Attachment H - Shadow Impact Analysis

By Hassell, dated September 2016

SHADOW IMPACT ANALYSIS

A shadow impact analysis was conducted to assess the overshadowing impact of the proposed indicative building envelopes to publicly accessible open space at key locations along the corridor including Civic Lane, Civic Link, Darby Plaza and the Harbour Lawn. The analysis looks at 3 control times (9am, 12pm, and 3pm) for the equinox, summer and winter solstices.

Civic Lane

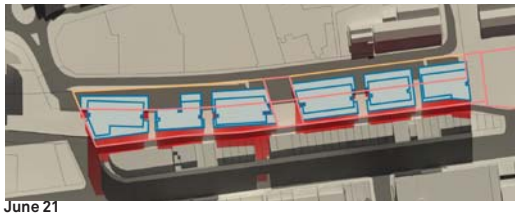
Significant overshadowing of Civic Lane occurs during the cooler months of the year, although proposed acessways between envelopes allow pockets of solar access to reach the lane at 12pm. The lane receives good solar access in summer and shading strategies may be required to mitigate the solar impact at this time. A decrease in building height to the southern edge of the envelopes may reduce overshadowing of the lane in the winter months. However, further analysis is required to test this.

March 20
9am

March 20
12pm

March 20
3pm

June 21
9am



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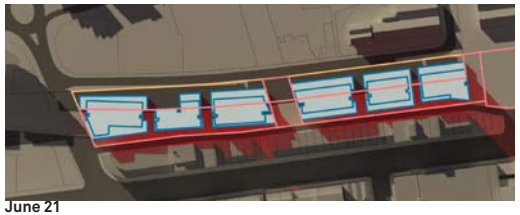

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September 23
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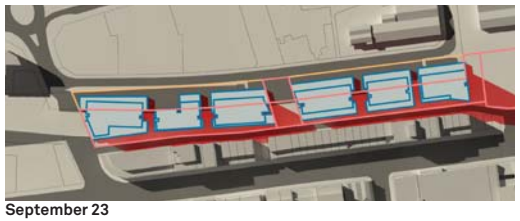

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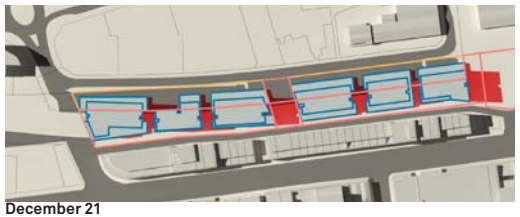

December 21
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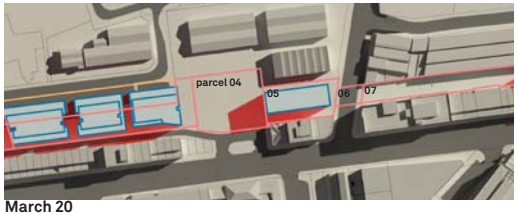
Civic Link

Throughout the year, especially during midday, little overshadowing occurs within Civic Link, creating an open space with high amenity and comfort during winter. Up to only 14% of the space (parcel 04) is additionally overshadowed in winter on the tested dates due to the proposed building envelopes. Shading strategies are advised to mitigate solar impact in summer. The analysis also demonstrates that no additional overshadowing of Wheeler Place occurs as a result of the proposed building envelopes and heights.



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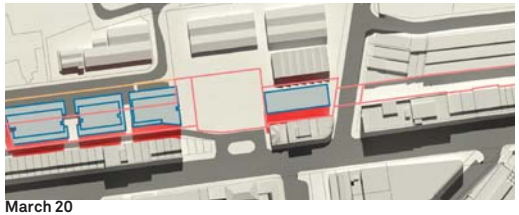
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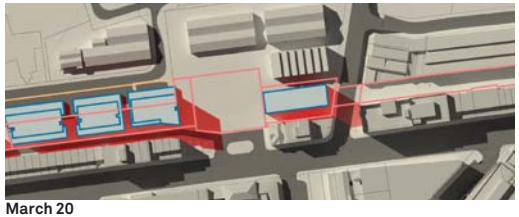
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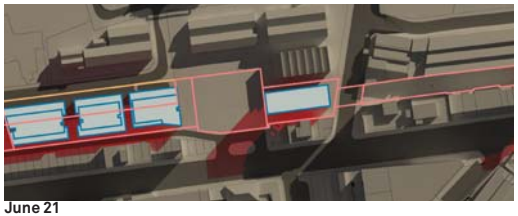
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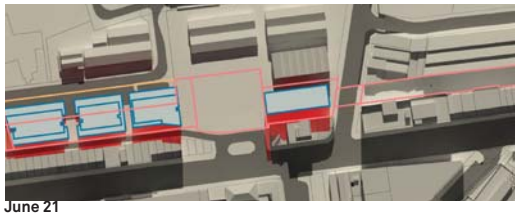
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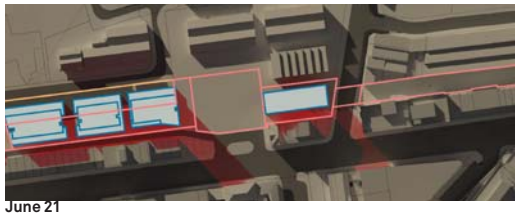
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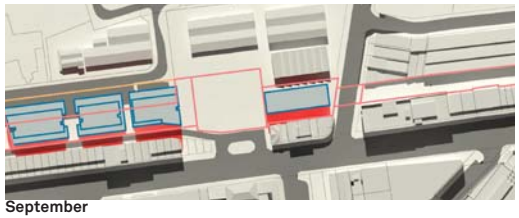
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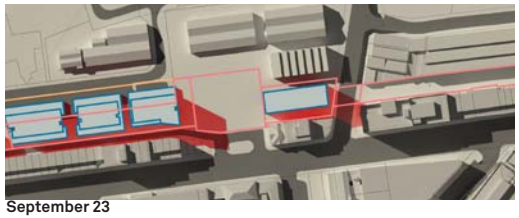
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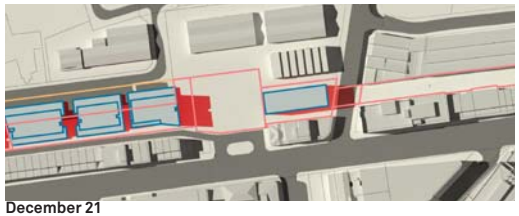
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3pm

Indicative building envelope

Additional overshadowing from indicative building envelope

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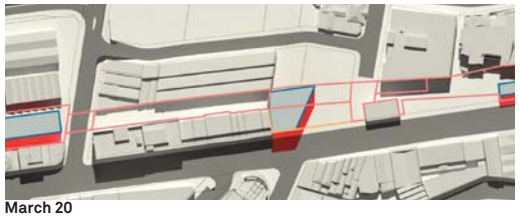
Darby Plaza

Darby Plaza receives good solar access in winter in the morning, however, by 3pm just over half of the plaza is overshadowed. A similar outcome occurs at March 20 and September 23, although the overshadowing at 3pm is more significant. A decrease in building height along the western plaza edge would lessen the overshadowing impact, although this requires further testing and analysis. In summer, the plaza is in full sun from the morning to midday, with approximately 60% overshadowing occuring in the afternoon at 3pm. Shading strategies are advised to mitigate solar impact in the morning to midday during summer.

March 20
9am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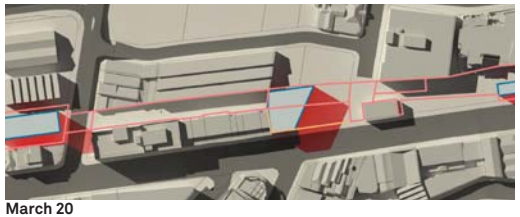
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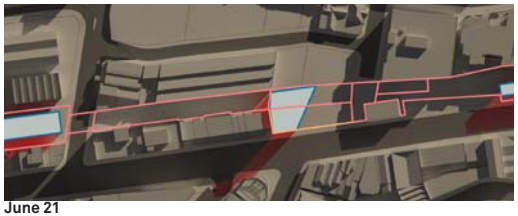
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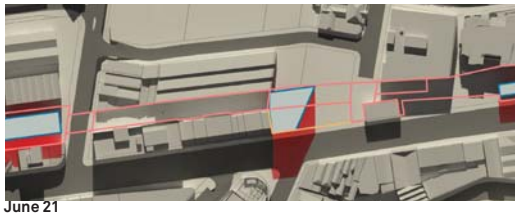
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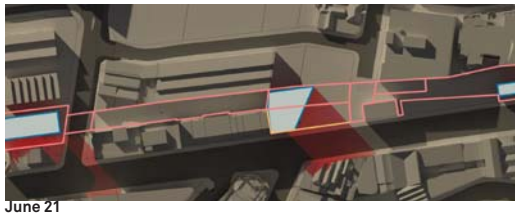
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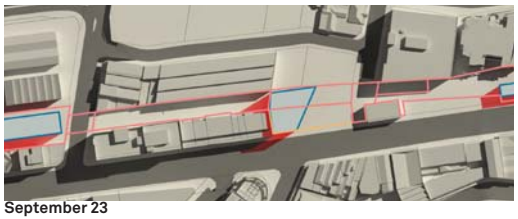
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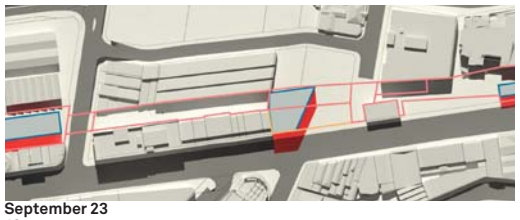
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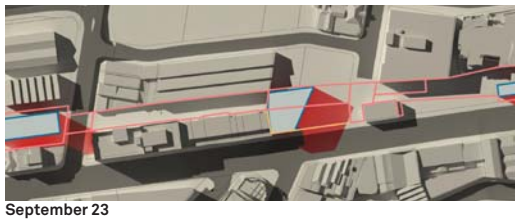
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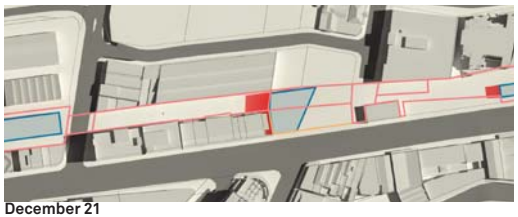
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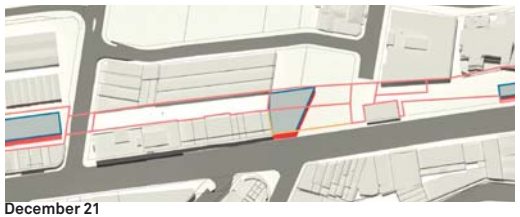
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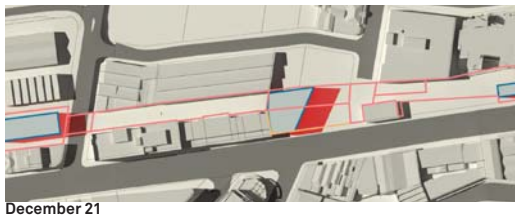
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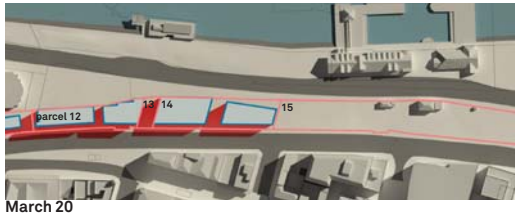
Harbour Lawn

The proposed building envelopes create minimal overshadowing of the Harbour Lawn for most of the year, with a small amount occuring at the western end of the Lawn in the afternoon at 3pm.



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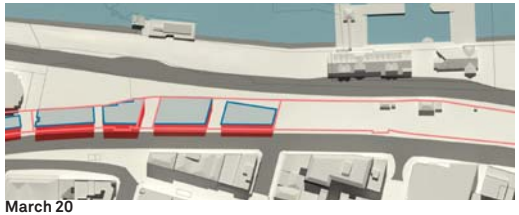
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March 20
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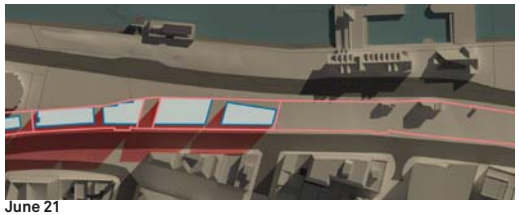
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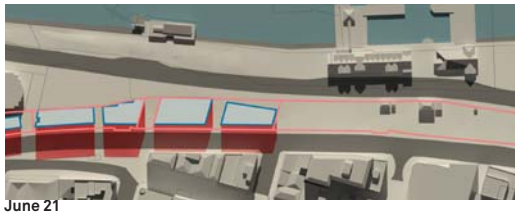
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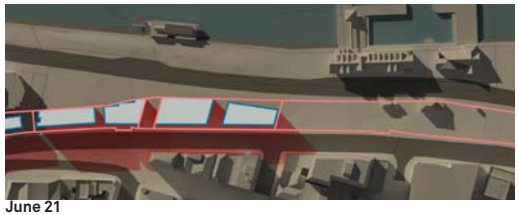
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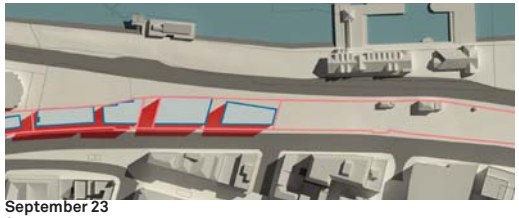
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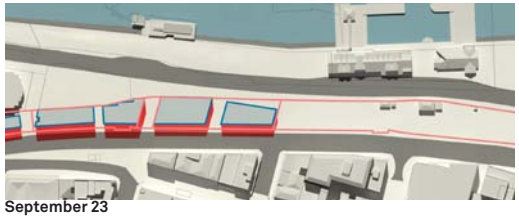
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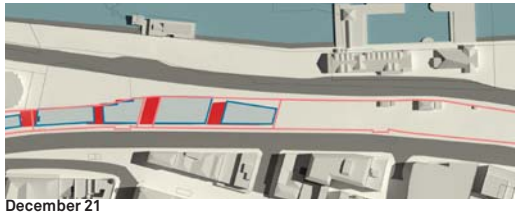
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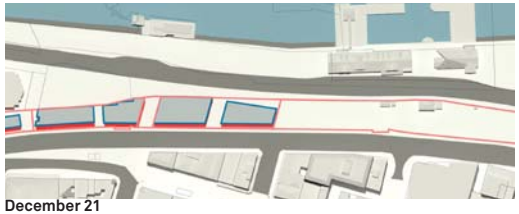
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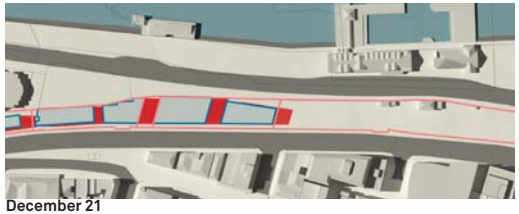
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Attachment I - Draft DCP Principles

