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# Abbreviations

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</thead>
<tbody>
<tr>
<td>CBD</td>
<td>Central business district</td>
</tr>
<tr>
<td>EP&amp;A Act</td>
<td><em>Environmental Planning and Assessment Act 1979</em></td>
</tr>
<tr>
<td>GHD</td>
<td>GHD Pty Ltd</td>
</tr>
<tr>
<td>LGA</td>
<td>Local government area</td>
</tr>
<tr>
<td>NUTTP</td>
<td>Newcastle Urban Transformation and Transport Program</td>
</tr>
<tr>
<td>PB</td>
<td>Parsons Brinckerhoff</td>
</tr>
<tr>
<td>REF</td>
<td>Review of environmental factors</td>
</tr>
<tr>
<td>TfNSW</td>
<td>Transport for NSW</td>
</tr>
</tbody>
</table>
# Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectivity</td>
<td>The ease with which a person can travel through and link to other spaces.</td>
</tr>
<tr>
<td>Duration</td>
<td>The length of time during which something continues.</td>
</tr>
<tr>
<td>Imageability</td>
<td>Quality in a physical object which gives it a high probability of evoking a strong image in any given observer.</td>
</tr>
<tr>
<td>Landscape</td>
<td>All aspects of a tract of land, including landform, vegetation, buildings, villages, towns, cities and infrastructure.</td>
</tr>
<tr>
<td>Landscape character</td>
<td>The combined quality of built, natural and cultural aspects that make up an area and provide its unique sense of place.</td>
</tr>
<tr>
<td>Landscape character area</td>
<td>An area of landscape with similar properties or strongly defined spatial qualities, distinct from areas immediately adjacent.</td>
</tr>
<tr>
<td>Landscape feature</td>
<td>A component, part or feature of the landscape that is prominent or eye-catching, e.g. hills, buildings, vegetation.</td>
</tr>
<tr>
<td>Landscape quality</td>
<td>Largely subjective judgement based on particular characteristics that influence the way in which the environment is experienced, including special interests such as cultural associations or heritage interests, the presence and/or type of elements and condition.</td>
</tr>
<tr>
<td>Legibility</td>
<td>The ease with which a person can recognise and understand a space.</td>
</tr>
<tr>
<td>Magnitude</td>
<td>The measurement of the scale, form and character of a development proposal when compared to the existing condition. In the case of visual assessment this also relates to how far the proposal is from the viewer.</td>
</tr>
<tr>
<td>Mitigation</td>
<td>Measures, including any process, activity or design to avoid, reduce, remedy or compensate for adverse impacts of a development.</td>
</tr>
<tr>
<td>Navigability</td>
<td>The ease with which a person can navigate through a space.</td>
</tr>
<tr>
<td>Sensitive visual receptor</td>
<td>Person and/or viewer group with the potential to experience an impact from the proposal.</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>The sensitivity of a landscape character area or view and its capacity to absorb change. In the case of visual impact this also relates to the type of viewer and number of viewers.</td>
</tr>
<tr>
<td>Spatial definition</td>
<td>How spaces are defined through expression of physical elements, such as walls, facades, contrasting material treatments.</td>
</tr>
<tr>
<td>Townscape</td>
<td>The character and composition of the built environment including the buildings and the relationship between them, the different types of urban open space, including green spaces, and the relationship between buildings and open space.</td>
</tr>
<tr>
<td>Urban form</td>
<td>Urban elements within the built environment.</td>
</tr>
<tr>
<td>Urban grain</td>
<td>The patterns and apparent intensity of buildings, structures, infrastructure, and open space in an urban environment.</td>
</tr>
<tr>
<td>Visual amenity</td>
<td>The value of a particular area or view in terms of what is seen.</td>
</tr>
<tr>
<td>Visual impact</td>
<td>The impacts on the views from residences, workplaces and public places. This can be positive (i.e. benefit or an improvement) or negative (i.e. adverse or a detraction).</td>
</tr>
<tr>
<td>Visual catchment</td>
<td>Extent of potential visibility to or from a specific area, feature or proposal</td>
</tr>
<tr>
<td>View</td>
<td>The visual experience from the viewer’s perspective.</td>
</tr>
</tbody>
</table>
Executive summary

This urban landscape and visual assessment has been undertaken for Transport for NSW (TfNSW) for the proposed Newcastle Light Rail project (the proposal) and forms part of the Review of Environmental Factors (REF) for the proposal.

The proposal is a key infrastructure element in the Newcastle Urban Renewal Strategy (Department of Planning and Infrastructure, 2012) and the Newcastle Urban Transformation and Transport Program (NUTTP). The proposal would facilitate urban redevelopment of public, residential and commercial lands by providing an efficient and accessible form of transport for Newcastle city centre. The truncation of the heavy rail at Wickham and development of the new transport interchange at Stewart Avenue is an important precursor. This has already resulted in improved connectivity in the city with new pedestrian and cycle crossings across the heavy rail corridor improving access to the foreshore.

This assessment considers the potential impacts of the proposal on the urban landscape (particularly in terms of landscape character and features) and visual environment (in terms of key views and visual experiences) of the study area.

The assessment follows standard industry practice, and assesses the potential significance of impacts based on a combination of:

- The sensitivity of the landscape and of key visual receptors in the area.
- The magnitude of change likely to be experienced in the landscape and by the key receptors as a result of the proposal.

A significance rating matrix was adopted to assist in the comparison of impacts.

Impacts on the landscape and visual environment have been considered with particular emphasis on:

- Important landscape features and their contribution to the urban experience
- Urban character and imageability
- Legibility and navigability
- Urban structure in terms of connectivity and spatial definition
- Visual amenity and the general appearance of the urban landscape
- Quality views or visual experiences

Impacts were considered for both the construction phases and operation of the proposal.

Four landscape character areas were identified to assist with the assessment of impacts on the landscape:

- Character area 1: Wickham Transport Interchange to Worth Place
- Character area 2: Cultural and legal precincts – Worth Place to Crown Street
- Character area 3: Crown Street to Pacific Street
- Character area 4: North and east of Pacific Street

Table E-1 summarises the results of the assessment of impacts on landscape character areas.
Table E-1 Summary of character area impact ratings

<table>
<thead>
<tr>
<th>Character area</th>
<th>Sensitivity</th>
<th>Phase</th>
<th>Magnitude of impacts</th>
<th>Impact significance rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Wickham to Worth Place</td>
<td>Low sensitivity to change</td>
<td>Construction</td>
<td>Large</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Low</td>
</tr>
<tr>
<td>2 Cultural and legal precincts</td>
<td>Medium sensitivity to change</td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Moderate-low</td>
</tr>
<tr>
<td>3 Crown Street to Pacific Street</td>
<td>Medium sensitivity to change</td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Moderate-low</td>
</tr>
<tr>
<td>4 East of Pacific Street</td>
<td>Medium to high sensitivity to change</td>
<td>Construction</td>
<td>Moderate</td>
<td>High/moderate to moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Moderate to moderate-low</td>
</tr>
</tbody>
</table>

Eight representative visual receptor groups were identified to assist with the assessment of visual impacts:

- Viewing area 1 – Wickham Transport Interchange to Cottage Creek
- Viewing area 2 – Cottage Creek to Union Street
- Viewing area 3 – Union Street to Auckland Street
- Viewing area 4 – Auckland Street to Darby Street
- Viewing area 5 – Darby to Crown Street
- Viewing area 6 – Crown Street to Newcomen Street
- Viewing area 7 – Newcomen Street to Watt Street
- Viewing area 8 – Watt Street and Pacific Street to Zaara Street.

Table E-2 summarises the results of the assessment of impacts on these visual receptor groups.

Table E-2 Summary of visual impacts

<table>
<thead>
<tr>
<th>Viewing area</th>
<th>Sensitivity</th>
<th>Phase</th>
<th>Magnitude rating</th>
<th>Significance of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Wickham Transport Interchange to</td>
<td>Low (general) Medium to high (residential)</td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate-low (general) Moderate to high/mode</td>
</tr>
<tr>
<td>Cottage Creek</td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Low</td>
</tr>
<tr>
<td>2 Cottage Creek to Union Street</td>
<td>Low (all viewers)</td>
<td>Construction</td>
<td>Small</td>
<td>Low</td>
</tr>
<tr>
<td>3 Union Street to Auckland Street</td>
<td>Low (general) Medium (limited residential)</td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate-low (general) Moderate (residential)</td>
</tr>
<tr>
<td>Viewing area</td>
<td>Sensitivity</td>
<td>Phase</td>
<td>Magnitude rating</td>
<td>Significance of impact</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-------------------------</td>
<td>----------------</td>
<td>------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>4 Auckland Street to Darby Street</td>
<td>Medium (all viewers)</td>
<td>Operation</td>
<td>Small</td>
<td>Low to moderate-low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Moderate to low</td>
</tr>
<tr>
<td>5 Darby Street to Crown Street</td>
<td>Low (general) Medium</td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate-low (general) Moderate (residential)</td>
</tr>
<tr>
<td></td>
<td>(residential)</td>
<td>Operation</td>
<td>Small</td>
<td>Low (general) Moderate-low (residential)</td>
</tr>
<tr>
<td>6 Crown Street to Newcomen Street</td>
<td>Low (general) Medium</td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate-low (general) Moderate (residential)</td>
</tr>
<tr>
<td></td>
<td>(residential)</td>
<td>Operation</td>
<td>Small</td>
<td>Low (general) Moderate-low (residential)</td>
</tr>
<tr>
<td>7 Newcomen Street to Watt Street</td>
<td>Low (general) High</td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate-low (general) High-moderate (residential)</td>
</tr>
<tr>
<td></td>
<td>(residential)</td>
<td>Operation</td>
<td>Small</td>
<td>Low (general) Moderate (residential)</td>
</tr>
<tr>
<td>8 Watt Street and Pacific Street to Zaara Street</td>
<td>High (all viewers)</td>
<td>Construction</td>
<td>Moderate</td>
<td>High-moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

The key findings of the assessment are as follows:

- The landscape at the eastern end of the study area is most sensitive to change, largely as a result of the coherence of the built environment and a number of high quality landscape features. This landscape would be exposed to temporary impacts rated as high-moderate to moderate significance during the construction phase, and moderate impacts during the operation of the proposal.
- Other landscapes had a low to medium sensitivity to change and would be generally less affected by the proposal.
- Most sensitive visual receptors have a low or medium sensitivity to change. The exceptions were receptors at the eastern end of the study area, some of which would have a high sensitivity to change. Consequently, construction of the proposal would generate temporary impacts rated as having high-moderate significance.

Importantly, the fact that a landscape area or receptor has a high sensitivity to change or is impacted does not mean that the proposal is unacceptable. Rather, this information would be used to inform the detailed design of the proposal, and would be considered on balance with the wider benefits of the proposal for the city centre (including place making and urban renewal outcomes that have not been factored into this assessment).

To assist with the detailed design of the proposal, a number of mitigation measures have been provided to minimise the impacts identified in this assessment.

The appearance and visual form of the key proposal elements have been, and would continue to be important considerations in the design process and would continue to be refined during the detailed design phase. The final design would continue to take into account all relevant considerations in consultation with key stakeholders such as UrbanGrowth NSW and the Council of the City of Newcastle.
1. **Introduction**

1.1 **Background to the proposal**

The NSW Government is revitalising the Newcastle city centre. The revitalisation will reinforce the city’s role as a 21st century regional centre, unlock the potential of the city centre as a place that can meet the needs of the current and future community, and boost economic activity across the Hunter Region.

The Newcastle Urban Transformation and Transport Program (NUTTP) has been established to deliver the NSW Government’s $510 million commitment to revitalise the city. 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 NUTTP comprises:

1. Urban redevelopment/renewal projects being led by Urban Growth
2. The transport program being led by Transport for NSW (TfNSW).

The transport program seeks to revitalise Newcastle by improving pedestrian and vehicle connectivity within the city centre and by promoting public transport usage and accessibility. TfNSW is now proposing to progress development of the Newcastle Light Rail project. The construction and operation of the light rail project is referred to as ‘the proposal’ in this document.

GHD Pty Ltd (GHD) was commissioned by TfNSW to undertake an assessment of the potential environmental impacts of the proposal and prepare a review of environmental factors (REF) in accordance with the provisions of Part 5 of the *Environmental Planning and Assessment Act 1979* (the EP&A Act).

