birth took place. 12 children attended the Paint the Gong REaD reading tent at the Lord Mayor's Giving Tree Launch, for stories with the Lord Mayor and staff. *Bright Spark* and the Paint the Gong REaD reading tent went to the CareWays Children's Week event, with 13 children enjoying stories and engagement with *Bright Spark*. Eleven [11] new organisations have requested book boxes to be placed for children and parents/carers to read while waiting for appointments.

Deliver learning programs for employment, digital inclusion and creativity from 'The Hub' digital learning space

The Lab - a versatile learning space on Level 1 of Wollongong Library (formally The Hub) was created to enable people to come together to work, collaborate, learn, play and read for entertainment and pleasure. The Library has partnered with a number of not-for-profit and other organisations including the Salvation Army, Kiama Community College, Strategic Community Assistance to Refugee Families, and State Government agencies to deliver courses and training. During the quarter, The Lab hosted Get Skilled technology training, the Illawarra Historical Society, SaverPlus (in partnership with the Smith Family), South Coast Writers' Centre, knitting for the blind, gingerbread house workshops, and Celebration of Ability Festival. During the quarter, 28 events were held in The Lab, with 260 attendees.

GOAL 2: WE HAVE AN INNOVATIVE AND SUSTAINABLE ECONOMY

Deliver a new and refreshed integrated marketing and activation program that reflects the 'city experience'

The communications and marketing strategy 'Centre of it All', in partnership with the GPT Group/ Wollongong Central, continued during the quarter. A number of marketing channels continue to be employed to promote the City Centre including: television advertisements; radio advertisements and editorial, signage and printed collateral. Key activations for the period focused on Christmas, including: integrated Mall decorations; live music programme including 'Honk into Christmas'; Santa's arrival and tree lighting event; school concerts and tree-guard colouring; and the Renew Wollongong creative container activation. A digital media communications strategy has also been developed for the City Centre, with a focus on a website, social and digital media collateral and electronic direct mail. This strategy will begin to roll out in 2020 with a focus on a holistic CBD experience.

Performance Measures

- Number of visitations to the tourism information centres | 13,570 (Q2 2018-19 – 13,895)
- Tourist Park occupancy rate of cabins | 71% (Q2 2018-19 – 64%)
- Occupancy rates of paid on street parking | 75% (Q2 2018-19 – 75%)
- Tourist parks occupancy rate of unpowered sites | 39% (Q2 2018-19 – 54%)
- Tourist parks occupancy rate of powered sites | 53% (Q2 2018-19 – 39%)

GOAL 3: WOLLONGONG IS A CREATIVE, VIBRANT CITY

Deliver the annual Viva la Gong Festival

Viva la Gong was delivered on Saturday 9 November in MacCabe Park, Wollongong. The event was a success attracting an audience of over 20,000, with operations as planned with no major incidents and achieving several strategies within the Cultural Plan. The program included six stages, workshops, community stalls, food stalls and creative activations. In 2019, changes were made to the site layout improving the overall flow of operations and visitor experience. Highlights included the 'Circus Precinct' showcasing local and international circus acts, the accessible Quiet Space and Quiet Tours, and the Queer community programs. Media reported more than 60,000 'hits' on social media. Post-event, community representatives have sent positive feedback to Council, including comments about the smooth operations, sense of community spirit and the high quality/engaging program.

[IMAGE: Children dancing at Viva la Gong 2019]

Contribute to the delivery of the 3 Fest Arts, Science and Technology Festival in 2020

3-Fest is a third-party Signature Event funded in part by Council, University of Wollongong and Destination NSW. The event producer continues to work on the development of the Festival with licensed support from the Ars Electronica partners network. This includes seeking additional funding through sponsorship and in-kind support. Year one of the Festival is programmed to take place over 25 – 28 June 2020 utilising unusual spaces located within the WIN Entertainment Centre. The Festival will feature an exhibition, symposium, live music 'night-line' and youth focused content.

The 'Create Your World' (0-24yrs) project which is being led by Council, will provide and promote opportunities for children and young people. Create Your World is being developed through cross-organisational collaborations, alongside a partnership between Council and University of Wollongong's Early Years Discovery Space and the Science Centre, as well as engagement and participatory opportunities for local schools. Workshops will take place at Council's Youth Centre in the lead up to the Festival.

GOAL 3: WOLLONGONG IS A CREATIVE, VIBRANT CITY

Deliver Council's annual community events program

During the quarter, Council delivered New Year's Eve celebrations and the summer Twilight Movies program commenced. Due to prevailing weather and fire conditions (total fire ban in place), the fireworks component of New Year's Eve was cancelled, and the number of attendees was lower than previous years. Council's summer Twilight Movies program was rolled out with 3 free movie events held at Port Kembla (200 attendees), Russell Vale (300 attendees) and Berkeley (250 attendees). Australia Day preparations were also progressed during the quarter, with planning almost complete and all stakeholders confirmed.

[IMAGE: Summer Twilight Movie Program]

Collaborate with Destination Wollongong to encourage local sporting associations to host and facilitate events

During the quarter, Council staff facilitated the delivery of the WBBL Cricket Match, Sydney Thunder vs Adelaide Strikers on Wednesday 20th November at North Dalton Park, with further Cricket NSW events in March 2020.

[IMAGE: Sydney Thunder vs Adelaide Strikers WBBL cricket match, 20 November 2019]

GOAL 3: WOLLONGONG IS A CREATIVE, VIBRANT CITY

Manage the Merrigong funding agreement for IPAC and the Town Hall

During the quarter, the Illawarra Performing Arts Centre (IPAC) continued to deliver against its 2019 Program and also finalised its 2020 Theatre Season Program.

In October, *39 Steps* returned to Wollongong followed by the popular *Wharf Revue*. The Russian Ballet also performed two sold out performances of *Swan Lake*. Other highlights included Effie in *Love Me Tinder* and *A Night with Mia Freedman*.

During November, Merrigong's 2020 Theatre Season was launched, featuring diverse artists. The Season commences in January 2020 with *Trash Talk*, Merrigong's Strangeways Ensemble show which explores justice in the workplace for people living with a disability. Other highlights include *Black Cockatoo*, *The Crucible*, My Brilliant Career and *American Psycho - The Musical*.

IPAC's theatres were used throughout November and December for rehearsals and performances from twenty [20] Illawarra dance and theatre schools. Final dance performances were held on 22 December 2019.

Town Hall performances included two nights of comedy with Dylan Moran from Black Books, and musical performances including: the Illawarra Choral Society's *Handel's Messiah* and the Sydney Symphony Orchestra. The venue also hosted TAFE NSW's Graduation ceremony for the second year in a row, and also held the Doll, Bear and Craft Fair.

Deliver the Living Books Program

Three Living Books events were delivered during the quarter, with three new 'books' joining the program. One at Corrimal High with three 'books' (community member who shares their story) and 31 'readers' (audience members). Another event was held at Warrawong High with 7 books and 37 readers. A third event was held at Bulli High with 4 books and 120 readers. A volunteer celebration was held in November to thank the books for their time and dedication.

Performance Measures

- Library visitations | 300,781 (Q2 2018-19 – 285,779)
- Library – total number of loans | 293,330 (Q2 2018-19 – 311,453)
- Library programs: number of programs | 556 (Q2 2018-19 – 570)
- Library programs: number of participants | 12,348 (Q2 2018-19 – 12,182)

GOAL 4: WE ARE A CONNECTED AND ENGAGED COMMUNITY

Deliver civic activities which recognise and celebrate the city's people

During the quarter, Council hosted their Excellencies the Governor-General the Hon David Hurley AC DSC (Retd) and Mrs Linda Hurley. The Governor-General and Mrs Hurley visited Council's Administration Building to meet with staff and learn about Council's take on Food Organics Garden Organics (or FOGO) trial, plastic-free initiatives and waste diversion. Council staff also shared information on how the 32-year-old Administration Building has become a world-leader in sustainability, earning a 6 Star Green Start Rating from the Green Building Council of Australia. The meeting was one of their stops on a two-day visit to Wollongong, which also included their attendance to the One Door Illawarra Luncheon in recognition of World Mental Health Day.

Nominations for Wollongong's Australia Day Awards were also advertised during this period with 40 nominations received. Presentations will take place next quarter at the Australia Day Awards Dinner.

[IMAGE: The Hon David Hurley AC DSC (Retd) and Wollongong Lord Mayor Cr Gordon Bradbery AM, October 2019]

Provide information updates via the quarterly community newsletters

Council issued two Community Newsletters in the October-December quarter. These newsletters were letterbox dropped across the Local Government Area. Topics covered in the October newsletter included Council's sustainability focus, Ward boundaries review, swim season launch and summer events. The December newsletter had an events focus, sharing information about New Year's Eve and Australia Day while also providing details of Council's services during the Christmas-New Year period.

GOAL 4: WE ARE A CONNECTED AND ENGAGED COMMUNITY

Continue to review and enhance Council's digital customer service and engagement channels in line with strategic objectives

Council continues to engage directly with the community via digital channels. Likes on the City of Wollongong Facebook page were 27,688 at the end of the quarter, an increase of 3.95% from the previous quarter. An increasingly strong Facebook following allowed Council to engage with the community and convey essential and timely messages around bushfire safety and changes to the New Year's Eve event.

Twitter followers increased by 1.1% from 6013 to 6080. 6,096 Instagram followers were recorded at the end of the quarter, up 3.5% from 5892 at the end of the previous quarter.

There were 581,334 page views on Council's website in the quarter, with the most visited pages being the resident homepage, View a Development Application, jobs, visitor homepage and business homepage. Of the 47 media releases published, the most viewed media releases were: 'Drop off your extra recyclables – for free' (128); 'New Year's Eve celebrations go ahead – without fireworks' (75 views); 'Temporary beach access closure – McCauley's Beach, Thirroul' (55 views); 'Supporting a Greener Future' (45 views) and 'Share your cycling experiences in Wollongong' (34 views).

Actively engage people with disability and carers in the delivery, evaluation and monitoring of the Disability Inclusion Action Plan

During the quarter, Council designed and delivered four community engagement workshops to inform the development of the new Disability Inclusion Action Plan. Two workshops were held with young school leavers with disability and two with people with disability, carers and Council staff. An engagement report is currently being prepared from these activities to inform the new Disability Inclusion Action Plan.

Deliver the Volunteering Illawarra service, including online advice

During the quarter, 79 volunteers were referred to non-government organisations (NGOs), with an average 90% placement rate compared to the 115 referrals the previous quarter, mainly due to community organisations closing down for the holiday period.

Training is a significant component of the Volunteering Illawarra (VI) service. Training provided during the quarter included:

- Corporate Volunteer induction session held for Council's Library, Social Support and Community Transport volunteers.
- Six training sessions were offered (WHS for Volunteers; Managing Poor Volunteer Performance; Understanding Elder Abuse; Leading Volunteer Teams, Kitchen Health & Hygiene, and Managing Volunteer Performance and Dispute Management).
- Two Volunteering Interagency meetings were held this quarter to support the NGO sector in recruiting and managing volunteers, attracting 24 representatives from various agencies.

To mark International Volunteers' Day on 5 December, VI volunteers attended the divisional volunteers' lunch to thank them for their contributions to the services.

GOAL 4: WE ARE A CONNECTED AND ENGAGED COMMUNITY

Work has also progressed on the development a corporate volunteering program for Council staff. Volunteering Illawarra has worked closely with community organisations to identify suitable activities for Council's staff to volunteer as part of the corporate volunteer model. As a result, two suitable activities were arranged during December. On 13 December, nine staff worked closely alongside the volunteers from the Denny Foundation to pack bags of foods for families in need. The second opportunity involved 22 Council staff and other community volunteers participating in holiday gift wrapping for a gold coin donation, with funds raised going to Supported Accommodation Service, Shoalhaven-Illawarra (SAHSSI). The initiative ran over two weeks and raised $3,000 for women and children affected by domestic violence.

[IMAGE: Council staff participating in a gift wrapping stall to raise funds for Supported Accommodation Service, Shoalhaven-Illawarra (SAHSSI)

Participate in a range of community sector networks to foster collaborations and partnerships

During the quarter, Council staff attended and coordinated various network meetings and groups, with a highlight being the Multicultural Water Safety Forum.

Council coordinated the NSW Water Safety Forum for Multicultural Communities during September. The aim of the Forum was to showcase best practice water safety practice programs from across NSW, while building partnerships and networks. Fifty people from local government, aquatic services and community organisations came together with speakers and participants from Coffs Harbour, South-Western Sydney, Sutherland Shire and the Illawarra. The event was a response to the increasing number of drowning deaths among people from culturally diverse backgrounds. The initiative received positive feedback from attendees, given the approaching 2019-20 swim season.

GOAL 4: WE ARE A CONNECTED AND ENGAGED COMMUNITY

Deliver a diverse range of community engagement opportunities to inform and guide development and delivery of Council business

During the quarter, engagement continued on a diverse range of projects. "Karrara" was adopted as the name for the Fowlers Road to Fairwater Drive main bridge. "Karrara" is the traditional Aboriginal name for Upper Mullet Creek. In response to engagement with Dapto High School, pedestrian crossing points and extension of the footpath on Marshall Street has been designed. Wongawilli Road residents were invited to a session that provided an update on power pole design and the landscape plan. Other activities included notifications, stakeholder management, liaising and meeting with businesses, schools and transport companies. The community were also consulted on detailed designs for traffic lights and changes to carpark access at the Bong Bong Road and Station Street intersection.

Engagement for the Wollongong Cycling Strategy was undertaken and emphasised the importance of creating a cycle friendly city for everyone. A variety of communication methods were used to raise awareness of the engagement across the city.

Engagement for the Cringila Hills Recreation Masterplan commenced including information sessions at various locations. New methods of engagement were introduced to capture the voices of high school and primary school students, as well as pre-school children.

The community were asked their thoughts on the design for the refurbishment of the Austinmer Bathers Pavilion including the changes to the façade to accommodate an accessible toilet.

Engagement with Waniora Point provided the community with information on projects and maintenance activities planned for the precinct, associated approvals and timeframes.

The community were invited to provide their thoughts on the Port Kembla Beach Viewing Platform and informed of the proposed location and type of stormwater quality improvement device for Port Kembla Beach.

Engagement was undertaken on Hewitts Creek Catchment and Towradgi Creek Catchment flood studies. Engagement is also underway to inform this review of chapters E13: Floodplain Management and E14: Stormwater Management of the Wollongong Development Control Plan (DCP) 2009. Engagement has included an industry forum, with representatives from Local and State Government, development and floodplain management industries in attendance.

The Global Covenant of Mayors is a commitment to set an emissions reduction target of net zero emissions by 2050. Engagement was undertaken to meet Council's request to hear the community's thoughts and ideas on the actions our community could take to accelerate emissions reductions, prior to setting a target.

GOAL 4: WE ARE A CONNECTED AND ENGAGED COMMUNITY

Performance Measures

Sick Leave | 7.72 Days (Q2 2018/19 – 7.73 days)

Number of Twitter followers for Council | 6,080 (Q2 2018/19 – 5,715)

Carers Leave | 0.64 Days (Q2 2018/19 – 0.64 days)

Lost Time Injury Frequency Rate | 15.12 (Q2 2018/19 – 14.87)

Number of media releases issued | 47 (Q2 2018/19 – 56)

Number of Council Facebook page 'likes' | 27,688 (Q2 2018/19 – 25,024)

Workers compensation costs as a percentage of payroll | 0.00 % (Q2 2018/19 – 1.73%)

Telephone calls are answered within 30 seconds | 88 % (Q2 2018/19 – 86%)

Enquiries made in person are welcomed and attended to within 5 minutes | 95 % (Q2 2018/19 – 93%)

GOAL 5: WE HAVE A HEALTHY COMMUNITY IN A LIVEABLE CITY

Undertake programmed renewal works at Council's rock pools in accordance with the capital works program

During the quarter, construction upgrade works to Bellambi Rock Pool were completed, allowing the pool to be reopened before Christmas. The Pool was closed to the public in May to upgrade and refurbish the Pool, its concourse and reconstruction of the seawall north of the Pool. Works included renewing and repairing the ageing infrastructure walls, access ramp, installing new seating at the viewing platform and repairs to the Pool floor and a fresh coat of paint.

[IMAGE: Members of Bellambi Bluebottles swimming club enjoying the reopening of Bellambi Rock Pool]

Deliver the Council resolution for affordable housing (targeting of Commonwealth Funding

On 9 December, Council considered a report on the submissions received during the call for proposals for Community Housing providers to nominate projects that could be assisted by the Commonwealth funding. Council resolved to accept, in principle, the tender of the Illawarra Community Housing Trust for delivery of affordable housing, with a contract value of $4,340,000.

GOAL 5: WE HAVE A HEALTHY COMMUNITY IN A LIVEABLE CITY

Incorporate child-friendly and age-friendly principles in design, planning and service delivery with the community

During the quarter, Council partnered with Vision Australia to design and deliver a Braille Map for *Luke's Place* all-inclusive playground in Corrimal. *Luke's Place* now includes a Braille map of the internal space and equipment for carers and children. The special purpose playground also features the region's first carousel which can be used by children of all abilities, featuring colour-coded, textured sections and areas where deaf children or those with limited hearing can interact with noise and vibration, as well as active and quiet zones.

The new map provides opportunities for all children to interact with the Braille to learn more about how some children and adults read in this way. These aspects have been included to support education and understanding for the broader community. The initiative was launched by Lord Mayor, Cr Gordon Bradbery AM and attended by representatives from Vision Australia and Guide Dogs Australia. Other attendees included children who are blind or have low vision and their teachers and parents, as well as adults who are blind and/or have low vision. Initial feedback from the community was overwhelmingly positive and a WIN News clip post on social media recording 8,000 views.

During November, Council hosted the 15th Lord Mayor's School Starter Picnic at MacCabe Park, Wollongong. The event saw over 600 people, including 189 children who were starting school in 2020 attend. Special guests, Transition to School experts, Professor Sue Dockett, Professor Bob Perry and their PhD students from Norway attended the event to join in the celebrations. They have been involved in the Picnic since the inaugural event 15 years ago. Twenty [20] organisations in attendance provided activities and experiences for the children and families that attended including Fire and Rescue, Ambulance Services, Rotary Club, Vision Australia, Aboriginal art and weaving, Multicultural activities and more. An AUSLAN interpreter assisted with the official part of the morning.

[IMAGE: Local children at the unveiling of the Braille map at Luke's Place Playground, Corrimal, 11 December 2019.