By Elton Consulting, dated 2 June 2016

Newcastle Urban Transformation and Transport Program

Development Control Plan Amendment Principles Paper

Client UrbanGrowth NSW

Date 02 June 2016

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Prepared by	**Debrah Barr**
Reviewed by	**Jenny Rudolph**
Date	**2 June 2016**
Version	**Final**

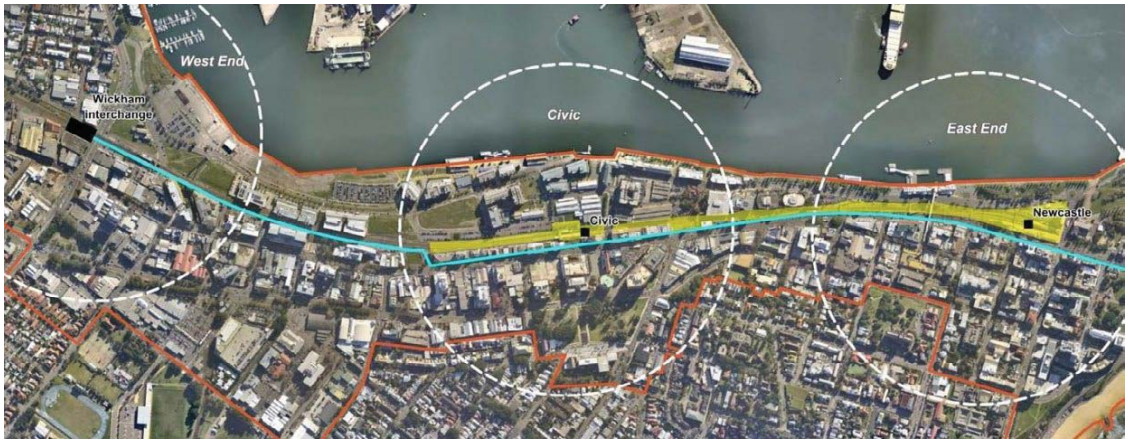
Contents

01 Introduction

General

This proposed Development Control Plan (DCP) Amendment Principles Paper has been prepared to support an amendment to the Newcastle Local Environmental Plan (NLEP) 2012 that applies to the surplus rail corridor land ('rail corridor land') between Worth Place and Watt Street in Newcastle city centre (Figure 1) at the pre-Gateway phase of the project. The final proposed amendment to the DCP will be prepared post-Gateway, before the public exhibition of the planning proposal. It is intended to exhibit both the planning proposal and the DCP amendment concurrently.

Figure 1 Rezoning study area



Source UrbanGrowth NSW

The Newcastle Urban Transformation and Transport Program ('Program') has been established to deliver on NSW Government's around $500 million commitment to revitalise the city centre through:

- The truncation of the heavy rail line at Wickham and creation of the Wickham Transport Interchange
- The provision of a new light rail line from Wickham to the Beach
- The delivery of a package of urban transformation initiatives.

The transformation initiatives of the Program aims to bring people back to the city centre by strengthening connections between the city and the waterfront, creating employment opportunities, providing more public space and amenity, preserving and enhancing heritage and delivering better transport.

The proposed rezoning of the rail corridor land forms a part of the delivery of urban transformation initiatives, comprising a package of transport, built form and public domain improvements.

Newcastle Urban Transformation

The Newcastle Urban Renewal Strategy (NURS) sets out the NSW Government's long term approach and vision for the revitalisation of Newcastle city centre to the year 2036.

The NURS identifies three character precincts in Newcastle city centre (West End, Civic and East End), within which significant housing and employment opportunities, together with built form and public domain changes and improvements exist. The NURS describes these precincts as:

- East End: residential, retail, leisure and entertainment
- Civic: the government, business and cultural hub of the city
- West End: the proposed future business district including the western end of Honeysuckle (Cottage Creek)

UrbanGrowth NSW has been directed by NSW Government to deliver on NURS through the Program, in partnership with Transport for NSW (TfNSW), the Hunter Development Corporation (HDC) and the City of Newcastle Council (Council).

Vision

The Program vision has been informed by feedback from the community, Council, government agencies and urban renewal experts.

> Our vision is an activated city centre and waterfront that attracts people, new enterprises and tourism. Over time, we see great opportunities to build on the strengths of the city centre to encourage innovative and enterprising industries to thrive. In the longer term, we see an opportunity to strengthen Newcastle's position on the regional, national and international stage, with a view to stronger ties with the Asia Pacific.
>
> **UrbanGrowth NSW, 2015**

Program objectives

The Program is underpinned by **six objectives** which will drive successful urban revitalisation:

01 **Bring people back** to the city centre

02 **Connect the city** to its waterfront

03 **Help grow new jobs** in the city centre

04 **Create great places** linked to new transport

05 **Creating** economically sustainable public domain and community assets

06 **Preserve and enhance** heritage and culture

Urban transformation concept plan

Surplus rail corridor land runs from Worth Place to Watt Street, which is from the East End and Civic city centre precincts.

Based on the Program vision and the results of extensive stakeholder and community engagement, an overall urban transformation concept plan ('concept plan') has been prepared for the surplus rail corridor.

The concept plan (as shown in Figure 2) includes five 'key moves', two that relate to the Civic precinct and three of which relate to the East End.

1 CIVIC LINK (CIVIC)

This area is the civic heart of Newcastle and includes some of the region's most important civic and cultural assets, including Civic Park, City Hall, Civic Theatre and Newcastle Museum. Current investment in the area includes the recently completed law courts and the University of Newcastle NeW Space campus, which is currently under construction.

The focus of this key 'move' is to leverage best value from new investments by creating new open space and walking and cycling connections that link Newcastle's civic buildings to the waterfront and the light rail system.

Civic Green. Creating a new civic focused public space linking Hunter Street to the Newcastle Museum that will provide direct visual and physical connection from Wheeler Place to the harbour, activate light rail on Hunter Street and meet the needs of the incoming legal and student populations

Built form improvements. Sensibly scaled mixed use development that forms part of the Honeysuckle development.

2 DARBY PLAZA (CIVIC)

Darby Street is Newcastle's premier 'eat street', offering a mix of shops, cafes, restaurants and night life. At present Darby Street ends at the intersection with Hunter Street. This key 'move' seeks to create a new node of activity and linkage through to the harbour that complements the delivery of light rail stations.

Darby Plaza. A new community focused public space, including provision of new walking and cycling facilities from Hunter Street to the harbour.

Built form improvements. Zoning of rail corridor land between Merewether Street and Argyle Street to allow for future mixed use development in conjunction with surrounding lands in the longer term.

3 HUNTER STREET REVITALISATION (EAST END)

Hunter Street features some of Newcastle's best heritage buildings and offers a mix of shops, cafes, restaurants and other local business. Hunter Street has experienced decline in recent years, and the opportunity exists to reinstate Hunter Street as the regions premier main street.

Built form improvements. Sensibly scaled mixed use development consistent with the adjoining land uses to create an activated street with 'two edges', celebrate heritage and create new linkages from Hunter Street to the waterfront, provide activation around light rail stops and improve walking and cycling facilities.

4 ENTERTAINMENT PRECINCT (EAST END)

This key 'move' aims to create a place where people and tourists can come to play, relax and reconnect with the harbour in a new public space stretching from Scott Street to the waterfront incorporating a new connection from Market Street to Queens Wharf. This key 'move' will assist to activate the area to create an exciting place for the East End.

Recreational opportunities. This precinct will incorporate the adaptive re-use of the signal box and provision of recreation opportunities for all ages and abilities. Public domain will be designed to provide a thoughtful series of character areas and experiences as one traverses its length. The area will also provide opportunities for viewing and interpretation of heritage character that respect the unique qualities of place.

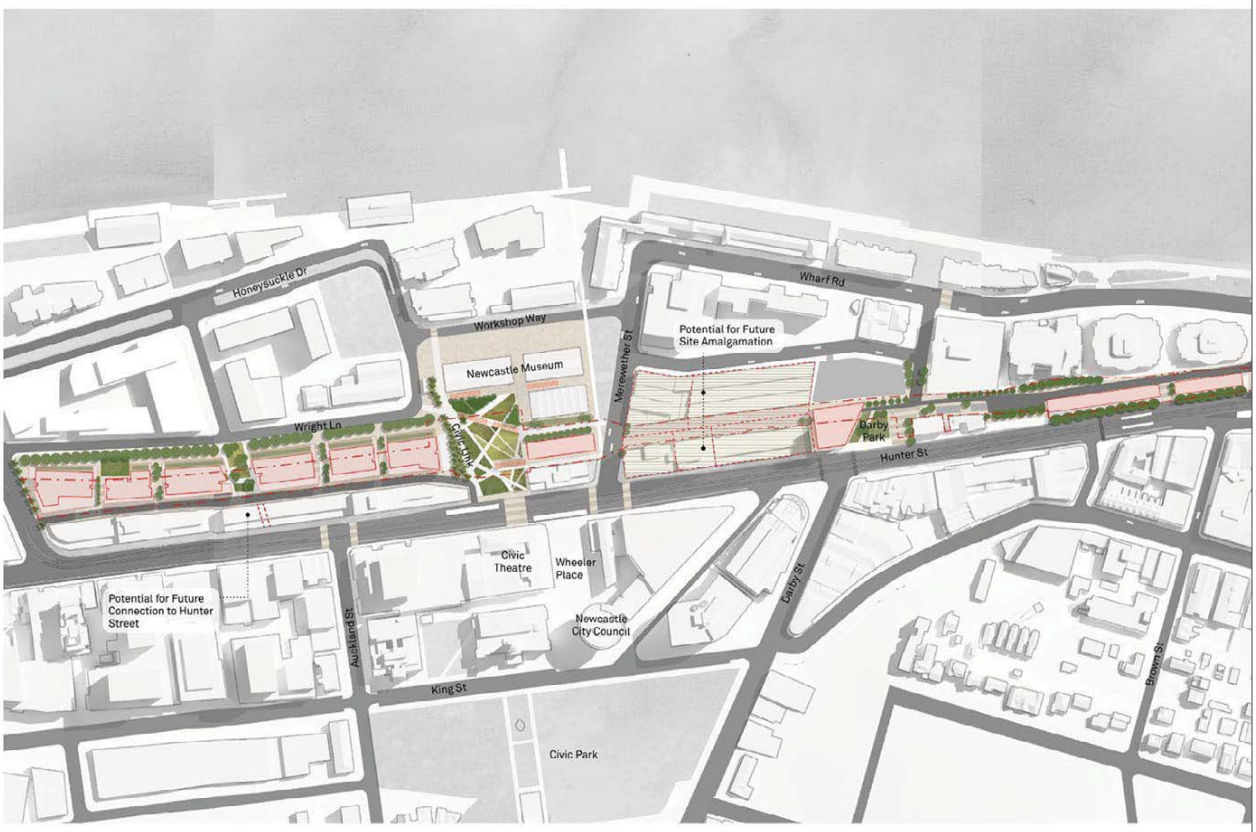
5 NEWCASTLE STATION (EAST END)

Newcastle Railway Station is proposed to be re-purposed into a hallmark destination, retaining heritage character with a mix of uses and focal point for the new East End, accommodating enterprises and activities that attract visitors and stimulate the economy.

Refurbishment would fully respect and celebrate the heritage integrity of the Station, and could accommodate a range of different activities including community, retail, leisure and commercial uses. The exact uses will be determined as the rezoning and Program progresses.

Newcastle urban transformation concept plan

Figure 2 Newcastle urban transformation concept plan



Source Hassell Architects

Hunter St and Scott St Revitalisation

Entertainment Precinct

Newcastle Station

02 Proposed amendment to Newcastle Development Control Plan 2012

Overview

Newcastle Development Control Plan (NDCP) 2012 supports the NLEP and provides additional guidelines that should be taken into account when preparing a development application.

Part 6 Locality Specific Provisions of the NDCP provide area specific guidelines for certain locations, including Newcastle city centre (Part 6.1). The provisions for Newcastle city centre were amended to reflect the *State Environmental Planning Policy Amendment (Newcastle City Centre) 2014*. The new provisions were approved and embedded into the NDEP in September 2014. However, the current provisions do not include the rail corridor lands.

The Vision for Newcastle city centre as described in Part 6.1 of the NDCP is as follows:

Newcastle City Centre will continue to grow and evolve to strengthen its position as the Hunter Region's capital. The city centre will reflect the Newcastle Community Strategic Plan 2030 vision to be a 'Smart, Liveable and Sustainable City', and the initiatives of the Newcastle Urban Renewal Strategy. Newcastle city centre will be an attractive city that is built around people and reflects our sense of identity.

The planning proposal is consistent with this vision.

Proposed amendments to the NDCP

To achieve the Program's objectives and vision, the following amendments are proposed to the NDCP. For the most part, the recommended amendments affect Part 6.01.02 Newcastle City Centre – Character Areas.

While the details of these amendments have not been finalised, the principles of the proposed amendments are being presented to Council as a pre-Gateway commitment. The final detailed amendments will be developed in consultation with Council post-Gateway and prior to public exhibition. It is intended for both the planning proposal and amended NDCP to be publicly exhibited concurrently.

Table 1 Newcastle Development Control Plan 2012 amendments – principles

Part of DCP	Proposed principle to be considered in the NDCP amendment	Justification
Part 6.01.02 Character areas		
D. Civic	**New principle:** Nodes of activity and linkages between Darby Street and the Hunter River foreshore are created, including the creation of Darby Park	The existing Principles for the Civic area are reflected in the Program's vision and concept plan objectives. The additional Principles are recommended to: » Enhance the public realm » Provide additional linkages to the Hunter River foreshore » Enable easier mid-block permeability.
	Amendment to principle (g): Distinctive early industrial, warehouse, retail buildings and heritage that contribute to the character of the area to be re-purposed	
	New principle: The new Civic Square, at Newcastle Museum, together with Wheeler Place, are the primary public open space in the heart of Civic	
	New principle: Expansion of Civic to extend northwards towards the Hunter River foreshore, to include higher education and smart workplaces	
F. East End	**New principle:** Recreational opportunities are created by creating public space and pedestrian connections from Scott Street to the Hunter River foreshore, through Market Street and Queens Wharf	As with the Civic Character area, the existing Principles are generally reflected in the Program's vision and concept plan objectives. An additional Principle is recommended to ensure that recreational opportunities, which will be created through the connecting of Scott Street to the Hunter River foreshore, through Market Street and Queens Wharf, are highlighted.