1.2 **Key features of the proposal**

1.2.1 **Location**

The proposal site (the area that would be generally affected by construction works) is located in the Newcastle city centre and extends in an east–west direction within the former rail corridor and road reserves. It is bounded to the west by the Wickham Transport Interchange near Stewart Avenue. From the Wickham Transport Interchange the proposal site extends east along Beresford Street and enters the former rail corridor near the existing Wickham Station buildings. The proposal site is located within the former rail corridor from this point until near Worth Place, where it enters the road corridor and travels along Hunter Street and Scott Street to the northern boundary of Pacific Park.

The proposal site also includes the proposed location for the two electrical substations in the former rail corridor to the west of Argyle Street.

The location of the proposal is shown in Figure 1-1.
1.2.2 Overview of key features

The proposal involves the construction and operation of a light rail system in the Newcastle city centre, and associated changes to the road and bus network. This would include:

**Light rail infrastructure**
- About 2.7 kilometres of light rail track, consisting of about 2.5 kilometres of dual track and 180 metres of single track.
- Six light rail stops and associated infrastructure (such as platforms, shelters and lighting):
  - Wickham Interchange
  - Honeysuckle
  - Civic
  - Crown Street
  - Market Street
  - Pacific Park
- A light rail stabling and maintenance facility at the location of the existing Wickham Station.
- Terminus facilities near the Pacific Park stop.
- Ancillary infrastructure, including two new substations, power supply, wiring and utilities.

**Former rail corridor works**
- Remove the existing Wickham Station buildings, platforms and pedestrian bridge.
- Remove the pedestrian bridge over the former rail corridor to the west of Market Street.

**Transport network works**

**Bus network**
- Remove seven existing bus stops along Hunter and Scott streets and provide four new stops in Watt Street, Wharf Road (two stops) and Centenary Road.

**Road network and intersection changes**
- Changes to the road configuration along the light rail corridor to accommodate the light rail infrastructure on Beresford, Hunter and Scott streets
- Changes to the following intersections along the light rail corridor:
  - Stewart Avenue/Beresford Street
  - Steel Street at the former rail corridor
  - Hunter Street/Worth Place
  - Pacific Street/Scott Street
- New signalised road crossings to provide access to light rail stops:
  - At Hunter Street near Crown Street
  - At Scott Street near Market Street
• New signalised road crossings of the former rail corridor at:
  – Steel Street
  – Worth Place

• Changes to the road configuration outside the light rail corridor at the following locations:
  – Honeysuckle Drive and Stewart Avenue/Hannell Street
  – King Street from Union Street to Darby Street
  – King Street intersection northbound on Darby Street
  – Darby Street intersection southbound on Darby Street.

**Operation of the proposal**

• Mix of segregated, separated and mixed running.

• Light rail services would commence at 5am and finish at 1am.

• Between the core hours of 7am and 7pm, services would operate every 10 minutes on weekdays and every 15 minutes on weekends.

• Less frequent services would be provided in the early morning, evening and night periods.

• Five light rail vehicles would operate with capacity for a minimum of 100 passengers per vehicle.

### 1.3 Purpose and scope of the assessment

#### 1.3.1 Purpose of the assessment

This assessment has been prepared as an input to the REF. It considers the potential impacts of the proposal on the urban landscape (particularly in terms of landscape character and features) and visual environment (in terms of key views and visual experiences) of the study area.

The assessment involved a desktop study, site inspection, photographic inventory, and assessment of potential impacts on the landscape and visual environment in accordance with relevant guidelines (see section 2).

The landscape and visual environment of the Newcastle city centre is going through substantial planned change and as such, this assessment considers the existing landscape and visual environment, as well as foreseeable planned changes. The assessment considers existing built developments, developments which are currently under construction, as well as developments which have been approved. The future urban landscape is further described in section 2.1.5.

It is recognised that visual assessment can be highly subjective and individuals are likely to associate different visual experiences with the study area. This assessment aims to be objective and describe any changes factually. However, the significance of these changes requires qualitative and subjective judgements to be made. The conclusions of this assessment combine objective measurement and subjective professional interpretation.

A detailed description of the methodology for the assessment is provided in section 2.
1.3.2 Assumptions

Establishing the baseline environment for the assessment is complicated by the wide range of projects planned, approved, or under construction in the local area. The range and scale of these projects means that the baseline environment would be subject to change as the urban revitalisation and renewal initiatives outlined in the Newcastle Urban Renewal Strategy (Department of Planning and Infrastructure 2012) are implemented. The urban form and land use surrounding the proposal site will be subject to a number of changes over the next 20 years. In considering the future urban landscape, it has been assumed that the projects identified in section 2.1.5 are realised.

Although this assessment does not consider the potential for heritage impacts, the aesthetic contribution of heritage buildings/structures to the urban landscape and visual environment is considered.

The design of the proposal will progress during the detailed design process. If the detailed design of the proposal differs substantially from the proposal considered by this assessment, additional assessment may be required.

This assessment considers the potential impacts of the proposal on the urban landscape as well as sensitive visual receptors. It is not a detailed urban design assessment, and does not consider the adequacy of, or provide detailed recommendations in relation to, proposed urban design measures or treatments (such as pavement treatments or shelter design) or other urban design considerations. The assessment focuses on the potential direct impacts of the proposal and does not provide detailed consideration of the potential indirect/secondary impacts (such as increased bus patronage or increased activity within the city centre).

The assessment does not consider impacts from any advertising, either on the light rail vehicles, or at the proposed stops.

The impact ratings used by the assessment are based on the proposal design described in the REF and assumes that the proposed landscaping is successfully established.

The assessment of potential operational impacts considers the impacts approximately five years after the commencement of operations as this allows for the establishment of mitigation measures such as landscaping.

1.4 Structure of this report

This report consists of the following sections:

- **Section 1 – Introduction**: provides an overview of the project and the scope of the socio-economic assessment.
- **Section 2 – Methodology**: provides a detailed description of the methodology used to prepare the assessment including the overall approach, how the landscape and visual baseline is described, and the method for assessing landscape and visual impacts.
- **Section 3 – Existing landscape and visual environment**: describes the visual and landscape environment within which the proposal is located and the assessment was undertaken.
- **Section 4 – Urban landscape and visual impact assessment**: discusses the likely landscape and visual benefits, impacts and risks generated by the proposal.
- **Section 5 – Mitigation measures**: outlines the recommended mitigation measures to avoid negative impacts and enhance positive social outcomes.
- **Section 7 – Conclusion**: presents a summary of the key findings and recommendations of the impact assessment.
Figure 1-1  Location and key features of the proposal
2. **Methodology**

2.1 **Assessment approach**

2.1.1 **General**

The urban landscape and visual assessment has followed a process largely informed by the following guidelines:

- *Transport Analysis Guidance (DfT TAG) Unit A3: Townscape Worksheets* produced by the Department for Transport (UK).

The assessment includes the following key steps:

- Definition of the study area
- Desktop analysis
- Site visit and analysis
- Establish the baseline environment (landscape and visual) for the assessment
- Assess the potential landscape character and visual impacts of the proposal
- Develop mitigation measures

2.1.2 **The study area**

The study area for the assessment includes the proposal site and surrounding area, and is located within the Newcastle city centre. The Newcastle city centre includes the central business district (CBD), cultural precincts, high density residential areas, the recently developed Honeysuckle area, and several public reserves. It adjoins the Hunter River and city beaches.

An assessment zone of 250 metres from the proposed alignment has been used for this study. Based on previous similar studies in urban environments, this is expected to be the extent of the visual catchment for the proposal. Further, given the built-up urban setting, it is expected that impacts on the landscape and visual environment beyond this assessment zone would be negligible.

2.1.3 **Desktop analysis**

A desktop analysis of aerial photography and existing mapping information, including geographic information system (GIS) and topographic maps, was undertaken to identify representative publicly accessible viewpoints, potentially affected receptors and the visual catchment, within which the proposal may be seen.

Relevant design reports and plans were reviewed to determine the elements of the proposal with the potential to impact on the urban landscape and visual environment.
2.1.4 Site visit and analysis

The baseline description is based on observations made during a site visit on 21 March 2015. At this time, the heavy rail corridor east of Stewart Avenue had been decommissioned. Five pedestrian crossings over the rail corridor had been installed. The assessment of the urban environment of the proposal site was completed by traversing the streets of the Newcastle CBD on foot along the proposed alignment.

2.1.5 Considering the potential future urban landscape

The following considerations have informed an understanding of the foreseeable future urban landscape within the study area.

Design strategies

Key design decisions and intended urban outcomes from UrbanGrowth NSW’s NUTTP include the following initiatives:

- Reshaping Hunter Street as Newcastle’s main street and a key destination.
- Strengthening the Civic precinct as the main municipal, educational and cultural hub of Newcastle.
- Positioning the west end as the city’s future CBD.

To reshape Hunter Street as the main street of the city, the Newcastle Urban Renewal Strategy (Department of Planning and Infrastructure 2012) provides for:

- The use of Hunter Street to facilitate better connections between precincts within and across the city centre.
- Redeveloping the landholdings around the Hunter Street Mall and revitalising the mall.
- Focusing activity in nodes rather than dispersing it along the full length of the street.

Further information on relevant strategies and plans for the city centre are provided in chapters 5 and 14 of the REF.

Significant existing and proposed developments

Although there are many anticipated future development projects within the study area, it is unclear if, when, and how many of them will be realised. As such, only approved, under construction or existing projects are considered. Section 14 of the REF provides an overview and some general commentary regarding the future urban structure of the study area.

The major approved developments considered part of the urban landscape for the purposes of this assessment are summarised in chapter 14 of the REF.

2.2 Description of the baseline for the assessment

2.2.1 Landscape baseline

The assessment of the existing landscape character involves a number of tasks. This analysis is undertaken to obtain an understanding of the character of the context and the sensitivity of the area’s landscape character.
A landscape character assessment was completed to identify the different landscape character areas through the study area. This was based on field assessment and desktop assessment of GIS data. The landscape baseline is described in terms of:

- Layout, urban form and scale, physical connections
- Program, land use, activation, and spatial use
- Appearance, architectural qualities, architectural and landscape heritage
- Public realm type, qualities, and condition
- Views, visual permeability and visual cues

The landscape was described as it existed at the time of the site visit. However this is subject to change as previously discussed in section 2.1.5.

To provide a basis for the impact assessment, the study area was divided into a number of landscape character areas, categorised by similar spatial or character properties, and the sensitivity of each area to change has been described.

Definitions for the different levels of sensitivity of landscape character areas are provided in Table 2-1.

**Table 2-1 Landscape sensitivity definitions**

<table>
<thead>
<tr>
<th>Landscape sensitivity</th>
<th>Definition / example</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Typically landscapes of international designation that are highly valued, particularly near or distinctive and susceptible to small change. The landscape has high sensitivity to the type of development proposed which could have a detrimental effect on the landscape character or value. Mitigation measures unlikely to mitigate the impacts of the change.</td>
</tr>
<tr>
<td>Medium</td>
<td>Typically landscapes of regional designation that are valued more locally and tolerant of moderate levels of change. The landscape has medium sensitivity to the type of development proposed. Any change caused by the proposed development would be unlikely to have a significant adverse effect on the landscape character or value. Could not be mitigated against.</td>
</tr>
<tr>
<td>Low</td>
<td>Typically landscapes of local designation that are more commonplace and potentially tolerant of noticeable change or are undergoing substantial development, such that their character is one of change. The landscape would have low sensitivity to this type of development and few constraints imposed by landscape elements. Development of this type is very unlikely to have an adverse effect on the landscape character. Mitigation measures would be effective in neutralising adverse effects and/ or may improve the landscape character.</td>
</tr>
</tbody>
</table>
2.2.2 Visual baseline

The baseline visual environment consists of the existing environment (for which potential construction impacts are assessed) and the indicative future environment (for which potential operational impacts are assessed). The visual baseline assesses the visual quality of the environment from the point of view of the visual receptors and how they respond to the aesthetic qualities of the environment. For the purposes of this assessment, the study area is divided into representative sensitive visual receptor areas. These areas are based on grouping visual receptors with similar sensitivities located within similar visual environments. The baseline visual environment was established by:

- Reviewing aerial photography and spatial information
- On-site verification and photographic recording
- Identifying landscape character areas and their sensitivity to change
- Identifying the potentially sensitive visual receptors
- Describing the indicative future environment (five years after the commencement of operations) based on a review of:
  - Relevant planning strategies and proposed developments
  - Information provided by UrbanGrowth NSW regarding the likely future urban form/land uses in the Newcastle city centre.