GOAL 5: WE HAVE A HEALTHY COMMUNITY IN A LIVEABLE CITY

In consultation with the community develop the Cringila Hills Master Plan

On 19 November, Council resolved to place a draft Recreation Masterplan on public exhibition until 30 January 2020. This ambitious plan is a long term strategy to look at how the space can be better enjoyed by our community and provides an opportunity to develop a multipurpose space that will provide diverse recreational and social opportunities. A beginners and intermediate mountain biking trail, pump track and bike skills park, as well as walking trails and an upgraded playground are some of the activities targeted within the draft Plan. The Plan will improve protection of important areas of remnant and regenerated natural vegetation, including pockets of Illawarra Subtropical Rainforest, an endangered ecological community. Following extensive community engagement, the masterplan will be presented to Council for adoption in March 2020.

[IMAGE: Cringila Hills]

Continue to engage children and young people in planning and design processes

Charles Harper playground in Helensburgh was officially opened in October, with 120 children from participating schools and pre-schools in attendance. School Captains from Helensburgh Public School and Holy Cross Catholic Primary School gave speeches about their positive experience in participating in the design and development of the art work. The playground has been well received by the children and the broader community.

During November and December, 128 primary and pre-school children and 80 high school young people took part of in an engagement process for the proposed nature playground in Cringila and Cringila Hills Recreation Master Plan. During one of the engagement sessions, four different language interpreters were utilised when working with students from the Intensive English Class at Warrawong High School. Following the engagement activities with children and young people, ideas have been gathered and a report developed, outlining their ideas and issues. This information will be included in the Cringila Hills Recreation Master Plan engagement report.

GOAL 5: WE HAVE A HEALTHY COMMUNITY IN A LIVEABLE CITY

Throughout these engagement activities, Council piloted an innovative approach to engaging primary school students. The new approach proved very effective and learning from the process was shared in a workshop facilitated by Playground Ideas founder Marcus Veerman. During the workshop Council staff used the information from the engagements to design a playground that is fun and adventurous whilst meeting safety compliance standards. These skills will be used to undertake similar nature play engagement and design processes into the future.

[IMAGE: Local Helensburgh children at the opening of the new Charles Harper Park, Helensburgh, 22 October 2019

Design and construct the Longyan Friendship Garden

During the quarter, the Longyan Chinese Friendship Garden was launched with concept design principles agreed by Council and Longyan representatives. A ceremony was held in the Garden on 29 October to mark the announcement that Wollongong's Chinese Friendship City, Longyan, will have a feature within the Garden, as part of a new area to be called the Longyan-Chinese Friendship Garden. The gift marks the 20th anniversary of the Sister City relationship between Longyan City and Wollongong City. While the details of the Garden are yet to be finalised, the planting of a Yew Tree symbolises the first milestone in the project. Detailed design work will continue to progress during 2020.

[IMAGE: Lord Mayor Cr Gordon Bradbery AM and representatives from the City of Longyan attend the announcement ceremony of the new friendship garden, 29 October 2019

GOAL 5: WE HAVE A HEALTHY COMMUNITY IN A LIVEABLE CITY

Contribute to a range of community safety initiatives in conjunction with community partners

During the quarter, Council staff contributed to organising and participating in two major events in October and November, raising awareness about male violence against women. The Reclaim the Night march and rally was held in October in Crown Street Mall. The White Ribbon Walk was held in November from the North Wollongong Surf Club to the Lighthouse and back. Both events were held in partnership with members of the Illawarra Committee Against Domestic Violence which includes representatives from NSW Police.

Council officers also attended the Wollongong Liquor Accord meetings during the quarter. These meetings offer an opportunity to progress community safety initiatives and information between Council, NSW Licensing Police and the participating Liquor Accord members.

[IMAGE: Reclaim the Night 2019]

Implement, monitor and report on the Disability Inclusion Action Plan 2016-2020

During the quarter, an eight-week work experience program was piloted with six students from Aspect South Coast School for Autism. The students worked at a variety of Council sites including the Botanic Garden, Beaton Park, working with the Foreshore crew, Youth Services at the Wollongong Youth Centre and in the Council Administration Building with the Community Development and Planning teams.

One Autism Awareness training session was delivered for Council staff in this quarter and a Quiet Space was provided at Viva la Gong, where 73 people came and enjoyed the day.

GOAL 5: WE HAVE A HEALTHY COMMUNITY IN A LIVEABLE CITY

A calendar of events to celebrate "International Day of People with Disability" was launched in partnership with Dressed for Success and Shellharbour City Council. Approximately 1,000 calendars have been distributed. Twelve local women with disability who attended the launch participated in a styling session and employment preparedness workshop delivered by Dressed for Success. The "Disability Access Brochure" has now been updated and is currently being distributed.

Deliver a range of youth services with a focus on youth participation and community development, targeted programs, music, culture and sector development and coordination

Various programs provided during the quarter for young people included 'Teenz Connect' at Warrawong Library, 'Acting Up', 'Code the Gong', Create Art, Rainbow League and 'Q-mmunity' at Wollongong Youth Centre, activating civic engagement at Dapto Library and 'Out and About' in Bellambi.

Team Ignite continued to support music events for young people within Wollongong Youth Centre's 'On Stage' program, 'Music for the Mind', 'Halloween Hardcore Gig' and Viva la Gong drama performances.

The 'What's Next' transition program was delivered in Bellambi Public School over two weeks to 22 Year 6 students who will be attending high school in 2020.

Council staff supported the delivery of Illawarra Multicultural Youth Conference held at Five Islands College, attended by 96 young people. The Work Inspiration program, in partnership with The Smith Family, was held at Wollongong Youth Centre during October.

Coordinate the sports facilities planning priorities program with the Sports and Facilities Reference Group

During the quarter, the Sports and Facilities Reference Group endorsed 16 applications for the new Sports Grants Program, totalling approximately $366,000. Successful grant recipients were advised during December.

Performance Measures

- Community Transport trips | 28,240 (Q2 2018/19 – 33,500)
- Direct-Run District Level Community Facilities visitation | 59,494 (Q2 2018/19 – 64,768)
- Utilisation of Direct-Run District Level Community Facilities | 9,841 Hours (Q2 2018/19 – 8,611 hours)
- Social Support hours of service | 9,871 Hours (Q2 2018/19 – 11,107 hours)
- Total Visits commercial heated pools: Corrimal | 49,171 (Q2 2018/19 – 38,720)
- Total Visits commercial heated pools: Dapto | 26,489 (Q2 2018/19 – 21,825)
- Utilisation/visitation at pools | 397,510 (Q2 2018/19 – 421,128)
- Utilisation/visitation at beaches | 432,258 (Q2 2018/19 – 453,129)

GOAL 6: WE HAVE AFFORDABLE AND ACCESSIBLE TRANSPORT

Complete the construction of the Fowlers Road extension to Fairwater Drive

Construction on the extension of Fowlers Road to Fairwater Drive has continued during the quarter with substantial activity occurring on and adjacent to the Princes Highway and Fowlers Road intersection. Many services have been relocated and adjusted to suit the revised intersection layout. The Optus service relocation remains to be completed. Property adjustments have also been made with the majority now completed.

Remaining intersection works include the installation of new traffic signals, relocation of power poles, asphalting, line-marking and street furniture.

Works have also continued on the main stretch of new road including concrete works on the bridge, construction of footpaths, median construction and laying of asphalt pavement. Council has resolved to name the new main bridge, "Karrara", which spans over the south coast rail line and the Mullet Creek floodplain. "Karrara" is the traditional name for Upper Mullet Creek. The Fowlers Road extension, or the new road, will be named separately to the main bridge. The name of the new road is currently being considered by the Working Party, which includes the Lord Mayor and Ward 3 Councillors.

Construction works have also continued at the Fairwater Drive/Daisybank Drive intersection. Works have included under-boring to provide for the installation of conduits for traffic signals, kerb and gutter and footpath construction.

[IMAGE: Karrara Bridge, part of the Fowlers Road to Fairwater Drive extension]

GOAL 6: WE HAVE AFFORDABLE AND ACCESSIBLE TRANSPORT

Review and update the Wollongong Bike Plan

A significant review of the Bike Plan has commenced which will lead to a new 'Wollongong Cycling Strategy 2030'. Scoping and visioning workshops have been held with Councillors, Executive and Council's Walking, Cycling and Mobility Reference Group. Community engagement commenced in November 2019. The new Cycling Strategy, supported by an accompanying Implementation Plan, will align to the UCI (Union Cycliste Internationale) 'Cycling City Pillars', involve wide stakeholder and public engagement and provide both a publicly accessible Cycling Strategy and associated action plan. The new Strategy's priorities and expectations will align with delivery of the anticipated UCI 2022 World Road Cycling Championships Legacy projects.

Promote access to Community Transport services to meet the needs of eligible consumers

Community Transport (Wollongong – Shellharbour) provides a range of services to support frail older people, and those who are transport disadvantaged to continue living independent, active members of the community and to access essential services. The service requires minimal promotion, as the demand for service continues to grow, with an average of 300 new referrals per quarter. This quarter, Community Transport received 350 new referrals. Staff continue to promote the service at sector meetings within the region such as the Community Care Forum and the regional assessment team, who provides referrals to our services.

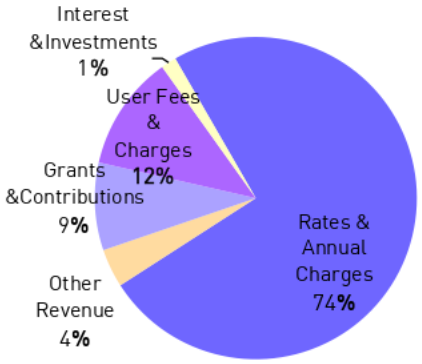
Performance Measures

- Delivery of Council's Capital Program | 43% (Q2 2018/19 – 49.71%)

How we performed against our budgets

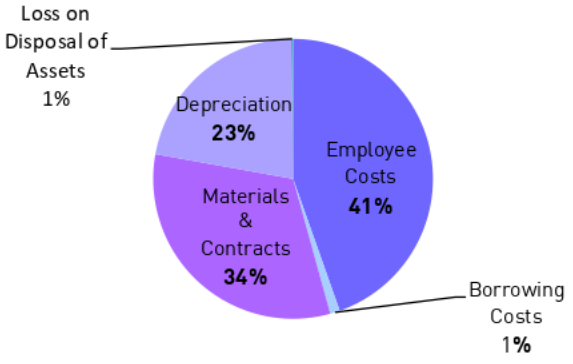
Budget 2019-20

The graph below shows Council's expenses from ordinary activities by expense type for the year:



Expense Type ($'M)	YTD Actual	Proposed budget
Employee Costs less Internal Charges	60.4	118.8
Borrowing Costs	1.5	3.0
Materials & Contracts	43.5	98.5
Depreciation	29.7	64.8
Loss on Disposal of Assets	-0.3	2.0
Total	**134.9**	**287.1**

The graph below shows Council's revenue from ordinary activities by revenue type for the year:



Income Type ($M)	YTD Actual	Proposed budget
Rates & Annual Charges	49.5	203.0
Other Revenue	2.4	10.7
Profit on disposal of Assets	0.0	0.0
Grants &Contributions	5.7	22.0
User Fees & Charges	7.4	33.6
Interest &Investments	1.0	3.7
Total	**66.0**	**272.9**

Report of Chief Financial Officer

The December Quarterly Review of the financial estimates proposes a range of adjustments that will improve the forecast Operating Result [pre capital] by $0.1 million and negatively impact the Funds Result (Available Funds balance) by $0.2 million for the year ending 30 June 2020.

The proposed adjustments in the Operating Result [pre capital] predominately reflects the timing of expenses and recognition of revenues that are transferred to Restricted Cash and, therefore, has a relatively minor impact in Council's Funds Result.

The revised forecasts are inclusive of the recognition of proceeds from the sale of Southern Phone shares and final dividend payment of $876 thousand and $139 thousand respectively. The revised forecasts also propose a corresponding transfer of both these amounts to internally restricted cash with application of these funds to be considered through the planning process. Consistent with a prior resolution of Council, annual dividend proceeds have been held as restricted cash and applied to support natural area projects. The Adopted Operational Plan and Long Term Financial Forecasts currently include approximately $105 thousand of annual income and corresponding level of support to natural area projects.

The following table and comments provide a summary view of the proposed variations and forecast for 2019-2020 based on adjustments required from the prior year, year to date performance and anticipated results to June 2020.

TABLE 1

FORECAST POSITION	Current Budget	Proposed Budget	YTD Actual	Proposed Variation
KEY MOVEMENTS	$M	$M	$M	$M Proposed Variation
Operating Revenue	270.2	271.2	134.8	1.0
Operating Costs	(284.2)	(285.1)	(135.2)	(0.9)
Operating Result [Pre Capital]	**(14.0)**	**(13.9)**	**(0.4)**	**0.1**
Capital Grants & Contributions	42.9	33.5	9.6	(9.5)
Operating Result	**28.9**	**19.5**	**9.2**	**(9.4)**
Funds Available from Operations	**55.7**	**55.5**	**27.4**	**(0.2)**
Capital Works	**97.8**	**97.8**	**42.0**	**(0.0)**
Contributed Assets	**6.7**	**6.7**	-	-
Transfer to Restricted Cash	5.4	6.2	4.8	0.8
Borrowings Repaid	7.9	7.9	5.4	-
Funded from:				
- Operational Funds	56.3	55.5	30.7	(0.8)
- Other Funding	48.3	49.0	11.3	0.8
Total Funds Surplus/(Deficit)	**(13.9)**	**(14.1)**	**(13.5)**	**(0.2)**

Report of Chief Financial Officer

OPERATING RESULT [pre capital]

The proposed Operating Deficit [pre capital] of $13.9 million represents an improvement of $0.1 million against a revised budget of $14.0 million that is made up of both funded and cash variations.

The major variations are summarised broadly below with favourable variations identified as (F) and unfavourable as (U) with more detail provided in the major variations proposed table.

Funded Variations (no Fund impact)

These are variations where the unfavourable adjustments are funded from restricted cash. These variations include:

- Introduction of funded operational projects $0.9M (U)
- Operational Grants $0.4M (F)
- Southern Phones dividend & share sale proceed $1.0M (F)

Funds (Cash) Adjustments

- Waste Facility revenue $0.5M (U)
- Waste operations $0.5M (F)
- Fires Services grant $0.1M (F)
- Planning certificate income $0.1M(U)
- Prior period corrections $0.2M(U)
- Various other $0.2M(U)

OPERATING RESULT

The proposed Operating Result of $19.5 million represents a deterioration of $9.4 million to Current Budget. This includes the adjustments discussed above along with a proposed decrease in developer contributions for the West Dapto release area of $9.8 million that is partially offset by a proposed increase in City Centre developer contribution income of $0.4 million.

FUNDS RESULT

The Funds Result indicates a minor deterioration of $0.2 million.

OVERVIEW OF FINANCIAL STATEMENT VARIATIONS

The following is a summary of variations at Financial Statement level with a more detailed comprehensive list provided in Table 7 of this report.

1 Income & Expense

The primary variations and issues are discussed below with favourable changes identified as (F) and unfavourable as (U). A more comprehensive list is provided in Table 7.

- **User Charges and Fees $0.7M (U)**. This variance is comprised of lower waste facility tipping income ($0.5 million) and a reclassification of income to other revenue ($0.2 million).
- **Interest and Investment Revenues $0.1M (F)**. This increase is due to recognition of the final dividend from Southern Phones.
- **Other Revenues $0.2M (F)**. This increase is due to a reclassification of income from user charges and fees ($0.2 million).
- **Profit on Asset Disposal $0.7M (F)**. The sale of the Southern Phones shareholding has generated a net profit on sale. The sale price achieved of $785 thousand, less the book value of $55 thousand, provides the net profit on sale of $730 thousand.
- **Grants and Contributions – Operating $0.5M (F).** This variation includes the introduction of $0.2 million for the maintenance of land dedicated to Council from Stocklands ($0.2 million), an increase in the

Report of Chief Financial Officer

State Government grant to compensate for the higher Emergency Services Levy associated with new workers' compensation arrangements for fire fighters ($0.1 million) and other more minor increases.

- **Grants and Contributions – Capital $9.5M (U).** This variation is comprised of a reduction in developer contributions from West Dapto of $9.8 million partially offset by an increase in developer contributions for the City Centre ($0.4 million).
- **Employee Costs $0.3M (U).** The proposed increase in employee costs is due to a correction to a prior year adjustment ($0.2 million) and other more minor adjustments.
- **Materials, Contracts and Other Expenses $0.4 (U).** While the proposed movement in this expense category is negative, most of the proposed variations do not impact on the Funds Result. These include the introduction of funded projects ($0.9 million). These have been partially offset by lower Whytes Gully operating expenses ($0.5 million).

2 Capital Budget

Council commenced the quarter with a Capital Program budget of $96.8 million and has been increased to $97.8 million. This increase has been offset by funding and is largely due to timing adjustments in the delivery of projects. Details of proposed capital changes are reported and approved by Council through the monthly financial reporting process.

3 Cash & Investments

The Available Funds forecast shown below excludes movement in externally and internally restricted cash such as timing of special purpose grants and contributions and progress of funded projects. There is a very minor deterioration in the forecast result of $0.1 million that is due to the net impact of the cash movements associated with the proposed December Quarterly Review.