Part of DCP	Proposed principle to be considered in the NDCP amendment	Justification
Part 6.01.03 General controls		
A1. Street wall heights	**New principle:** Building height to relate to adjacent height limits to minimise impact to amenity and view loss	The additional Performance Criteria seek to create a consistent building form and pattern within the study area. The alternative solutions provided in the DCP enable the flexibility sought in some instances, for example adjoining or adjacent to heritage buildings and reflecting existing built form in heritage conservation areas. Additional Performance Criteria are recommended to deal with any larger buildings which may arise through the amalgamation of properties and reducing their overall bulk and scale when viewed from street level and to ensure adequate levels of amenity are provided to separate built form. The additional Principles take a holistic view of the unique nature of the proposed infill buildings within the study area.
	New principle: The heights of new buildings should respond to established or proposed built form, view lines between the city and harbour, and lower scale heritage buildings	
	New principle: Built form setback above the street wall height recommended at larger sites to reduce building bulk and floor plate size	
	New principle: Potential for built form setback above the street wall height for proposed residential buildings for the sites between Worth Place and Argyle Street to maintain a pedestrian scaled environment at ground level, achieve appropriate floor plate depth, reduce building bulk and create opportunities for private domain benefits on the podium roof top	

Part of DCP	Proposed principle to be considered in the NDCP amendment	Justification
A2. Building setbacks	**New principle:** Appropriate ground floor setback along Hunter Street to be established to increase pedestrian zones and opportunities for retail activation	An additional Performance Criteria may be included to emphasise the role Hunter Street plays in providing retail and commercial opportunities, whilst being located within a heavily pedestrianised area.
	New principle: Side setbacks at identified locations to align with adjacent buildings and create new physical links, view corridors and public domain spaces	Additional Performance Criteria may be included to relate to specific properties to establish and reinforce building separation. These setbacks will emphasise the character being sought for the study area where opportunities are available to create new view corridors, open spaces, laneways between buildings, and enable servicing from the rear / side of buildings. An additional figure may be included within the DCP to indicate the location of new laneways.
	New principle: Rear setbacks are required to create adequate separation between adjacent buildings and open opportunities for potential laneway activation, vehicle access and on-street loading zones.	
	Amend existing map: Amend Figure 6.01-13 Building setbacks plan to remove requirement for buildings to be setback 4m	This amendment will enable buildings to be sited closer to the property boundary in instances where they form 'back of house' and rear entrances.
A3. Building separation	**New principle:** Physical breaks between buildings enhance permeability, create new north-south connections and open up new view corridors.	This proposed Performance Criteria would specifically apply to identify sites where additional building separation will assist in creating improved connections and view corridors between buildings. An additional figure may be included within the DCP to indicate the location of these key sites and will be supported by a visual analysis.
A4. Building depth and bulk	**New principle:** It is important that long, narrow sites allow breaks in buildings to avoid a continuous built form wall and increase permeability within blocks.	This Performance Criteria will ensure that new buildings are expressed as separate building elements to result in an appropriate built form. The Performance Criteria will reinforce the desired outcomes for this control allowing ventilation, daylight access, view sharing and privacy in neighbouring developments and the public domain.

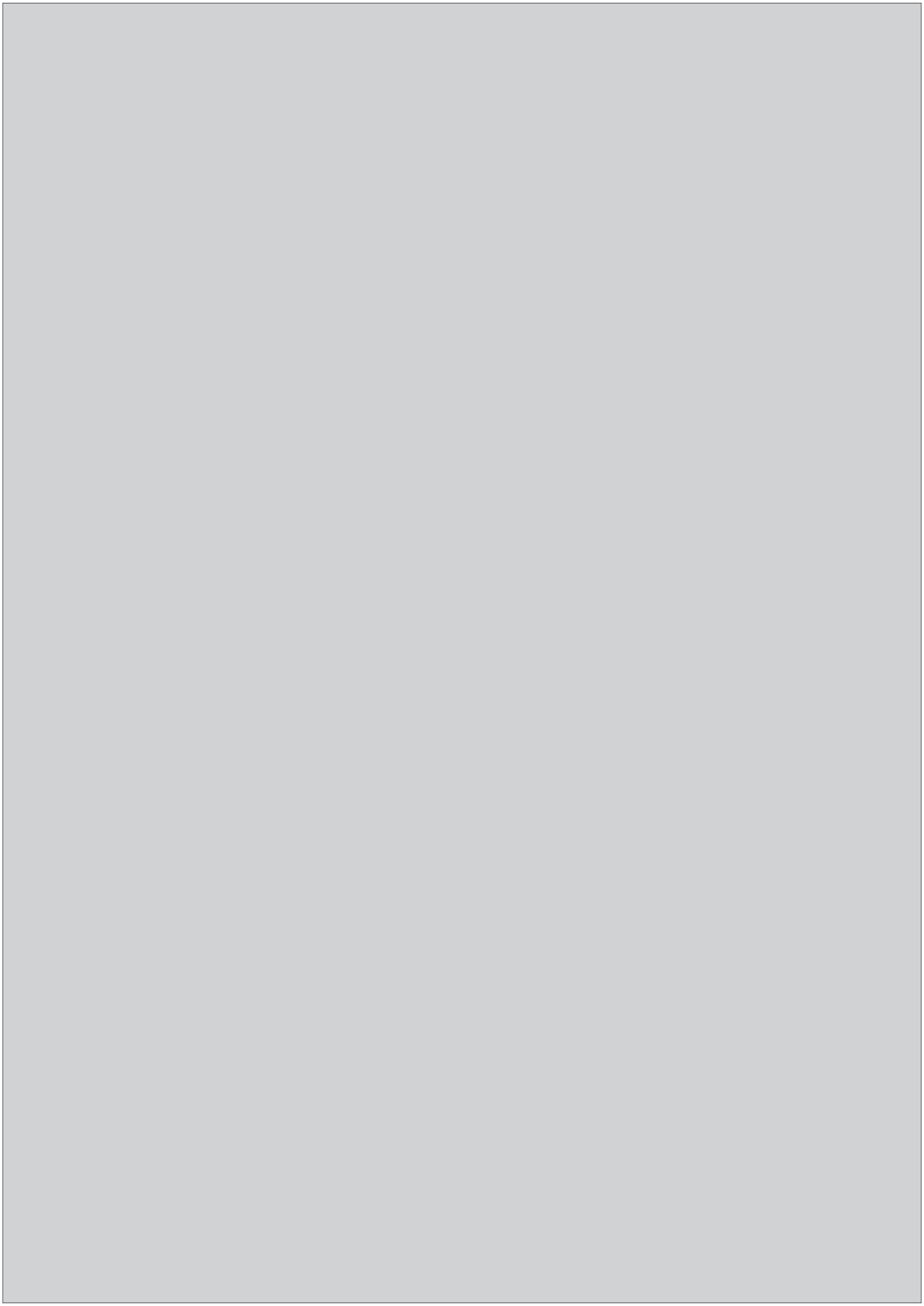
Part of DCP	Proposed principle to be considered in the NDCP amendment	Justification
A8. Design of parking structures	**New principle:** Maximum access widths will enable each site to be accessed separately, without resulting in dominance of driveways on the streetscape.	An additional figure to indicate the location and proposed minimum access widths may be included under this Performance Criteria to achieve a good urban design outcome.
Noise and vibration mitigation measures	**New principles:** Consider noise and vibration impacts by including greater setbacks, amending building orientation and overall building height and constructing noise barriers. Locate sleeping and other habitable areas within buildings furthest from the noise source. Implement noise barriers, which may comprise using the natural topography, earth mounding or a solid barrier, or a combination of these. Use podiums, balconies and courtyards to increase the travel path of noise to noise-sensitive areas. Consider building elements such as walls, windows, doors and roofs.	This is a new principle being proposed for consideration as an inclusion into the DCP. The principle relates to mitigating both noise and vibration impacts of having residential and commercial/retail/ tourist/recreational uses in close proximity to each other.
B1. Access network	**Amend existing map:** Amend Figure 6.01-20 Access network plan to identify proposed pedestrian links, through-site links, service/ shared lanes and cycle lanes.	This amendment will ensure that the rezoning area integrates with the access network plan previously identified by Council.

Part of DCP	Proposed principle to be considered in the NDCP amendment	Justification
B3. Active street frontages	**New principle:** Active uses in existing and new laneways may be encouraged to increase laneway activation and provide opportunities for the rejuvenation and activation of neighbouring buildings. However, not all ground floor uses from Worth Place and Merewether Street are encouraged to be activated in order to insure Hunter Street remains the main activity corridor	This new Performance Criteria will ensure the activation of existing and new laneways to encourage lively areas that have natural surveillance.
	Amend existing map: Amend Figure 6.01-25 Active street frontages plan to identify areas of 'activity nodes' and blocks which support 'active frontages'.	
B4. Addressing the street	**New principle:** Require a Crime Prevention Through Environmental Design (CPTED) assessment to reinforce public safety and encourage natural surveillance from windows and balconies.	This new Performance Criteria will ensure streets and public spaces are provided with natural surveillance through the design of new buildings and the creation of new laneways.

Part of DCP	Proposed principle to be considered in the NDCP amendment	Justification
Part 6.01.04 Key precincts		
East End Newcastle City Centre (parcels 12 & 14)	A new Key Precinct is proposed to be included in the DCP. This Precinct will focus on parcels 12 & 14 in the East End, as identified in Council's DCP and the rezoning proposal. The Precinct will be inserted into Figure 6.01-26 Character areas and key precincts map as number '4'. The format of the Key Precinct will be consistent with the existing Key Precincts: **Existing character** The existing character will be described, highlighting the current opportunities and constraints. **Future character** The future character will also be described. The Newcastle Urban Renewal Strategy (NURS) sets out the future character as being one involving a mix of residential, retail, leisure and entertainment uses. This section will also emphasise the sought-after opportunities and improvements that should result from the rezoning. **Objectives** Objectives for this Precinct may include: Strengthen the sense of place and urban character as a residential, retail, leisure and entertainment destination. **1** Promote active street frontages. **2** Create new and protect existing view corridors. **3** Promote a permeable street network with well connected easily accessible streets and lanes. **4** Create spaces that are safe and secure. **Performance criteria** **1** Pedestrian permeability and amenity is improved. **2** Building form integrates with existing buildings. **3** Servicing and access is designed to minimise conflicts with pedestrians.	

Part of DCP	Proposed principle to be considered in the NDCP amendment	Justification
Newcastle Station and Foreshore Park	A new Key Precinct is proposed to be included in the DCP. This Precinct will focus on the East End, as identified in Council's DCP and the rezoning proposal. The Precinct will be inserted into Figure 6.01-26 Character areas and key precincts map as number '5'. The Precinct will encompass the heritage listed Newcastle Station building and the open space to its north. The format of the Key Precinct will be consistent with the existing Key Precincts: **Existing character** The existing character will be described, highlighting the current opportunities and constraints. **Future character** The future character will also be described. This will emphasise the Precinct as a destination for both residents and visitors alike to use and enjoy the regional open space and any future adaptation of the former Newcastle Station. **Objectives** Objectives for this Precinct may include: **1** Promote the Newcastle Station and Foreshore Park as a recreational, leisure and tourist destination. **2** Protect the heritage and history of the Newcastle Station through its adaptive re-use. **3** Promote the space as a regional destination for both residents and visitors. **4** To create a space that is safe and secure. **Performance criteria** Key performance criteria may include: **1** Pedestrian permeability and amenity is improved and enhanced through the provision of street furniture and recreational equipment. **2** Promote the Foreshore Park as a regional open space asset. **3** Ensure built form and land use considers noise impacts on adjacent residential uses. **4** Consider elements such as double facing the buildings between Scott Street.	
Part 7.02.01 Categories of development		
B. Public open space	**New principle:** Encourage green infrastructure in the public domain to provide additional amenity and promote climate adaptation and biodiversity	This new Performance Criteria provides opportunity for green infrastructure to be incorporated into the design of new public open space.

Part of DCP	Proposed principle to be considered in the NDCP amendment	Justification
Part 7.03.02 Parking provision		
A. Parking rates	**Note:** It is likely that parking rates within the Newcastle City Centre can be reviewed following any approval for the light rail project, and any associated changes to the existing bus network. **New principle:** Building design to encourage reduced private vehicle dependency and increased light rail patronage, walking and cycling	A review of the current parking rates in the City Centre will be required to be undertaken should the Newcastle light rail project be implemented to more accurately reflect car usage for this highly accessible location. The study area will be able to ensure that any future development will more accurately respond to this change in private vehicle usage by providing a reduced on-site parking provision. This work will be undertaken in collaboration with Council's Transport and Traffic section.
Part 7.05 Energy efficiency		
7.05.01 Residential development **7.05.02 Business development**	**New principle:** Encourage green buildings which will reduce the demand for resources, improve indoor health and amenity and reduce the cost of living/working.	For both residential and business development, an increased green building requirement, either through BASIX or NatHERS, may be sought to address sustainability principles.



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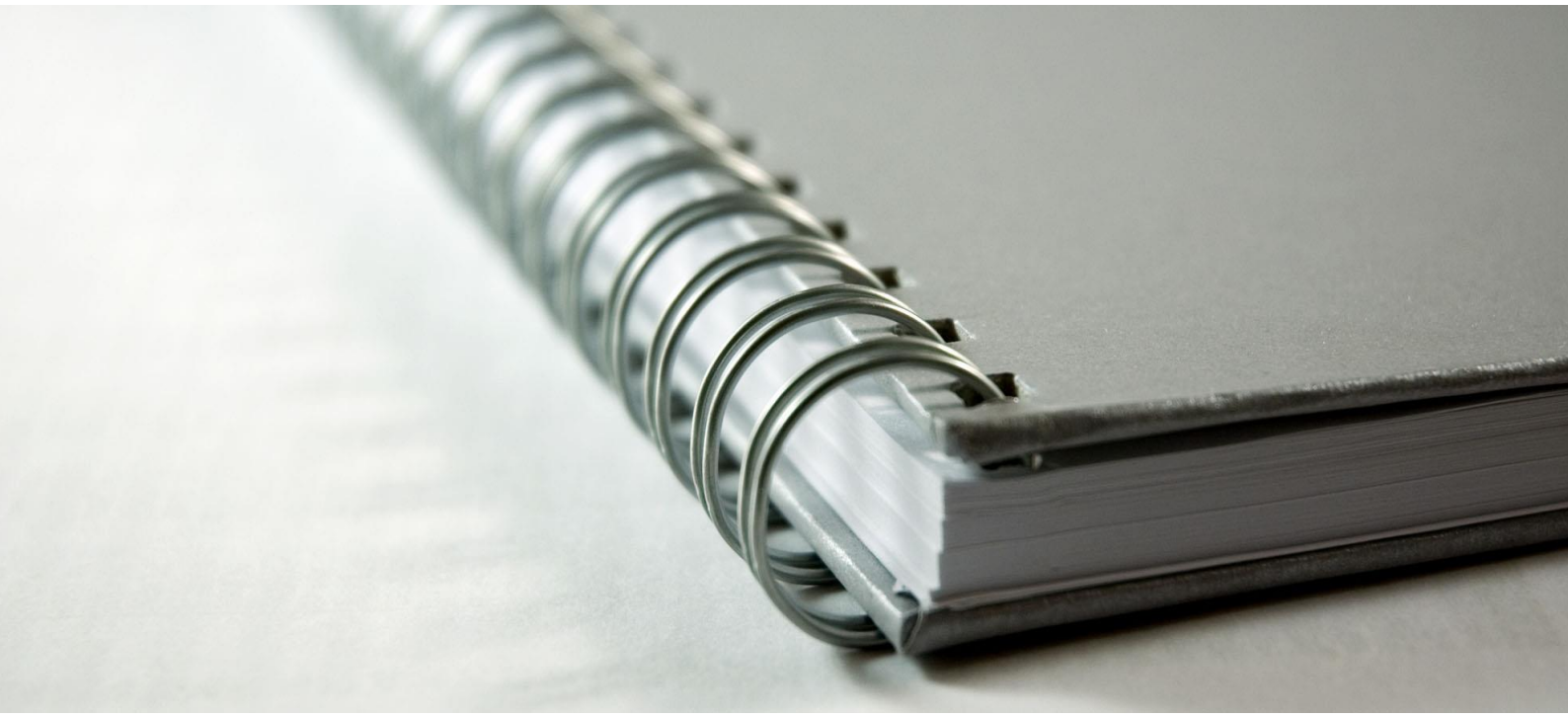
Attachment J - Traffic Impact Assessment

By GHD, dated June 2016



UrbanGrowth NSW

Newcastle Urban Transformation and Transport Project
Rezoning of surplus rail corridor lands

Traffic Impact Assessment

June 2016

Executive summary

This report has examined the traffic implications of the proposed rezoning of the surplus rail corridor through the Newcastle CBD. This report is subject to, and must be read in conjunction with, the limitations and qualifications contained throughout the Report.