Sensitivity depends on a receptors' location, the importance of their view, their activity, expectations, available view, and the extent of screening of this view. The potential sensitivity of the visual receptors is rated using the descriptors in Table 2-2.

**Table 2-2 Assessment of visual receptor sensitivity**

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Occupiers of residential properties with long viewing periods, within close proximity to the proposal, who currently enjoy high quality views. Communities that place value upon the landscape and enjoyment of views of their setting.</td>
</tr>
<tr>
<td>Medium</td>
<td>Outdoor workers who have a key focus on their work and may also have intermittent views of the proposal site. Occupiers of residential properties with long viewing periods, within close proximity to the proposal, who currently enjoy low-medium quality views, or who are beyond the immediate vicinity of the proposal site. Viewers at schools, or similar, when outdoor play and recreation areas are located within close proximity but viewing periods are limited.</td>
</tr>
<tr>
<td>Low</td>
<td>Road users in motor vehicles, trains or on transport routes that are passing through or adjacent to the study area and therefore have short term views. Viewers indoor at their place of work, schools or similar.</td>
</tr>
<tr>
<td>Negligible</td>
<td>Viewers from locations where there is screening by vegetation or structures where only occasional screened views are available and viewing times are short. Road users in motor vehicles, trains or on transport routes that are passing through/adjacent to the proposal site and have partially screened views and short viewing times.</td>
</tr>
</tbody>
</table>
2.3 Assessment of landscape and visual impacts

2.3.1 Approach

A qualitative assessment of the potential impacts of the proposal on the landscape character and visual environment was undertaken. The rating of the importance of impacts was determined by combining the potential landscape and visual impacts, as described in section 2.3.3 and 2.3.4.

Impacts on the landscape and visual environment have been considered with particular emphasis on:

- Impacts on important landscape features and their contribution to the urban experience
- Impacts on urban character and imageability
- Impacts on legibility and navigability
- Impacts on urban structure in terms of connectivity and spatial definition
- Impacts on visual amenity and the general appearance of the urban landscape
- Impacts on quality views or visual experiences.

2.3.2 Artistic impressions

An animation video of the proposal has been prepared by Luminova. Still images were used to create artistic impressions from freeze frames of the animation video to illustrate proposal operation in the Newcastle city centre at the day of opening. The artistic impressions include existing buildings and facades and any known new buildings, such as the New Space campus in Hunter Street. The video also includes people and cars that are representative of other activity in the street.

The artistic impressions were reviewed to assist with the landscape and visual impacts assessment and are provided in Appendix A (and throughout the report where relevant).

2.3.3 Assessment of landscape character impacts

The impact of the proposal on each landscape character area has been assessed based on the sensitivity of the area, and the magnitude of the proposal in that particular zone.

Impacts on the identified landscape character areas were assessed by considering the potential scale of change, including:

- The extent to which the change affects landscape qualities, features, character, or structure.
- The extent of area from which the change is evident.
- The duration of the impact (short, medium, long term, or permanent).
- The likely effectiveness of any proposed mitigation measures.

Magnitude ratings used to assess the impacts are described in Table 2-3.
### Table 2-3 Assessment of impact magnitude

<table>
<thead>
<tr>
<th>Magnitude</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>A substantial/obvious change to the landscape or views due to total loss of, or change to, elements, features or characteristics of the landscape. Change would cause a landscape or view to be permanently changed and its quality diminished.</td>
</tr>
<tr>
<td>Moderate</td>
<td>Discernible changes in the landscape or a view due to partial loss of, or change to the elements, features or characteristics of the landscape. May be partly mitigated. The change would be out of scale with the landscape, and at odds with the local character and would leave an adverse impact on the landscape. The change would partially obstruct or change a view.</td>
</tr>
<tr>
<td>Small</td>
<td>Minor loss or alteration to one or more key landscape features or characteristics, or the introduction of elements that may be visible but may not be uncharacteristic within the existing landscape.</td>
</tr>
<tr>
<td>Negligible</td>
<td>Almost imperceptible or no change in the landscape or views as there is little or no loss of/or change to the elements, features or characteristics of the landscape.</td>
</tr>
</tbody>
</table>

#### 2.3.4 Assessment of visual impacts

Visual impacts result from changes in available views, visual experiences (such as from the light rail vehicles), legibility, or general visual amenity. Visual impacts are determined through a subjective assessment of the sensitivity of the visual receptors (identified as part of establishing the baseline for the assessment as outlined in section 2.2) and the magnitude (scale) of the potential change in their view.

The results of the visual impact assessment provide information on whether and how the proposal will impact on the views from sensitive visual receptors.

The factors considered to assess the response to changes in visual amenity include:

- Interest in the visual environment and their distance/angle of view to the source of the impact.
- The extent of screening/filtering of the view.
- Relative importance of the view or visual experience.
- The magnitude of change in the view (i.e. loss/addition of features that change the view’s composition).
- The duration of the effect (temporary/permanent, intermittent/continuous).
- The likely effectiveness of any proposed mitigation measures.

Magnitude ratings used to assess the impacts are described in Table 2-3.

#### 2.3.5 Impact significance

Predicted impacts have been described according to their significance, which is a function of the magnitude of the impact and the sensitivity of the landscape or visual receptor, as described in Table 2-4. Significant impacts are considered to be those with a rating of moderate to high or above.
### Table 2-4 Significance of impact

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>Impacts Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>High - moderate</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Negligible</td>
</tr>
<tr>
<td>Medium</td>
<td>High-moderate</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Moderate - low</td>
</tr>
<tr>
<td></td>
<td>Negligible</td>
</tr>
<tr>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Moderate-low</td>
</tr>
<tr>
<td></td>
<td>Low</td>
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<tr>
<td></td>
<td>Negligible</td>
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<td>Negligible</td>
<td>Negligible</td>
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<td>Negligible</td>
</tr>
<tr>
<td></td>
<td>Negligible</td>
</tr>
</tbody>
</table>

#### 2.3.6 Mitigation and improvement measures

A concept urban design plan has been developed for the proposal as part of the definition design which highlights the potential mitigation measures and design outcomes for the urban environment. Additional mitigation measures have been outlined in section 5.
3. **Existing landscape and visual environment**

3.1 **Overview**

This section provides a description of the urban landscape and visual environment for the purposes of the assessment.

Given the potential changes that are likely to occur in the study area as a result of the implementation of the *Newcastle Urban Renewal Strategy* (Department of Planning and Infrastructure 2012), potential construction impacts are assessed with reference to the existing environment, and potential operational impacts take into account both the existing and potential future environment of currently under construction or approved developments.

The description of the existing environment includes:

- A description of the existing landscape character areas with the potential to be impacted by the proposal (section 3.2).
- Identification of representative sensitive visual receptor areas (section 3.3).

The description of the potential future environment (five years after commencement) is based on:

- Relevant planning strategies and proposed developments.
- Information provided by UrbanGrowth NSW regarding the likely future urban form/land uses in the Newcastle city centre.

An assessment zone of 250 metres from the proposal site has been adopted for this assessment.

3.2 **Landscape character areas**

Four landscape character areas have been identified:

- Character Area 1: Wickham Transport Interchange to Worth Place
- Character Area 2: Cultural and legal precincts – Worth Place to Crown Street
- Character Area 3: Crown Street to Pacific Street
- Character Area 4: North and east of Pacific Street.

The character areas are described in sections 3.2.1 to 3.2.3 and are shown in Figure 3-1.
Figure 3-1 Landscape character areas
3.2.1 Character Area 1: Wickham Transport Interchange to Worth Place

Character Area 1 is located in the area around the former rail corridor from Stewart Avenue to Worth Place (refer Photo 3-1 to Photo 3-5).

**Photo 3-1** View west from foot bridge at decommissioned Wickham Station along former heavy rail line to Stewart Avenue.

**Photo 3-2** View east along Beresford Street

**Photo 3-3** View north along Steel Street

**Photo 3-4** View west along Honeysuckle Drive

**Photo 3-5** View south at Worth Place

**General**

The area is characterised by a highly developed urban environment, bound by multiple parallel transport corridors (Honeysuckle Drive, the former rail corridor and Hunter Street).

The surrounding urban form varies in scale but is generally defined by large scale and high rise (five storeys and above) development with a mix of uses including residential, commercial, light industrial and education. Architectural expression and spatial definition varies, and there is a characteristic mix of older and newer built form.
The former heavy rail corridor (and Wickham Station) is fenced-off and typically 20 to 30 metres wide. There are a number of large vacant lots surrounding the area and the former rail corridor to the north. It is expected that, over time, high rise development will infill the existing vacant lots (a number of unrealised approvals are already in place).

**Layout and land use**

Land use along the proposal site includes mixed commercial and light industrial shifting to higher density residential; a four lane highway (State Road); previously industrial vacant lots; high-density modern residential; a modern commercial showroom (Jeep); scattered heritage buildings; some ground floor commercial and occasional derelict buildings.

To the south, the built form is dominated by large, multi-storey buildings. To the north are some large areas of under-utilised open space, roads and car parking with views to the river.

The former rail corridor is fenced-off and the surrounding urban fabric includes some degraded buildings and vacant lots. Generally the built form is not uniform and there are gaps in the urban fabric.

**Appearance and spatial qualities**

The former rail corridor is typically 20 to 30 metres wide with 10 metre high gantries every 50 metres. Metal rails on discoloured old ballast are fenced off with cyclone fencing. There is some visual clutter associated with Wickham Station, including white hoop-top fencing, a footbridge and small buildings associated with signal boxes/electricity.

Key buildings at the western end include a three storey car park. There are a number of heritage listed buildings including the former Newcastle Cooperative Store, which is three storeys in height, and the existing Wickham Station.

Stewart Avenue (Pacific Highway) is a wide arterial road (State Road). When considered with the gaps in the urban grain, the long views across and along the disused rail corridor, and the open views across to the river, it compounds the overall impression of openness and large scale structural elements.

The built form is typically characterised by large scale, modern, high quality buildings. It consists mostly of glass and steel office and education buildings to the north, and large TAFE education buildings with avenues of mature plane trees to the south. The Hunter Street streetscape is a mix of modern glass and steel style buildings and Victorian red brick buildings with ornate features. Buildings are typically six storeys or higher with large footprints. Active frontages are present along Hunter Street and Honeysuckle Drive and the ‘back’ of the buildings are generally to the former rail corridor and adjacent linear car parking area, emphasising the rail corridor as an as a residual urban space.

**Public realm**

The public realm is largely dominated by traffic, parking and rail infrastructure uses. There are few pedestrian facilities within the local area and pedestrian activity is limited. Street landscaping and footpath finishes are generally average to poor in quality and the scale, busy transport focus and controlled pedestrian crossing facilities of the area are unwelcoming. Landscaped public open space is limited and there are no landscape features of particular quality.

The Wickham Station pedestrian overpass is fairly well used. The ‘Beresford Garden’ community garden and adjacent streetscape improvements display a sense of community activity. There are also a number of high quality street art interventions which contribute an artistic and regenerative feel to the area.
Additional regeneration activities around the Wickham Transport Interchange (under construction at the time of this report) are evident with the renovation of a largely empty heritage building (‘the Store’) into a market, and a warehouse into a martial arts centre. While there is an overall degraded aesthetic, the area has a creative character owing in to the commissioned street art and community garden.

Despite the lack of active frontages to the rail corridor, transparent glass buildings around the proposed Honeysuckle stop, create some perception of passive surveillance and safety, to an otherwise unwelcoming pedestrian environment.

The paved public space at Kuwumi Place is fairly new but it appears to be underutilised.

**Views**

The visual environment is primarily defined by the built form, with long vistas along the wide, straight, rail corridor. Views are dominated by the urban form and views to the north are generally more open than to the south due to the vacant lots.

The visual amenity of the area is influenced by extensive road and rail infrastructure including fencing, gantries, side roads lined with parked cars and intermittent crossings.

Scenic views to the river and industrial landscape beyond could be perceived as either unsightly or attractive. Either way they are reflective of Newcastle’s image and character. The port infrastructure and industrial machinery has a particular and unique sculptural quality.

There are a number of views which are particularly important to the visual amenity of the area: views to the river and the industrial landscape along Steel Street; from Kuwumi Place; and from elevated vantage points in the nearby office and residential buildings.