TABLE 2

CASH, INVESTMENTS & AVAILABLE FUNDS

	Original Budget 2019/20 $M	September QR 2019/20 $M	December QR 2019/20 $M	Actual Ytd December 2019 $M
Total Cash and Investments	130.0	147.6	138.1	156.4
Attributed to:				
External Restrictions				
Developer Contributions	42.0	39.2	28.7	38.8
Specific Purpose Unexpended Grants	1.1	14.7	14.7	4.1
Special Rates Levy City Centre	0.1	0.1	0.1	0.1
Unexpended Loans	1.7	2.8	2.8	4.9
Domestic Waste Management	14.2	14.2	14.2	14.1
Private Subsidies	5.8	6.0	6.1	6.2
Housing Affordability	11.0	11.1	11.1	10.9
Stormwater Management Charge	2.2	1.0	1.1	2.3
Total External Restrictions	78.0	89.1	78.8	81.5
Internal Restrictions				
Property Investment Fund	8.9	9.0	9.0	8.5
Strategic Projects	28.9	34.7	34.2	45.2
Sports Priority program	0.6	1.0	0.5	0.9
City Parking strategy	2.2	2.1	2.2	1.9
MacCabe Park Development	1.4	1.4	1.4	1.4
Darcy Wentworth Park	0.2	0.2	0.2	0.2
Waste Disposal Facility	(1.4)	(0.6)	(0.6)	0.3
Telecommunications Revenue		-		
West Dapto additional rates	5.4	5.9	5.9	5.7
Natural Areas	0.2	0.2	1.1	1.1
Lake Illawarra Management Fund	0.2	0.3	0.3	0.5
Total Internal Restrictions	46.7	54.2	54.3	65.8
Available Cash	5.3	4.3	5.0	9.1
Net Payable & Receivables	10.5	11.1	10.3	6.7
Payables	(25.4)	(25.6)	(25.7)	(32.0)
Receivables	24.6	24.4	23.8	24.3
Other	11.2	12.2	12.2	14.4
Available Funds	15.7	15.4	15.3	15.9

Report of Chief Financial Officer

5 Long Term Financial Projections

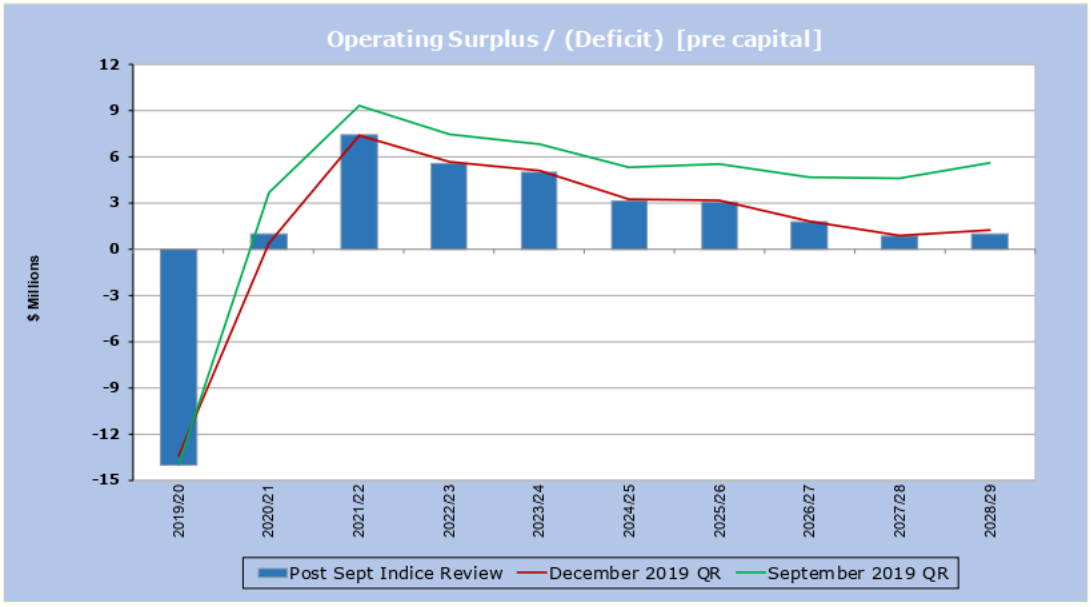
Council has a continuous budget process that revises the long term forecasts in line with quarterly changes and resets assumptions and indices annually or where new information leads to an immediate requirement to change the indices. The revised projections at December are inclusive of a reset of indices to reflect current economic forecasts made during the second quarter in line with the commencement of the annual planning cycle. The graphs provided below show revised forecasts at December Quarterly Review along with comparatives to the September Quarterly Review and the impact of the revised forecasts post September. The revised indices impact has not been formally reported prior to this review. The reset is inclusive of a reduction in interest rates that has impacted investment revenues and is expected to continue for some time with potential for further official easing.

The long term projections, particularly the latter years, are indicative and will continue to be reviewed and further developed through the 2020-2021 annual planning process in line with the Financial Strategy targets to reflect current information from both external sources and internal analysis.

LONG TERM OPERATING SURPLUS/(DEFICIT) [pre capital]

The Operating Result [pre capital] provides an indication of the long term viability of Council. In broad terms, a deficit from operations indicates that Council is not earning sufficient revenue to fund its ongoing operations (services) and continue to renew existing assets. The forecast deficit for the Adopted Operational Plan 2019-2020 is due to the early payment of the first two instalments of the 2019-2020 Financial Assistance Grant in 2018-2019.

TABLE 3



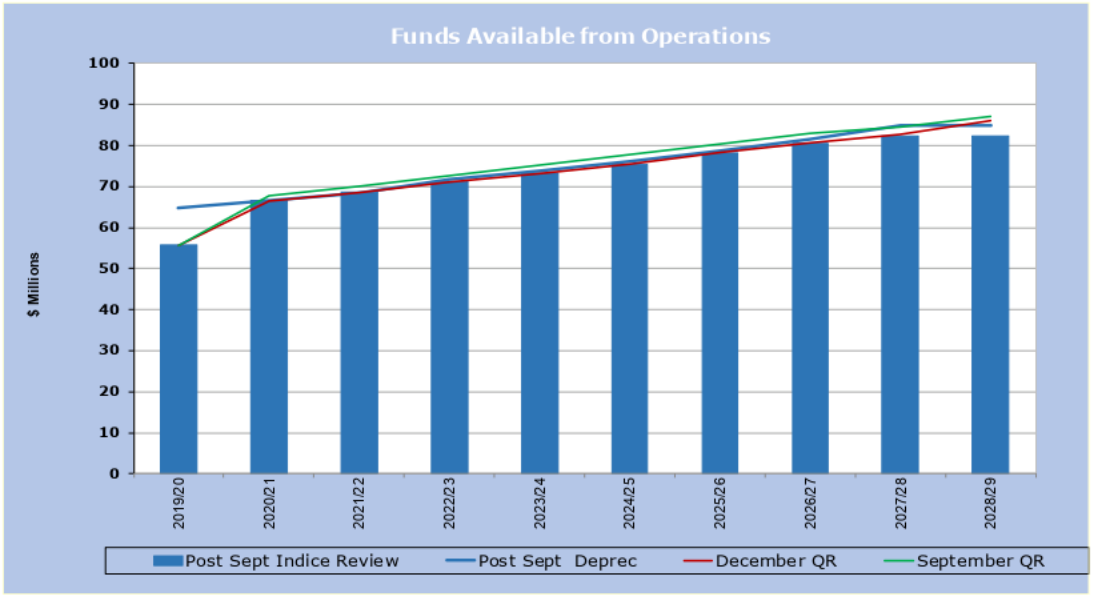
FUNDS AVAILABLE FROM OPERATIONS

The Funds Available from Operations is a primary objective of Council over time to provide for effective renewal of assets and growth in assets.

The following graph also shows forecast deprecation expenses compared to Funds Available from Operations. This is an important indicator as it demonstrates the capacity to generate sufficient funds from operations to meet asset renewal requirements. Revised forecasts at December generally indicate a continued achievement of this indicator with the exception of the last few years. These forecasts are preliminary and further analysis and development of these will be undertaken through the planning process.

Report of Chief Financial Officer

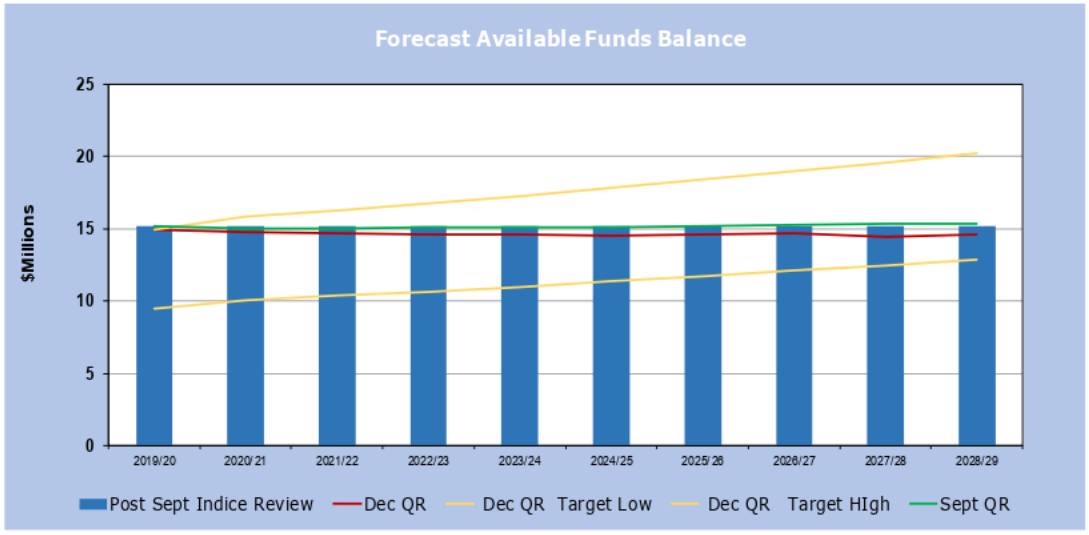
TABLE 4



AVAILABLE FUNDS

Available Funds are the uncommitted funds of an organisation that assist in meeting the short term cash requirements, provide contingency for unexpected costs or loss of revenue and provide flexibility to take advantage of opportunities that may arise from time to time. Council's Financial Strategy has a target to achieve and maintain an Available Funds position between 3.5% and 5.5% of operational revenue [pre capital]. Based on the Adopted Operational Plan and Delivery Program 2019-2022, the target range for Available Funds is between $9.6 million and $13.1 million (lower range) and $15.07 million and $20.6 million (upper range) over the life of the Long Term Financial Plan. The revised forecasts remain within these parameters.

TABLE 5



Report of Chief Financial Officer

6 Supporting Documents

Supporting document budgets were revised at the September Quarterly Review to include budgets for projects in progress at 30 June 2019 into the 2019-2020 forecasts. It was recognised at that time that this would create an ambitious target with potentially significant challenge organisationally for these projects to be delivered in full in the current reporting period. The current review has resulted in some minor budget adjustments to reflect expected timing. These will continue to be monitored and, where required, budget changes may be considered through the 2020-2021 Annual Planning process.

TABLE 6

Supporting Documents - Planning Studies & Investigations				
Service & Project	2019/20 Adopted Budget $000's	2019/20 Revised Forecast $000's	2019/20 Proposed Change $000's	Details
Land Use Planning	**1,139**	**1,008**	**(131)**	
West Dapto Review	286	288	2	
West Dapto Review Demographic and Economic Planning	119	119		
West Dapto Flood Risk Review #	182	182		
West Dapto Review Structure Plan	35	35		
West Dapto Review Specialist Consultants	73	0	(73)	Budget transferred to 2020/21
West Dapto Infrastructure Delivery Program Review #	45	45		
West Dapto DCP Review 2019	18	18		
Port Kembla 2505 Study	61	61		
Tourism Accommodation Review Planning Controls	25	25		
Heritage Asset Management Strategy	20	20		
Helensburgh Town Centre Planning Study	26	26		
Bulli Town Centre Planning Study	10	10		
City Centre Planning Review	120	120		
Development of Crown Land Plans of Management	120	60	(60)	Revised project costs
Communications, Engagement, Events and Signage	**70**	**70**	**0**	
Generic Event DA various sites	70	70		
Stormwater Services	**1,204**	**1,204**	**0**	
Floodplain Management Studies	102	102		
Review of Towradgi Creek FRMS	100	100		
Review of Hewitts Creek FRMS	100	100		
JJ Kelly Park Land Form Modification	15	15		
Review of Flood Studies & Floodplain Risk Mgmt Plans	81	81		
Duck Creek Flood Study	15	15		
Review of Collins Creek Flood Study	30	30		
Review of Allans Creek Flood Study	41	41		
Review of Wollongong City Flood Study	15	15		
Review of Fairy Cabbage Tree Creek Flood Study	80	80		
Kully Bay Flood Study	10	10		
Flood Risk Management Studies Best Practice	327	327		
Review of Allans Creek FRMS	40	40		
Review of Fairy Cabbage Creeks FRMS	40	40		
Investigation of Flood Mitigation Options	48	48		
ARR Testing	20	20		
Community Education	20	20		
DCP Review	20	20		
FLIA Automation	100	100		
Environmental Services	**13**	**58**	**45**	
Biocertification for West Dapto	13	13		
City Beach Dune Contamination Management		35	35	Introduction of new project funded internally
Climate Change Risk Assessment & Adaption Plan		10	10	Introduction of new project funded internally

Report of Chief Financial Officer

TABLE 6 (CONT)

Supporting Documents - Planning Studies & Investigations				
Service & Project	2019/20 Adopted Budget $000's	2019/20 Revised Forecast $000's	2019/20 Proposed Change $000's	Details
Transport Services	**568**	**502**	**(66)**	
Corrimal Traffic Study and Access Movement	16	41	25	Transfer of budget between projects
Accessible Car Parking and Bus Stops audit	67	42	(25)	Transfer of budget between projects
Access and Movement Strategy Review	38	38		
City Centre Parking Surveys - EMS Report	67		(67)	Budget transferred to 2020/21
Foreshore Parking Strategy	15	15		
City Centre Parking Strategy	40	28	(12)	Transfer of budget between projects
Bellambi Foreshore Precinct Plan	150	150		
Wollongong LGA Feasibility Studies	15	15		
Gwynneville/Keiraville Access & Movement Study		12	12	Transfer of budget between projects
Real Time Parking Information Signage	38	38		
Lake Illawarra Shared Path Masterplan	40	40		
Towradgi Creek Shared Path Feasibility Investigations	20	20		
Suburb/Place Name Signage Strategy	62	62		
Community Facilities	**73**	**73**	**0**	
Social Infrastructure Supporting Document	30	30		
Integrated Facilities Planning	9	9		
Facilities Planning Development	34	34		
Cultural Services	**120**	**120**	**0**	
Art Gallery 2nd Entrance Design	120	120		
Botanic Garden and Annexes	**21**	**21**	**0**	
Botanic Garden Masterplan/Asset Mgmt. Plan	1	1		
Mt Keira Summit Park	20	20		
Leisure Services	**97**	**97**	**0**	
Beaton Park Precinct Masterplan	97	97		
Parks and Sportsfields	**332**	**261**	**(71)**	
Cringila Hills Site Assessment	16	16		
Hill 60 CMP and Aboriginal HIL	50	50		
Blue Mile Masterplan - update	46		(46)	Budget transferred to 2020/21
Fred Finch Park - Landscape Masterplan	35	10	(25)	Budget transferred to 2020/21
Cringila Park Playground Design and Consultation	185	185		
Property Services	**55**	**55**	**0**	
Bulli Showground Masterplan	33	33		
Bulli Showground Master Plan Stage 2	22	22		
Total Expenditure *	3,692	3,469	(224)	

**Expenditure shown above is for full project cost. A number of projects are supported from external grant funds or internal restrictions*

 # Projects have been renamed to reflect planned outcome

Report of Chief Financial Officer

TABLE 7

WOLLONGONG CITY COUNCIL
DECEMBER 2019 QUARTERLY REVIEW

	2019/2020 Original Budget $'000	2019/2020 Current Budget $'000	2019/2020 Actual YTD $'000	2019/2020 Variance $'000	2019/2020 Proposed Budget $'000
Income Statement					
Income From Continuing Operations					
Revenue:					
Rates and Annual Charges	202,991	202,991	99,865	5	202,996
User Charges and Fees	33,665	33,634	15,559	(589)	33,044
Interest and Investment Revenues	4,882	3,688	2,073	139	3,827
Other Revenues	10,598	10,653	5,211	212	10,865
Grants & Contributions provided for Operating Purposes	20,840	21,954	11,825	504	22,459
Grants & Contributions provided for Capital Purposes	42,927	42,927	9,568	(9,470)	33,458
Profit/Loss on Disposal of Assets	0	(2,700)	306	730	(1,970)
Total Income from Continuing Operations	**315,903**	**313,148**	**144,407**	**(8,469)**	**304,679**
Expenses From Continuing Operations					
Employee Costs	134,742	136,309	67,161	437	136,746
Borrowing Costs	2,722	3,012	1,527	0	3,012
Materials, Contracts & Other Expenses	97,916	99,770	44,347	438	100,209
Depreciation, Amortisation + Impairment	66,276	64,776	29,740	(0)	64,776
Internal Charges (labour)	(17,558)	(17,957)	(6,733)	56	(17,901)
Internal Charges (not labour)	(1,694)	(1,694)	(820)	(17)	(1,711)
Total Expenses From Continuing Operations	**282,404**	**284,217**	**135,221**	**915**	**285,131**
Operating Results From Continuing Operations	**33,499**	**28,931**	**9,186**	**(9,384)**	**19,547**
Discontinued Operations					
Net Profit/Loss from Discontinued Operations	0	0	0	0	0
Net Operating Result for the Year	**33,499**	**28,931**	**9,186**	**(9,384)**	**19,547**
Net Operating Result for the Year before Grants & Contributions provided for Capital Purposes	**(9,429)**	**(13,996)**	**(382)**	**86**	**(13,910)**
NET SURPLUS (DEFICIT) [Pre capital] %	10.6%	9.2%	6.4%	110.8%	6.4%
Funding Statement					
Net Operating Result for the Year	**33,499**	**28,931**	**9,186**	**(9,384)**	**19,547**
Add back :					
- Non-cash Operating Transactions	84,272	85,932	38,535	(666)	85,266
- Restricted cash used for operations	16,491	19,460	7,706	878	20,338
- Income transferred to Restricted Cash	(63,420)	(64,283)	(21,759)	8,985	(55,298)
- Payment of Accrued Leave Entitlements	(14,162)	(14,331)	(6,307)	0	(14,331)
Net Share Joint Venture using Equity Method					
Funds Available from Operations	**56,680**	**55,708**	**27,361**	**(186)**	**55,522**
Borrowings repaid	(7,913)	(7,913)	(5,388)	0	(7,913)
Advances (made by) / repaid to Council	0	0	0	0	0
Operational Funds Available for Capital Budget	**48,767**	**47,795**	**21,973**	**(186)**	**47,609**
CAPITAL BUDGET					
Assets Acquired	(99,795)	(97,805)	(42,007)	0	(97,805)
Contributed Assets	(6,726)	(6,726)	0	0	(6,726)
Transfers to Restricted Cash	(1,431)	(5,431)	(4,835)	(785)	(6,216)
Funded From :-					
- Operational Funds	48,767	47,795	21,973	(186)	47,609
- Sale of Assets	1,292	1,292	479	785	2,077
- Internally Restricted Cash	14,029	11,127	1,728	0	11,127
- Borrowings	0	0	0	0	0
- Capital Grants	7,353	8,564	6,128	0	8,564
- Developer Contributions (Section 94)	16,867	17,553	1,433	0	17,553
- Other Externally Restricted Cash	3,490	3,531	572	0	3,531
- Other Capital Contributions	6,483	6,189	985	0	6,189
TOTAL FUNDS SURPLUS / (DEFICIT)	**(9,672)**	**(13,911)**	**(13,544)**	**(186)**	**(14,097)**