The proposed rezoning would provide for public recreation, a major attraction and several mixed use sites. Land that is the subject of the rezoning application includes the assumed potential for some 585 residential units, and 5,200 m^2 Gross Floor Area of non-residential land use (most likely for employment-generating uses such as office and/or retail). Development on three adjacent and related sites, which do not form part of the rezoning application, has also been considered in this assessment.

Traffic generation

Conservative estimates of expected traffic generation have been adopted, based on rates published by Roads and Maritime Services for a location in suburban Newcastle, and on the parking requirements outlined in the Newcastle Development Control Plan 2012. Daily traffic movements of almost 3,900 (2-way) have been estimated. However, with good access to the Newcastle CBD, light rail services, bus services and active transport connections, traffic generation from the proposed development sites will be substantially less than this conservative estimate.

Traffic modelling

Traffic modelling of the assumed traffic generation has been undertaken, using the traffic model developed for TfNSW to assess the traffic impacts of the Newcastle Light Rail project. The model was developed in collaboration between TfNSW, Roads and Maritime Services, Newcastle City Council and GHD.

The modelling shows that for forecast peak hour traffic conditions in 2018 and 2028 the additional traffic generated by the proposed rezoning could be accommodated within the road network, without any modifications or mitigation works beyond those already proposed by TfNSW in response to the Light Rail project.

Parking

Surveys conducted by Newcastle City Council suggest that while some areas of the CBD experience very high levels of utilisation at peak times, overall utilisation peaks at some 64% of supply. This suggests that there is opportunity to review existing controls over parking, particularly the duration of stay, to achieve a more balanced utilisation across the inner city area.

The proposed rezoning will not directly impact on any existing public parking. However, two existing off-street parking areas, comprising 190 spaces off Wright Lane, are on land adjacent to the rezoning that are also likely to be redeveloped. In the context of the overall supply of off-street parking the CBD area, with the removal of these spaces the peak utilisation would remain at less than 70%. At this level of utilisation there is capacity for growth in demand as well as a reasonable likelihood of spaces being available to users when required.

Pedestrian connectivity

The proposal would maintain and enhance pedestrian connectivity between the CBD and the waterfront, with 2 new and 4 enhanced crossings of the former rail corridor proposed. The proposed development sites will enhance the public open space surrounding each site, with retail land uses activating building frontages to provide increased opportunity for movement, recreation and service transactions.

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GHD has not been involved in the preparation of the Rezoning Application and has had no contribution to, or review of the Rezoning Application *other than in the* Traffic Impact Assessment*. GHD shall not be liable to any person for any error in, omission from, or false or misleading statement in, any other part of the* Rezoning Application*.*

1. Introduction

This report has been prepared to support the amendment to the Newcastle Local Environmental Plan (NLEP) 2012 that applies to the surplus rail corridor land ('rail corridor land') between Worth Place and Watt Street in Newcastle city centre (Figure 1-1).

Figure 1-1 Rezoning study area

Source: Elton Consulting

The Newcastle Urban Transformation and Transport Program ('Program') has been established to deliver on NSW Government's more than $500 million commitment to revitalise the city centre through: the truncation of the heavy rail line at Wickham and creation of the Wickham Transport Interchange; the provision of a new light rail line from Wickham to the Beach; and the delivery of a package of urban transformation initiatives.

The transformation element of the Program aims to bring people back to the city centre by strengthening connections between the city and the waterfront, creating employment opportunities, providing more public space and amenity, and delivering better transport.

The proposed rezoning of the rail corridor land forms a part of the delivery of urban transformation initiatives, comprising a package of transport, built form and public domain improvements.

1.1 Purpose of this report

This report outlines the potential traffic impacts arising from the proposed rezoning of land in the Newcastle City Centre, as part of the Program. It details the process used to undertake the assessment, including traffic generation and distribution, traffic modelling and reporting of model outputs. Other traffic impacts, including parking, site access, and pedestrian and bicycle issues, are also assessed.

1.2 Basis of assessment

The basis of the assessment for this project is the Newcastle City Centre Microsimulation Traffic Model, which was used by Transport for New South Wales (TfNSW) to model the impacts of the Newcastle Light Rail on the road network of the Newcastle CBD. This model was developed in collaboration between TfNSW, Roads and Maritime Services, Newcastle City Council and GHD.

The development of the model is detailed in Section 5.1. The spatial coverage of the model is shown in Figure 1-2.

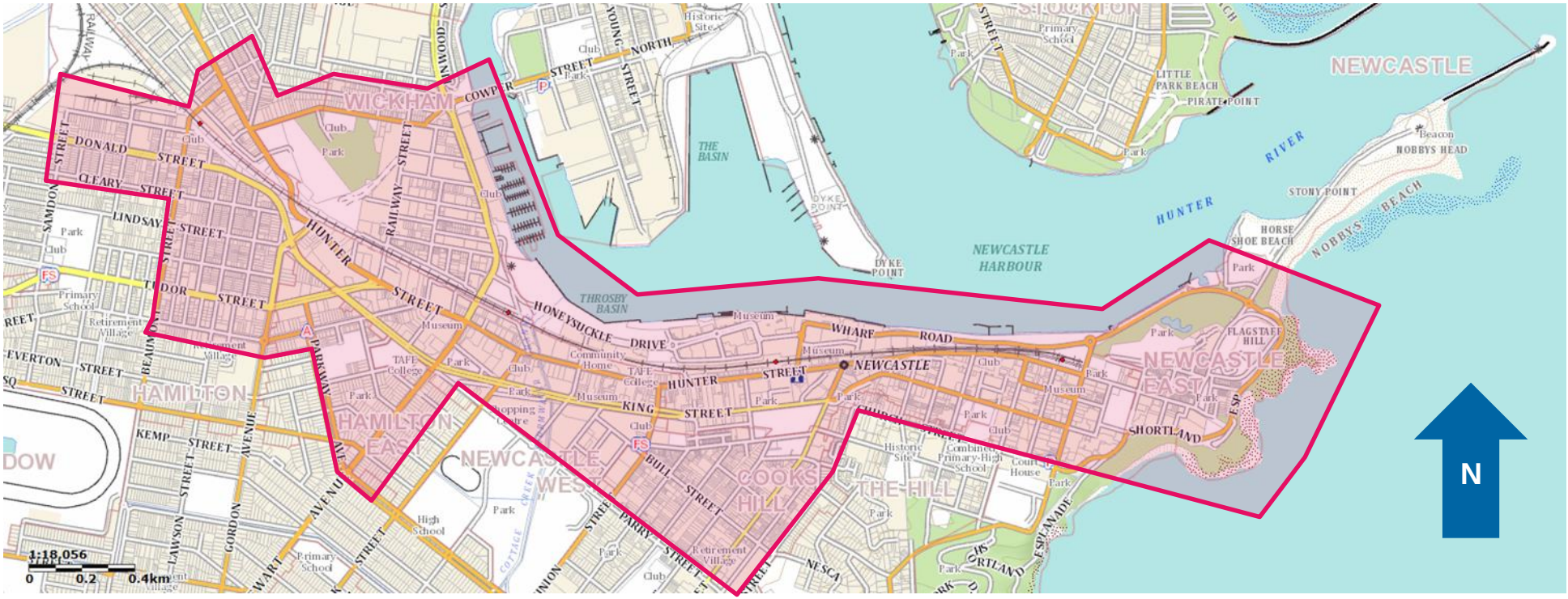


Figure 1-2 Study area for the Newcastle light rail traffic modelling

Source: https://maps.six.nsw.gov.au/

2. Newcastle urban transformation and transportation project

2.1 Newcastle urban transformation

The Newcastle Urban Renewal Strategy (NURS) sets out the NSW Government's long term approach and vision for the revitalisation of Newcastle city centre to the year 2036.

The NURS identifies three character precincts in Newcastle city centre (West End, Civic and East End), within which significant housing and employment opportunities, together with built form and public domain changes and improvements exist. The NURS describes these precincts as:

- East end: residential, retail, leisure and entertainment
- Civic: the government, business and cultural hub of the city
- West end: the proposed future business district including the western end of Honeysuckle (Cottage Creek).

UrbanGrowth NSW has been directed by NSW Government to deliver on NURS through the Program, in partnership with Transport for NSW (TfNSW), the Hunter Development Corporation (HDC) and Newcastle City Council (Council).

2.2 Proposed rezoning

UrbanGrowth NSW seeks to amend the Newcastle Local Environmental Plan 2012 (NLEP) to enable the delivery of the Program and the objectives of NURS planning outcomes.

2.2.1 Vision

The Program vision has been informed by feedback from the community, Council, government agencies and urban renewal experts.

> *Our vision is an activated city centre and waterfront that attracts people, new enterprises and tourism. Overtime, we see great opportunities to build on the strengths of the city centre to encourage innovative and enterprising industries to survive. In the longer term, we see an opportunity to strengthen Newcastle's position on the regional, national and international stage, with a view to stronger ties with Asia Pacific.*
>
> *UrbanGrowth NSW, 2015*

2.2.2 Program objectives

The Program is underpinned by five objectives which will drive successful urban transformation:

- **Bring people back to the city centre**
  - Re-imagine the city centre as an enhanced destination, supported by new employment, educational and housing opportunities and public domain, that will attract people.
- **Connect the city to its waterfront**
  - Unite the city centre and the harbour to improve the experience of being in and moving around the city.

- **Help grow new jobs in the city centre**
  - Invest in initiatives that create jobs, with a focus on innovative industries, higher education and initiatives to encourage a range of businesses to the city centre.
- **Create great places linked to new transport**
  - Integrate urban transformation with new, efficient transport to activate Hunter and Scott Streets and return them to thriving main streets.
- **Creating economically sustainable public domain and community assets**
  - Leave a positive legacy for the people of Newcastle. Ensure that new public domain and community facilities can be maintained to a high standard into the future.
- **Preserve and enhance heritage and culture**
  - Respect, maintain and enhance the unique heritage and character of Newcastle city centre through the revitalisation activities.

2.2.3 Urban transformation concept plan

Surplus rail corridor land runs through the East End and Civic city centre precincts (established by NURS). Based on this vision and the results of extensive stakeholder and community engagement, an overall urban transformation concept plan ('concept plan') has been prepared for the surplus rail corridor (rezoning sites), as well as surrounding areas. The concept plan considers and integrates with the delivery of light rail. It is also coordinated with the proposed Hunter Street Mall development to create an interactive, synergised and cohesive city centre and foreshore area.

The concept plan (as shown in Figure 2-1) includes five key 'key moves', two that relate to the Civic precinct and three of which relate to the East End.

Civic link (Civic)

This area is the civic heart of Newcastle and includes some of the region's most important civic and cultural assets, including Civic Park, City Hall, Civic Theatre and Newcastle Museum. Current investment in the area includes the law courts development and the University of Newcastle NeW Space campus – both of which are under construction.

The focus of this key 'move' is to leverage best value from new investments by creating new open space and walking and cycling connections that link Newcastle's civic buildings to the waterfront and the light rail system.

- **Civic Green.** Creating a new civic focused public space linking Hunter Street to the Newcastle Museum that will provide direct visual and physical connection from Wheeler Place to the harbour, activate light rail on Hunter Street and meet the needs of the incoming legal and student populations
- **Built form improvements.** Sensibly scaled mixed use development that forms part of the Honeysuckle development.

-

Darby Plaza (Civic)

Darby Street is Newcastle's premier 'eat street', offering a mix of shops, cafes, restaurants and night life. At present Darby Street ends at the intersection with Hunter Street, and this key 'move' seeks to create a new node of activity and linkage through to the harbour that complements the delivery of light rail.

- **Darby Plaza.** A new community focused public space including provision of new walking and cycling facilities from Hunter Street to the harbour.
- **Built form improvements.** Zoning of rail corridor land between Merewether Street and Argyle Street to allow for future mixed use development in conjunction with surrounding lands in the longer term.

Hunter Street revitalisation (East End)

Hunter Street features some of Newcastle's best heritage buildings and offers a mix of shops, cafes, restaurants and other local business. Hunter Street has experienced decline in recent years, and the opportunity exists to reinstate Hunter Street as the regions premier main street that complements the delivery of light rail.

- **Built form improvements.** Sensibly scaled mixed use development consistent with the adjoining land uses to create an activated street with 'two edges', celebrate heritage and create new linkages from Hunter Street to the waterfront, provide activation around light rail stops and improve walking and cycling facilities.

Entertainment precinct (East End)

This key 'move' aims to create a place where people can come to play, relax and reconnect with the harbour in a new public space stretching from Scott Street to the waterfront incorporating a new connection from Market Street to Queens Wharf. This key 'move' will assist to activate the area with a variety of activities to create an exciting place for the East End.

- **Recreational opportunities.** This precinct will incorporate the adaptive re-use of the signal box and provision of recreation opportunities for all ages and abilities. Public domain will be, designed to provide a thoughtful series of character areas and experiences as one walks the length. The area will also provide opportunities for viewing and interpretation of heritage character that respect the unique qualities of place.