**Sensitivity of character area**

This area is characterised by its highly developed urban setting. It appears to be in a transitory stage due to the former heavy rail line, the availability of vacant lots providing opportunities for development and the approval of several future projects for the area.

The wide, vehicle dominated streets are combined with few pedestrian crossings. As such, the area is currently not conducive to pedestrian interaction as vehicular and public transport uses have been prioritised over the needs of the pedestrian.

A variety of local and state important heritage listed buildings, civic elements and an underlying creative social character contribute to the local character.

The dynamic and transitory nature of the urban form, as well as significant diversity of built form and activity, mean the area has a high capacity to accommodate change, and a low sensitivity to change.
### 3.2.1 Character Area 2: Cultural and legal precincts

Character Area 2 is located around Hunter Street from Worth Place to Crown Street (refer Photo 3-6 to Photo 3-9).

**General**

The area is characterised by a highly developed urban environment along linear transport corridors.

Hunter Street is a wide street with six vehicle lanes, pedestrian pavements, active frontages and some street trees. Urban form typically consists of two storey Victorian shop fronts interspersed with the larger medium-high rise commercial or civic buildings. This area forms a hub for educational, cultural and legal activities. Key places include the new university building at Auckland Street (under construction); the old Civic Theatre and the adjacent public space; Wheeler Place; Council buildings; and the new justice building (under construction). A number of buildings have heritage importance and state significance.

**Layout and land use**

Hunter Street is a linear, wide vehicular transport corridor (five lanes including parking and turning lanes) with intermittent mature street trees, bound on both sides by two to three storey retail or commercial buildings, with verandas over pavements. Some four or more storey commercial buildings, occasional six or more storey civic or commercial buildings are present.

Hunter Street is enclosed by buildings on both sides until 80 metres west of Crown Street, where the character changes and the street edge is bound on one side by the rail corridor.
Appearance and spatial qualities

The historic Civic Theatre is adjacent to a large public plaza, Wheeler Place, which forms the cultural heart of this precinct.

The Civic Station and forecourt area have local heritage value, but appear dated. Generally well defined by a continuous built edge, the streetscape is of medium to low quality and the area is not pedestrian-friendly.

The area has many active frontages but there is a lack of on-street activation or ‘spill out’ activity (such as pavement cafes / pavement retail etc.).

There are some high quality heritage architectural facades including the Civic Theatre with its Georgian revival style Italian Renaissance façade; the Corona building - a large, ornate, Art Deco style brick frontage; the state heritage listed Frederick Ash building which stands out as a visually striking commercial building from the Victorian era; and the unusual circular concrete and glass form of the Council administration building, which is a striking and iconic feature in the townscape. These traditional buildings will contrast with the new buildings currently under construction (themselves architecturally distinct and prominent).

Public realm

This area is a culturally significant space comprised of an education hub, a civic centre and a legal precinct.

There is substantial pedestrian activity along the streets, many active frontages and pedestrian destinations, partial cycle lanes and some public transport uses (bus/decommissioned Civic Station).

The width of the street combined with the high vehicular speed limit and lack of safe pedestrian crossings make it a vehicular dominated environment and it is not a particularly pedestrian-friendly place. The streetscape is not suited for the human scale but designed for traffic.

Views

There are a number of views which are important to the visual amenity of the area:

- Views down Hunter Street framed by an avenue of mature trees (mostly Plane trees)
- Views to the river and industrial landscape from Worth Place
- Views to the Civic Theatre and Wheeler Place.

Sensitivity of character area

This area is characterised by its highly developed urban setting. A number of buildings have heritage importance and regional significance. This culturally significant character area encompasses the social heart of the precinct. The mix of high quality architectural facades is in contrast to the medium to low quality streetscape around the Civic Station.

Given these factors the area has a medium capacity to accommodate change and a medium sensitivity to change due to its evolving urban environment.
3.2.2 Character Area 3: Crown Street to Pacific Street

Character Area 3 is located in the area from Scott Street and Crown Street to Pacific Street (refer Photos 3.10 to 3.13).

![View south along Newcomen Street](Photo 3-10)
![View south from foreshore](Photo 3-11)
![View east along Scott Street](Photo 3-12)
![View west along Scott Street](Photo 3-13)

**General**

The townscape of this character area is characterised by a highly developed urban environment bound by multiple linear transport corridors and longer north-south vehicle connections.

The street changes from large to medium in scale as Hunter Street becomes Scott Street, and the roadway narrows by approximately 10 metres.

The townscape character changes west of Crown Street when the street becomes bound on the northern edge by the former rail corridor.

The area has a medium to high quality character which is defined by a narrower roadway, ornate facades, a brick wall with railings to the northern boundary which offers visual continuity, street furniture, and large, frequent street trees which provide plenty of shade and visual relief.

**Layout and land use**

The townscape environment is characterised by its highly developed urban form to the south of the road corridor, with the former rail corridor to the north. As the street changes from Hunter Street to Scott Street, the urban grain becomes one sided and has a strong sense of definition and enclosure.
The northern edge of Scott Street is characterised by wide and long views across the rail corridor. The high quality boundary treatment is of brick low walls or pillars with black metal railings. Street features include frequent and large avenue trees with some newly planted street trees. The repeated material of gloss black metal, which is used in the railings, tree grilles and tree guards, gives overall coherence to the street around the decommissioned Newcastle Station area.

The southern edge of Scott Street is characterised by medium to high quality architectural facades and tall (four to six storey) high quality retail and commercial buildings. The building styles include modern, heritage Victorian red brick, Art Deco and industrial.

The road is narrower (four traffic lanes to the Market Street footbridge which then reduces to two lanes).

West of the Market Street footbridge there is a shift in scale and the streetscape becomes much more accommodating of pedestrian activity. Buildings are tall and approximately equal in height to the width of street which creates an enclosed, pedestrian-scale environment.

Distinctive places within this character area include:

- The Perkins Street bus stop which features distinctive and large trees within a pedestrian accessible bus interchange area. The small pedestrian friendly urban plaza is bound by access roads on two sides. It features high quality mining orientated metal sculptures. The bus interchange area offers enclosure and shelter due to the presence of large trees. High quality heritage artwork contributes positively to the urban centre which affords a range of options for commuters and pedestrians. This area contains the entrance to the Hunter Street Mall retail area and a new public toilet.
- The large iconic pedestrian bridge linking Hunter Street, over Market Street to the Queens Wharf tower.
- The Newcomen Street area where the urban grain becomes slightly more intensified to the south side (three to five storeys) and the high quality heritage facades become visually striking. There are a number of outstanding highly ornate Baroque, Parisian and Art Deco building frontages within a streetscape of mature (Plane) street trees.
- The Pacific Park area (Watt Street to Telford Street) where the street opens out and creates an impressive urban panorama, incorporating a number of high quality urban elements and scenic views, such as the Italianate Customs House and views to the foreshore reserve.
- The State heritage listed Newcastle Station with its Victorian Italianate architecture used for larger stations in NSW in the 1870s and 1880s. The two-storey construction is unusual and adds to the imposing presence of the station as the terminus to the Great Northern Railway and the Newcastle to Sydney railway line. Visually, the station is an important element in the Victorian city centre of Newcastle, which developed around the railway precinct.

Public landscapes in this area include:

- The Scott Street streetscape on the northern side which is open and allows substantial light and long views. Coupled with frequent street trees (many of them large and mature with strong visual presence) and planting on the edge of the rail reserve, parts of this wide footpath give the perception of open space and have the character of a small linear park.
- The Perkins Street bus interchange pedestrian island.
Appearance and spatial qualities

The streetscape character changes from medium quality in the west to higher quality towards the east.

At the Perkins Street bus interchange a visual coherence is created by stainless steel elements including shelters, street lights and sculptures. At Newcastle Station visual coherence is created by matching black metal railings, tree guards and tree grilles.

Public realm

The human scale of the streetscape is improved by a number of factors, including the reduced width in the roadway, the perception of reduced traffic flow, occasional wide pavements, mature shade trees, the public transport interchange area, shelters, public toilets, elements of historical interpretation and human-sized artistic sculptures.

Views

The following views are particularly important to the visual amenity of the area:

- General long views from Scott Street across the former rail corridor to the north, with frequent visual obstructions in the form of large gantries with multiple overhead wires associated with the heavy rail infrastructure.
- Views of the existing station building.
- High quality views from the Scott/Watt Street intersection to the foreshore reserve, and avenues of Norfolk Island Pines, to the iconic Customs House and the Convict Lumber Yard.
- Views from Cathedral Park towards the river.

Sensitivity of character area

This area is characterised by its highly developed urban setting and a reasonable level of coherence and imageability. The former rail line to the north gives the area a dynamic feel due to the different typologies of movement corridors and building types. The existing station forms a recognisable landmark that anchors the area. The streetscape progresses from medium quality in the west to high quality towards the east. The pedestrian scale of the area combined with its historical elements help define the area. An array of high quality architectural facades also contributes to the local character.

Given the changing urban environment, the area has a medium sensitivity to change and has a medium potential capacity to accommodate change.

3.2.3 Character Area 4: East of Pacific Street

Character Area 4 is located around the area from Scott Street to the east of Pacific Street (refer Photo 3-14 to Photo 3-17).
General

The local character area is characterised by a developed urban environment centred around a road corridor and characterised by its proximity to Pacific Park, Enterprise Park, and the Foreshore. The streetscape is relatively small in scale with narrow streets and residential and community services buildings of one to two storeys in height. This area forms the gateway to a predominantly residential area to the east. The topography of the area is more varied, due to proximity to the Flagstaff Hill headland.

Layout and land use

The lower density residential areas (some detached, some two storey terraced) and community facilities (such as the Joy Cummings Centre), coupled with the local roads and building setbacks of five metres or more, give the area a low density ‘small town’ character. Buildings have medium to high quality aesthetic value and some Victorian heritage townhouses have high aesthetic quality.

The area is also largely defined by high quality public landscapes, including:

- The Convict Lumber Yard on Scott Street at Enterprise Park.
- Pacific Park and the connection it forms to the beaches to the south.
- Foreshore Park and the connection it forms with the river.
Appearance and spatial qualities

The area is predominantly a smaller scale urban environment comprised of mainly Victorian residential buildings, community buildings and parkland. It has a finer grain and scale that contrasts with the more intense urban environment of Character Area 3. Except for the visual connection to the train station, the area appears distinct from the remainder of the CBD.

Public realm

As noted, the public landscapes of the area are prominent and defining. As well as three significant parks, the beach (which is within 500 metres) and Flagstaff Hill are nearby.

Views

The following views are particularly important to the visual amenity of the area:

- Views from public parks towards the river, foreshore, and beaches.
- Views from the streets and parks towards the attractive streetscapes and landmarks buildings such as the existing station building.
- Views from the river towards this attractive part of the CBD.

Sensitivity of character area

This area is characterised by a low density, finer grain, and prominent open spaces. The streetscape has a comfortable pedestrian scale and buildings have medium to high quality aesthetic value. The character of this area is distinctive from the surrounding areas and the area provides a gateway to surrounding residential areas, the beach and significant historic attractions.

Given these factors the area is likely to have a low potential capacity to accommodate change and a medium to high sensitivity to change.

3.3 Sensitive visual receptors viewing areas

Within the study area there are many groups of sensitive visual receptors that interact with the environment at any given time. As this is a highly developed urban environment, views to the proposal are limited to within the immediate environment of the proposal site (250 metres from the proposal site in each direction). The sensitive receptors for the proposal include:

- Residential apartment buildings and individual dwellings that adjoin and/or have clear views of the proposal site.
- Commercial properties that adjoin and/or have clear views of the proposal site.
- Users of recreation areas/reserves with views of the proposal site (including views from the foreshore and river).
- Road users and pedestrians.

Light rail passengers are not included as sensitive visual receptors as their views would primarily be of the urban environment beyond the proposal site, rather than the proposal itself. Furthermore, as they would be willing patrons of the project, their overall sensitivity to change must be diminished or at least offset by their patronage.