Report of Chief Financial Officer

TABLE 8

MAJOR VARIATIONS PROPOSED $'000s	Offsetting Items for Fund	Surplus	Deficit	Net by type
REVENUES FROM ORDINARY ACTIVITIES				
Rates & Annual Charges		5		**5**
User Charges & Fees				
Commercial Waste Income	(440)			
Household Drop Off Waste Income	(60)			
Development Assessment Income	200			
Income reclassified to Other Revenue	(212)			
Planning Certificate Income			(100)	
Leisure Centre Income		23		**(589)**
Interest and Investment Income				
Southern Phones Dividend Income	139			**139**
Other Revenue				
Income reclassified from User Fees & Charges	212			**212**
EXPENSES FROM ORDINARY ACTIVITIES				
Employee Costs				
Development Assessment Salaries	(150)			
Domestic Waste	(28)			
Reinstatement of budget incorrectly removed in prior periods			(226)	
Other			(33)	**(437)**
Materials, Contracts & Other Expenses				
Whytes Gully: EPA Levy Cover Material	525			
Whytes Gully: EPA Levy on disposed waste materials	175			
Whytes Gully: Operations	(200)			
State Library grant applied to projects	(40)			
Design Review Panel resourcing	(50)			
Supporting Documents & Studies	180	46		
Adjustments to funded projects				
Office Accommodation/Workspace Program	(200)			
Our Safety Our Way Program	(100)			
Mobility Implementation	(182)			
Sporting facility works	(543)			
Grand Pacific Walk – Free Water	(51)			
Community Safety CCTV	(39)			
Housing Acceleration Fund - West Dapto Road	(35)			
Reconciliation Conference - CFS	(30)			
CTWS - Travel Training Project	(26)			
Stormwater Quality Management	115			
Community Transport	91			
Other	(42)			
Other	(17)		(15)	**(438)**

Report of Chief Financial Officer

TABLE 8 (CONT)

MAJOR VARIATIONS PROPOSED $'000s	Offsetting Items for Fund	Surplus	Deficit	Net by type
Depreciation				-
Internal Charges				
Labour Cost to be recovered	(56)			
Correction of internal recoveries		17		(39)
Profit on Asset disposal				-
Southern Phone Shares Proceeds	785			
Southern Phone Shares carrying value	(55)			730
Grants & contribution - Operating				
McCauley's Beach Estate Maintenance	220			
West Dapto Housing Acceleration	81			
Grand Pacific Walk free water	51			
State Library Grant increase	40			
Fire Services Grant (offset for workers compensation increase in contribution)		97		
Other	16			505
Operating Variation [pre capital]	**274**	**188**	**(374)**	**88**
Capital Grants & Contributions				
Developer Contributions - West Dapto	(9,832)			
Developer Contributions - City Centre	361			(9,471)
Operating Variation [post capital]	**(9,197)**	**188**	**(374)**	**(9,383)**
FUNDING STATEMENT				
Non Cash Items				
Southern Phone Shares Disposal Profit	(730)			
Employee Entitlements	64			(666)
Payment of Leave Entitlements				-
Restricted Cash Used for Operations				
Funded project adjustments	878			
Other				878
Income Transferred to Restricted Cash				
Grants & contributions - Capital	9,471			
Grants & contributions - Operational	(408)			
Southern Phones Dividend	(139)			
Domestic Waste	28			
Other	33			8,985
Advances (made by)/repaid to Council				-
OPERATIONAL FUNDS AVAILABLE FOR CAPITAL	-	**188**	**(374)**	**(186)**
CAPITAL BUDGET				
Southern Phones Share Disposal Proceeds	785			
Transfer of Southern Phones share sale to restricted cash	(785)			-
TOTAL FUNDS SURPLUS/(DEFICIT)	-	**188**	**(374)**	**(186)**

Report of Chief Financial Officer

CAPITAL PROJECT REPORT
DECEMBER 2019 QUARTER

ASSET CLASS/PROGRAMME Description	$'000 CURRENT BUDGET EXPENDITURE	$'000 CURRENT BUDGET OTHER FUNDING	$'000 PROPOSED BUDGET EXPENDITURE	$'000 PROPOSED BUDGET OTHER FUNDING	YTD EXPENDITURE	$'000 VARIATION EXPENDITURE	$'000 VARIATION OTHER FUNDING
Roads And Related Assets							
Traffic Facilities	2,220	(330)	4,097	(1,428)	2,262	1,877	(1,098)
Public Transport Facilities	430	(50)	330	0	65	(100)	50
Roadworks	14,872	(2,605)	14,219	(2,371)	7,768	(653)	234
Bridges, Boardwalks and Jetties	1,895	0	1,895	0	295	(0)	0
TOTAL Roads And Related Assets	19,417	(2,985)	20,541	(3,799)	10,390	1,124	(814)
West Dapto							
West Dapto Infrastructure Expansion	16,739	(16,739)	16,749	(16,749)	10,277	10	(10)
TOTAL West Dapto	16,739	(16,739)	16,749	(16,749)	10,277	10	(10)
Footpaths And Cycleways							
Footpaths	8,735	(3,743)	8,785	(3,743)	3,920	50	0
Cycle/Shared Paths	3,065	(1,165)	2,995	(1,205)	1,151	(70)	(40)
Commercial Centre Upgrades - Footpaths and Cyclew	3,250	(40)	3,150	(40)	874	(100)	0
TOTAL Footpaths And Cycleways	15,050	(4,948)	14,930	(4,988)	5,944	(120)	(40)
Carparks							
Carpark Construction/Formalising	550	(190)	900	(190)	387	350	0
Carpark Reconstruction / Upgrading	1,477	(7)	1,227	(7)	376	(250)	0
TOTAL Carparks	2,027	(197)	2,127	(197)	763	100	0
Stormwater And Floodplain Management							
Floodplain Management	1,414	(160)	1,153	(160)	201	(261)	0
Stormwater Management	4,274	(380)	5,149	(380)	2,136	875	0
Stormwater Treatment Devices	786	(250)	822	(250)	327	36	(0)
TOTAL Stormwater And Floodplain M	6,474	(790)	7,124	(790)	2,665	650	0
Buildings							
Cultural Centres (IPAC, Gallery, Townhall)	1,998	0	1,998	0	312	(0)	0
Administration Buildings	1,821	(50)	1,821	(50)	172	(0)	0
Community Buildings	6,096	(349)	5,994	(387)	2,004	(102)	(38)
Public Facilities (Shelters, Toilets etc.)	420	0	400	0	56	(20)	0
Carbon Abatement	0	0	0	0	0	0	0
TOTAL Buildings	10,335	(399)	10,213	(437)	2,545	(122)	(38)
Commercial Operations							
Tourist Park - Upgrades and Renewal	1,390	0	1,550	0	1,253	160	0
Crematorium/Cemetery - Upgrades and Renewal	265	0	265	0	48	(0)	0
Leisure Centres & RVGC	280	0	280	0	8	0	0
TOTAL Commercial Operations	1,935	0	2,095	0	1,309	160	0
Parks Gardens And Sportfields							
Play Facilities	1,365	(325)	1,465	(425)	378	100	(100)
Recreation Facilities	401	(136)	401	(136)	31	0	0
Sporting Facilities	2,824	(865)	2,824	(865)	723	(0)	0
Lake Illawarra Foreshore	10	0	10	0	0	0	0
TOTAL Parks Gardens And Sportfield	4,600	(1,326)	4,700	(1,426)	1,132	100	(100)
Beaches And Pools							
Beach Facilities	384	0	384	0	75	(0)	0
Rock/Tidal Pools	3,030	0	3,030	0	2,223	(0)	0
Treated Water Pools	1,653	0	1,653	0	1,268	0	0
TOTAL Beaches And Pools	5,067	0	5,067	0	3,566	(0)	0

Report of Chief Financial Officer

CAPITAL PROJECT REPORT
DECEMBER 2019 QUARTER

ASSET CLASS/PROGRAMME Description	$'000 CURRENT BUDGET EXPENDITURE	$'000 CURRENT BUDGET OTHER FUNDING	$'000 PROPOSED BUDGET EXPENDITURE	$'000 PROPOSED BUDGET OTHER FUNDING	YTD EXPENDITURE	$'000 VARIATION EXPENDITURE	$'000 VARIATION OTHER FUNDING
Natural Areas							
Natural Area Management and Rehabilitation	50	0	50	0	0	(0)	0
TOTAL Natural Areas	50	0	50	0	0	(0)	0
Waste Facilities							
Whytes Gully New Cells	2,222	(2,222)	2,222	(2,222)	350	(0)	0
Whytes Gully Renewal Works	1,335	(1,335)	1,335	(1,335)	356	(0)	0
Helensburgh Rehabilitation	506	(506)	506	(506)	204	(0)	(0)
TOTAL Waste Facilities	4,063	(4,063)	4,063	(4,063)	1,110	(0)	0
Fleet							
Motor Vehicles	1,768	(517)	1,768	(517)	433	(0)	0
TOTAL Fleet	1,768	(517)	1,768	(517)	433	(0)	0
Plant And Equipment							
Portable Equipment (Mowers etc.)	125	(62)	127	(64)	43	2	(2)
Mobile Plant (trucks, backhoes etc.)	2,890	(737)	2,890	(737)	441	0	0
TOTAL Plant And Equipment	3,015	(800)	3,017	(802)	484	2	(2)
Information Technology							
Information Technology	1,005	(60)	1,005	(60)	106	(0)	0
TOTAL Information Technology	1,005	(60)	1,005	(60)	106	(0)	0
Library Books							
Library Books	1,221	0	1,221	0	788	(0)	0
TOTAL Library Books	1,221	0	1,221	0	788	(0)	0
Public Art							
Art Gallery Acquisitions	100	0	100	0	90	(0)	0
TOTAL Public Art	100	0	100	0	90	(0)	0
Emergency Services							
Emergency Services Plant and Equipment	52	0	60	0	23	8	0
TOTAL Emergency Services	52	0	60	0	23	8	0
Land Acquisitions							
Land Acquisitions	2,856	(2,556)	2,856	(2,556)	231	(0)	0
TOTAL Land Acquisitions	2,856	(2,556)	2,856	(2,556)	231	(0)	0
Non-Project Allocations							
Capital Project Contingency	1,007	0	79	0	0	(928)	0
Capital Project Plan	(0)	0	20	0	10	20	0
TOTAL Non-Project Allocations	1,007	0	99	0	10	(908)	0
Not Applicable							
Not Applicable	0	0	0	0	(21)	0	0
TOTAL Not Applicable	0	0	0	0	(21)	0	0
GRAND TOTAL	36,781	(35,381)	37,785	(36,385)	42,007	1,004	(1,004)

Report of Chief Financial Officer

WOLLONGONG CITY COUNCIL

Balance Sheet

	Actual 2019/20 $'000	Actual 2018/19 $'000
Current Assets		
Cash Assets	**28,253**	25,187
Investment Securities	**121,600**	114,579
Receivables	**30,817**	36,620
Inventories	**415**	337
Other	**14,952**	11,879
Assets classified as held for sale	**0**	0
	0	0
Total Current Assets	**196,036**	188,602
Non-Current Assets		
Non Current Cash Assets	**8,000**	15,000
Non Current Investment Securities	**56**	56
Non-Current Receivables	**0**	0
Non-Current Inventories	**5,948**	5,948
	0	0
Property, Plant and Equipment	**2,571,061**	2,565,095
Investment Properties	**5,000**	5,000
Westpool Equity Contribution	**2,931**	2,931
Intangible Assets	**425**	440
Total Non-Current Assets	**2,593,420**	2,594,470
TOTAL ASSETS	**2,789,456**	2,783,072
Current Liabilities		
Current Payables	**36,208**	35,020
Current Provisions payable < 12 months	**15,460**	14,697
Current Provisions payable > 12 months	**43,517**	43,517
Current Interest Bearing Liabilities	**7,934**	7,934
Total Current Liabilities	**103,118**	101,168
Non-Current Liabilities		
Non Current Payables	**0**	385
Non Current Interest Bearing Liabilities	**16,310**	17,497
Non Current Provisions	**47,539**	47,054
Total Non-Current Liabilities	**63,849**	64,936
TOTAL LIABILITIES	**166,967**	166,104
NET ASSETS	**2,622,489**	2,616,968
Equity		
Accumulated Surplus	**1,328,859**	1,324,990
Asset Revaluation Reserve	**1,153,123**	1,153,123
Restricted Assets	**140,508**	138,856
TOTAL EQUITY	**2,622,489**	2,616,968

Report of Chief Financial Officer

The following tables provide details of contracts (other than contractors that are on Council's preferred supplier list that have a value equivalent of 1% of estimated income from continuing operations or $50 thousand, whichever is the lesser) and amounts expended on consultancies and legal fees for financial year. Consultants are defined as a person or organisation that is engaged under contract on a temporary basis to provide recommendations or high level specialist or professional advice to assist decision making by management. Generally, it is the advisory nature of the work that differentiates a consultant from other.

Contract Listing
Budget Review for Quarter ended December 2019

Contractor	Contract Detail & Purpose	Contract Value $000's	Commencement Date	Duration of Contract	Budgeted Y/N
Cadifern Pty Ltd	Iris Avenue Divided Carriageway Retaining Wall - Stage 2	760	4/11/2019	2019/20	Y
Growth Civil Landscapes Pty Limited	Off-road Retaining Wall - Bellevue Rd to Outlook Dr Figtree	151	5/11/2019	2019/20	Y
Cadifern Pty Ltd	Wongawilli Road - Watermain Installation	421	21/11/2019	2019/20	Y
Interflow Pty Ltd	Pipe Relining - 16 Medway Drive	179	9/12/2019	2019/20	Y
Sullivans Construction	Kitchen Refurbishment - Ribbonwood Kurrajong Hall 1	154	16/12/2019	2019/20	Y

Consultancy and Legal Expenses
Budget Review for Quarter ended December 2019

Expense	Expenditure YTD $000's	Budgeted (Y/N)
Consultancies	2,459	YES
Legal Fees	289	YES

STATEMENT OF RESPONSIBLE ACCOUNTING OFFICER

All investments held at 27 December 2019 were invested in accordance with Council's Investment Policy.

Bank reconciliations have been completed as at 27 December 2019.

Year to date cash and investments are reconciled with funds invested and cash at bank.

BRIAN JENKINS
RESPONSIBLE ACCOUNTING OFFICER

APPENDIX 1: Annual Deliverables Progress By 3 Year Action – Delivery Program 2018 - 2021

Goal	On track	Not Scheduled to Commence	Delayed	Deferred	Ongoing / Complete
1.1.1.1 Implement programs and events which facilitate community participation to improve natural areas	100%	0%	0%	0%	0%
1.1.1.2 Projects and programs that achieve enhancement of the natural environment and escarpment are developed and implemented	78%	11%	11%	0%	0%
1.1.2.1 Protect and conserve the health and biodiversity of our waterways and coast	80%	0%	20%	0%	0%
1.1.2.2 The impacts of the increasing number of visitors to the coast and Lake Illawarra is managed effectively	100%	0%	0%	0%	0%
1.1.3.1 Manage vegetation to reduce bushfire risk in Asset Protection Zones on natural areas under Council care and control	100%	0%	0%	0%	0%
1.1.3.2 Establish effective urban stormwater and floodplain management programs	100%	0%	0%	0%	0%
1.2.1.1 Develop and implement a range of programs that encourage community participation in reducing Wollongong's ecological footprint	75%	25%	0%	0%	0%
1.2.1.2 Promote and enforce compliance with litter reduction	100%	0%	0%	0%	0%
1.2.1.3 Methods to reduce emissions are investigated and utilised	100%	0%	0%	0%	0%
1.2.2.1 Our community is proactively engaged in a range of initiatives that improve the sustainability of our environments	100%	0%	0%	0%	0%

APPENDIX 1: Annual Deliverables Progress By 3 Year Action – Delivery Program 2018 - 2021

Goal	On track	Not Scheduled to Commence	Delayed	Deferred	Ongoing / Complete
1.3.1.1 Impacts from development on the environment are assessed, monitored and mitigated	100%	0%	0%	0%	0%
1.3.1.2 Develop planning controls and Town Centre and Neighbourhood Plans with regard to the economic, social and environmental impacts	60%	40%	0%	0%	0%
1.3.2.1 Carry out best practise assessment for urban development proposals and applications	100%	0%	0%	0%	0%
1.3.2.2 Mitigate the impact of development on the natural environment and visual amenity of our open spaces and urban areas	100%	0%	0%	0%	0%
1.4.1.1 Work in partnership with others to promote a diverse range of heritage education and promotion programs	100%	0%	0%	0%	0%
1.4.2.1 Work with the local Aboriginal community in the management of Indigenous heritage	100%	0%	0%	0%	0%
1.5.1.1 Set an emissions reduction target and carry out actions to reduce greenhouse gas emissions through the Global Covenant of Mayors	33%	0%	33%	0%	33%
2.1.1.1 Build on partnerships which enable the retention of local talent	67%	33%	0%	0%	0%
2.1.2.1 Ensure that Wollongong is attractive for business expansion, establishment and relocation.	100%	0%	0%	0%	0%
2.1.2.2 Progress implementation of the City for People and its accompanying Implementation Plan	100%	0%	0%	0%	0%

APPENDIX 1: Annual Deliverables Progress By 3 Year Action – Delivery Program 2018 - 2021

Goal	On track	Not Scheduled to Commence	Delayed	Deferred	Ongoing / Complete
2.1.3.1 Support regional activities and partnerships that promote business investment and jobs growth	100%	0%	0%	0%	0%
2.1.4.1 Develop and maintain partnerships with the business sector to fund and contribute to a broader range of community projects and activities	100%	0%	0%	0%	0%
2.1.5.1 In collaboration with key agencies, facilitate the West Dapto Taskforce to deliver the first stages of the West Dapto Urban Release Area	100%	0%	0%	0%	0%
2.2.1.1 The development of renewable energy products and services is supported	100%	0%	0%	0%	0%
2.2.1.2 Partnership opportunities in research and development are expanded	100%	0%	0%	0%	0%
2.2.2.1 In conjunction with partner organisations support the development of innovative industries	100%	0%	0%	0%	0%
2.2.3.1 Undertake major refurbishment works in the city centre	100%	0%	0%	0%	0%
2.3.1.1 Pursue initiatives that promote the region as a place to holiday to domestic and international markets	67%	17%	17%	0%	0%
2.3.1.2 Support projects that investigate opportunities for the provision of tourism infrastructure	100%	0%	0%	0%	0%
2.3.2.1 Market and promote events in the city centre	100%	0%	0%	0%	0%

APPENDIX 1: Annual Deliverables Progress By 3 Year Action – Delivery Program 2018 - 2021