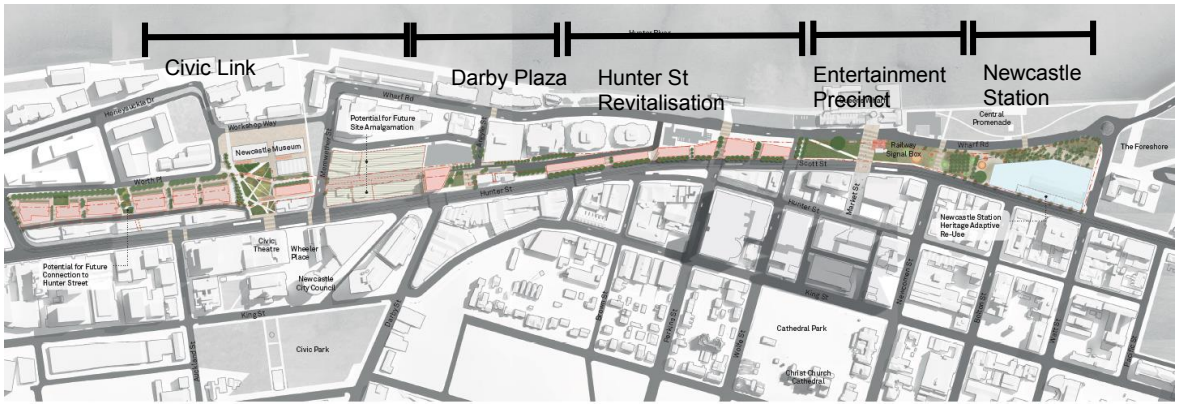
Newcastle Station (East End)

Newcastle Railway Station is proposed to be re-purposed into a hallmark destination and focal point for the new East End, accommodating enterprises and activities that attract visitors and stimulate the economy.

Refurbishment would fully respect and celebrate the heritage integrity of the Station, and could accommodate a range of different activities including community, retail, leisure and commercial uses.

2.2.4 Rezoning concept plan

The proposed rezoning of the surplus rail corridor lands is the focus of this report. Figure 2-1 defines the site rezoning area within the broader program planning outcomes.



Source: Hassell

Figure 2-1 Rezoning concept plan

Amendments to the NLEP are required to deliver part of the concept plan. The proposed amendments are on surplus rail corridor land only.

Necessary amendments to the NLEP include:

- Amend the Land Use Zoning Map to introduce new B4 Mixed Use, SP3 Tourism and RE1 Public Recreation zones
- Amend the Height of Building and Floor Space Ratio maps to facilitate development on select parcels of land
- Reclassification of part of the rail surplus rail corridor to Community by amending Part 3 of Schedule 4 of the NLEP to rezone land for public open space
- Amendment to the Land Reservation Acquisition Map to enable the proposed RE1 public open space land to be acquired by Newcastle Council.

Amend the key maps (as referred to in Clause 7.5 of the NLEP) to include Newcastle Railway Station Heritage building. The approach taken to the amendments is to support the NURS planning approach and to remain consistent with surrounding planning controls in terms of zones, floor space ratio (FSR) and height.

The concept plan will also form the basis for updates to the Newcastle City Centre Development Control Plan design controls to guide development and public domain works for rezoning sites.

2.2.5 Proposed rezoning

This planning proposal seeks to rezone rail corridor land (rezoning sites) to enable the delivery of the proposed urban uses established in the concept plan. The planning proposal concept plan includes public domain, entertainment, mixed use and commercial and residential development.

In general the proposed rezoning will provide a mix of uses with between 500-600 dwellings which will comprise a variety of styles and types, and around 5,000 m^2 of commercial, restaurant and other entertainment uses, as described in Table 2-1.

Proposed maximum building height and floor space ratio controls respect existing controls that apply to surrounding land.

Table 2-1 Sites for rezoning – Proposed development summary

Precinct and Parcel Code*		Purpose	Site area (m^2)	Current zone	Proposed zoning	Proposed floor space ratio	Proposed maximum building height (m)
Civic Link	1	Mixed use development	3,370	SP2 Infrastructure	B4 Mixed use	3:1	30
	2	Recreation	408	SP2 Infrastructure	RE1 Public recreation	3:1	30
	3	Mixed use development	3,146	SP2 Infrastructure	B4 Mixed use	3:1	30
	4	Recreation	2,464	SP2 Infrastructure	RE1 Public recreation	N/A	N/A
	5	Mixed use development	1,603	SP2 Infrastructure	B4 Mixed use	3:1	24
	6	Road	295	SP2 Infrastructure	B4 Mixed use (road)	2.5:1	30
Darby Plaza (Civic)	7	Mixed use development	2,040	SP2 Infrastructure	B4 Mixed use	2.5:1	30
	8	Mixed use development	988	SP2 Infrastructure	B4 Mixed use	4.1:1	24
	9	Recreation	467	SP2 Infrastructure	B4 Mixed use (road)	N/A	N/A
Hunter St Rev. (East End)	10	Mixed use development	386	SP2 Infrastructure	SP2 Infrastructure	N/A	N/A
	11	Mixed use development	4,542	SP2 Infrastructure	B4 Mixed use	2.5:1	14
	12	Mixed use development	1,544	SP2 Infrastructure	B4 Mixed use	2.5:1	17
	13	Recreation	303	SP2 Infrastructure	RE1 Public recreation	N/A	N/A
	14	Mixed use development	2,251	SP2 Infrastructure	B4 Mixed use	2.5:1	14
Entertainment precinct (East End)	15	Recreation	7,713	SP2 Infrastructure	RE1 Public recreation	N/A	N/A
Newcastle Station (East End)	16	Recreation and mixed use development	10,698	SP2 Infrastructure	SP3 Tourist	1.5:1	Part 10m and part 20m

The location of the proposed rezoning parcels is indicated in Figure 2-2 below.

Source: Hassell

Figure 2-2 Rezoning explanatory map - Parcels

2.3 Newcastle light rail

The NSW Government is introducing light rail to Newcastle as part of a broader strategy to revitalise the Newcastle city centre. Light rail will travel from a new transport interchange at Wickham, through the Newcastle city centre to Pacific Park.

The truncation of heavy rail services at Wickham and the building of a new interchange are the first steps in delivering an urban renewal and transport solution for Newcastle.

Transport for NSW has been working closely with UrbanGrowth NSW, Newcastle City Council and Roads and Maritime Services in planning for light rail. Light rail will help improve public transport and access, reunite the city centre with its waterfront and improve the attractiveness of public spaces. The light rail route will travel east from the new transport interchange at Wickham along the existing rail corridor to Worth Place, before moving south to connect with Hunter Street and Scott Street before reaching Pacific Park, near the beach.

Initial geotechnical investigations have been completed and detailed design and environmental planning is well underway.

Transport for NSW and a combined team of Newcastle-based experts have prepared an environmental assessment for the Newcastle Light Rail project. The environmental assessment studies include heritage, visual and urban design, noise and vibration, social impacts, air quality and traffic, and access.

2.3.1 The Review of environmental assessment factors will follow its due process, including public consultation. Light rail alignment

The currently proposed alignment for the light rail is shown in Figure 2-3.

The six light rail stops on this alignment are located at:

- Wickham west of Stewart Avenue (terminus)
- Honeysuckle at Kuwami Place in the existing railway corridor
- Civic in Hunter Street
- Crown Street in Hunter Street

- Queens Wharf in Scott Street at Market Street
- Pacific Park on the south side of Scott Street between Pacific Street and Telford Street (terminus).

Light Rail services

The Light Rail service will operate with 10 minute headways in each direction, with travel times between Wickham and Pacific Park in the order of 12 minutes.

The Light Rail terminus is on the western side of Stewart Avenue at the new Wickham Interchange, requiring light rail vehicles to cross Stewart Avenue and access the existing rail corridor via Beresford Street. Additionally, with the new road connection at Steel Street the light rail vehicle will be required to cross Steel Street before accessing the Hunter Street dedicated Light Rail Lane at Worth Place. The Hunter Street dedicated lane continues until Market Street where the alignment becomes shared running with regular traffic until Pacific Street, where the light rail terminates at the terminus on the northern side of Pacific Park near Newcastle Beach.

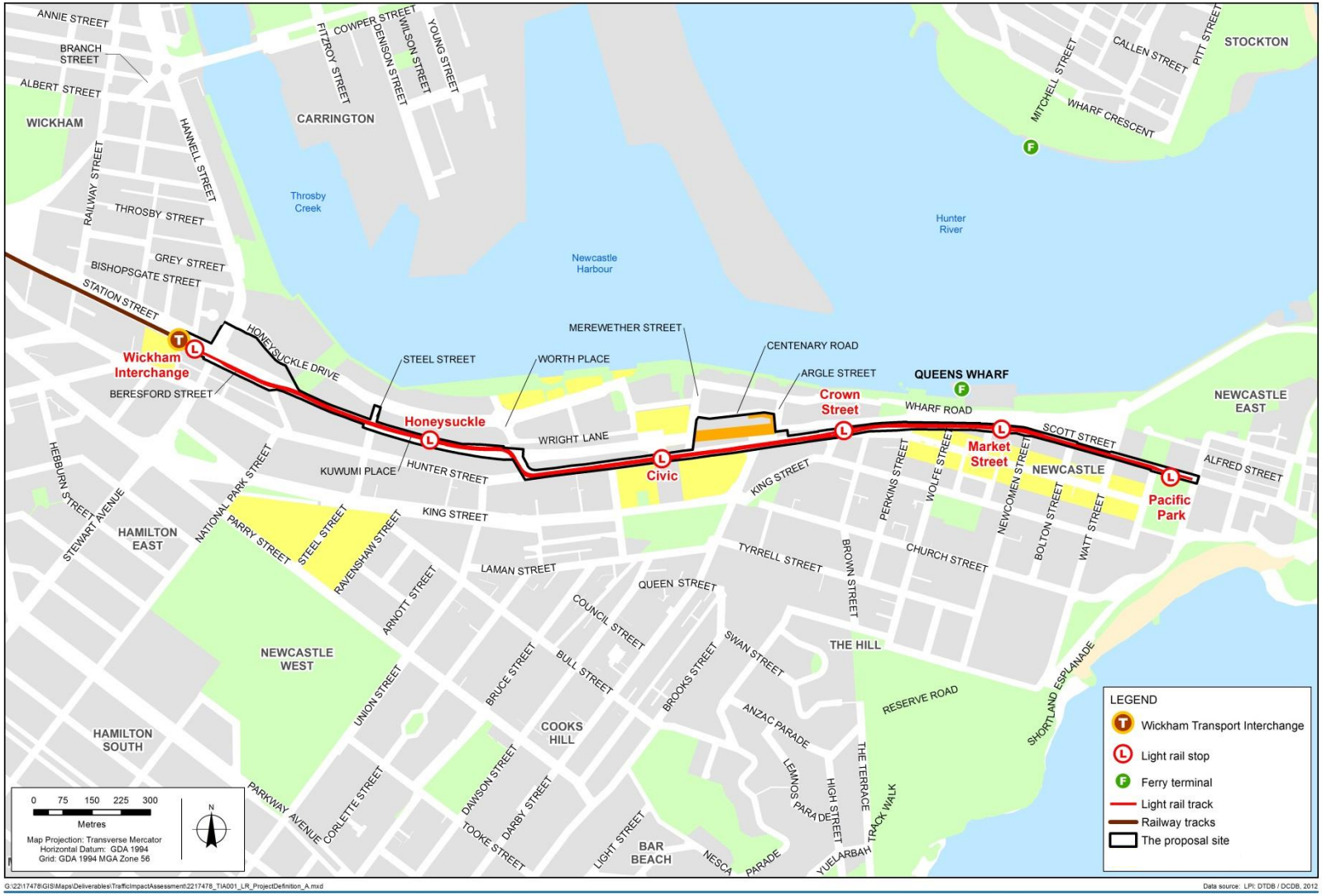


Figure 2-3 Proposed Newcastle light rail alignment and stop locations

3. Base conditions

The NUTTP rezoning proposal is being delivered in conjunction with the Newcastle Light Rail project. As such the Base, or pre-development scenario for this study is the TfNSW Light Rail Proposal. The establishment of this Base scenario, including the light rail alignment and stop locations, and changes to the road network to accommodate light rail traffic impacts, has been the subject of separate discussions between TfNSW, RMS and Newcastle City Council, and a separate REF has been prepared for that project.

3.1 Road network

Key elements of the road network relevant to the rezoning proposal are described below, including planned changes associated with the Light Rail project.

Hunter Street

Hunter Street is an arterial road that runs in an east-west direction, running parallel to the former heavy rail line between Wickham and Newcastle. It is generally a two-way four lane undivided road. The former railway corridor runs parallel to Hunter Street on the road's northern side. Between Perkins Street and Bolton Street, most traffic uses the parallel Scott Street, with Hunter Street being a one-way westbound 10km/h shared zone through the 'Hunter Street Mall'. Hunter Street and Scott Street have a sign posted speed limit of 60 km/h and carries up to 1200 vehicles per hour in the peak period. Hunter Street provides access to residential and commercial properties and a local shopping and café precinct in the eastern mall area.

King and Parry Street

King Street is an arterial road that runs parallel to Hunter Street. Between Union Street and Stewart Avenue, it is a four lane divided road, with peak volumes up to 1,400 vehicles per hour. The adjacent land-uses are generally commercial however there are also a number of hotels and residential apartment blocks along its length. To the west of the intersection with Stewart Avenue, King Street becomes Parry Street. At this location Parry Street is also a four lane divided road with a third west bound clearway lane in the afternoon. Parry Street connects with Donald Street, Hamilton and ultimately becomes Newcastle Road to the western suburbs and the M1 Motorway. The posted speed limit varies between 40 km/hr, 50 km/hr and 60 km/hr, reflecting the road configuration, adjacent land use and pedestrian activity levels.

Union Street

Union Street is a collector road that runs in a north-south direction between Hunter Street and The Junction, terminating at Mitchell Street, Merewether. Union Street is a two-lane carriageway with a speed limit that varies between 40km/h and 60km/h, and carries up to 800 vehicles per hour in the peak period. On-street parking is permitted along most of its length and provides direct access to a number of residential properties and The Junction shopping precinct.

Darby Street

Darby Street is a collector road that runs in a north-south direction between Hunter Street and Parkway Avenue. Between Bull Street and Queen Street, the sign posted speed limit is 40km/h and the road is characterised by a bar and café precinct, generating high levels of pedestrian activity. Darby Street is generally a two-lane carriageway that carries approximately 1000 vehicles per hour in the peak period.

Honeysuckle Drive and Wharf Road

Honeysuckle Drive runs generally east-west between the former heavy rail corridor and Newcastle Harbour. It becomes Workshop Way before changing to Wharf Road at Merewether Street. Honeysuckle Drive services the commercial office space, residential and restaurant/bar precincts that are adjacent to Newcastle Harbour. East of Merewether Street, there are several medium density residential and commercial developments. Peak period traffic volumes are up to 700 vehicles per hour, highest at the western end of the road. A 50 km/hr speed limit applies.