For the purposes of this assessment, the study area is divided into representative sensitive receptor areas. These areas are based on grouping receptors with similar sensitivities located within similar visual environments. A total of eight sensitive visual receptor viewing areas were identified.
The identified representative viewing areas are described in section 3.3.1 to 3.3.8 and shown in Figure 3-2. The view locations include:

- Viewing Area 1 – Wickham Transport Interchange to Bellevue Street
- Viewing Area 2 – Cottage Creek to Union Street
- Viewing Area 3 – Union Street to Auckland Street
- Viewing Area 4 – Auckland Street to Darby Street
- Viewing Area 5 – Darby Street to Crown Street
- Viewing Area 6 – Crown Street to Newcomen Street
- Viewing Area 7 – Newcomen Street to Watt Street
- Viewing Area 8 – Watt Street and Pacific Street to Zaara Street.
Figure 3-2 Sensitive visual receptor viewing areas
### 3.3.1 Viewing Area 1: Wickham Transport Interchange to Cottage Creek

This representative viewing area includes the residential properties on Beresford Street and Bellevue Street as well as the surrounding commercial buildings. The existing visual context of the area is described below and shown in Photos 3.18 to 3.21.

**Photo 3-18**  View south east to the decommissioned Wickham Station from Stewart Avenue

**Photo 3-19**  View south west from Stewart Avenue

**Photo 3-20**  View west from foot bridge at decommissioned Wickham Station along former heavy rail line to Stewart Avenue

**Photo 3-21**  View west from Beresford Street at decommissioned Wickham Station towards Stewart Avenue
Visual context
The bulky, impermeable building facades and scale of the commercial buildings to the east and west of Stewart Avenue dominate this viewing area. Buildings largely screen the views of the former rail corridor from surrounding areas. Views south-east and north-west along the rail corridor are open when passing over the Stewart Avenue level crossing.

There are two residential apartment buildings located within this area; a six-storey building located on Beresford Street and a seven-storey apartment building located at the junction of Bellevue Street and Beresford Street. Both buildings have apartments with balconies that overlook the decommissioned Wickham Station. The focus of views, however, would be north-east towards Throsby Creek and Newcastle Harbour.

Views from this location are experienced by customers of commercial premises, from balconies of the multi-storey building on Beresford Street, and road vehicles and pedestrians passing through the area.

Sensitivity of view location
Generally this area is viewed by pedestrians, cyclists, motorists moving through the area and workers within businesses who would have a low sensitivity.

Some residents of the two multi-story residential apartment blocks area on Beresford Street and Bellevue Street would overlook the proposal site in close proximity and would have a high sensitivity. The majority of the remaining views especially those higher in the building would have a wider visual catchment so would generally have a medium sensitivity.

3.3.2 Viewing Area 2: Cottage Creek to Union Street
This representative viewing area is located in the area around the former rail corridor from Cottage Creek to Union Street. The existing visual context of the area is described in 3.2.1 and shown in Photos 3.22 to 3.25.
Visual context

The bulky, impermeable building facades and scale of the mixed use and commercial buildings to the north and south of the former heavy rail alignment limit views from Hunter Street. Views are available of the rail corridor when passing along Honeysuckle Drive around Cottage Creek.

The sensitive visual receptors in this location include users of Kuwumi Place, recreational users around Cottage Creek, businesses along Hunter Street and Honeysuckle Drive and students from the Hunter TAFE (Hunter Street Campus).

Sensitivity of view location

Generally this area is viewed by pedestrians, cyclists, motorists moving through the area and workers within businesses who would have a low sensitivity.

3.3.3 Viewing Area 3: Union Street to Auckland Street

This representative viewing area is located from the junction of Union Street and Hunter Street to Auckland Street including Worth Place. The existing visual context of the area is shown in Photos 3.26 to 3.30.
Views along Hunter Street are generally in an east – west linear direction confined by building height. Some north-south views are available along streets that intersect Hunter Street. In the area around Worth Place, there are currently open and filtered views to the north. This is due to the currently vacant lots on Hunter Street and Honeysuckle Drive and the car park in this area on Wright Lane.

Views from this location are experienced by customers of commercial premises, from balconies of the multi-storey residential building on Hunter Street, and road vehicles and pedestrians passing through the area.

**Sensitivity of view location**

The majority of the sensitive receptors with this viewing area would be pedestrians, cyclists, motorists moving through the area and workers within businesses who would have a **low sensitivity**.

There are a potentially limited number of people in residential properties who would overlook the site in at a distance. These receptors would have a **medium sensitivity**.
3.3.4 Viewing Area 4: Auckland Street to Darby Street

The representative viewing area is located between Auckland Street and Darby Street. The existing visual context of the area is shown in Photos 3.31 to 3.36.

| Photo 3-31 | View east along Hunter Street at junction with Auckland Street |
| Photo 3-32 | View to the west along Hunter Street |
| Photo 3-33 | View west from Civic Station along Hunter Street |
| Photo 3-34 | View east from Civic Station along Hunter Street |
| Photo 3-35 | View west from Wheeler Place along Hunter Street |
Visual context

Views along Hunter Street are generally in an east – west linear direction confined by building height. Some north-south views are available along side streets that intersect Hunter Street including Auckland Street, Merewether Street, Wheeler Plaza and Burwood Street. Views from this location are experienced by customers and workers of commercial premises; theatre goers visiting Civic Theatre, recreational users of Wheeler Plaza, and road vehicles and pedestrians passing through the area.

Sensitivity of view location

The main focus of this area is around the Civic Theatre and Wheeler Place and its associated uses. Receptors within this area would have a medium sensitivity.

There are a potentially limited number of people in residential properties who would overlook the site at a distance. These receptors would have a medium sensitivity.

3.3.5 Viewing Area 5: Darby Street to Crown Street

The representative viewing area is located between the Darby Street to Crown Street. The existing visual context of the area is shown in Photos 3.37 to 3.39.
Visual context

Views along Hunter Street are generally in an east – west linear direction confined by building height. To the north of Hunter Street views are generally more open as the street is adjacent to the former heavy rail line which has some adjoining empty lots. Some north-south views are available along side streets that intersect Hunter Street including Darby Street and Crown Street. There is a pedestrian bridge that crosses over the former heavy rail line connecting Hunter Street to Argyle Street. Views from this location are experienced by customers and workers of commercial premises; from balconies of the multi-storey residential building on Wharf Road and road vehicles and pedestrians passing through the area.

Sensitivity of view location

Generally this area is viewed by pedestrians, cyclists, motorists moving through the area and workers within businesses who would have a low sensitivity. This area is also viewed by people in residential properties who would overlook the site at a distance. These receptors would have a medium sensitivity.

3.3.6 Viewing Area 6: Crown Street to Newcomen Street

The representative viewing area is located between Crown Street and Newcomen Street in the areas around Scott Street and Hunter Street. The existing visual context of the area is shown in Photos 3.40 to 3.45.

Photo 3-40 View west along Scott Street to the bus stop with mature trees

Photo 3-41 View east along Scott Street from bus stop
Visual Context

Views along Hunter Street are generally confined by building height to the south. To the north of Hunter Street and Scott Street, views are generally more open or filtered across the rail alignment as the street is adjacent to the former heavy rail alignment and adjoining empty lots. Some north-south views are available along side streets that intersect Hunter and Scott Streets, including Crown Street, Browne Street, Perkins Street, Wolfe Street, Market Street and Newcomen Street. There are three pedestrian bridges that cross the former heavy rail line, connecting Scott Street to Wharf Road. Views from this location are experienced by customers and workers of commercial premises, from balconies of the multi-storey residential building, recreational views from the lookout tower and road vehicles and pedestrians passing through the area.

Sensitivity of view location

The majority of the sensitive receptors with this viewing area would be pedestrians, cyclists, motorists moving through the area and workers within businesses who would have a low sensitivity.

There are a potentially limited number of people in residential properties who would overlook the site at a distance. These receptors would have a medium sensitivity.
3.3.7 Viewing Area 7: Newcomen Street to Watt Street

The representative viewing area is located between Newcomen Street and Watt Street. The existing visual context of the area is shown in Photos 3.46 to 3.48.

Visual context

Views along Scott Street are generally confined by commercial buildings with high quality architectural facades and framed by mature (Plane) street trees. There are a number of high quality heritage facades which are visually striking and, together with the train station façade, form a high-quality visual experience within the streetscape.

To the north of Scott Street, views are open across the former heavy rail line around Newcomen Street. Around Bolton Street, views become enclosed again with the long façade of the train station building enclosing the street to the north. At the Watt Street and Scott Street intersection, the street opens out and creates an impressive urban panorama, incorporating a number of high quality urban elements and scenic views, such as the Italianate Customs House, views to the foreshore reserve and the Convict Lumber Yard on Scott Street.

Some north-south views are also available along side streets that intersect Scott Street including Newcomen Street, Bolton Street and Watt Street.

Views from these locations are experienced by customers and workers of commercial premises, residents from balconies of the multi-storey residential building, road users and pedestrians passing through the area.
Sensitivity of view location

Generally this area is viewed by pedestrians, cyclists, motorists moving through the area and workers within businesses who would have a low sensitivity.

This area is also viewed by people in the residential multi storey apartment block along Scott Street who would overlook the site in close. These receptors would have a high sensitivity.

3.3.8 Viewing Area 8: Watt Street and Pacific Street to Zaara Street

The representative viewing area is located between Watt Street and Zaara Street and includes The Foreshore Reserve view, Customs House, Convict Lumber Yard and Pacific Park. The existing visual context of the area is shown in Photos 3.49 to 3.52.

![Photo 3-49 View northeast from the corner of Pacific Street and Scott Street](image1)

![Photo 3-50 View southeast from the corner of Pacific Street and Scott Street](image2)

![Photo 3-51 View west from Pacific Park and Scott Street](image3)

![Photo 3-52 View west from junction of Telford Street and Scott Street](image4)

Visual context

The streetscape consists of mainly one to two storey Victorian residential facades, community buildings and parkland. It is relatively small in scale and a kerb outstand narrows the roadway, giving priority to pedestrians. This area forms the gateway to a predominantly residential and lower density area to the east and as such, there are more views to the sky in this area and a more residential visual character.

There is a lower density and a ‘country town’ aesthetic and buildings have medium to high quality aesthetic value with some Victorian heritage townhouses of high aesthetic quality.
There are general views along Scott Street and high quality views from the Scott / Watt Street intersection to the foreshore reserve with its avenues of Norfolk Island Pines to the iconic Customs House and Convict Lumber Yard. There are long views from Scott Street down Telford Street to The Foreshore and shorter views from Scott Street across Pacific Park, which are screened by vegetation.

Views from these locations are experienced by residents surrounding Pacific Park and along Scott, Telford and Pacific Streets. Views are also experienced by customers and workers of commercial premises, recreational users of Pacific Park and the Convict Lumber Yard, road users and pedestrians.

**Sensitivity of view location**

This area also contains two parks and is within relatively close proximity to the beach. It is also viewed by people in residential properties who would overlook the site in close proximity. These receptors would have a **high sensitivity**.
4. Urban landscape and visual impact assessment

4.1 Approach

Potential urban landscape and visual impacts of the proposal are considered in the context of the sensitivity of the surrounding landscape and visual environment. The assessment focuses on the visibility of both the construction and operational phases of the proposal using the methodology described in section 2.3.

4.2 General overview of potential impacts

4.2.1 Construction impacts

The proposal would generate temporary visual impacts during the construction period for residents, visitors and workers in the study area. Construction of the proposal is anticipated to be undertaken over a period of 2.5 years, from mid-2016 with operations commencing in early 2019. It is anticipated that construction would generally progress from west to east along the light rail corridor and that construction activities would be undertaken concurrently within the four main construction zones shown in Figure 4-1 and listed in Table 4-1.

Table 4-1 Construction zones

<table>
<thead>
<tr>
<th>Construction zone</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Former rail corridor and stabling and maintenance facility Extends from Wickham Transport Interchange, via Beresford Street and along the former rail corridor to Worth Place. The total length of this area would be about 970 metres. The width of the construction zone within Beresford Street would be about four metres.</td>
</tr>
<tr>
<td>2</td>
<td>Hunter Street west Extends along Hunter Street from Worth Place to Darby Street. The total length of this area would be about 645 metres. The width of the construction zone would be about eight metres.</td>
</tr>
<tr>
<td>3</td>
<td>Hunter Street east Extends along Hunter Street from Darby Street, into Scott Street to Wolfe Street. The total length of this area would be about 500 metres. The width of the construction zone would be about eight metres.</td>
</tr>
<tr>
<td>4</td>
<td>Scott Street Extends along Scott Street from Wolfe Street to the end of the route just past the Eastern Terminus stop. The total length of this area would be about 637 metres. The width of the construction zone would be about eight metres.</td>
</tr>
</tbody>
</table>

Two construction compounds are proposed as shown on Figure 4-1. These compounds would be in place for the duration of the construction phase:

- Eastern compound – a site within the existing heavy rail corridor located just west of Newcastle Station.
- Western compound – a site located on currently vacant land adjacent to Hannell Street and Station Street.