Goal	On track	Not Scheduled to Commence	Delayed	Deferred	Ongoing / Complete
2.3.2.3 Improve policies and systems to support the revitalisation of the city centre	100%	0%	0%	0%	0%
2.3.3.1 Continue to grow Wollongong's attractiveness to attract signature events and festivals	100%	0%	0%	0%	0%
2.4.1.1 Ensure Wollongong is attractive to research and development companies and organisations	100%	0%	0%	0%	0%
2.4.1.2 Implement a range of programs that incorporate learning and development	100%	0%	0%	0%	0%
2.4.2.1 Implement programs to ensure Wollongong becomes a Smart City	100%	0%	0%	0%	0%
3.1.1.1 Promote Made in Wollongong to become a well-known brand	0%	0%	100%	0%	0%
3.1.1.2 The visibility of our cultural diversity is increased	100%	0%	0%	0%	0%
3.1.1.3 Encourage the integration of urban design and public art	75%	0%	25%	0%	0%
3.1.1.4 Deliver sustainable and successful events and festivals through Council investment and delivery of the Events Strategy	83%	17%	0%	0%	0%
3.1.1.5 Encourage Sports Associations to conduct regional, state and national events in the city	50%	0%	50%	0%	0%

APPENDIX 1: Annual Deliverables Progress By 3 Year Action – Delivery Program 2018 - 2021

Goal	On track	Not Scheduled to Commence	Delayed	Deferred	Ongoing / Complete
3.1.2.1 Provide opportunities for local artists and performers to exhibit, promote and perform at Council venues and events	100%	0%	0%	0%	0%
3.2.1.1 Provide support to existing and emerging artists and performers	100%	0%	0%	0%	0%
3.2.1.2 Seek funding for the promotion of heritage sites, museums and galleries to the community and visitors	100%	0%	0%	0%	0%
3.2.2.1 Coordinate an integrated approach to infrastructure improvement and service delivery in the Arts Precinct	50%	0%	50%	0%	0%
3.2.3.1 Support the coordination of an externally funded calendar of activities delivered across the City	100%	0%	0%	0%	0%
3.3.2.1 Deliver and support a range of projects and programs which build harmony, understanding and cultural awareness	100%	0%	0%	0%	0%
4.1.1.1 Ensure an effective community engagement framework that connects the community to Council decision making	83%	0%	0%	0%	17%
4.1.1.2 Improve community understanding and awareness of Council decisions	100%	0%	0%	0%	0%
4.1.2.1 Ensure the NBN is rolled out across the Wollongong LGA	100%	0%	0%	0%	0%
4.1.3.1 Council continue to partner with our local Aboriginal community	100%	0%	0%	0%	0%

APPENDIX 1: Annual Deliverables Progress By 3 Year Action – Delivery Program 2018 - 2021

Goal	On track	Not Scheduled to Commence	Delayed	Deferred	Ongoing / Complete
4.2.1.1 Increase opportunities for the community to connect with volunteering organisations	100%	0%	0%	0%	0%
4.2.1.2 Support community participation in community activities	100%	0%	0%	0%	0%
4.2.1.3 Build the capability of community based organisations in managing, developing and sustaining their volunteers	100%	0%	0%	0%	0%
4.2.2.1 Continue to participate and contribute to an integrated community service network	100%	0%	0%	0%	0%
4.2.3.1 Support a range of projects and programs in the city	100%	0%	0%	0%	0%
4.3.1.1 Ensure appropriate strategies and systems are in place that support good corporate governance	100%	0%	0%	0%	0%
4.3.1.2 Build a workplace culture that is safe, engaged, responsive and professional	88%	13%	0%	0%	0%
4.3.2.1 Effective and transparent financial management systems are in place	100%	0%	0%	0%	0%
4.3.2.2 Continue to pursue alternative funding options to deliver financially sustainable services and facilities	100%	0%	0%	0%	0%
4.3.2.3 Improve the efficiency of supply management in order to achieve operational efficiencies	100%	0%	0%	0%	0%

APPENDIX 1: Annual Deliverables Progress By 3 Year Action – Delivery Program 2018 - 2021

Goal	On track	Not Scheduled to Commence	Delayed	Deferred	Ongoing / Complete
4.3.2.4 Deliver the Asset Management Strategy and Improvement Plan 2012-17	100%	0%	0%	0%	0%
4.3.3.1 Coordinate a service review program with a focus on business development and improvement	100%	0%	0%	0%	0%
4.3.3.2 Working together, levels of service are established and service continuously improve and offer best value for money	100%	0%	0%	0%	0%
5.1.1.1 Partner with community based organisations in the provision of services	100%	0%	0%	0%	0%
5.1.1.2 Continue to undertake social, land use and environmental planning activities that assists in service planning	88%	0%	13%	0%	0%
5.1.2.1 Partner with agencies and health authorities to support improvements to the region's medical services	100%	0%	0%	0%	0%
5.1.3.1 Deliver a diverse suite of projects to the community that foster and enhance community strenghts and participation	100%	0%	0%	0%	0%
5.1.3.2 Carry out commercial business management of Council's operational lands	100%	0%	0%	0%	0%
5.1.4.1 Provide an appropriate and sustainable range of quality passive and active open spaces and facilities	92%	0%	8%	0%	0%
5.1.4.2 Review planning controls for priority locations	100%	0%	0%	0%	0%

APPENDIX 1: Annual Deliverables Progress By 3 Year Action – Delivery Program 2018 - 2021

Goal	On track	Not Scheduled to Commence	Delayed	Deferred	Ongoing / Complete
5.1.4.3 Policies and plans are developed, reviewed and implemented to encourage physical activity	100%	0%	0%	0%	0%
5.1.4.4 Develop and implement public health, amenity and safety regulatory programs and reviews that assist in improving compliance with legislative requirements	100%	0%	0%	0%	0%
5.1.5.1 Increase opportunities to enhance library multimedia and online services	100%	0%	0%	0%	0%
5.1.5.2 Renew community facilities and consider rationalisation, replacement or refurbishment to achieve facilities that are strategically located, good quality and meet identified community need	50%	0%	0%	0%	0%
5.1.6.1 Facilitate a range of programs and activities which improve food security and support local food systems	0%	0%	0%	100%	0%
5.2.1.1 Investigate provision of Leisure Services in the greater Dapto area, taking into account expansion of West Dapto, and determine Council's role in the market	100%	0%	0%	0%	0%
5.2.1.2 Investigate the future provision of Aquatic Services across the local government area and implement improvements	100%	0%	0%	0%	0%
5.2.1.3 Use data to assess the current community infrastructure available, community demand and develop a strategic framework and policies to either rationalise, enhance or expand to meet community needs	100%	0%	0%	0%	0%
5.2.1.4 Develop a Regional Botanic Garden of Excellance	100%	0%	0%	0%	0%

APPENDIX 1: Annual Deliverables Progress By 3 Year Action – Delivery Program 2018 - 2021

Goal	On track	Not Scheduled to Commence	Delayed	Deferred	Ongoing / Complete
5.2.1.5 Provide statutory services to appropriately manage and maintain our public spaces	80%	0%	0%	0%	20%
5.2.1.6 Implement Council's Planning, People, Places Strategy	33%	0%	33%	33%	0%
5.2.2.1 Deliver a range of programs and recreational pursuits for older people	100%	0%	0%	0%	0%
5.3.1.1 Prepare a Housing Study and Strategy incorporating Affordable Housing Issues	100%	0%	0%	0%	0%
5.3.2.1 In partnership with relevant agencies and networks lobby and advocate for improved service levels and quality enhanced access to services	100%	0%	0%	0%	0%
5.4.1.1 Provide lifeguarding services at beaches (in partnership with Surf Life Saving Illawarra) and Council pools	100%	0%	0%	0%	0%
5.4.1.2 Facilitate a range of partnerships and networks to develop community safety initiatives	100%	0%	0%	0%	0%
5.4.2.1 Delivery projects and programs to reduce crime in the Wollongong Local Government Area	100%	0%	0%	0%	0%
5.5.1.1 Well maintained assets are provided that meet the needs of the current and future communities	100%	0%	0%	0%	0%
5.5.1.2 Manage and maintain community infrastructure portfolio with a focus on asset renewal	100%	0%	0%	0%	0%

APPENDIX 1: Annual Deliverables Progress By 3 Year Action – Delivery Program 2018 - 2021

Goal	On track	Not Scheduled to Commence	Delayed	Deferred	Ongoing / Complete
5.5.1.3 Coordinate an access improvement program through pre-planning and renewal activities	100%	0%	0%	0%	0%
6.1.1.1 Support the delivery of the Gong Shuttle Bus as an affordable transport option	100%	0%	0%	0%	0%
6.1.2.1 Implement a variety of projects and programs to encourage sustainable transport throughout the LGA	100%	0%	0%	0%	0%
6.1.3.1 Plan and implement an integrated and sustainable transport network	100%	0%	0%	0%	0%
6.1.4.1 Facilitate the integration of public amenities and transport with local communities	100%	0%	0%	0%	0%
6.2.1.1 Work with partners to reduce travel time between Sydney and Western Sydney with Wollongong	100%	0%	0%	0%	0%
6.3.1.1 Plan and implement projects to improve connectivity	83%	0%	0%	0%	17%
6.3.2.1 Deliver sustainable transport asset renewal programs and projects	100%	0%	0%	0%	0%
6.3.3.1 Investigate the option for disruptive transport technologies and the impact on the future transport network	100%	0%	0%	0%	0%
6.3.4.1 Work with key agencies and partners to continue and improve late night transport options	100%	0%	0%	0%	0%

APPENDIX 1: Annual Deliverables Progress By 3 Year Action – Delivery Program 2018 - 2021

Goal	On track	Not Scheduled to Commence	Delayed	Deferred	Ongoing / Complete
6.3.5.1 Develop an alternative service delivery, governance model and auspice for Community Transport in response to the Federal Government's Aged Care reform legislation	100%	0%	0%	0%	0%
Total Annual Deliverable Progress	92%	3%	3%	1%	1%

File: FI-230.01.554 Doc: IC20/30

ITEM 9 TENDER T19/38 - IVR, WEB AND PARKING PAYMENT SERVICES

This report recommends acceptance of a tender for provision of Interactive Voice Response (IVR), Web and Parking Payment Services in accordance with the requirements of the Local Government Act 1993 and the Local Government (General) Regulation 2005. This service allows customers to pay their accounts over the telephone (IVR), web and make parking meter payments using their bank accounts or credit cards.

The current contract for the provision of IVR, Web and Parking Payment Services for Council and parking meters is due for expiration. Two conforming tenders were received, and the report recommends Council accept the tender submitted by the Commonwealth Bank of Australia.

RECOMMENDATION

1 In accordance with the Local Government (General) Regulation 2005, Clause 178 (1) (a), Council accept the tender of Commonwealth Bank of Australia for the provision of IVR, Web and Parking Payment services for the approximate sum of $449,046.60, excluding GST, in accordance with the priced schedule of the service, for the period of three years.

2 Council delegates to the General Manager the authority to finalise and execute the contract and any other documentation required to give effect to this resolution.

3 Council grant authority for the use of the Common Seal of Council on the contract and any other documentation, should it be required to give effect to this resolution.

REPORT AUTHORISATIONS

Report of: Brian Jenkins, Chief Financial Officer
Authorised by: Renee Campbell, Director Corporate Services - Connected + Engaged City

ATTACHMENTS

There are no attachments for this report.

BACKGROUND

The current contract for the provision of IVR, Web and Parking Payment Services for Council and parking meters is due for expiration. Council has gone to tender for the provision of these services for the next three years.

Two conforming tenders were received by the close of tender and all tenders have been scrutinised and assessed by a Tender Assessment Panel constituted in accordance with Council's Procurement Policies and Procedures and comprising representatives of Finance, Governance and Information and Property and Recreation Divisions.

The Tender Assessment Panel assessed all tenders in accordance with the following assessment criteria as set out in the formal tender documents:

1 Cost to Council

2 Implementation plan for the telephone, web and parking payment services

3 Demonstrated satisfactory experience in provision of telephone, web and parking payment services with a large organisation

4 Qualifications and experience of key personnel proposed to be engaged in relation with this contract

5 Efficiencies and innovation within system (eg Variation and adding new services)

6 Demonstrated strengthening of local economic capacity

7 Referees

8 PCI Compliance 3.2

9 APRA

10 Financial capacity

The Tender Assessment Panel utilised a weighted scoring method for the assessment of tenders which allocates a numerical score out of five in relation to the level of compliance offered by the tenders to each of the assessment criteria as specified in the tender documentation. The method then takes into account pre-determined weightings for each of the assessment criteria which provides for a total score out of five to be calculated for each tender. The tender with the highest total score is considered to be the tender that best meets the requirements of the tender documentation in providing best value to Council. Table 1 below summarises the results of the tender assessment and the ranking of tenders.

Tenderer	Rank of Tender
Commonwealth Bank of Australia	1
Windcave Pty Ltd	2

PROPOSAL

It is proposed that Council award the Commonwealth Bank of Australia to carry out the provision of IVR, Web and Parking Payment Services in accordance with the scope of works and technical specifications developed for the project.

The recommended tenderer has satisfied the Tender Assessment Panel that it is capable of undertaking the works to Council's standards and in accordance with the technical specification.

CONSULTATION AND COMMUNICATION

Members of the Tender Assessment Panel

PLANNING AND POLICY IMPACT

This report contributes to the delivery of Our Wollongong 2028 goal "We are a connected and engaged community".

It specifically delivers on core business activities as detailed in the Financial Services Service Plan 2019-20.

RISK ASSESSMENT

The risk in accepting the recommendation of this report is considered low on the basis that the tender process has fully complied with Council's Procurement Policies and Procedures and the Local Government Act 1993.

FINANCIAL IMPLICATIONS

The recommended tender amount is within budget for this service.

CONCLUSION

It is recommended Council endorses the preferred tenderer as outlined in this report.

File: FI-230.01.560 Doc: IC20/19

ITEM 10 TENDER T19/43 - CULVERT REPAIRS AT DARKES ROAD, DAPTO - STAGE 2

This report recommends acceptance of a tender for the Culvert Repairs at Darkes Road, Dapto – Stage 2 in accordance with the requirements of the Local Government Act 1993 and the Local Government (General) Regulation 2005.

Tenders were sought from experienced Contractors for the internal concrete repairs to an existing three cell culvert under Darkes Road at Dapto.

RECOMMENDATION

1 In accordance with clause 178 (1) (a) of the Local Government (General) Regulation 2005, Council accept the tender of Eywad Pty Ltd for Culvert Repairs at Darkes Road, Dapto – Stage 2, in the sum of $289,198.50, excluding GST.

2 Council delegate to the General Manager the authority to finalise and execute the contract and any other documentation required to give effect to this resolution.

3 Council grant authority for the use of the Common Seal of Council on the contract and any other documentation, should it be required, to give effect to this resolution.

REPORT AUTHORISATIONS

Report of: Glenn Whittaker, Manager Project Delivery
Authorised by: Andrew Carfield, Director Infrastructure + Works - Connectivity Assets + Liveable City

ATTACHMENTS

1 Location Plan

BACKGROUND

The need for repair and strengthening works was identified by Council staff in order to address the degradation of the existing stormwater infrastructure adjacent to Lot 402 Darkes Road and the Princes Highway, Dapto. Damage and wear to the structure has resulted in concrete spalling away from the reinforcement in some areas leaving the exposed reinforcement to corrode further. Detailed design analysis also determined the structure was considered under strength when compared to current maximum load capacity standards. This assessment informed the proposed detailed design solution which comprises a scope of works including rehabilitation and augmentation (where required) of existing corroded reinforcement, the addition of a 100mm thick reinforced concrete layer to the culvert soffit using shotcreting and general patch repairs to identified areas of degraded concrete and reinforcement. It is expected that the proposed works will prolong the life of the structure without the need for complete replacement.

Works initially commenced in early 2019 in accordance with the scope described above. The walls of two (2) of the three (3) cells of the culvert were completed before microbats were discovered to be roosting within crevices in the soffits of the culvert. These microbats are listed as vulnerable and protected under the Biodiversity Act 2016 which resulted in works being suspended and subsequently termination of the initial contract.

A management plan prepared by a specialist consultant to manage the microbats during construction has now been developed which addresses the timing of works and the creation of alternative habitats both during and after works. Key to the project outcomes is that the works are completed in a timely manner and in conjunction with a specialist Consultant assisting in the management (exclusion) of microbats during construction.

The works for this ‘second stage’ of the project entails the completion of the repairs to the remaining internal surface of the three (3) cells and specifically includes cleaning and assessment of the internal

culvert surfaces, defective concrete breakout, existing reinforcement cleaning and augmentation, installation of new reinforcement and the application of repair mortar to the internal surfaces.

Tenders were invited for this project by the open tender method with a close of tenders of 10.00 am on Thursday, 19 December 2019.

Seven (7) tenders were received by the close of tenders and all tenders have been scrutinised and assessed by a Tender Assessment Panel constituted in accordance with Council's Procurement Policies and Procedures and comprising representatives of the Project Delivery, Infrastructure Strategy and Planning and Governance and Customer Service Divisions.

The Tender Assessment Panel assessed all tenders in accordance with the following assessment criteria and weightings as set out in the formal tender documents:

Mandatory Criteria

1 Satisfactory references from referees for previous projects of similar size and scope

Assessable Criteria

1 Cost to Council – 40%

2 Appreciation of Scope of works and construction methodology – 15%

3 Experience and satisfactory performance in undertaking projects of similar size, scope and risk profile – 5%

4 Staff qualifications and experience – 5%

5 Proposed sub-contractors – 5%

6 Project schedule – 10%

7 Demonstrated strengthening of local economic capacity – 5%

8 Workplace Health and Safety Management System – 5%

9 Environmental Management Policy and Procedures – 10%

The mandatory assessment criteria has been met by the recommended tenderer.

The Tender Assessment Panel utilised a weighted scoring method for the assessment of tenders which allocates a numerical score out of 5 in relation to the level of compliance offered by the tenders to each of the assessment criteria as specified in the tender documentation. The method then takes into account pre-determined weightings for each of the assessment criteria which provides for a total score out of 5 to be calculated for each tender. The tender with the highest total score is considered to be the tender that best meets the requirements of the tender documentation in providing best value to Council. Table 1 below summarises the results of the tender assessment and the ranking of tenders.

TABLE 1 – SUMMARY OF TENDER ASSESSMENT

Name of Tenderer	Ranking
Eywad Pty Ltd	1
Silver Raven Pty Ltd	2
Donnelley Civil Pty Ltd	3
The RIX Group	4
SRG Global Services (Australia) Pty Ltd	5
Interflow Pty Ltd	6
Concrete Protection and Repair Services	7

PROPOSAL

Council should authorise the engagement of Eywad Pty Ltd to carry out the Culvert Repairs at Darkes Road, Dapto – Stage 2 works in accordance with the scope of works and technical specifications developed for the project.