3.1.1 Road network changes with light rail

The concept for the light rail included the following changes to the road network:

- New traffic signals on Stewart Avenue at Beresford Street to allow safe crossing of Stewart Avenue by the light rail vehicles
- East/West 'light rail only' dedicated lanes in Beresford Street
- A westbound dedicated vehicle lane in Beresford Street
- A new road connection between Hunter Street and Honeysuckle Drive, across the existing heavy rail corridor, at Steel Street with new traffic signals at the intersection of Steel Street and the light rail track
- A signalised intersection at the new Steel Street connection at Honeysuckle Drive. Right turns from Honeysuckle Drive onto Steel Street are to be banned
- A new road connection between Hunter Street and Honeysuckle Drive at Worth Place. The intersection of Worth Place and Hunter Street is to be left in / left out, with traffic signals to control light rail movements across Hunter Street
- Changes to all the intersections along Hunter Street between Worth Place and Pacific Street to control all right turns across the light rail track through green / amber /red arrows
- New traffics signals at the Wolfe Street/Scott Street intersection with the north approach being a new connection to Wharf Road
- A new pedestrian crossing of Scott Street at Market Street, and Hunter Street at Civic
- New traffics signals at the Scott Street/Pacific Street intersection to facilitate northbound left turning and eastbound right turning light rail vehicles accessing the eastern terminus at Pacific Park
- Light rail with separated running in Hunter Street between Worth Place and Market Street
- Light rail with shared running in Hunter Street between Market Street and Wolfe Street.

3.2 Bus services

All of the existing 30 bus routes that pass through the city centre terminate at Newcastle bus interchange adjacent to Newcastle station. When light rail is implemented, the bus network within the city centre would be reconfigured so that most bus routes will terminate in Hunter Street at Auckland Street. The bus network that was coded into the Paramics model has been determined in coordination with the Infrastructure and Services Division of Transport for NSW.

3.3 Pedestrians and cyclists

Pedestrians are well catered for in and around the study area, with footpaths provided adjacent to most roadways. Since the termination of the former heavy rail line, a number of at-grade pedestrian connections have been made across the corridor, including at Steel Street, Kuwami Place, Worth Place, Argyle Street, Perkins Street and Wolfe Street, in addition to existing overpasses at the former Wickham Station, Civic Station, Argyle Street, Perkins Street and Queens Wharf.

On-road bike lanes are provided on several streets in the study area, including parts of Honeysuckle Drive, King Street, and Auckland Street.

Shared paths are also provided along the harbour through Honeysuckle and parallel to Wharf Road towards Nobbys Head.

3.4 Parking

On-street and off-street parking is provided within the study area, both by Newcastle City Council and private operators. Car parking is generally time restricted, with pay and display systems in operation.

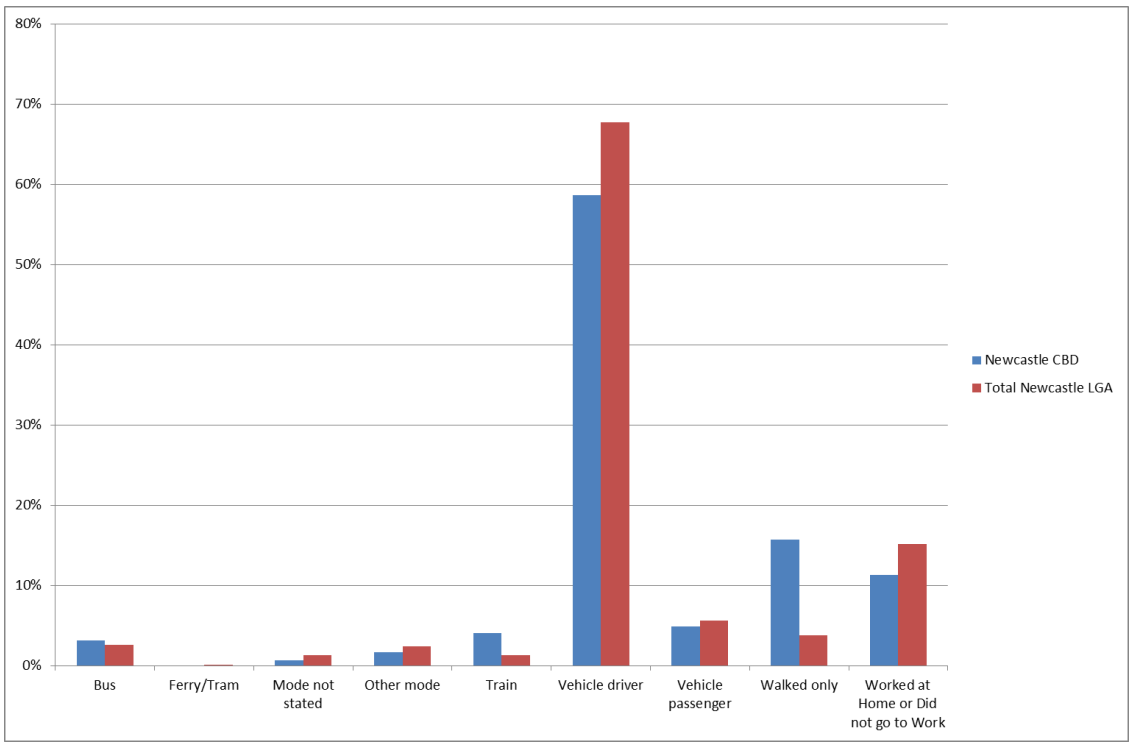
Council completed a parking strategy in 2015, which included an inventory of parking supply in the CBD and surrounding areas, as well as surveys of usage patterns, including duration of stay and overall utilisation. In the Newcastle City Centre area, there are 3,459 on-street parking spaces, and 3,169 off-street spaces. Overall peak occupancy was surveyed at 78% and 64% respectively, although some locations were more heavily utilised than others. The Strategy concludes that overall supply of parking in Newcastle can meet the current levels of demand, and that parking problems in Newcastle are predominantly management rather than supply related. This suggests that there may be opportunities to redistribute parking activity around the CBD to achieve a more efficient utilisation of existing parking infrastructure, rather than a particular need to increase parking supply. This is independent of the current rezoning proposal.

3.5 Travel behaviour

The majority of trips undertaken within Newcastle are made by car. The 2011/12 Household Travel Survey from the Bureau of Transport Statistics indicates that for residents of the Newcastle Local Government Area, 57% of trips are made as a vehicle driver, with 23% as a vehicle passenger. Walking accounts for 15% of trips, while all other modes combined make up only 5% of trips.

A breakdown of similar data included in the 2015 Newcastle Transport Strategy suggests that in Inner Newcastle, the car is still dominant but other modes are more popular.

Results of the 2011 Census Journey to Work data validate this observation. Figure 3-1 compares the mode of commute trips for residents of the Newcastle CBD with the whole Newcastle Local Government Area. For the CBD vehicle driver and passenger are less dominant, and public transport and walking more popular. It is noted that the truncation of the heavy rail line since this data was collected may affect mode share to public transport in the CBD area. Similarly, the introduction of light rail is also expected to influence travel behaviour.



Data Source; Australian Bureau of Statistics

Figure 3-1 Journey to work mode share, 2011

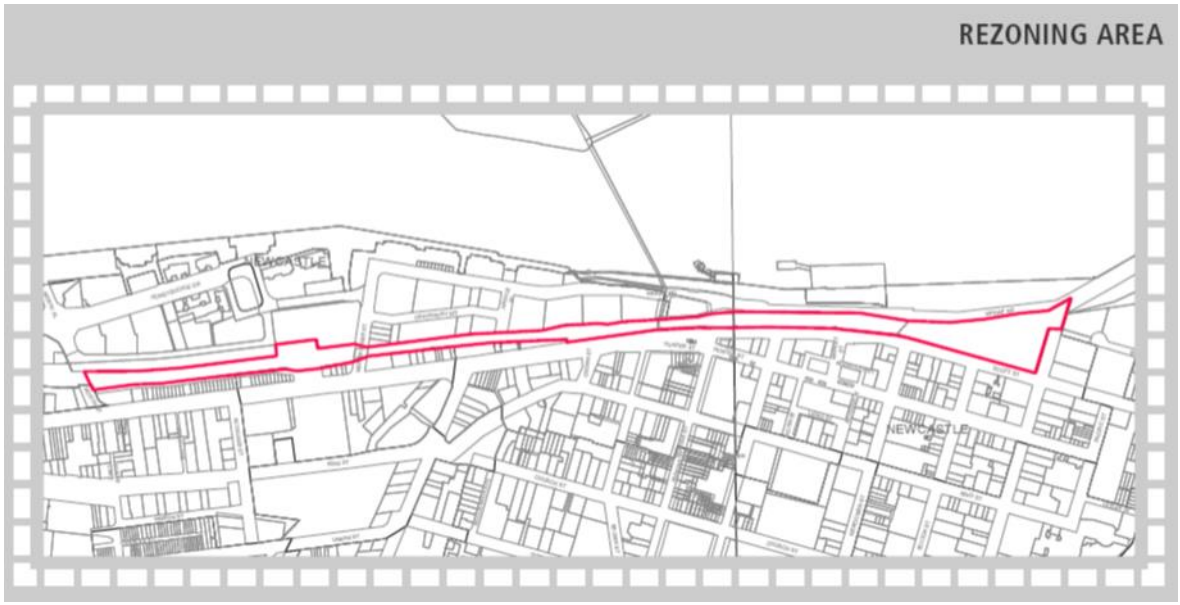
4. Rezoning proposal

4.1 Overview

The rezoning site is located in Newcastle city centre and comprises a collection of land holdings within the surplus rail corridor lands.

The site is approximately 2.1km in length generally bounded by Wharf Road to the north, Watt Street to the east, Hunter and Scott Streets to the south and Worth Street to the west. The site includes Civic and Newcastle Stations.

The site area subject to the rezoning is provided in Figure 4-1.



Source: Elton Consulting

Figure 4-1 Rezoning site area

4.2 Assumed development mix

Table 4-1 shows the assumed Gross Floor Area (GFA) that could be achieved on each land parcel. It has been assumed that 10% of GFA would be for non-residential uses, and that all sites can achieve a full GFA entitlement.

Future development applications which will be subject to planning approval and public exhibition will determine final development outcomes.

Note that the subject of this rezoning proposal is only land within the existing rail corridor. However, the assessment includes three adjacent parcels where development could be influenced by this proposal. These are:

- Parcel 17, adjacent to Parcel 1 in Wright Lane
- Parcel 19, adjacent to Parcel 3 in Wright Lane
- Parcel 20, adjacent to Hunter Street opposite Darby Street

Table 4-1 Anticipated gross floor areas

Precinct	Parcel	Gross Floor Area		
		Total	Non-residential (m^2)	Residential (m^2)
Within rail corridor				
Civic Link	1	10,000	1,000	9,000
	2			
	3	9,000	1,000	8,000
	4			
	5	4,000	500	3,500
	6			
Darby Plaza (Civic)	7	4,000	500	3,500
	8	2,000	200	1,800
	9			
Hunter St Rev. (East End)	10			
	11	11,000	1,000	10,000
	12	4,000	500	3,500
	13			
	14	6,500	500	5,500
Entertainment Precinct (East End)	15			
Newcastle Station (East End)	16			
	Sub-total	***50,500***	***5,200***	***44,800***
Adjacent Sites				
	17	7,500	750	6,750
	19	10,000	1,000	9,000
	20	5,000	500	4,500
	Sub-total	***22,500***	***2,250***	***20,250***
	Total	**73,000**	**7,450**	**65,050**

Source: Hassell

Within the above floor areas for non-residential land uses, it has been assumed that 50% would be used for retail purposes, and 50% for office uses, for the purpose of estimating parking requirements (see Section 4.4).

Table 4-2 shows the assumed mix of residential units on each site, with an average apartment size of 80 m^2 per apartment.

Table 4-2 Anticipated dwelling yield

Precinct	Parcel	Number of dwellings				
		Total	Studio	1 bed	2 bed	3 bed
			20%	35%	35%	10%
Within rail corridor						
Civic Link	1	110	20	40	40	10
	2					
	3	100	20	35	35	10
	4					
	5	50	10	15	20	5
	6					
Darby Plaza (Civic)	7	55	10	20	20	5
	8	25	5	10	10	
	9					
Hunter St Rev. (East End)	10					
	11	125	25	45	45	10
	12	50	10	20	15	5
	13					
	14	70	15	25	25	5
Entertainment Precinct (East End)	15					
Newcastle Station (East End)	16					
	Sub-total	***585***	***115***	***210***	***210***	***50***
Adjacent Sites						
	17	75	15	25	25	10
	19	85	15	30	30	10
	20	45	10	15	15	5
	Sub-total	***205***	***40***	***70***	***70***	***25***
	Total	**790**	**155**	**280**	**280**	**75**

Source: Hassell

4.3 Site access

4.3.1 Vehicular access

Each site would be accessed separately, with a basement car park anticipated for each mixed-use development. A summary of access arrangements for each site is provided in Table 4-3.

Table 4-3 Vehicular access arrangements

Parcel	Vehicular access / Egress route	Minimum access widths
1 / 17	Site access onto Wright Lane to connect to Worth Place or Settlement Lane. Potential for service vehicle access via Civic Lane. No change proposed in Civic Lane (subject to Development Application).	Combined entry / exit 6.0 to 9.0 metres wide.
3 / 19	Site access onto Wright Lane to connect to Worth Place or Settlement Lane. Potential for service vehicle access via Civic Lane. No change proposed in Civic Lane (subject to Development Application).	Combined entry / exit 6.0 to 9.0 metres wide.
5	Access connects to Merewether Street (left-in / left-out only), replicating an existing laneway between Hunter Street properties and the railway station. Access to Hunter Street is via Workshop Way roundabout.	Combined entry / exit 3.0 to 5.5m wide.
7	Left-in / left-out access to Merewether Street. Access from Hunter Street via Workshop Way roundabout	Combined entry / exit 3.0 to 5.5m wide.
8	Site access via Argyle Street.	Combined entry / exit 3.0 to 5.5m wide.
20	Site access via Argyle Street. No access off Hunter Street.	Combined entry / exit 3.0 to 5.5m wide.
11	Site access via Argyle Street. No access off Hunter Street.	Combined entry / exit 6.0 to 9.0 metres wide.
12	Access from Wharf Road adjacent to, or potentially through, existing car park.	Combined entry / exit 3.0 to 5.5m wide.
14	Access from Wharf Road	Combined entry / exit 3.0 to 5.5m wide.
16	Entry from Watt Street, exit to Wharf Road, similar to existing bus layover area access and egress arrangements. Final configuration to be confirmed at Development Application stage	Access geometry to be confirmed at Development Application stage.

Generally, Council has indicated a strong preference to avoid vehicle crossovers on Hunter Street and Scott Street, hence rear access has been assumed.

4.3.2 Access to public transport

Each of the rezoning sites is well situated with regard to public transport. Table 4-4 details the approximate walking distances between each of the rezoning sites and public transport services in Hunter Street.

Table 4-4 Approximate distances to public transport

Parcel	Walking distance to Proposed Light Rail stop	Walking distance to Bus Stop
1 / 17	300 m (Civic)	240 m
3 / 19	150 m (Civic)	215 m
5	80 m (Civic)	190 m
7	190 m (Civic)	300 m
8	220 m (Crown Street)	60 m
20	210 m (Crown Street)	50 m
11	30 m (Crown Street)	160 m
12	25 m (Crown Street)	25 m
14	130 m (Crown Street)	70 m
16	230 m (Market Place)	10 m

Pedestrian access around each of the development sites will be facilitated by the public open space that is proposed, that will connect to the existing footpath network.