Further information on the construction process and key activities is provided in chapter 7 of the REF.

During works, visible elements would include work sites, machinery and equipment, waste materials, fencing and hoarding, stockpiles and compounds.
Figure 4-1 Indicative construction zones and compound locations
The change in the visual environment would generally be experienced by viewers from a relatively short distance. The proposal would be viewed within the context of a highly developed and dynamic urban environment, where construction and associated works are common occurrences.

There has been a range of works within the former rail corridor associated with the rail line decommissioning that would ultimately lead to benefits for the study area. There would also be expectation for some level of construction impacts given the previous community engagement activities undertaken for the proposal and the broader NUTTP.

There may also be potential for some light spill impacts associated with lighting required to carry out night works, should they be required. However, sections of the proposal site are already generally well-lit at night and additional lighting would not result in a significant increase in light spill events. Any additional lighting would be directionally-mounted so as to avoid unnecessary direct light spill into sensitive receptors such as residences.

Tree removal would be avoided where possible. In the event that removal is required, the contractor would obtain approval from TfNSW by submitting an ‘application for removal or trimming vegetation’. Any trees subject to removal would be replaced in accordance with TfNSW’s Vegetation Offset Guide (2012).

Mitigation measures provided in section 5 would assist in reducing the potential significance of these short term impacts.

**4.2.2 Operational impacts**

Infrastructure proposed as part of the proposal and the key operational features are described in chapter 6 of the REF. The proposal would generate long term operational activity in the form of light rail vehicle and passenger activity, as well as the implementation of new structures (stop shelters, the stabling and maintenance facility) infrastructure (overhead cables, poles, lighting and the substations), and landscaping. These changes would have most potential for impact during the early years of operation, and would be likely to be rapidly normalised as they become seen as part of the urban environment.

The appearance and visual form of the visible features of the proposal have been important considerations in the options assessment and design definition process. The definition design for the proposal has been prepared in accordance with these considerations, and the urban design requirements and objectives of the Newcastle Urban Renewal Strategy and the NUTTP. This would be further developed during detailed design in consultation with UrbanGrowth NSW, Council and other stakeholders and with reference to the Hunter Street Revitalisation Final Strategic Framework (City of Newcastle, 2010) and Newcastle 2030 (City of Newcastle, 2013).

The proposal has the potential to both impact and benefit the surrounding landscape and visual receptors. The main impacts during proposal operation would be associated with the new light rail alignment and infrastructure within the road corridor. A potential benefit of the proposal would be the increased pedestrian connectivity between Hunter Street and the Foreshore, including new road links across the former rail corridor. This impact assessment is based on a potential urban form that would be realised five year post-construction as described in section 2.1.5.

The key issues during proposal operation include:

- Replacing the locally heritage listed Wickham Station with the stabling and maintenance facility.
- Four new stops along the road corridor in Hunter and Scott Street.
- New power poles and overhead wiring.
The presence of moving light rail vehicles in the street corridor.

Introduction of new sources of lighting at night – stabling and maintenance facility, headlights and stop lighting.

Removal of the four pedestrian overbridges.

New traffic signals with road crossings and intersection changes.

Installation of the prefabricated substations and associated works.

### 4.3 Character area impact assessment

Potential impacts on the landscape character areas are considered in the following sections. A summary of the impact ratings is provided in Table 4-2.

#### Table 4-2 Summary of character area impact ratings

<table>
<thead>
<tr>
<th>Character area</th>
<th>Sensitivity to change</th>
<th>Phase</th>
<th>Magnitude of impacts</th>
<th>Impact significance rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Wickham to Worth Place</td>
<td>Low sensitivity to change</td>
<td>Construction</td>
<td>Large</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Low</td>
</tr>
<tr>
<td>2 Cultural and legal precincts</td>
<td>Medium sensitivity to change</td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Moderate-low</td>
</tr>
<tr>
<td>3 Crown Street to Pacific Street</td>
<td>Medium sensitivity to change</td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Moderate-low</td>
</tr>
<tr>
<td>4 East of Pacific Street</td>
<td>Medium to high sensitivity to change</td>
<td>Construction</td>
<td>Moderate</td>
<td>High-moderate to moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Moderate to moderate-low</td>
</tr>
</tbody>
</table>

#### 4.3.1 Character Area 1: Wickham to Worth Place

**Construction**

**Magnitude of change**

Works in this area during the construction phase include removing the existing Wickham Station buildings, platforms and pedestrian bridge; and establishment of the western construction compound on currently vacant land adjacent to Hannell Street and Station Street. This character area equates to construction zone 1.

This would displace users, change circulation patterns and may alter building access. The existing station would become a construction site and, along with the adjacent construction compound, would be enclosed by security fencing with temporary fencing. It is likely that the flow of pedestrian movements would be impacted by the removal of the pedestrian bridge and associated construction works, with diversion around the site causing impacts on the visual connectivity and legibility in this character area.

Taking the above factors into consideration it is expected that there would be a large reduction in the quality of the landscape which, as identified in section 3.2.1, has a low sensitivity to change. Construction of the stabling and maintenance facility would take about 12 months to complete with the construction compound to be in place for the entire construction phase of about 2.5 years.
Significance of impacts

The significance of the landscape impacts within this character area during the construction phase would be a moderate.

Operation

Magnitude of change

This area is an existing transport hub with a warehouse building located along Beresford Street. A pedestrian bridge would be removed and some pedestrians may need to walk 100 metres further to the Stewart Avenue (Pacific Highway) crossing, as the Cottage Creek crossing is not accessible from Beresford Street due to the retaining wall and waterway. The former station buildings would be replaced with the light rail stabling and maintenance facility.

Taking the above factors into consideration, there would be limited changes to the character with some changes to the function and movement during operation. There would be a loss of pedestrian connectivity across the rail alignment at the eastern end of Beresford Street. Vegetation along Beresford Street beside the station would be removed.

It is expected that there would be a small reduction in the quality of the landscape which as, identified in section 3.2.1, has a low sensitivity to change.

Significance of impacts

The significance of the landscape impacts within this character area during operation would be low.

4.3.2 Character Area 2: Cultural and legal precincts

Construction

Magnitude of change

This character area coincides with the eastern half of construction zone 2 and the western half of construction zone 3. The landscape in this character area, as identified in section 3.2.2, has a medium sensitivity to change. Construction along the road corridor would move at approximately 50 metres per month in 100 metre sections. The active construction zone would have hoarding around its perimeter. These activities and interventions would generate a moderate change to the landscape.

Significance of impacts

The significance of the landscape impacts within this character area during the construction phase would be a moderate.

Operation

Magnitude of change

Light rail stops with associated infrastructure would be constructed near Wheeler Place opposite the decommissioned Civic Station and at Crown Street.

During the operation phase, the proposal would be on a segregated alignment in the former heavy rail corridor and to Worth Place and then a separated alignment along Hunter Street and would include overhead power infrastructure, including a catenary structure at the Worth Place junction.
The landscape in this character area, as identified in section 3.2.2, has a medium sensitivity to change. The character and functionality of the area would be maintained but with amendments to the pattern of movement within the area. These works would have a small impact.

**Significance of impacts**

The significance of the impacts to the landscape in this area during operation is considered to be of moderate-low significance.

### 4.3.3 Character Area 3: Crown Street to Pacific Street

#### Construction

**Magnitude of change**

This character area coincides with the eastern half of construction zone 3 and the western half of construction zone 4. During the construction phase, a work area approximately 100 metres long surrounded by hoarding would progress from west to east along the road alignment in each of the construction zones. The eastern compound would be located within the existing heavy rail corridor just west of Newcastle Station around Market Street.

The pedestrian bridges over the former rail corridor at Perkins Street and Market Street would be removed. A new at grade crossing has already been installed along the rail corridor so impacts on movement in a north-south direction would be minimal.

It is likely that the flow of pedestrian movements would be impacted by the construction works with diversion around the site causing impacts on the visual connectivity and legibility in this character area. These works would displace users and may alter the circulation through the area.

Taking the above factors into consideration it is expected that there would be a moderate reduction in the quality of the landscape which, as identified in section 3.2.2, has a medium sensitivity to change.

**Significance of impacts**

The significance of the landscape impacts within this character area during the construction phase would be a moderate.

#### Operation

**Magnitude of change**

A stop with associated infrastructure would be constructed near Market Street on Scott Street. During the operation phase, the proposal would be on a separated alignment from the road corridor and would include overhead power infrastructure on poles.

This area has a medium sensitivity to change. The character and functionality of the area would be maintained but with amendments to the pattern of movement within the area. These works would have a small impact.

**Significance of impacts**

The significance of the impacts to the landscape in this area during operation is considered to be of moderate-low significance.
4.3.4 Character Area 4: East of Pacific Street

**Construction**

**Magnitude of change**

This character area coincides with the eastern half of construction zone 4. During the construction phase, a work area approximately 100 metres long surrounded by hoarding would progress from west to east along the road alignment in the construction zone. Construction along the road corridor would move at approximately 50 metres per month in 100 metre sections.

It is likely that the flow of pedestrian movements would be impacted by the construction works with diversion around the site causing impacts on the visual connectivity and legibility in this character area. These works would displace users and may alter the circulation through the area.

Taking the above factors into consideration, it is expected that there would be a **moderate** reduction in the quality of the landscape which, as identified in section 3.2.3, has a **medium** to **high sensitivity to change**.

**Significance of impacts**

The significance of the landscape impacts within this character area during the construction phase would be **high-moderate to moderate**.

**Operation**

**Magnitude of change**

During the operation phase, the proposal would be on a mixed road rail corridor and would include overhead power infrastructure. A stop with associated infrastructure would be constructed on Scott Street at Pacific Park. A new terminus facility to the east of the Pacific Park stop would hold waiting light rail vehicles at periods throughout the operational hours.

This area has a high quality, smaller scale landscape with smaller buildings and park areas. It is expected that there would be a reduction in the landscape quality of this character area. There would be amendments to the functionality and the pattern of movement within the area.

This area has a **medium** to **high sensitivity to change**. These works would have a **small** impact.

**Significance of impacts**

The significance of the impacts to the landscape in this area during operations would be of **moderate to moderate-low significance**.

4.4 Visual impact assessment

Potential impacts on the viewing areas are considered in the following sections. A summary of the impact ratings is provided in Table E-2.

A number of artistic impressions of the proposal at various locations along the proposed route are provided in Appendix A.
Table 4-3  Summary of visual impacts

<table>
<thead>
<tr>
<th>Viewing area</th>
<th>Sensitivity</th>
<th>Phase</th>
<th>Magnitude rating</th>
<th>Significance of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Wickham Transport Interchange to Cottage Creek</td>
<td>Low (general) Medium to high (residential)</td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate-low (general) Moderate to high-moderate (residential)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Low (general) Moderate to moderate-low (residential)</td>
</tr>
<tr>
<td>2 Cottage Creek to Union Street</td>
<td>Low (all viewers)</td>
<td>Construction</td>
<td>Small</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Negligible</td>
<td>Negligible</td>
</tr>
<tr>
<td>3 Union Street to Auckland Street</td>
<td>Low (general) Medium (limited residential)</td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate-low (general) Moderate (residential)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Low to moderate-low</td>
</tr>
<tr>
<td>4 Auckland Street to Darby Street</td>
<td>Medium (all viewers)</td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Moderate to low</td>
</tr>
<tr>
<td>5 Darby Street to Crown Street</td>
<td>Low (general) Medium (residential)</td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate-low (general) Moderate (residential)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Low (general) Moderate to low</td>
</tr>
<tr>
<td>6 Crown Street to Newcomen Street</td>
<td>Low (general) Medium (residential)</td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate-low (general) Moderate (residential)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Low (general) Moderate to low</td>
</tr>
<tr>
<td>7 Newcomen Street to Watt Street</td>
<td>Low (general) High (residential)</td>
<td>Construction</td>
<td>Moderate</td>
<td>Moderate-low (general) High-moderate (residential)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Low (general) Moderate (residential)</td>
</tr>
<tr>
<td>8 Watt Street and Pacific Street to Zaara Street</td>
<td>High (all viewers)</td>
<td>Construction</td>
<td>Moderate</td>
<td>High-moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation</td>
<td>Small</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

4.4.1  Viewing Area 1: Wickham Transport Interchange to Cottage Creek

Figure 4-2 and Figure 4-3 illustrate the main visual changes in proximity to Viewing Area 1. These images are indicative only and subject to detailed design.
Key visible proposal elements near Viewing Area 1

Key visual elements in Viewing Area 1 during construction and operation are summarised as:

**Construction**

- Western compound located on currently vacant land adjacent to Hannell Street and Station Street.
- Machinery and construction works including hoarding, stockpiles, fencing, temporary buildings, construction compounds.
- Removal of the existing Wickham Station buildings, platforms and pedestrian overbridge.
- Construction progressing concurrently in each construction zone along the alignment in approximately 100 metre lengths, with works taking about one month to move 50 metres.
• Removal of the track and associated infrastructure in the former rail corridor between the interchange and Worth Place.
• Construction of the stabling and maintenance facility at the Wickham Station site.
• Lighting of construction compound.