The recommended tenderer has satisfied the Tender Assessment Panel that it is capable of undertaking the works to Council's standards and in accordance with the technical specification.

Referees nominated by the recommended tenderer have been contacted by the Tender Assessment Panel and expressed satisfaction with the standard of work and methods of operation undertaken on their behalf.

CONSULTATION AND COMMUNICATION

1 Members of the Tender Assessment Panel

2 Nominated Referees

PLANNING AND POLICY IMPACT

This report contributes to the delivery of Our Wollongong 2028 goal 5 "We have a healthy community in a liveable city".

It specifically delivers on core business activities as detailed in the Infrastructure Planning and Support Service Plan 2019-20.

RISK ASSESSMENT

The risk in accepting the recommendation of this report is considered low on the basis that the tender process has fully complied with Council's Procurement Policies and Procedures and the Local Government Act 1993.

The risk of the project works or services is considered medium based upon Council's risk assessment matrix and appropriate risk management strategies will be implemented.

FINANCIAL IMPLICATIONS

It is proposed that the total project be funded from the following source/s as identified in the Annual Plan –

2019/20 Capital Budget

CONCLUSION

The recommended tenderer has submitted an acceptable tender for this project and Council should endorse the recommendations of this report.

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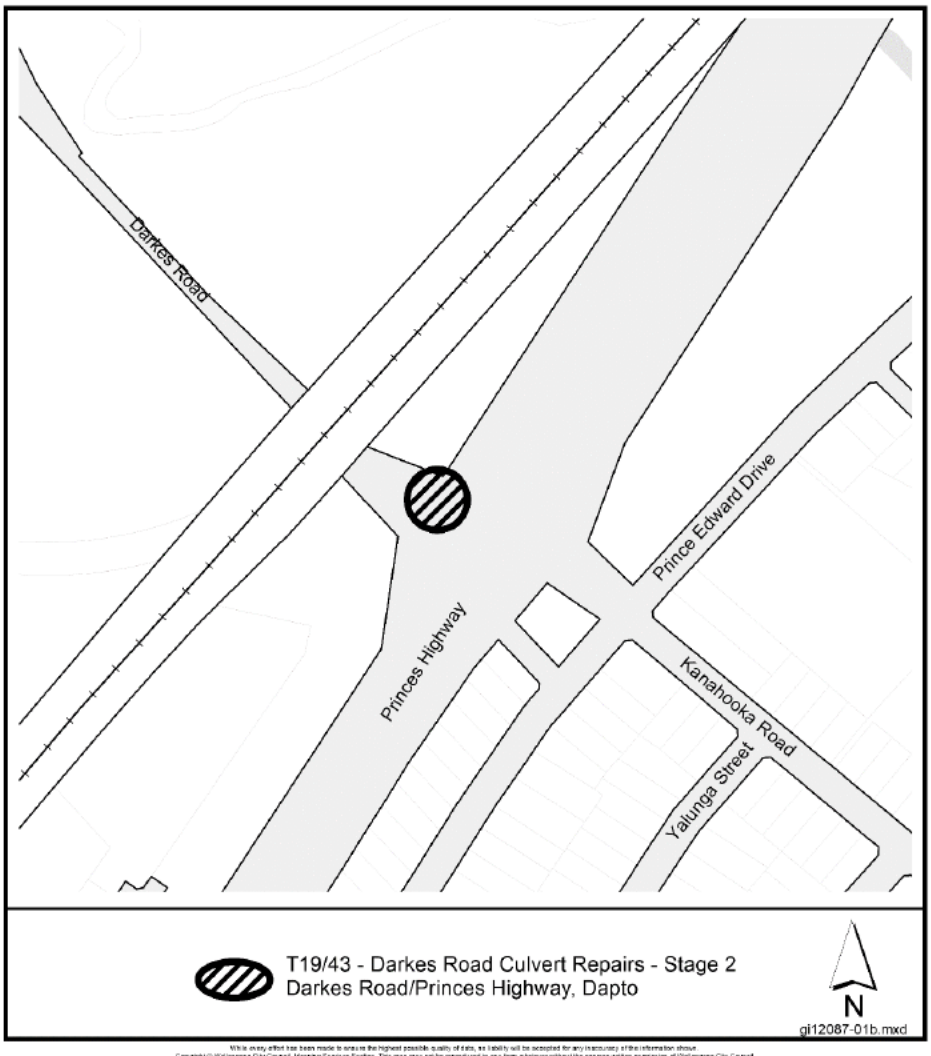

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File: LCS-160.35.026 Doc: IC20/38

ITEM 11 PROCUREMENT POLICY EXEMPTION - CAB CHARGE AUSTRALIA LIMITED

This report seeks Council approval for exemption from the Procurement Procedures Management Policy in relation to the purchase of e-ticket services from Cab Charge Australia Limited, for Council's Community Transport Program. The request for exemption affords compliance with Section 55(3)(i) of the Local Government Act 1993.

RECOMMENDATION

Council under Section 55 (3)(i) of the Local Government Act 1993, enters into an agreement with Cab Charge Australia Ltd without inviting tenders, due to the unavailability of competitive or reliable tenders and otherwise, for the reasons set out in this report.

REPORT AUTHORISATIONS

Report of: Jenny Thompson, Director Community Services - Creative + Innovative City (Acting)
Authorised by: Kerry Hunt, Director Community Services - Creative and Innovative City

ATTACHMENTS

There are no attachments for this report.

BACKGROUND

Council's Community Transport: Wollongong-Shellharbour (CT:W-S) service provides a variety of affordable transport options to eligible, older people in the community to support their continued independence and well-being. The service is funded under the Commonwealth Home Support Program and administered by Transport for NSW.

CT:W-S delivered 117,405 community transport trips during 2018/2019, with up to 50% of those trips delivered via a subsidised taxi-transport program.

In seeking business efficiencies and innovation and in response to enhanced data reporting requirements from Transport for NSW, CT:W-S piloted the use of e-tickets as an alternative to the existing, paper-based taxi voucher system, during the second half of 2019. The pilot was highly successful, delivering benefits for both Council and community transport customers.

Illawarra Taxi Network, Council's supplier of taxi services, has an exclusive partnership with Cab Charge Australia for the provision of e-ticket services.

PROPOSAL

It is proposed that Council purchases e-ticket services from Cab Charge Australia Ltd. As the value of the proposed purchase, on a cumulative basis, is anticipated to be greater than $150,000 per annum, an exemption to deviate from Council's Procurement Policy, based on "the unavailability of competitive or reliable tenders" is proposed.

The request for exemption from Council's Procurement Policy is based on the following criteria:

- Cab Charge Australia Ltd is the only provider of e-tickets which are accepted by taxi services within the Wollongong and Shellharbour Local Government areas.
- Council currently has a contract with Illawarra Taxi Network until June 2020 (with provision for extension) which was procured via a competitive tender for delivery of taxi services to Council, that was conducted in February 2019.

CONSULTATION AND COMMUNICATION

Internal

- Legal Services Unit – Local Government Act provisions
- Governance and Customer Service Division (Supply Chain and Logistics Unit) – Procurement Policy and Procedures
- Information Technology - access to Cab Charge portal

External

- Transport for NSW
- Illawarra Taxi Network
- Cab Charge Australia
- Community Transport: Wollongong-Shellharbour customers

PLANNING AND POLICY IMPACT

This report contributes to the delivery of Our Wollongong 2028:

- Goal 5 – We have a healthy community in a liveable city, and
- Goal 6 - We have affordable and accessible transport.

It specifically delivers on the following:

Community Strategic Plan	Delivery Program 2018-2021	Annual Plan 2018-19
Strategy	3 Year Action	Annual Deliverables
5.2.2 Healthy, active ageing programs are promoted in partnership with government agencies and community organisations.	5.2.2.1 Deliver a range of programs and recreational pursuits for older people	Support the provision of Community Transport services across Wollongong and Shellharbour Local Government Areas.
6.3.5 Community Transport options for frail older people, people with disabilities and the transport disadvantaged are actively promoted and available	6.3.5.1 Develop an alternative service delivery, governance model and auspice for Community Transport in response to the Federal Government's Aged Care reform legislation. Support the provision of Community Transport services across Wollongong and Shellharbour Local Government Areas.	Promote access to Community Transport

RISK ASSESSMENT

Risks to reputation or to the community that may be posed by the lack of successful implementation of the e-ticket taxi transport program have been mitigated by the piloting and evaluation of the new program.

The use of e-tickets will mitigate risk associated with the existing, paper-based taxi voucher program. as the system provides for online, cloud-based tracking and management of the tickets and improved monitoring and reporting on their use.

FINANCIAL IMPLICATIONS

There are no financial implications for Council.

The expenditure budget for the CT:W-S taxi-transport service is around $300,000 per year. The service is fully funded by the Commonwealth Department of Health and operates on a cost neutral basis to Council. Any costs associated with the replacement of Taxi Vouchers with Cab Charge e-tickets will be accommodated within the Community Transport budget.

CONCLUSION

Council endorsement of an exemption under section 55 of the Local Government Act for the delivery of e-ticket services by Cab Charge Australia Ltd, will enable continued mobility and independence for more than 1,300 older people in the community who are unable to access other forms of private and public transport.

File: CP-914.05.001 Doc: IC20/24

ITEM 12 QUARTERLY VARIATIONS REPORT FOR DEVELOPMENT APPLICATIONS - DECEMBER 2019

This quarterly report to Council identifies ten (10) Development Applications which were determined during the period 1 October 2019 to 31 December 2019, where a variation to a development standard was granted. The NSW Department of Planning, Industry, and Environment has been notified of the variations as part of Council's ongoing reporting requirements.

RECOMMENDATION

Council note the development standards variation report for the period 1 October to 31 December 2019.

REPORT AUTHORISATIONS

Report of: Mark Riordan, Manager Development Assessment and Certification
Authorised by: Linda Davis, Director Planning + Environment - Future City + Neighbourhoods

ATTACHMENTS

1 Quarterly Variations Report for Development Applications - December 2019

BACKGROUND

Development Applications involving variations to development standards may be made under clause 4.6 of Wollongong Local Environmental Plan 2009 (WLEP 2009). Requirements are provided within clause 4.6 of WLEP 2009 for the assessment of variations to development standards.

Any variations approved are reported on a quarterly basis to the NSW Department of Planning, Industry and Environment (DPIE), in accordance with procedural guidelines. Council and the DPIE may in turn consider the extent and nature of variations granted when reviewing relevant planning controls or instruments.

Wollongong City Council provides further transparency and oversight of applications seeking departures to development standard via –

- Wollongong Local Planning Panel (WLPP) review.
- Declaration of any variation during public exhibition.
- Maintaining an ongoing public record of all variations approved.

Following recent amendments to Planning Panel operations by NSW DPIE minor variations to development standards (below 10%) receiving less than two objections may be determined by staff under delegated authority. This delegation is restricted to Manager level.

QUARTERLY RESULT

During the 1 October to 31 December 2019 quarter (ten 10) Development Applications were approved which included a variation to a development standard. Attachment 1 provides a summary of each application and the circumstances relating to the variations. All of the application assessment reports are publicly available through Council's website. It is noted that six (6) of the variations relate to the same Light Industrial complex at 8 Pioneer Drive, Woonona.

PLANNING AND POLICY IMPACT

This report contributes to the delivery of Wollongong 2022 goal "We value and protect our environment". It specifically delivers on core business activities as detailed in the Development Assessment Service Plan 2018-2019.

Development Applications approved with variations to development standards for the quarterly period between 1 October 2019 and 31 December 2019 (Reporting applications with a decision of 'Approved'/'Deferred Commencement')

Application	DA-2018/1481			
Lot	3 DP 1159710, Lot 1 DP 434080, Lot 2 DP 505162		**Zone**	R2 Low Density Residential
Address	Lot 3 Robert Street, Lot 1 Wilga Street, Lot 2 Rothery Street, CORRIMAL NSW 2518			
Description	Mixed Use Residential - residential flat building comprising 21 apartments above basement car parking, 13 townhouses with double garages and tree removals and Subdivision - Strata title - 34 lots			
Decision	Approved		**Decision Date**	9 December 2019
Variations	**Planning Instrument**	WLEP 2009	**Clause**	c4.3(2) Height of buildings
	Justification of variation	The site is a large residue site that enables the building form to be of a greater scale than its surrounds. The building articulation and manipulation of building elements help to reduce the buildings apparent scale.		
	Extent of variation	A 9 metre height limit applies to the site. The proposed residential flat building has a maximum overall height of 10.075 metres, representing a 11.9% variation.		
	Concurring Authority	Wollongong Local Planning Panel		

Application	DA-2018/1630			
Lot	105 DP 25391		**Zone**	R2 Low Density Residential
Address	35 Yellagong Street, WEST WOLLONGONG NSW 2500			
Description	Residential - demolition of existing structures, tree removal and construction of multi dwelling housing - 10 units with associated carparking and infrastructure			
Decision	Approved		**Decision Date**	23 December 2019
Variations	**Planning Instrument**	WLEP 2009	**Clause**	c7.14 (1, 2) Minimum site width
	Justification of variation	The subject site is a battle-axe allotment having a site width of 16.46 metres along the street frontage and then broadens to 49 metres. The design layout displays only one of the units which is a two-storey single dwelling when viewed from the street which is detached from rest of the units that are located to the rear wider area. The proposed development meets other development standards and controls and is sympathetic to the neighbouring dwellings in the locality.		
	Extent of variation	18 metre lot width requirement. Approved 16.46 metre minimum variable lot width (8.5% variation).		
	Concurring Authority	Council under assumed concurrence		

Application	DA-2019/774			
Lot	2 DP 151454		**Zone**	R1 General Residential
Address	16 Smith Street, WOLLONGONG NSW 2500			
Description	Residential - demolition of existing structures and construction of a residential flat building			
Decision	Approved		**Decision Date**	11 December 2019
Variations	**Planning Instrument**	WLEP 2009	**Clause**	c7.14 (1, 2) Minimum site width
	Justification of variation	A 24 metre lot width is normally required (clause 7.14). The proposed 20.11 metre lot width however provides a suitable building envelope for the development and is reasonable in the circumstances of the case. The development is sympathetic with surrounding development in the locality.		
	Extent of variation	24 metre lot width requirement. Approved 20.11 metre lot width		
	Concurring Authority	Wollongong Local Planning Panel		

Application	DA-2019/921			
Lot	3 DP 16354		**Zone**	R2 Low Density Residential
Address	24 James Road, CORRIMAL NSW 2518			
Description	Subdivision - Torrens title - two (2) residential lots			
Decision	Approved		**Decision Date**	31 October 2019
Variations	**Planning Instrument**	WLEP 2009	**Clause**	c4.4(2) Floor space ratio
	Justification of variation	The existing dual occupancy development was previously approved via a Complying Development Certificate (CDC) with an approved floor space ratio of 0.504:1 (0.4% variation from the 0.5:1 FSR standard). The FSR non-compliance relates to the previous dual occupancy CDC approval and is not directly related to the subdivision of the land (being the subject of this application).		
	Extent of variation	0.4% variation applying to the previous dual occupancy CDC approval		
	Concurring Authority	Council under assumed concurrence		

Application	DA-2019/951			
Lot	9 SP 78814		**Zone**	IN2 Light Industrial
Address	9/8 Pioneer Drive, WOONONA NSW 2517			
Description	Mezzanine level and Change of Use to Warehouse and Distribution Centre			
Decision	Approved		**Decision Date**	18 December 2019
Variations	**Planning Instrument**	WLEP 2009	**Clause**	c4.4(2) Floor space ratio
	Justification of variation	The proposed mezzanines for all of the units in the complex represents a 545.1m2 total increase or 12% variation to the 0.5:1 floor space ratio (FSR) standard. The proposed development is consistent with the objectives of the floor space ratio standard and the objectives for development within the IN2 Light Industrial zone.		
	Extent of variation	12% variation to the 0.5:1 floor space ratio standard.		
	Concurring Authority	Wollongong Local Planning Panel		

Application	DA-2019/1034			
Lot	4 SP 78814		**Zone**	IN2 Light Industrial
Address	4/8 Pioneer Drive, WOONONA NSW 2517			
Description	Mezzanine Level and Change of Use to Depot			
Decision	Approved		**Decision Date**	18 December 2019
Variations	**Planning Instrument**	WLEP 2009	**Clause**	c4.4(2) Floor space ratio
	Justification of variation	The proposed mezzanines for all of the units in the complex represents a 545.1m2 total increase or 12% variation to the 0.5:1 floor space ratio (FSR) standard. The proposed development is consistent with the objectives of the floor space ratio standard and the objectives for development within the IN2 Light Industrial zone.		
	Extent of variation	12% variation to the 0.5:1 floor space ratio standard.		
	Concurring Authority	Wollongong Local Planning Panel		

Application	DA-2019/1054			
Lot	204 DP 776457, Lot 6 SP 78814		**Zone**	IN2 Light Industrial
Address	8 Pioneer Drive and 6/8 Pioneer Drive, WOONONA NSW 2517			
Description	Mezzanine Level and Change of use to Warehouse and Distribution Centre			
Decision	Approved		**Decision Date**	18 December 2019
Variations	**Planning Instrument**	WLEP 2009	**Clause**	c4.4(2) Floor space ratio
	Justification of variation	The proposed mezzanines for all of the units in the complex represents a 545.1m2 total increase or 12% variation to the 0.5:1 floor space ratio (FSR) standard. The proposed development is consistent with the objectives of the floor space ratio standard and the objectives for development within the IN2 Light Industrial zone.		
	Extent of variation	12% variation to the 0.5:1 floor space ratio standard		
	Concurring Authority	Wollongong Local Planning Panel		

Application	DA-2019/1058			
Lot	204 DP 776457, Lot 7 SP 78814, Lot 11 SP 78814, Lot 12 SP 78814, Lot 13 SP 78814, Lot 14 SP 78814		**Zone**	IN2 Light Industrial
Address	8 Pioneer Drive, 7/8 Pioneer Drive, 11/8 Pioneer Drive, 12/8 Pioneer Drive, 13/8 Pioneer Drive, 14/8 Pioneer Drive, WOONONA NSW 2517			
Description	Mezzanine levels and Change of use to Light Industry			
Decision	Approved		**Decision Date**	18 December 2019
Variations	**Planning Instrument**	WLEP 2009	**Clause**	c4.4(2) Floor space ratio
	Justification of variation	The proposed mezzanines for all of the units in the complex represents a 545.1m2 total increase or 12% variation to the 0.5:1 floor space ratio (FSR) standard. The proposed development is consistent with the objectives of the floor space ratio standard and the objectives for development within the IN2 Light Industrial zone.		
	Extent of variation	12% variation to the 0.5:1 floor space ratio standard.		
	Concurring Authority	Wollongong Local Planning Panel		

Application	DA-2019/1177			
Lot	3 SP 78814		**Zone**	IN2 Light Industrial
Address	3/8 Pioneer Drive, WOONONA NSW 2517			
Description	Mezzanine Level and Change of use to Recreation Facility (Indoor)			
Decision	Approved		**Decision Date**	18 December 2019
Variations	**Planning Instrument**	WLEP 2009	**Clause**	c4.4(2) Floor space ratio
	Justification of variation	The proposed mezzanines for all of the units in the complex represents a 545.1m2 total increase or 12% variation to the 0.5:1 floor space ratio (FSR) standard. The proposed development is consistent with the objectives of the floor space ratio standard and the objectives for development within the IN2 Light Industrial zone.		
	Extent of variation	12% variation to the 0.5:1 floor space ratio standard.		
	Concurring Authority	Wollongong Local Planning Panel		

Application	DA-2019/1259			
Lot	15 SP 78814		**Zone**	IN2 Light Industrial
Address	15/8 Pioneer Drive, WOONONA NSW 2517			
Description	Mezzanine Level and Change of use to Depot			
Decision	Approved		**Decision Date**	18 December 2019
Variations	**Planning Instrument**	WLEP 2009	**Clause**	c4.4(2) Floor space ratio
	Justification of variation	The proposed mezzanines for all of the units in the complex represents a 545.1m2 total increase or 12% variation to the 0.5:1 floor space ratio (FSR) standard. The proposed development is consistent with the objectives of the floor space ratio standard and the objectives for development within the IN2 Light Industrial zone.		
	Extent of variation	12% variation to the 0.5:1 floor space ratio standard.		
	Concurring Authority	Wollongong Local Planning Panel		

File: IW-911.01.196 Doc: IC20/27

ITEM 13 CITY OF WOLLONGONG TRAFFIC COMMITTEE MINUTES HELD ON 29 JANUARY 2020

The City of Wollongong Traffic Committee meeting was held on 29 January 2020. Items listed in Sections 2 and 4 are to be adopted by Council through delegated authority. The items listed in Section 3 must be determined by Council and is recommended to Council for approval for temporary Regulation of Traffic on public roads for works or events by independent parties.