4.4 Parking provision

The Newcastle Development Control Plan (DCP) 2012 outlines requirements for car parking for various land use categories. Requirements relevant to this proposal are shown in Table 4-5.

Table 4-5 Newcastle DCP 2012 parking requirements

Land use	Car parking	Bike parking	Motorbike parking
Residential Accommodation (Attached Dwellings, Multi Dwelling Housing, Residential Flat Buildings, Shop Top Housing)	*(Refer to Note 1)* Small (<75 m^2 or 1 bedroom) average 0.6 spaces per dwelling Medium (75 m^2 - 100m^2 or 2 bedrooms) average 0.9 spaces per dwelling Large (>100 m^2 or 3 bedrooms) average 1.4 spaces per dwelling 1 space for the first 3 dwellings plus 1 space for every 5 thereafter or part thereof for visitors		
Office	1 space per 50 m^2 GFA	1 space per 200 m^2 GFA (Class 2)	1 space per 20 car spaces
Restaurant or Café	1 space per 6.5 m^2 GFA or 1 space per 3 seats	1 space per 100 m^2 GFA (Class 2)	1 space per 20 car spaces
Shops	1 space per 40 m^2 GLFA	1 space per 200 m^2 GFA (50% Class 2, 50% Class 3)	1 space per 20 car spaces

Note 1: Requirements are for the Newcastle City Centre and Renewal Corridors

The DCP also allows for departures from the above rates to be approved in certain circumstances, including:

- Shared use opportunities arising from the different hours of demand for various uses
- Where a Green Travel Plan has been prepared and agreed between the Council and the owner / occupier
- Access to public transport services, and likely modes of travel
- Whether a car sharing scheme is proposed
- Availability and accessibility of public parking facilities, including on-street and off-street spaces
- Considering the impacts of providing on-site parking.

For these development sites, it is expected that the requirements on the DCP for on-site parking could be satisfied. However it is possible that within the framework of the DCP future Development Applications could propose reduce on-site parking provision, primarily based on:

- Locality in the city centre and thus accessible to many different land uses
- Access to public transport (see Section 4.3.2)
- Limited on-site capacity.

There is also the possibility that future Development Applications could include shared use parking, a Green Travel Plan and/or car share schemes which could reduce parking demand. The final parking requirement will be determined at the development application stage following public exhibition.

Table 4-6 shows the number of spaces required by the DCP for each land parcel.

Table 4-6 DCP parking requirements

Parcel	Proposed zone	Site area (m^2)	DCP parking requirement (no discount)
1 / 17 *	B4 Mixed Use	5,914	219
3 / 19 *	B4 Mixed Use	5,670	224
5	B4 Mixed Use	1,603	61
7	B4 Mixed Use	2,040	65
8	B4 Mixed Use	988	28
11	B4 Mixed Use	4,542	142
12	B4 Mixed Use	1,544	59
14	B4 Mixed Use	2,251	78
20 *	B4 Mixed Use	1,108	55
Total		**25,660**	**931**

** Includes part outside existing rail corridor*

4.5 Traffic generation and distribution

Traffic generation rates for the proposed development sites has been estimated based on information provided in the NSW RMS Guide to Traffic Generating Developments 2013 Update.

The Guide does not provide rates for the Newcastle CBD specifically, and the adopted traffic generation rate is as stated in the Guide for an existing site at Charlestown. Data for this site has been adopted in preference to an average across several sites, or to an alternative site in Sydney or elsewhere. It provides a conservatively high estimate of traffic generation for the proposed rezoning, given the greater accessibility to activity centres and public transport in the CBD, relative to Charlestown.

For the purposes of estimating the traffic impacts of the proposed rezoning, the adopted traffic generation rates are conservatively based on the full number of parking spaces required by the DCP for each site. The adopted rates are shown in Table 4-7 and are higher than alternative trip generation rates determined by measures such as vehicle trips per unit or per bedroom. This allows for some flexibility in the ultimate development of each site, where a more intense land use may be proposed by the developer of each site. The current concept has an assumed mix of unit sizes, and commercial / retail floorspace, which determines the car parking requirements. This may change as more detailed planning is undertaken for each development site (post-rezoning).

Table 4-7 Adopted traffic generation rates

	Sample site – Charlestown
AM Peak Vehicle Trips per car space	0.37
PM Peak Vehicle Trips per car space	0.40
Daily Vehicle Trips per car space	4.18

Source: NSW RMS Guide to Traffic Generating Developments 2013 Update, Appendix B3

Table 4-8, overleaf, summarises the estimated traffic generation for each of the development sites.

4.5.1 Traffic distribution

The traffic generated by each of the development sites, as detailed in Table 4-8, was distributed throughout the study area shown in Figure 1-2. The distribution was weighted by existing traffic volume, such that areas of already high traffic volumes contributed to more of the traffic generated by the development sites than those areas with currently low traffic volume.

To reduce the potentially unrealistic number of short trips that this distribution could create, only the areas south of King Street, north of the Honeysuckle Drive / Hannell Street intersection and West of Stewart Avenue were considered to be origins or destinations for the development traffic.

Table 4-8 Traffic generation summary

Parcel	Residential Units					Non-residential		DCP Parking Requirements (number)	Traffic Generation per car space per peak hour				
	Studio	1-bed	2-bed	3-bed	Total	Office GFA m^2	Retail GLFA m^2		AM - Inbound	AM – Outbound	PM - Inbound	PM – Outbound	Daily (2-way)
1 / 17	35	65	65	20	185	875	660	219	16	65	61	26	915
3 / 19	35	65	65	20	185	1,000	750	224	17	66	63	27	936
5	10	15	20	5	50	250	190	61	5	18	17	7	255
7	10	20	20	5	55	250	190	65	5	19	18	8	270
8	5	10	10	0	25	100	75	28	2	8	8	3	117
20	10	15	15	5	45	250	190	55	4	16	15	7	230
11	25	45	45	10	125	500	375	142	11	42	40	17	594
12	10	20	15	5	50	250	190	59	4	17	17	7	247
14	15	25	25	5	70	250	190	78	6	23	22	9	326
Total	**155**	**280**	**280**	**75**	**790**	**3,725**	**2,795**	**931**	**69**	**276**	**261**	**112**	**3,890**

5. Assessment methodology

5.1 Microsimulation traffic model

The *Newcastle Urban Transformation and Transport Program* microsimulation model has been utilised to analyse the land rezoning proposed by UrbanGrowth NSW. The model has been developed using the Paramics microsimulation modelling package (version 6.7.2) with additional functionality provided by the CeeJazz suite of Plugins.

5.1.1 Previous modelling

GHD developed the NUTTP microsimulation model for Transport for NSW (TfNSW) to assess the traffic-related impacts associated with the implementation of light rail through the Newcastle City Centre. The model was based on a microsimulation traffic model for the Newcastle City Centre developed by Bitzios Consulting in 2009. An extensive update of the 2009 Newcastle City Centre microsimulation model was undertaken by GHD for existing traffic conditions (based on traffic surveys undertaken by SkyHigh in June 2014, prior to the truncation of the heavy rail line), with a further update based on traffic surveys undertaken by SkyHigh in March 2015 (post heavy rail truncation). The updated model was calibrated and validated according to the methodology set out in the Roads and Maritime *Traffic Modelling Guidelines, 2013.* Various reports have been prepared and issued detailing the process undertaken to develop the microsimulation model used as part of the previous assessment.

This model was developed in collaboration between TfNSW, Roads and Maritime Services and Newcastle City Council. Project model conditions

The Newcastle Urban Transformation is assumed to coincide with the opening of the Light Rail Network in 2018. Therefore the base conditions assumed for the traffic modelling included the current preferred light rail network and estimated 2018 traffic conditions. The Light Rail network includes several changes to the road network, as outlined in Section 3.1.1.

The Implementation of the Light Rail has an impact on several key transport systems within the Newcastle area, including the bus, cyclist and pedestrian networks. These are addressed in the REF for the Light Rail project, which includes a suite of mitigation measures agreed between TfNSW, Roads and Maritime Services and Newcastle City Council. These measures have been incorporated into the modelling for this project where appropriate.

5.2 Screenline volumes

For the purpose of assessing changes in traffic volumes as a result of the proposed rezoning, two screenlines have been established, each crossing Honeysuckle Drive / Wharf Road, Hunter Street and King Street. Screenline 1 is west of Union Street, while Screenline 2 is west of Darby Street. These are shown in Figure 5-1.

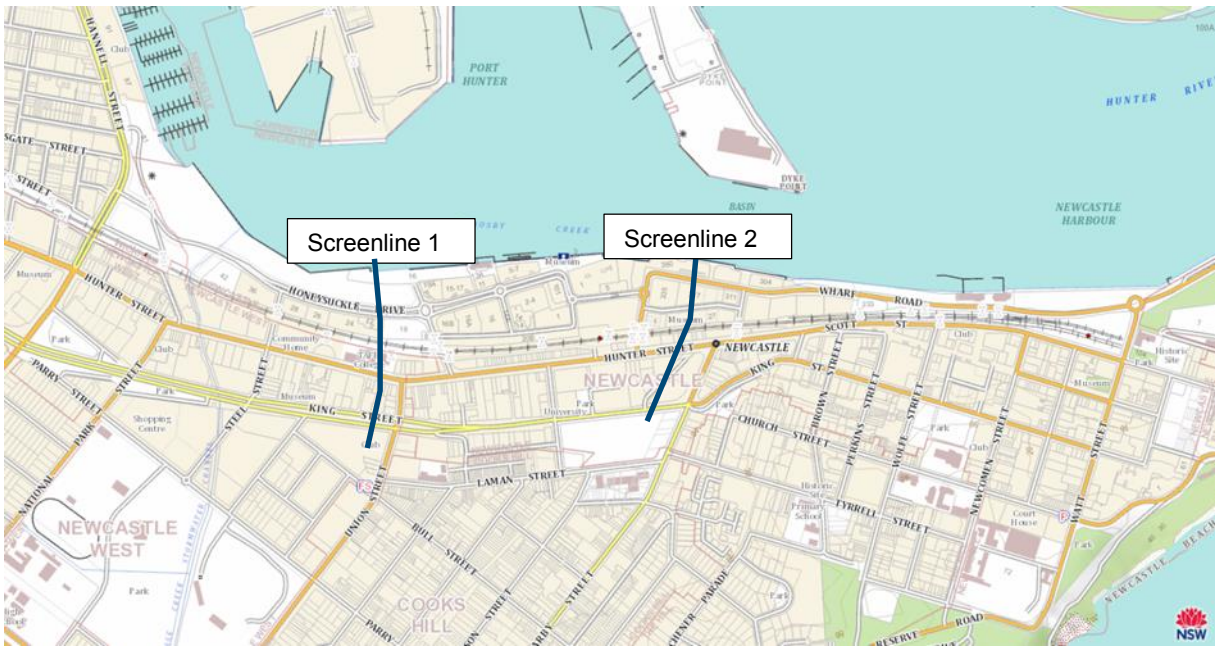


Figure 5-1 Screenline locations

Source: https://maps.six.nsw.gov.au/

5.3 Vehicle travel times

For the purpose of assessing changes in travel times as a result of the proposed rezoning, three routes through the network have been established, each on a major east/west route. Route 1 is vehicles travelling on Honeysuckle Drive, Route 2 is vehicles traveling on Hunter Street, while Route 3 is vehicles travelling on King Street. These are shown in Figure 5-2.

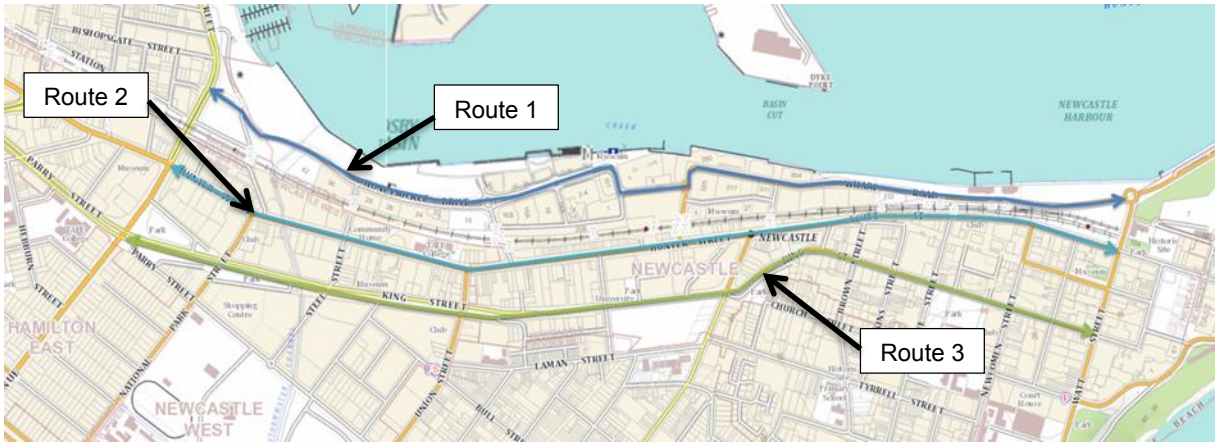


Figure 5-2 Travel route locations

Source: https://maps.six.nsw.gov.au/

5.4 Intersection performance

The assessment of intersection performance is based on criteria outlined in Table 5-1 as defined in the *Guide to Traffic Generating Developments* published by the NSW Roads and Maritime Services (RMS) in 2002.

Intersection Levels of Service have been reported for the peak hour during the AM and PM peak periods (8 – 9 am and 5 – 6 pm).

Table 5-1 Intersection levels of service criteria for intersections

Level of service	Average delay per vehicle	Traffic signals and roundabouts	Give Way and Stop Signs
A	<14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays; Roundabouts will require other control mode	At capacity, requires other control mode
F	>70	Over capacity, unstable operation	Over capacity, unstable operation

Source: Guide to Traffic Generating Developments, NSW RTA (2002)

Intersections have been modelled using the SIDRA Intersection modelling software. Version 6.1 allows for the analysis of intersections in a network situation, where downstream effects of any queueing are taken into account.

5.5 Network performance

To complement the intersection performance measures detailed in Table 5-1 a measure of transport efficiency has been adopted from Austroads. Austroads provides typical level of service criteria as summarised in Table 5-2 based on travel efficiency. Level of service for motor vehicles can be measured in terms of speed for an urban street in addition to the average delay for intersections.

Table 5-2 Level of Service Criteria for urban streets

Level of Service	Urban Streets Travel speed as a percentage of free flow speed
A	> 85%
B	67 – 85%
C	50 – 67%
D	40 – 50%
E	30 – 40%
F	≤ 30%

Source: Austroads, 2013

Travel speeds on certain routes have been extracted from the Paramics microsimulation model.