Operation
• Light rail stabling and maintenance facility at the existing Wickham Station site.
• New single track section immediately south of the Wickham Transport Interchange on Beresford Street.
• Dual track section from east of Stewart Avenue entering the heavy rail corridor east of Wickham Station.
• Overhead wiring infrastructure and poles.
• Light rail vehicles: stationary and moving.

Construction

Magnitude of change

Works in this area during the construction phase include removing the existing Wickham Station buildings, platforms and pedestrian bridge; and establishment of the western construction compound on currently vacant land adjacent to Hannell Street and Station Street. This area coincides with the western half of construction zone 1.

The removal of the pedestrian bridge would require some pedestrians to walk 100 metres further to the Stewart Avenue (Pacific Highway) crossing, as the Cottage Creek crossing is not accessible from Beresford Street due to the retaining wall and waterway.

Adverse visual impacts would occur during the construction phase due to the presence of the construction compound and the volume of works proposed in this location. These would have a short term and moderate impact.

Significance of impacts

As outlined in 3.3.1 the majority of receptors within this area are pedestrians, cyclists, motorists moving through the area, and workers within businesses, who would have a low sensitivity.

The significance of the impacts on these receptors during the construction phase would be moderate-low.

There are two residential high rise developments on Beresford Street and Bellevue Street. A limited number of these apartments would overlook the proposal site in close proximity and would have a high sensitivity. The majority of the properties, especially those higher in the building, would have a wider visual catchment so would generally have a medium sensitivity.

The limited number of residential properties at close proximity and with open views of the proposal would experience high-moderate impacts. Views with medium sensitivity would experience moderate impacts.

Operation

Magnitude of change

The layout of the light rail stabling and maintenance facility is shown in Figure 4-2 to Figure 4-3. There would be permanent fencing around the light rail stabling and maintenance facility. The building on the site would occupy an area of about 20 by 60 metres, and it would be about 12 metres high and 20 metres wide.
The new light rail track would commence at the interchange and continue along Beresford Street, moving into the former heavy rail corridor near Bellevue Street and continuing on this alignment to Worth Place. Beresford Street would be reduced to one lane and on street parking would be removed. The former station buildings would be replaced with the light rail stabling and maintenance facility.

Stationary or moving light rail vehicles along Beresford Street and within the former rail corridor would present a frequent and temporary visual barrier. However, they would be operating within the context of an existing rail transport corridor.

There may be some benefits associated with the opening up of the view from Beresford Street towards the north with the removal of the station and its associated infrastructure.

The proposal would be viewed as being characteristic of the decommissioned rail station and associated infrastructure in this urban context. Considering the largely transport and commercial context of the existing views in this area, it is expected that receptors would have a small visual impact.

**Significance of impacts**

The significance of the impacts on the majority of receptors during the construction phase would be moderate-low to low.

### 4.4.2 Viewing Area 2: Cottage Creek to Union Street

Figure 4-4 to Figure 4-6 illustrate the main visual changes in proximity to Viewing Area 2 however these images are indicative only and subject to detailed design.

![Indicative urban design plan for Honeysuckle stop](image)
Key visible proposal elements near Viewing Area 2

Construction

- Construction activities/features within the rail corridor would include hoarding, stockpiles, fencing, temporary buildings and machinery movements.
**Operation**

- Dual track section in heavy rail corridor set on ballast.
- New signalised road crossing at Steel Street.
- Honeysuckle light rail stop within the rail corridor near Kuwumi Place.

**Construction**

**Magnitude of change**

Adverse visual impacts would occur during the construction phase. However works would be within the former rail corridor. This area coincides with the eastern half of construction zone 1. The proposal would be viewed as being characteristic of the existing urban context within the rail infrastructure and therefore have a short term *small* impact.

**Significance of impacts**

There are limited opportunities to view the construction zone in the former rail corridor. As identified in section 3.3.2 the sensitivity of the receptors who can view the construction zone would be *low*. The significance of the impact during the construction phase would be *low*.

**Operation**

**Magnitude of change**

There would be an increase in streetscape activation due to more pedestrians moving around Kuwumi Place and the Honeysuckle light rail stop. There would be an impact from the stationary and moving light rail vehicles within the former rail corridor, which would present a frequent but temporary visual barrier. As they would be operating within the context of an existing rail transport corridor, impacts on these receptors would be *negligible*.

**Significance of impacts**

The significance of the impact during the operational phase would be *negligible*.

**4.4.3 Viewing Area 3: Union Street to Auckland Street**

Figure 4-7 illustrates the main visual changes in proximity to Viewing Area 3 however these images are indicative only and subject to detailed design.

(Parsons Brinckerhoff Aurecon, 8 October 2015)

**Figure 4-7 Indicative cross section on Hunter Street between Worth Place and Auckland Street in Viewing Area 3**
Key visible proposal elements near Viewing Area 3

Key visual elements in Viewing Area 3 during construction and operation are summarised as:

**Construction**

- Machinery and construction works occurring within the rail corridor including hoarding, stockpiles and fencing.

**Operation**

- Light rail corridor separated from adjacent road traffic along Hunter Street.
- Installation of overhead power infrastructure, including a catenary structure at the Worth Place junction.
- New vehicle crossing over rail at Worth Place.

**Construction**

*Magnitude of change*

There would be the potential for landscape and visual impacts during the construction phase. This area coincides with the western half of construction zone 2. In this area the proposal alignment would be partially within the former rail corridor, with the majority within the road corridor. Construction along the road corridor would move at approximately 50 metres per month in 100 metre sections. The active construction zone would have hoarding around its perimeter.

The proposal moves from the former rail corridor to the street at Worth Place. In this area, views to the construction activities would be *moderately* impacted as the proposal would change the general workings of the streetscape.

*Significance of impacts*

The general sensitivity of the receptors with this viewing area is *low* to *medium* as described in section 3.3.3. The significance of the impacts within this area would generally be *moderate-low*.

**Operation**

*Magnitude of change*

There would be a potential for increasing streetscape activation due to more pedestrians moving around the precinct.

There would be visual impacts associated with the overhead power infrastructure and poles within the streetscape with extensive catenary around Worth Place and Hunter Street intersections; and changes to the Hunter Street roadway.

Stationary or moving light rail vehicles within the streetscape would present a frequent but temporary visual barrier. These would be viewed as being of similar scale, form and character as the existing vehicles (such as a bus or truck) within this transport corridor. These new additions to this urban environment would have a *small* impact.

*Significance of impacts*

The general sensitivity of the receptors with this viewing area is assessed as *low* to *medium* as described in section 3.3.3. The significance of the impacts within this area would generally be *low* to *moderate-low*. 
### 4.4.4 Viewing Area 4: Auckland Street to Darby Street

Figure 4-8, Figure 4-9 and Figure 4-10 illustrate the main visual changes in proximity to Viewing Area 4. These images are indicative only and subject to detailed design.

*Figure 4-8 Indicative urban design plan for the Civic stop*

*Figure 4-9 Indicative cross section for the Civic stop*
Key visible proposal elements near Viewing Area 4

Key visual elements in Viewing Area 4 during construction and operation are summarised as:

**Construction**

- Machinery and construction works occurring within the road corridor including hoarding, stockpiles and fencing.
- Removal of the existing pedestrian overbridge at Civic Station.

**Operation**

- Light rail corridor separated from adjacent road traffic along Hunter Street.
- New stop with associated infrastructure near Wheeler Place opposite the decommissioned Civic Station.
- Overhead wiring infrastructure and poles.
- Light rail vehicles: stationary and moving.

**Construction**

*Magnitude of change*

There would be the potential for visual impacts during the construction phase. This area coincides with the eastern half of construction zone 2. In this area the alignment would be within the road corridor. Construction along the road corridor would move at approximately 50 metres per month in 100 metre sections. The active construction zone would have hoarding around its perimeter.

There would be limited impacts associated with the new bus interchange located on the former rail corridor to the north of Civic Station as this would be within the existing heavy rail corridor.

In this area the proposal alignment would be on-street. Construction activities would have a *moderate* impact as they would disrupt the general streetscape.

*Significance of impacts*

The sensitivity of the receptors as described in 3.3.4 is generally considered to be *medium*. The significance of the impact in this area is assessed to be *moderate*.
Operation

Magnitude of change

There would be limited impacts associated with the new bus interchange located on the former heavy rail corridor to the north of Civic Station. There would be visual impacts associated with the Civic stop including furniture; overhead power infrastructure and poles within the streetscape; changes to patterns of movement and groups of pedestrians at stops.

There would be benefits associated with the increase in streetscape activation due to more pedestrians moving around the precinct.

Stationary or moving light vehicles within the streetscape would present a frequent but temporary visual barrier. These would be viewed as being of similar scale, form and visual character as the existing vehicles (such as a bus or truck) within this transport corridor. For views in this area, it is expected that the visual impacts of the proposal during operation would have a small impact.

Significance of impacts

The sensitivity of the receptors as described in 3.3.4 is generally considered to be medium. The significance of the impact in this area is assessed to be moderate-low.

4.4.5 Viewing Area 5: Darby Street to Crown Street

Figure 4-11 to Figure 4-13 illustrate the main changes in proximity to Viewing Area 5. These images are indicative only and subject to detailed design.
Figure 4-12  Indicative cross section for the Crown Street stop

Figure 4-13  Indicative cross section on Hunter Street near Crown Street

Key visible proposal elements near Viewing Area 5

Key visual elements in Viewing Area 5 during construction and operation are summarised as:

Construction

- Machinery and construction works occurring within the road corridor including hoarding, stockpiles and fencing.

Operation

- Two new substations in the former rail corridor west of Argyle Street.
- Reconfiguration of the roadway for light rail tracks.
- Overhead wiring infrastructure and poles.
- Light rail vehicles: stationary and moving.
Construction

Magnitude of change

There would be the potential for visual impacts during the construction phase. This area coincides with the western half of construction zone 3. In this area the alignment would be within the road corridor. Construction along the road corridor would move at about 50 metres per month in 100 metre sections. The active construction zone would have hoarding around its perimeter.

Two new substation buildings would be constructed in the former rail corridor adjacent to Argyle Street. The substations would generally comprise prefabricated structures, with the manufacture and fit-out of each substation occurring off-site. On-site works would typically comprise excavation, foundation preparation and construction.

Construction activities would have a moderate impact as it would cause frequent disruptions to users and the general workings of the streetscape.

Significance of impacts

The sensitivity of the receptors as described in 3.3.5 is generally considered to be low with some limited residential properties of medium. The significance of the impact in this area is assessed to be moderate to moderate-low.

Operation

Magnitude of change

The changes to Hunter Street patterns of movement and the introduction of the right rail alignment, overhead power infrastructure and poles within the streetscape would have an impact on the existing streetscape and visual environment. However the impact would be characteristic of the urban environment which is adjacent to the former heavy rail corridor.

Stationary or moving light rail vehicles within the streetscape would present a frequent but temporary visual barrier. These would be viewed as being of similar scale, form and character as the existing vehicles (such as a bus or truck) within this transport corridor. The impacts on sensitive receptors within the viewing area would be small.

Significance of impacts

The sensitivity of the receptors as described in 3.3.5 is generally considered to be low with some limited residential properties of medium. The significance of the impact in this area is assessed to be low (for general receivers) to moderate-low (for residential receivers).