RECOMMENDATION

1 In accordance with the powers delegated to Council, the Minutes and Recommendations of the City of Wollongong Traffic Committee held on 29 January 2020 in relation to Regulation of Traffic be adopted.

REPORT AUTHORISATIONS

Report of: Mark Roebuck, Manager City Works
Authorised by: Andrew Carfield, Director Infrastructure + Works - Connectivity Assets + Liveable City

ATTACHMENTS

1 Thirroul Seaside & Arts Festival
2 WIN Sports and Entertainment Centre - NRL and Super Rugby
3 Standard Conditions for Road Closures

BACKGROUND

1. THIRROUL – Ward 1 (Item 3.1 of Wollongong Traffic Committee Minutes of Meeting)

Background

The Thirroul Seaside & Arts festival is to be held on the weekend of the 3rd to 5th April 2020 with similar arrangements to previous years. Lawrence Hargrave Drive is not affected except that pedestrians will be prevented from crossing at any points other than the refuge crossing near King Street and the signalised crossing at Raymond Road.

The road closures will take place on Saturday 4th April 2020 only from 7.00am to 5.00pm to allow street stalls and entertainment within the closed streets. This will include:

- McCauley Street between Lawrence Hargrave Drive and the Bath Street intersection.
- King Street between Lawrence Hargrave Drive and the Thirroul Plaza car park.

As in previous years, the festival will move to the Thirroul beach area off Cliff Parade on Sunday 5th April 2020 and no road closures will be involved. As the road closures involve access points to Lawrence Hargrave Drive, a concurrent road occupancy licence will be required from Transport for NSW.

Consultation

It is a condition of approval for the organisers to consult with adjoining residents and business operators affected by the road closures.

Proposal Supported Unanimously

The road closures for King and McCauley Streets for Saturday 4th April 2020 from 7:00 am to 5:00 pm be approved subject to the submitted Traffic Management Plans, Council's Standard Conditions for Road Closures, Police and Transport for NSW approvals.

2. WOLLONGONG – Ward 2 (Item 3.2 of Wollongong Traffic Committee Minutes of Meeting)

Background

WIN Sports and Entertainment Centre have submitted 3 Traffic Control Plans to cover the 8 major events in 2020 listed below. Although the Traffic Control Plan used for a particular event depends on the estimated crowd numbers these are currently not known for the events listed below. It is noted that there are single events only with no double bookings with the Entertainment Centre and the Stadium. Therefore, it is appropriate that the type 2 TCP for crowd numbers for 10,000 – 15,000 be used for these events.

Date	Event
Friday 6 March	Super Rugby NSW Game, Main game 7:15pm, NSW Waratahs V Waikato Chiefs
Sunday 15 March	Main Game 6:15pm, Dragons V West Tigers
Sunday 12 April	Main Game 6:15pm, Dragons V NZ Warriors
Sunday 31 May	Main Game 4:05pm, Dragons V Manly-Warringah Sea Eagles
Sunday 26 July	Main Game 2:05pm, Dragons V Canberra Raiders
Saturday 15 August	Main Game 7:35pm, Dragons V Canterbury Bankstown Bulldogs
Thursday 3 September	Main Game 7:50pm, Dragons V South Sydney Rabbitohs

These events involve road closures on Burelli and Harbour Streets between Stewart and Crown Streets and significant changes to parking regulations and the management of pedestrians.

The road closures and traffic controls will take effect from:

Date	Gates Open	Kick Off	Road Closure
Friday March 6	4:30pm	7:15pm	4:00pm – 9:45pm
Sunday, March 15	3:30pm	6:15pm	3:00pm – 8:45pm
Sunday, April 12	3:30pm	6:15pm	3:00pm – 8:45pm
Sunday, May 31	1:30pm	4:05pm	1:00pm – 6:35pm
Sunday, July 26	11:30am	2:05pm	11:00am – 4:35pm
Saturday, August 15	5:00pm	7:35pm	4:30pm – 10:05pm
Thursday, September 3	6:30pm	7:50pm	6:00pm – 10:20pm

The vehicle mitigation provisions shown on the Traffic Control Plans may be confusing between the vehicles on the Plan and the detailed insert. The Traffic Control Plans need to be adjusted accordingly to show minimum gaps of 1.2m between the vehicles.

3. Standard Conditions for Road Closures

Special events and work related activities within Council's road reserves like Thirroul Seaside and Arts Festival and events held at WIN Stadium trigger the attached standard conditions prior to seeking approval through Council.

Consultation

It is a condition of approval for the organisers to consult with adjoining residents and business operators affected by the road closures.

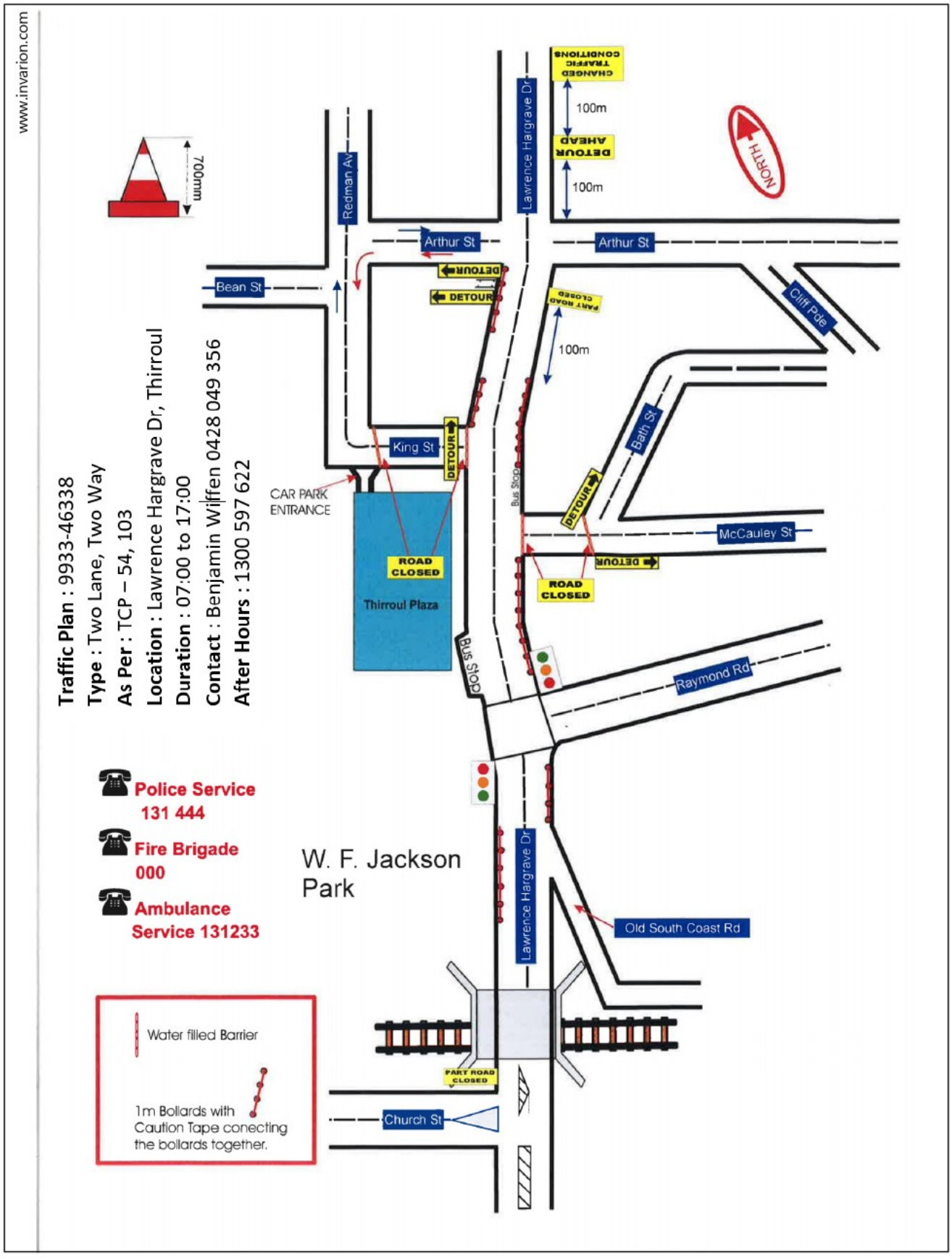
Proposal Supported Unanimously

The road closures of Burelli and Harbour Streets, Wollongong be approved for the events listed above subject to the Traffic Control Plan Type 2, to be amended to include the maintenance of no more than 1.2 metre gap and vehicles to be angled, Council's Standard Conditions for Road Closures, Police and Transport for NSW approvals.

PLANNING AND POLICY IMPACT

This report contributes to the delivery of Our Wollongong 2028 goal "We have affordable and accessible transport". It specifically delivers on the Service Plan 2019-20.

Plan 1 of 3


www.invarion.com
Traffic Plan : 9933-46338
Type : Two Lane, Two Way
As Per : TCP – 54, 103
Location : Lawrence Hargrave Dr, Thirroul
Duration : 07:00 to 17:00
Contact : Benjamin Wilffen 0428 049 356
After Hours : 1300 597 622
700mm
Redman Av
Lawrence Hargrave Dr
CHANGED TRAFFIC CONDITIONS
100m
DETOUR AHEAD
100m
NORTH
Arthur St
Arthur St
Bean St
DETOUR
DETOUR
PART ROAD CLOSED
100m
Cliff Pde
King St
DETOUR
Bus Stop
Bath St
CAR PARK ENTRANCE
DETOUR
McCauley St
ROAD CLOSED
DETOUR
ROAD CLOSED
Thirroul Plaza
Bus Stop
Raymond Rd
Police Service
131 444
Fire Brigade
000
Ambulance
Service 131233
W. F. Jackson
Park
Lawrence Hargrave Dr
Old South Coast Rd
Water filled Barrier
1m Bollards with
Caution Tape conecting
the bollards together.
PART ROAD CLOSED
Church St

Plan 2 of 3

www.invarion.com

North approach on cycleway, detoured at Pram Crossing

Detour Routes

Cycleway closed

The same Pine Trees!

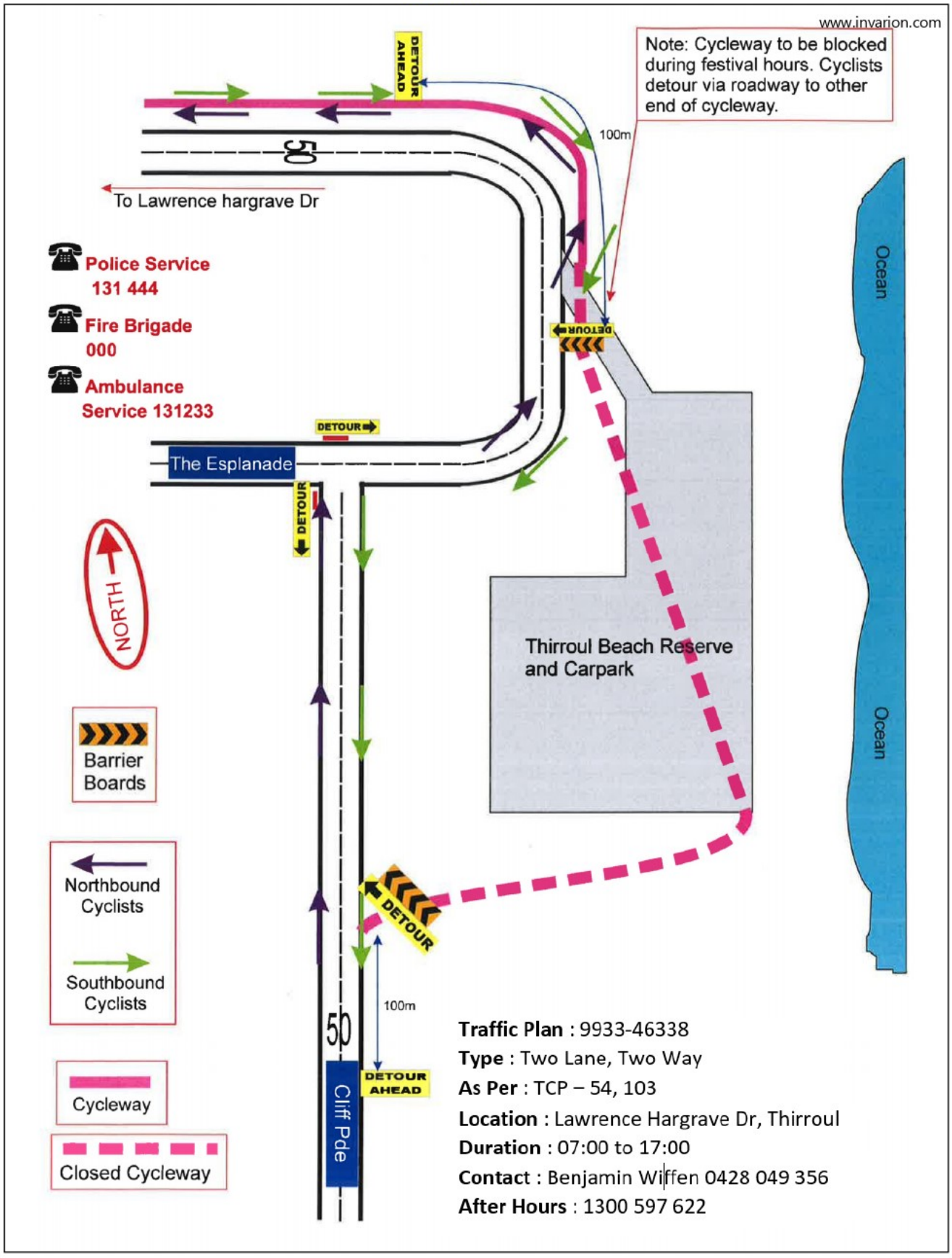
Northbound Route

Southbound Route

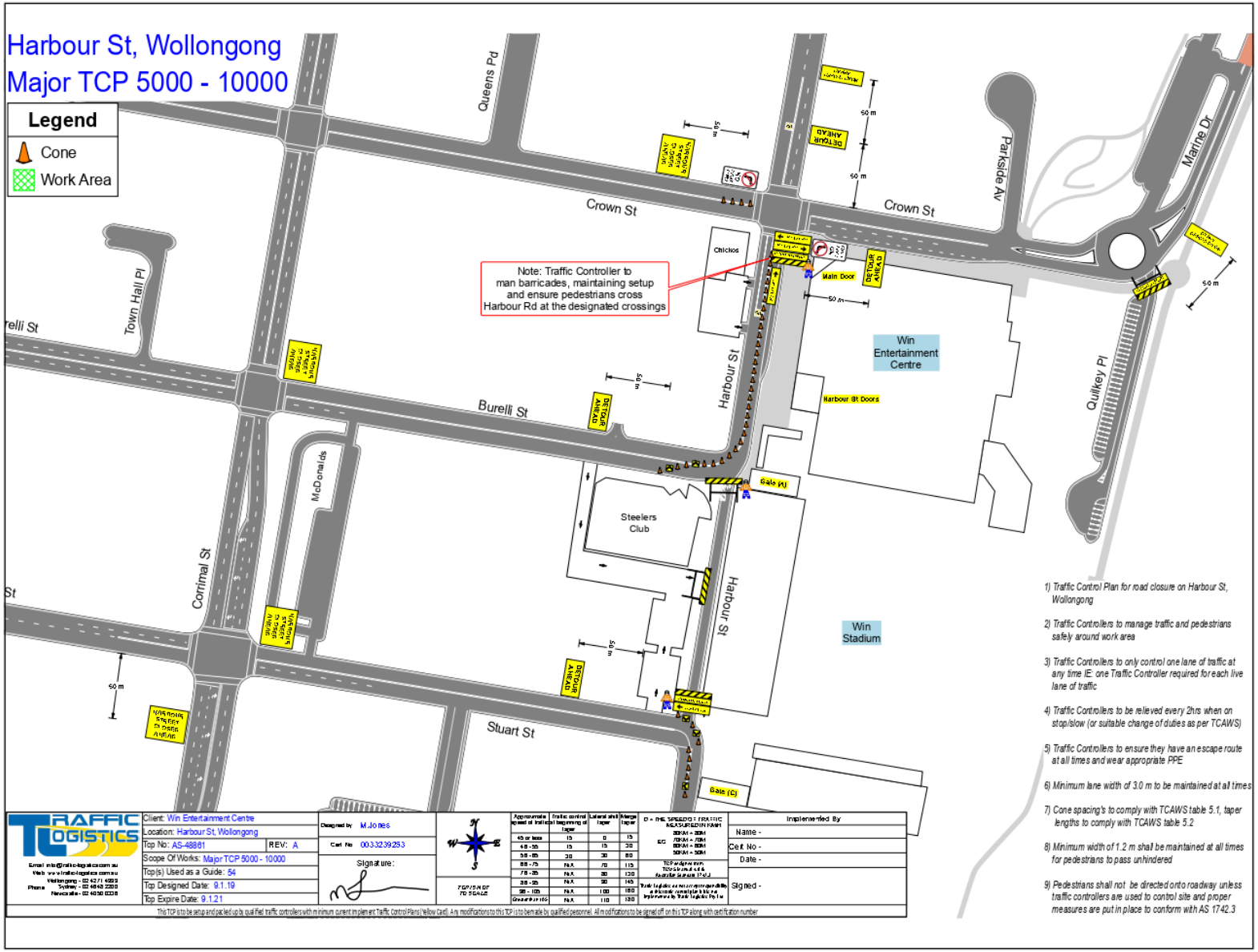
South approach to cycleway along Cliff Pde.