6. Impact assessment

6.1 Road network impacts

General observations of the traffic network performance in the Paramics model did not show any significant decreases in performance within the road network as a result of the proposed rezoning. The observations indicated that the proposed rezoning caused minor localised increases in traffic activity, however these increases were not significant enough to cause any major issues or require additional mitigation measures.

6.1.1 Traffic volumes

Changes in peak hour traffic volumes on each screenline (refer Section 5.2) are shown in the following tables.

Table 6-1 2018 AM peak – Screenline 1 volumes

Street	Eastbound				Westbound			
	Base	With UGNSW	Change	% Change	Base	With UGNSW	Change	% Change
Honeysuckle	625	651	25	4%	422	453	31	7%
Hunter	643	659	17	3%	655	649	-7	-1%
King	1,354	1,376	22	2%	666	745	79	12%
Total	2,622	2,686	64	2%	1,744	1,847	103	6%

Table 6-2 2018 PM peak – Screenline 1 volumes

Street	Eastbound				Westbound			
	Base	With UGNSW	Change	% Change	Base	With UGNSW	Change	% Change
Honeysuckle	595	687	92	15%	724	769	46	6%
Hunter	391	421	30	8%	806	831	25	3%
King	1,269	1,306	37	3%	1,180	1,224	44	4%
Total	2,255	2,414	159	7%	2,710	2,824	114	4%

Table 6-3 2028 AM peak – Screenline 1 volumes

Street	Eastbound				Westbound			
	Base	With UGNSW	Change	% Change	Base	With UGNSW	Change	% Change
Honeysuckle	636	666	30	5%	421	470	50	12%
Hunter	699	709	9	1%	618	651	33	5%
King	1,457	1,482	26	2%	680	772	92	14%
Total	2,791	2,857	65	2%	1,718	1,893	175	10%

Table 6-4 2028 PM peak – Screenline 1 volumes

Street	Eastbound				Westbound			
	Base	With UGNSW	Change	% Change	Base	With UGNSW	Change	% Change
Honeysuckle	593	696	103	17%	749	785	36	5%
Hunter	384	399	16	4%	825	853	28	3%
King	1,276	1,306	30	2%	1,269	1,285	15	1%
Total	2,252	2,401	149	7%	2,843	2,922	79	3%

Table 6-5 2018 AM peak – Screenline 2 volumes

Street	Eastbound				Westbound			
	Base	With UGNSW	Change	% Change	Base	With UGNSW	Change	% Change
Honeysuckle	414	417	3	1%	56	55	-1	-2%
Hunter	433	487	54	12%	460	449	-11	-2%
King	754	757	3	0%	423	455	32	8%
Total	1,601	1,660	59	4%	938	959	20	2%

Table 6-6 2018 PM peak – Screenline 2 volumes

Street	Eastbound				Westbound			
	Base	With UGNSW	Change	% Change	Base	With UGNSW	Change	% Change
Honeysuckle	440	460	20	5%	78	82	4	6%
Hunter	424	451	27	6%	512	526	14	3%
King	752	767	15	2%	669	722	53	8%
Total	1,616	1,678	62	4%	1,259	1,331	72	6%

Table 6-7 2028 AM peak – Screenline 2 volumes

Street	Eastbound				Westbound			
	Base	With UGNSW	Change	% Change	Base	With UGNSW	Change	% Change
Honeysuckle	456	459	3	1%	59	58	-1	-2%
Hunter	437	484	47	11%	435	445	9	2%
King	776	790	14	2%	415	435	20	5%
Total	1,669	1,733	64	4%	909	937	28	3%

Table 6-8 2028 PM peak – Screenline 2 volumes

Street	Eastbound				Westbound			
	Base	With UGNSW	Change	% Change	Base	With UGNSW	Change	% Change
Honeysuckle	439	474	35	8%	80	78	-3	-3%
Hunter	424	415	-8	-2%	489	521	32	6%
King	734	724	-11	-1%	704	729	25	4%
Total	1,597	1,612	16	1%	1,273	1,327	55	4%

These results show that changes in total traffic across each screenline are commensurate with the traffic generation from the proposed development sites. This analysis assumes that there isn't a significant volume of traffic switching from one route to another as a result of the additional traffic being added to the network.

6.1.2 Travel times

Changes in peak hour travel times on each route (refer Section 5.3) are shown in the following tables.

Table 6-9 2018 AM peak – Travel times

Route	Eastbound				Westbound			
	Base	With UGNSW	Change	% Change	Base	With UGNSW	Change	% Change
1	03:09	03:09	00:00	0%	03:20	03:30	00:10	5%
2	05:10	05:30	00:20	6%	06:30	06:30	00:00	0%
3	05:00	05:10	00:10	3%	07:00	07:30	00:30	7%

Table 6-10 2028 AM peak – Travel times

Route	Eastbound				Westbound			
	Base	With UGNSW	Change	% Change	Base	With UGNSW	Change	% Change
1	03:09	03:09	00:00	0%	03:20	03:20	00:00	0%
2	05:20	05:30	00:10	3%	06:10	06:20	00:10	3%
3	05:10	05:30	00:20	6%	06:50	07:20	00:30	7%

Table 6-11 2018 PM peak – Travel times

Route	Eastbound				Westbound			
	Base	With UGNSW	Change	% Change	Base	With UGNSW	Change	% Change
1	03:30	03:30	00:00	0%	03:30	03:40	00:10	5%
2	07:20	07:30	00:10	2%	06:10	06:10	00:00	0%
3	06:20	06:30	00:10	3%	07:10	07:40	00:30	7%

Table 6-12 2028 PM peak – Travel times

Route	Eastbound				Westbound			
	Base	With UGNSW	Change	% Change	Base	With UGNSW	Change	% Change
1	03:30	03:30	00:00	0%	03:30	03:30	00:00	0%
2	07:30	07:40	00:10	2%	06:10	06:20	00:10	3%
3	06:10	06:10	00:00	0%	09:30	09:50	00:20	4%

These results show that changes in travel times on each route, as a result of the increase in traffic generated by the proposed rezoning, is minimal. Analysing the efficiency of travel on these routes (see Section 5.5) the following table show that there is no decrease in travel efficiency, with Levels of Service values remaining constant between base conditions and with the proposed rezoning.

Table 6-13 AM peak – Travel efficiency

Route	Eastbound				Westbound			
	2018		2028		2018		2028	
	Base	With UGNSW	Base	With UGNSW	Base	With UGNSW	Base	With UGNSW
1	89% [LoS A]	89% [LoS A]	89% [LoS A]	89% [LoS A]	85% [LoS B]	81% [LoS B]	85% [LoS B]	85% [LoS B]
2	65% [LoS C]	61% [LoS C]	63% [LoS C]	61% [LoS C]	51% [LoS C]	51% [LoS C]	54% [LoS C]	53% [LoS C]
3	63% [LoS C]	61% [LoS C]	61% [LoS C]	58% [LoS C]	45% [LoS D]	42% [LoS D]	46% [LoS D]	43% [LoS D]

Table 6-14 PM peak – Travel efficiency

Route	Eastbound				Westbound			
	2018		2028		2018		2028	
	Base	With UGNSW	Base	With UGNSW	Base	With UGNSW	Base	With UGNSW
1	81% [LoS B]	81% [LoS B]	81% [LoS B]	81% [LoS B]	81% [LoS B]	77% [LoS B]	81% [LoS B]	81% [LoS B]
2	45% [LoS D]	44% [LoS D]	44% [LoS D]	43% [LoS D]	54% [LoS C]	54% [LoS C]	54% [LoS C]	53% [LoS C]
3	50% [LoS D]	49% [LoS D]	51% [LoS C]	51% [LoS C]	44% [LoS D]	41% [LoS D]	33% [LoS E]	32% [LoS E]

6.1.3 Intersection operation

SIDRA Intersection software was used to review the individual intersection performance within the network. The results of the analyses are shown in the following tables.

Table 6-15 2028 AM peak – Intersection delay [level of service]

Intersection	Without UrbanGrowth Development Traffic	With UrbanGrowth Development Traffic
Stewart Avenue / Hunter Street	43 seconds [D]	44 seconds [D]
Stewart Avenue / King Street	41 seconds [C]	48 seconds [D]
Steel Street / Hunter Street	26 seconds [B]	26 seconds [B]
Steel Street / King Street	30 seconds [C]	31 seconds [C]
Union Street / Hunter Street	36 seconds [C]	35 seconds [C]
Union Street / King Street	44 seconds [D]	49 seconds [D]
Darby Street / Hunter Street	42 seconds [C]	38 seconds [C]
Darby Street / King Street	30 seconds [C]	30 seconds [C]

Table 6-16 2028 PM peak – Intersection delay [level of service]

Intersection	Without UrbanGrowth Development Traffic	With UrbanGrowth Development Traffic
Stewart Avenue / Hunter Street	47 seconds [D]	55 seconds [D]
Stewart Avenue / King Street	42 seconds [C]	46 seconds [D]
Steel Street / Hunter Street	38 seconds [C]	42 seconds [C]
Steel Street / King Street	26 seconds [B]	30 seconds [C]
Union Street / Hunter Street	44 seconds [D]	44 seconds [D]
Union Street / King Street	>70 seconds [F]	>70 seconds [F]
Darby Street / Hunter Street	41 seconds [C]	40 seconds [C]
Darby Street / King Street	45 seconds [D]	45 seconds [D]

The results show no major deterioration in intersection performance with the inclusion of the proposed rezoning. It is noted that in some cases the Level of Service category changes with the rezoning, as a result of the intersection delay passing the relevant Level of Service threshold. However in these cases the actual increase in delay is small, and not indicative of a significant change in signal performance.

6.1.4 Local traffic impacts

Local areas will not be adversely impacted by the proposed rezoning, with the majority of traffic generated from the developments travelling to/from the major roads of Hunter Street, King Street, Union Street, Darby Street and Hannell Street.

6.2 Public transport

As discussed in Section 3.2, major changes to existing bus services in the CBD are proposed to coincide with the introduction of Light Rail. Changes will include bus route terminus locations, and changes to bus stops in Hunter Street.

Any changes to bus operations in the CBD are independent of, and are not required to facilitate, the proposed rezoning.

6.3 Pedestrians and cyclists

The proposed development sites will enhance the public open space surrounding each site, with retail land uses activating building frontages to provide increased opportunity for movement, recreation and service transactions.

Civic Square will be a particular focus of pedestrian connectivity, with pathways connecting between Hunter Street and the foreshore. A light rail stop is proposed for Hunter Street adjacent to Civic Square, with a signalised pedestrian crossing linking the footpath with the light rail platforms.

Footpaths would be maintained alongside existing roadways.

Public pedestrian connectivity across the former railway corridor would be provided at the following locations:

- Steel Street (existing)
- Kuwami Place (existing)
- Worth Place (existing)
- Settlement Lane (new)
- Civic Square (enhanced)

- Merewether Street (existing)
- Argyle Street (enhanced)
- Perkins Street (enhanced)
- Wolfe Street (existing)
- Market Street (enhanced)
- Newcomen Street (new)
- Watt Street (existing).

These locations maintain and enhance the connectivity and accessibility across the former railway corridor that has been in place since the truncation of heavy rail in December 2014.

The proposed rezoning would have no impact on existing bicycle infrastructure including on-road bike lanes and off-road pathways.

6.4 Parking

6.4.1 Off-street parking supply

The proposed rezoning will not directly impact on any existing off-street public parking. However, two existing off-street parking areas are on land adjacent to the rezoning that is also likely to be redeveloped. There are currently approximately 190 spaces off Wrights Lane, with a mixture of 2 hour, 4 hour and 8 hour restrictions (pay and display).

As discussed in Section 3.4, surveys by Newcastle City Council indicate that off-street parking occupancy peaks at approximately 64% in the Newcastle CBD. The removal of existing parking spaces to make way for the developments sites would cause the peak occupancy to increase to 69%. This suggests that there is suitable off-street parking capacity across the CBD area to accommodate expected demand levels. However, it is acknowledged that demand for parking is not evenly distributed across the CBD, and some areas, particularly those offering all-day parking, are regularly fully occupied.

It is recommended that the nomination of parking controls, particularly time limits and charges, be reviewed by Council for potential changes that could be made to more evenly distribute parking activity across all off-street parking areas in and around the Newcastle CBD. It is apparent from Council's parking study, and observations, that there could be a readjustment of the balance between short-stay and long-term parking in some locations.

It is noted that the impact of the rezoning proposal on this pre-existing issue is relatively small, albeit with a particular focus on the Wright Lane area.

6.4.2 On-street parking

A small number of on-street parking spaces may be impacted by the introduction of driveway accesses, particularly on Wharf Road. No significant impact on the availability of parking in the area is anticipated.

7. Conclusions

This study has examined the traffic implications of the proposed rezoning of the previous heavy rail corridor through the Newcastle CBD.

The proposed rezoning would provide for several mixed-use sites, as well as sites for public recreation. Land that is the subject of the rezoning application includes the assumed potential for some 585 residential units, and 5,200 m^2 Gross Floor Area of non-residential land use (most likely office and/or retail). Development on three adjacent and related sites, which do not form part of the rezoning application, has also been considered in this assessment.

Key findings of the assessment include:

- The proposed rezoning would generate up to an additional 3,900 vehicle movements (2-way) each day across all the development sites. This is expected to be an overestimate of actual generation, with a high mode share to public and active transport expected due to the locations of the development sites relative to light rail, bus services and the Newcastle CBD and Honeysuckle activity areas.
- Traffic modelling indicates that for forecast peak hour traffic conditions in 2018 and 2028, the additional traffic generated by the rezoning will not have a significant impact on the operation of the road network. The mitigation measures proposed as part of the light rail project will be sufficient to manage the changes in traffic conditions that are expected.
- On-site parking would be provided on each development site in accordance with the requirements of the Newcastle Development Control Plan 2012. The DCP allows for variation in parking provision for reasons including access to public transport, and a reduction in parking supply may be considered at the Development Application stage for each site.
- Overall utilisation of off-street parking in the Newcastle CBD currently peaks at some 64% of supply. However, some areas are more heavily utilised than others. There would appear to be scope for rebalancing the existing off-street parking supply, rather than needing to provide additional parking spaces to satisfy demand. The potential development of sites adjacent to the proposed rezoning could result in the loss of 190 off-street parking spaces from Wrights Lane. However, in the context of the overall supply of off-street parking the CBD area, the peak utilisation would remain at less than 70%. At this level of utilisation there is capacity for growth in demand as well as a reasonable likelihood of spaces being available to users.
- The proposal would maintain and enhance pedestrian connectivity between the CBD and the waterfront, with 2 new and 4 enhanced crossings of the former rail corridor proposed. The proposed development sites will enhance the public open space surrounding each site, with retail land uses activating building frontages to provide increased opportunity for movement, recreation and service transactions.

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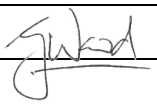
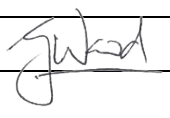
2	T. Bickerstaff	G. Wood		G. Wood		06/06/2016

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