4.4.6 Viewing Area 6: Crown Street to Newcomen Street

Figure 4-14 and Figure 4-15 illustrate the main changes in proximity to Viewing Area 6. These images are indicative only and subject to detailed design.
Key visible proposal elements near Viewing Area 6

Key visual elements in Viewing Area 6 during construction and operation are summarised as:

**Construction**

- Machinery and construction works occurring within the road corridor including hoarding, stockpiles, fencing, temporary buildings, construction compounds.
- Removal of the existing pedestrian overbridge at Market Street.
- Eastern compound within the existing heavy rail corridor located just west of Newcastle Station.
**Operation**
- Light rail corridor separated from adjacent road traffic along Hunter Street.
- New light rail platform and associated infrastructure at Crown Street.
- New light rail platform and associated infrastructure at Market Street.
- Installation of overhead power infrastructure.

**Construction**

**Magnitude of change**

Adverse landscape and visual impacts would occur during the construction phase. This area coincides with the western half of construction zone 3 and the eastern half of construction zone 4. In this area the alignment would be within the road corridor. Construction along the road corridor would move at approximately 50 metres per month in 100 metre sections. The active construction zone would have hoarding around its perimeter.

The eastern construction compound would be located within the existing heavy rail corridor located just west of Newcastle Station. This is already a degraded area with a lot of visual clutter associated with the former heavy rail line. The presence of a construction compound within this changing urban environment would not be uncharacteristic.

The two distinctive *Ficus microcarpa var. hillii* 'Hills Weeping Fig' trees near Perkins Street would be retained.

Adverse landscape and visual impacts would occur during the construction phase. In this area the proposal alignment would be on-street. Construction activities would have a moderate impact as it would cause frequent disruptions to users and the general workings of the streetscape.

**Significance of impacts**

The sensitivity of the majority of the receptors as described in 3.3.6 is generally considered to be medium to low. The significance of the impact in this area is assessed to be moderate to moderate-low.

**Operation**

**Magnitude of change**

There would be visual impacts associated with the Crown Street and Market Street stops, including the platforms and furniture; overhead power infrastructure and poles within the streetscape; changes to patterns of movement and groups of pedestrians at stops.

There are urban regeneration opportunities along the former rail corridor. It is anticipated that an increase in streetscape activation due to more pedestrians moving around the precinct would create opportunity for streetscape improvements within Scott Street.

Stationary or moving light rail vehicles within the streetscape would present a frequent but temporary visual barrier. These would be viewed as being of similar scale, form and visual character as the existing vehicles (such as a bus or truck) within this transport corridor. The impacts on sensitive receptors within the viewing area would be small.

**Significance of impacts**

The sensitivity of the receptors as described in 3.3.6 is generally considered to be medium to low. The significance of the impact in this area is assessed to be moderate–low to low.
4.4.7 Viewing Area 7: Newcomen Street to Watt Street

Figure 4-16 illustrates the main visual changes close to Viewing Area 7 however these images are indicative only and subject to detailed design.

Key visible proposal elements near Viewing Area 7

Key visual elements in Viewing Area 7 during construction and operation are summarised as:

**Construction**

- Machinery and construction works occurring within the road corridor including hoarding, stockpiles and fencing.

**Operation**

- Light rail corridor operating within the road traffic in a shared running arrangement.
- Overhead power infrastructure removal of heavy rail infrastructure.

**Construction**

*Magnitude of change*

There would be the potential for visual impacts during the construction phase. This area coincides with construction zone 4. In this area the alignment would be within the road corridor. Construction along the road corridor would move at approximately 50 metres per month in 100 metre sections. The active construction zone would have hoarding around its perimeter. There would be an impact from the changes within road corridor and overhead power infrastructure and poles within the streetscape.

Construction activities would have a *moderate* impact as they would cause frequent disruptions to users and the general streetscape.

**Significance of impacts**

The sensitivity of the majority of the receptors as described in 3.3.6 is generally considered to be high and low. The significance of the impact in this area is assessed to be *high-moderate* for residential receptors and *moderate-low* for the general receptors with the area.
Operation

Magnitude of change

There would be changes to Scott Street roadway. There would also be impacts associated with the overhead power infrastructure and poles within the streetscape; and changes to the Scott Street roadway.

Stationary or moving light rail vehicles within the streetscape would present a frequent but temporary visual barrier. These would be viewed as being of similar scale, form and visual character as the existing vehicles (such as a bus or truck) within this transport corridor. These new additions to this urban environment would have a small impact.

Significance of impacts

The sensitivity of the receptors as described in 3.3.7 is generally considered to be high and low. The significance of the impacts with this area would generally be moderate for residential receptors and low for the general receptors with the area.

4.4.8 Viewing Area 8: Watt Street and Pacific Street to Zaara Street

Figure 4-17 and Figure 4-18 illustrate the main visual changes in proximity to Viewing Area 8 however these images are indicative only and subject to detailed design.

(Parsons Brinckerhoff Aurecon, 8 October 2015)

Figure 4-17 Indicative urban design plan for the Pacific Park stop
Key visible proposal elements near Viewing Area 8

Key visual elements in Viewing Area 8 during construction and operation are summarised as:

**Construction**
- Machinery and construction works occurring within the road corridor including hoarding, stockpiles and fencing.

**Operation**
- Light rail corridor operating within the road traffic in a shared running arrangement.
- Overhead power infrastructure.
- New platform at the Pacific Park stop with associated infrastructure.
- Small section of single track long enough to hold a single light rail vehicle between the Pacific Park Stop and the end of the track.

**Construction**

**Magnitude of change**

Adverse visual impacts would occur during the construction phase. In this area the proposal alignment would be on-street. Construction along the road corridor would move at approximately 50 metres per month in 100 metre sections. The active construction zone would have hoarding around its perimeter. Construction activities would have a moderate impact as they would cause disruptions to users and the general workings of the streetscape and limit views to and from the adjoining park areas that would be short term and temporary.

**Significance of impacts**

The sensitivity of the receptors as described in 3.3.8 is generally considered to be high. The significance of the impact in this area is assessed to be high-moderate.
Operation

Magnitude of change

Moving light rail vehicles along Scott Street would have an impact on the visual amenity of the area. Important views within this area include to Customs House, the Great Northern Hotel, The foreshore, and the Convict Lumber Yard. However, the impact would be temporary, and at a similar scale as other existing modes of transport within this existing transport corridor.

A new stop would be located at Pacific Park as illustrated in Figure 4-17 to Figure 4-18. There would be permanent impacts associated with the stop infrastructure and overhead wiring.

Single and occasionally multiple light rail vehicles waiting (for short periods) at the Pacific Park stop would be a new visual impact in the streetscape and may temporarily filter views to and from Pacific Park.

Stationary or moving light rail vehicles within the streetscape would present a frequent but temporary visual barrier. These would be viewed as being of similar scale, form and visual character as the existing vehicles (such as a bus or truck) within this transport corridor.

The visual impacts within this viewing area would be small.

Significance of impacts

The sensitivity of the receptors as described in 3.3.8 is generally considered to be high. The significance of the impact in this area is assessed to be moderate.
5. Mitigation measures

The following measures are proposed to minimise the potential for adverse impacts from the proposal and would generally reduce the significance of impacts to a lower rating.

5.1 Detailed design

- The detailed design of all structures would involve consideration of appropriate design features, materials and treatments to ensure that the proposal:
  - integrates with the surrounding and proposed urban form.
  - achieves the urban design objectives of the Newcastle Urban Renewal Strategy, the NUTTP and Newcastle 2030.
  - minimises the potential for visual impacts.
  - respects the character and amenity of the surrounding area.
- An urban design and landscaping strategy would be prepared and approved by TfNSW as part of the detailed design. The strategy would consider:
  - Use of high quality landscape buffers (with street trees and planting) where practicable along the corridor to help integrate the infrastructure with the context and to improve the visual experience of passengers.
  - Strategic use of materials that blend, enhance and/or complement existing surfaces and improve visual coherence of the proposal and its context.
  - Options to help make the overhead wire/catenary system appear as an integrated part of the public domain.
  - The opportunity to combine several above ground street elements (lighting, traffic signals etc.) on common use poles to reduce visual clutter.
  - The use of materials, finishes, colour schemes and maintenance procedures including graffiti control for new walls, barriers and fences.
  - Strategic location of signage to maintain sensitive sight lines and avoid unnecessary intrusion into receptors’ views, and to enhance legibility of the broader context.
  - The design of barriers (railings, fences or walls) required for safety to complement the existing visual environment.
  - The heritage significance of the Newcastle City Centre Heritage Conservation Area.
  - Safety and security requirements, including crime prevention through environmental design (CPTED) requirements.

- Lighting for the project would be designed in accordance with AS 4282 Control of the Obtrusive Effects of Outdoor Lighting. Lighting would be designed to minimise light spill into adjoining areas.

- Opportunities for community involvement in mitigating visual impacts during construction and operation would be explored in consultation with Council.

- TfNSW’s Sustainable Design Review Panel would review the detailed design.
5.2 Construction

The following measures would be incorporated into the construction environmental management plan and implemented during construction:

- Work sites would be screened by fencing or placement of hoardings where practicable. Machinery, plant and equipment would be contained within these hoardings where practicable.
- Regular maintenance of site hoarding and perimeter site areas would be undertaken, including the prompt removal of graffiti.
- Hoardings would be designed to visually recede into the open space setting around Pacific Park. Hoarding treatments (colours and or materials) would be used that complement the green parkland surroundings at eastern end of site.
- Opportunities would be identified for an artistic approach to treatment of the site hoarding and enclosure, in collaboration with Council. This should include consideration of day and night time activation of the exterior of the site.
- Work sites would be maintained in a clean and tidy condition at all times.
- Trees to be retained would be protected prior to the commencement of construction in accordance with AS4970 Protection of Trees on Development Sites and Adjoining Properties.
- Works with the potential to impact trees would be developed to avoid street trees and their roots where practicable. This may include careful siting of construction compounds and worksites to avoid trees.
- Any pruning or removal of trees would be undertaken by a qualified arborist.
- Any trees requiring removal that are not assessed in this REF would require an approval through the TfNSW Application for Removal or Trimming of Vegetation process.
- In the event that trees are removed, they are to be replaced in accordance with Vegetation Offset Guide (TfNSW 2012) and in consultation with Council as required.
- Directional lighting would be mounted to avoid light spill into adjoining residences.
- Temporary hoardings, barriers, traffic management and signage would be removed when no longer required.
- On completion of construction work, sites and other land occupied temporarily would be reinstated.
- Equipment and site access would be positioned away from Wheeler Place and Hunter Mall as far as practicable.

5.3 Operation

- Ongoing maintenance, service and infrastructure upgrades would consider the urban design objectives of the Newcastle Urban Renewal Strategy and the NUTTP, where relevant.
6. Conclusion

The proposal is a key infrastructure element in the Newcastle Urban Renewal Strategy (Department of Planning and Infrastructure, 2012) and the NUTTP. The proposal would facilitate urban redevelopment of public, residential and commercial lands by providing an efficient and accessible form of transport for Newcastle city centre. The truncation of the heavy rail at Wickham and development of the new transport interchange at Stewart Avenue is an important precursor. This has already resulted in improved connectivity in the city with six new pedestrian and cycle crossings across the heavy rail corridor improving access to the foreshore.

This assessment has identified landscape and visual amenity impacts during construction and operation of the proposal and proposes mitigation measures to reduce identified impacts.

The urban landscape and visual impacts of the proposal would be of varying significance throughout the study area, ranging from negligible, to high-moderate in limited areas. The urban landscape and visual impacts would occur both during the construction and operational phases of the proposal and measures to minimise these impacts would be undertaken during both stages. Impacts during the construction phase would be short term.

Due to the nature of the proposal, there would be a permanent impact on the visual landscape and amenity for some sensitive receptors within the study area. The focus of mitigation measures should be on those sensitive receptors where the rating of the importance of the impact is moderate or high. Mitigation measures are provided in section 5. A summary of the landscape impacts is provided in Table 4-2 and a summary of the visual impacts is provided in Table 4-3.
7. References

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Appendices
Appendix A – Artistic impressions of proposal operation (Luminova)

Image 1: Artist’s impression – looking north west along Stewart Avenue from Beresford Street at the Wickham Transport Interchange

Image 2: Artist’s impression – looking north east across Steel Street south of Honeysuckle Drive at the light rail crossing
Image 3: Artist’s impression – looking east along Hunter Street from Auckland Street at the Civic stop

Image 4: Artist’s impression – looking east along Hunter Street at the Civic stop
Image 5: Artist’s impression – Looking south from Scott Street at the Pacific Park stop, across Pacific Park towards Newcastle Beach
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