Traffic Plan : 9933-46338
Type : Two Lane, Two Way
As Per : TCP – 54, 103
Location : Lawrence Hargrave Dr, Thirroul
Duration : 07:00 to 17:00
Contact : Benjamin Wiffen 0428 049 356
After Hours : 1300 597 622

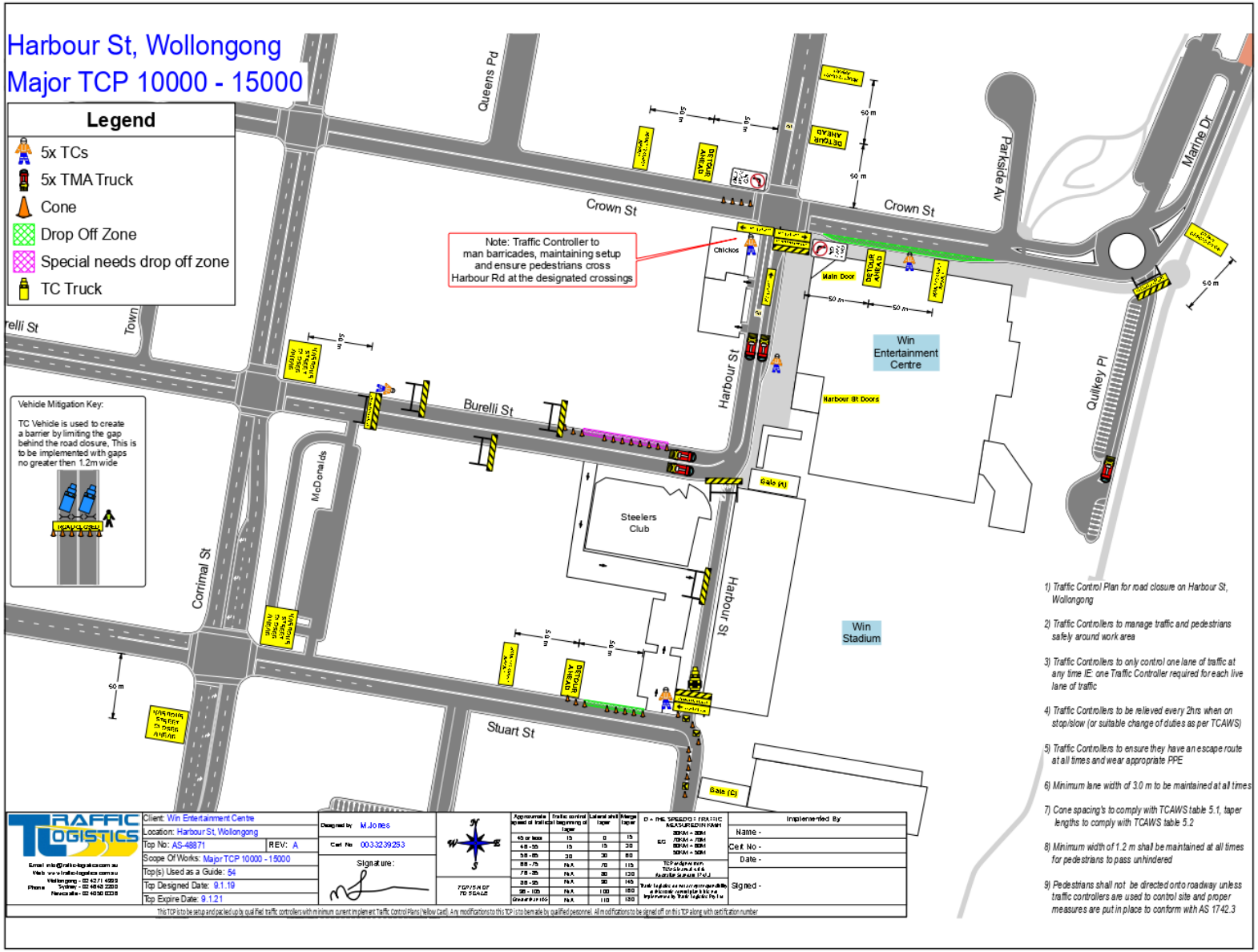
Plan 3 of 3


www.invarion.com
Note: Cycleway to be blocked during festival hours. Cyclists detour via roadway to other end of cycleway.
DETOUR AHEAD
100m
To Lawrence hargrave Dr
Police Service
131 444
Fire Brigade
000
Ambulance
Service 131233
DETOUR
The Esplanade
DETOUR
DETOUR
NORTH
Thirroul Beach Reserve and Carpark
Ocean
Ocean
Barrier Boards
Northbound Cyclists
Southbound Cyclists
Cycleway
Closed Cycleway
DETOUR
100m
DETOUR AHEAD
Cliff Pde
Traffic Plan : 9933-46338
Type : Two Lane, Two Way
As Per : TCP – 54, 103
Location : Lawrence Hargrave Dr, Thirroul
Duration : 07:00 to 17:00
Contact : Benjamin Wiffen 0428 049 356
After Hours : 1300 597 622

Plan 1 of 3


Harbour St, Wollongong
Major TCP 5000 - 10000
Legend
Cone
Work Area
Queens Pd
Crown St
Parkside Av
Marine Dr
Town Hall Pl
Burelli St
Harbour St
Quilkey Pl
Corrimal St
McDonalds
Stuart St
Note: Traffic Controller to man barricades, maintaining setup and ensure pedestrians cross Harbour Rd at the designated crossings
Chicos
Main Door
Win Entertainment Centre
Harbour St Doors
Steelers Club
Gate (A)
Gate (C)
Win Stadium
DETOUR AHEAD
50 m
1) Traffic Control Plan for road closure on Harbour St, Wollongong
2) Traffic Controllers to manage traffic and pedestrians safely around work area
3) Traffic Controllers to only control one lane of traffic at any time IE: one Traffic Controller required for each live lane of traffic
4) Traffic Controllers to be relieved every 2hrs when on stop/slow (or suitable change of duties as per TCAWS)
5) Traffic Controllers to ensure they have an escape route at all times and wear appropriate PPE
6) Minimum lane width of 3.0 m to be maintained at all times
7) Cone spacing's to comply with TCAWS table 5.1, taper lengths to comply with TCAWS table 5.2
8) Minimum width of 1.2 m shall be maintained at all times for pedestrians to pass unhindered
9) Pedestrians shall not be directed onto roadway unless traffic controllers are used to control site and proper measures are put in place to conform with AS 1742.3
TRAFFIC LOGISTICS
Client: Win Entertainment Centre
Location: Harbour St, Wollongong
Designed by: M Jones
Cert No: 00333239253
Signature:
Implemented By
Name -
Cert No -
Date -
Signed -
Top No: AS-48861
REV: A
Scope Of Works: Major TCP 5000 - 10000
Top(s) Used as a Guide: 54
Top Designed Date: 9.1.19
Top Expire Date: 9.1.21
This TCP is to be setup and packed up by qualified traffic controllers with minimum current Implement Traffic Control Plans (Yellow Card). Any modifications to this TCP is to be made by qualified personnel. All modifications to be signed off on this TCP along with certification number

Plan 2 of 3


Harbour St, Wollongong
Major TCP 10000 - 15000
Legend
5x TCs
5x TMA Truck
Cone
Drop Off Zone
Special needs drop off zone
TC Truck
Note: Traffic Controller to man barricades, maintaining setup and ensure pedestrians cross Harbour Rd at the designated crossings
Vehicle Mitigation Key:
TC Vehicle is used to create a barrier by limiting the gap behind the road closure, This is to be implemented with gaps no greater then 1.2m wide
Queens Pd
Crown St
Parkside Av
Marine Dr
Harbour St
Burelli St
Corrimal St
McDonalds
Steelers Club
Win Entertainment Centre
Harbour St Doors
Quilkey Pl
Win Stadium
Stuart St
Gate (A)
Gate (C)
Chicos
Main Door
DETOUR AHEAD
1) Traffic Control Plan for road closure on Harbour St, Wollongong
2) Traffic Controllers to manage traffic and pedestrians safely around work area
3) Traffic Controllers to only control one lane of traffic at any time IE: one Traffic Controller required for each live lane of traffic
4) Traffic Controllers to be relieved every 2hrs when on stop/slow (or suitable change of duties as per TCAWS)
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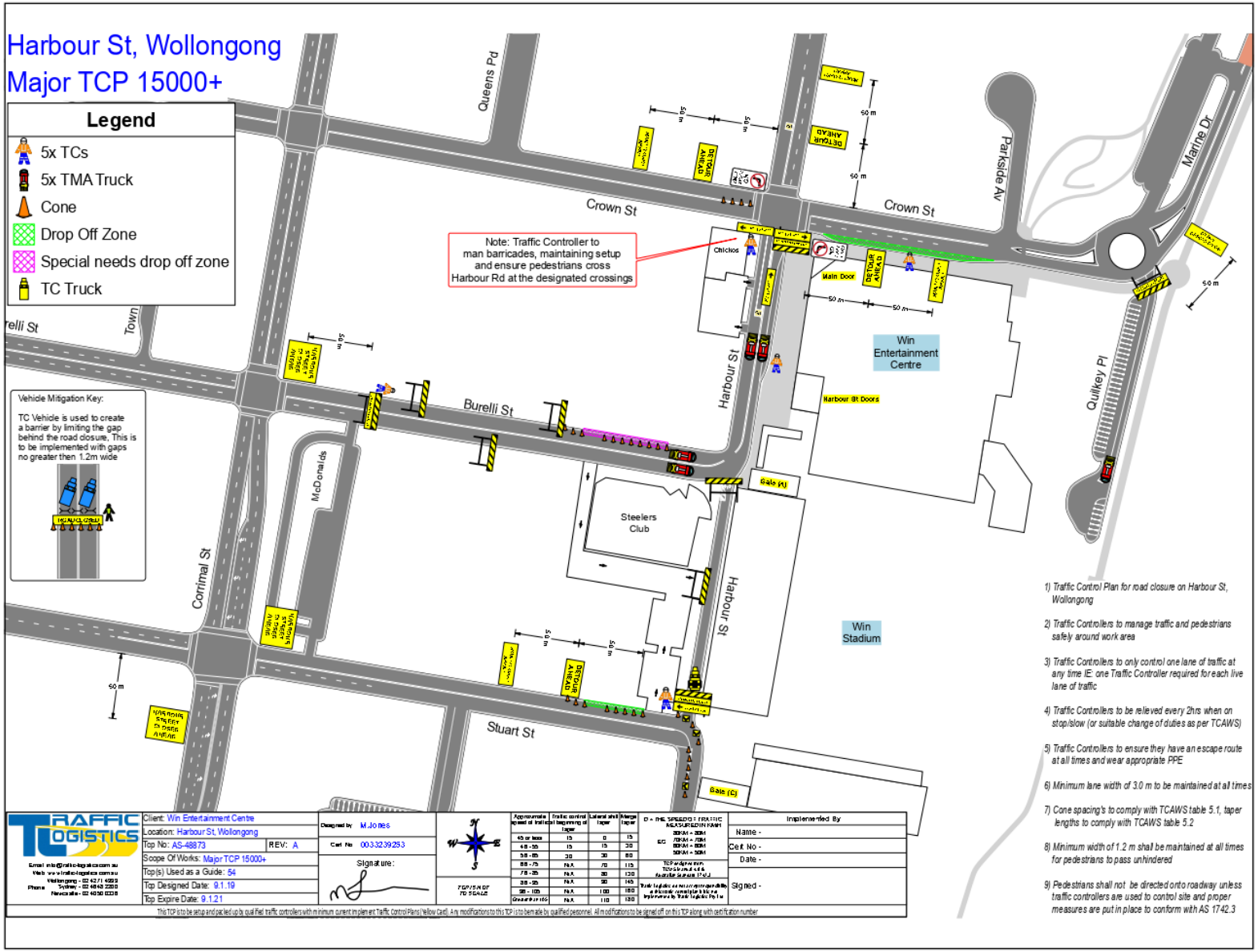
6) Minimum lane width of 3.0 m to be maintained at all times
7) Cone spacing's to comply with TCAWS table 5.1, taper lengths to comply with TCAWS table 5.2
8) Minimum width of 1.2 m shall be maintained at all times for pedestrians to pass unhindered
9) Pedestrians shall not be directed onto roadway unless traffic controllers are used to control site and proper measures are put in place to conform with AS 1742.3
TRAFFIC LOGISTICS
Client: Win Entertainment Centre
Location: Harbour St, Wollongong
Designed by: M Jones
Cert No: 00332392S3
Signature:
Top No: AS-48871
REV: A
Scope Of Works: Major TCP 10000 - 15000
Top(s) Used as a Guide: 54
Top Designed Date: 9.1.19
Top Expire Date: 9.1.21
TCP IS NOT TO SCALE
Implemented By
Name -
Cert No -
Date -
Signed -

Plan 3 of 3


Harbour St, Wollongong
Major TCP 15000+
Legend
5x TCs
5x TMA Truck
Cone
Drop Off Zone
Special needs drop off zone
TC Truck
Note: Traffic Controller to man barricades, maintaining setup and ensure pedestrians cross Harbour Rd at the designated crossings
Vehicle Mitigation Key:
TC Vehicle is used to create a barrier by limiting the gap behind the road closure, This is to be implemented with gaps no greater then 1.2m wide
Queens Pd
Crown St
Parkside Av
Marine Dr
Burelli St
Harbour St
Quilkey Pl
Corrimal St
McDonalds
Steelers Club
Win Entertainment Centre
Harbour St Doors
Win Stadium
Stuart St
Gate (H)
Gate (C)
Chicos
Main Door
DETOUR AHEAD
1) Traffic Control Plan for road closure on Harbour St, Wollongong
2) Traffic Controllers to manage traffic and pedestrians safely around work area
3) Traffic Controllers to only control one lane of traffic at any time IE: one Traffic Controller required for each live lane of traffic
4) Traffic Controllers to be relieved every 2hrs when on stop/slow (or suitable change of duties as per TCAWS)
5) Traffic Controllers to ensure they have an escape route at all times and wear appropriate PPE
6) Minimum lane width of 3.0 m to be maintained at all times
7) Cone spacing's to comply with TCAWS table 5.1, taper lengths to comply with TCAWS table 5.2
8) Minimum width of 1.2 m shall be maintained at all times for pedestrians to pass unhindered
9) Pedestrians shall not be directed onto roadway unless traffic controllers are used to control site and proper measures are put in place to conform with AS 1742.3
TRAFFIC LOGISTICS
Client: Win Entertainment Centre
Location: Harbour St, Wollongong
Designed by: M Jones
Cert No: 00332392S3
Top No: AS-48873
REV: A
Scope Of Works: Major TCP 15000+
Top(s) Used as a Guide: 54
Top Designed Date: 9.1.19
Top Expire Date: 9.1.21
Signature:
Implemented By
Name -
Cell No -
Date -
Signed -

Standard Conditions for Road Closures

For Special Events and Work Related activities Within Council Road Reserves.

Following approval by Wollongong City Council, road closures are subject to the additional Council conditions:

1. **The Applicant must complete the Council form** *'Application to Open and Occupy or Underbore a Roadway or Footpath' (Refer to Checklist below – relates to Section 138 of the Roads Act.)*
2. **NSW Police Approval:** The Applicant must obtain written approval from NSW Police, where required under the Roads Act.
3. **If the Road Closure is within 100m of any traffic control signals or on a *'State Classified Road'*** the Applicant must obtain a Road Occupancy Licence (ROL) from NSW Roads & Maritime Services (RMS).
4. **The Applicant must advise all affected residents and business owners** within the closure area of the date/s and times for the closure, at least 7 days prior to the intended date of works.
5. **The Applicant must advise Emergency Services:** Ambulance, Fire Brigade and Police, Taxi and Bus Companies of the closure dates and times in writing, 7 days prior to the intended date of works. The Applicant must endeavour to minimise the impact on bus services during the closure.
6. **Traffic Management Plan:** The closure must be set up in accordance with the approved **Traffic Management Plan (TMP)** prepared by an appropriately qualified traffic controller; a copy of whose qualifications must be included with the submitted TMP.
7. **Traffic Management Plan Setup:** The Traffic Management Plan must be set up by appropriately qualified traffic control persons or the NSW Police.
8. **Access to properties affected by the road closure must be maintained where possible.** Where direct access cannot be achieved, an alternative arrangement must be agreed to by both the applicant and the affected person/s.
9. **Public Notice Advertisement:** The Applicant must advertise the road closure in the Public Notices section of the local paper, detailing closure date/s and times at least 7 days prior to the closure.
10. **Public Liability Policy:** The Applicant must provide Council with a copy of their current insurance policy to a value of no less than $20 million dollars to cover Wollongong City Council from any claims arising from the closure.

Checklist:

☑ **Completed Council Form:**
'Application to Open and Occupy or Underbore a Roadway or Footpath'.

Required information as shown below MUST be attached:

☑ A copy of the letter from the Traffic Committee authorising the closure
☑ The Traffic Management Plan (TMP)
☑ The Road Occupancy Licence (ROL) *if required*
☑ Written approval from NSW Police
☑ Public Liability Insurance

Applications may be lodged in the Customer Service Centre located on the Ground Floor of Council's Administration Building, 41 Burelli Street Wollongong between 8.30am and 5pm Monday to Friday.