

## viewpoint 1

07

## Warners Bay Apartments - Warners Bay

**VIEWPOINT LOCATION**

The intersection of The Esplanade and Howard Street.

**COMMENTS:**

Driver viewpoint approaching Warners Bay retail precinct from the south.

Existing development to the south of the site obstructs views to the southern interface.

Articulated building design complements the existing built form at the lower two levels. Upper levels are set back from the existing building line to reduce the visual impact.

Proposed street trees shall provide some softening of the built form as they mature.



**SITE:**  
Cnr The Esplanade & Howard Street,  
Warners Bay  
**CLIENT:**  
Bloc  
**DATE:**  
19.04.2017  
**JOB NUMBER:**  
11159.5  
**DRAWN:**  
KM / YY  
**REVISION:**  
B



## ***6 – DESIGN VERIFICATION STATEMENT***



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**SEPP 65 Design Verification Statement**

Prepared to accompany the Development Application submitted to Lake Macquarie City Council.

**Project Address:**

Comprising a number of lots of the following addresses;

482 – 488 the Esplanade, Warners Bay

12 – 16 King Street, Warners Bay

1 Howard Street, Warners Bay

**Prepared on behalf of:**

BLOC

**Prepared by:**

Stewart Architecture

**Verification of Qualifications**

Marcus Graham is a registered architect in the Australian Capital Territory and is enrolled in the Division of Chartered Architects in the register of Architects pursuant to the Architect Act 1921. His ACT Registered Architect No. is 1090

**Statement of Design**

Stewart Architecture has been responsible for the design of the project since its inception and have worked with a wider consultant team. The project has been designed to contribute positively to the local area and respond respectfully to the local planning and design controls including the best practice design principles of SEPP 65.

We verify that our proposed residential development complies with the design quality principles set out in the Apartment Design Guide within SEPP 65. Details of the design compliance are included in the attached SEPP 65 Design Statement.



Marcus Graham  
Practice Principal, Stewart Architecture  
ACT Registered Architect No. 1090



## Apartment Design Guide Compliance Statement

Prepared to accompany the Development Application submitted to Lake Macquarie City Council.

Project Address:

Comprising a number of lots of the following addresses;

482 – 488 the Esplanade, Warners Bay

12 – 16 King Street, Warners Bay

1 Howard Street, Warners Bay

| Design Criteria              | Compliance                | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3D Communal Open Space       | ✓                         | Communal open space makes up 35% of the proposed development site.<br><br>50% of this open space will receive in excess of 2 hours of direct sunlight during the middle of the day on the winter solstice.                                                                                                                                                                                                                                                                                                              |
| 3E Deep Soil Zones           | ✓<br>Minor non-compliance | Deep root planting is provided along The Esplanade, on King Street and a 9m x 15m deep root zone is provided in the south of the communal open space. These deep root zones are less than 7% of the total site area, but non-compliance this is offset by extensive planting throughout the development in large planter boxes.                                                                                                                                                                                         |
| 3F Visual Privacy            | ✓<br>Minor non-compliance | The Howard Street building is largely setback at a distance of 4.8m from the side boundary with the exception of the lift and stair core. It does not have any habitable rooms or balconies which face the side boundary.<br><br>There is a 3.6m separation between The Esplanade building and the existing adjacent development for the first 12m. This separation is increased to 8.7 above 12m in height. Habitable rooms to the side boundary are only on level 6 and 7, above the height of the existing building. |
| 3J Car Parking               | ✓<br>Minor non-compliance | The proposal provides off street parking which complies with the councils parking generation rates for residential parking, commercial motorbike and bicycle parking.                                                                                                                                                                                                                                                                                                                                                   |
| 4A Solar and Daylight Access | ✓                         | The proposal orientates living rooms and private open spaces to the north or west (to access lake views).<br><br>26% of apartments have north orientation and receive sunlight throughout the day.<br><br>The remaining 74% of apartments have living rooms and private open space orientation to the west and receive direct sunlight for 3 hours between 9am and noon.<br><br>100% of apartments receive direct sunlight between 9am and 3pm at mid-winter (exceeding the minimum requirement of 85%)                 |

|      |                                  |                           |                                                                                                                                                                                                                                                                                                                                                          |
|------|----------------------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4B   | Natural Ventilation              | ✓                         | 68% of apartments are naturally cross ventilated. Maximum depth of a cross-through apartment is 18m.                                                                                                                                                                                                                                                     |
| 4C   | Ceiling Heights                  | ✓                         | Ceiling heights of 2.7m are provided for habitable rooms and 2.4m for non-habitable rooms.                                                                                                                                                                                                                                                               |
| 4D-1 | Apartment Size                   | ✓                         | Apartments are greater than minimum area and each habitable room has a window to an external wall of not less than 10% of the floor area.                                                                                                                                                                                                                |
| 4D-2 | Apartment Depth                  | ✓<br>Minor non-compliance | With the exception of Unit Type 2A habitable rooms do not exceed 2.5 x the ceiling height in depth, the maximum habitable depth in open plan layouts not exceeding 8m. Unit Type 2A has slightly deeper open plan layout but this is considered acceptable due to the northern orientation, full height glazing and living room glazed on two frontages. |
| 4D-3 | Apartment Layout                 | ✓<br>Minor non-compliance | Bedrooms and living rooms meet or exceed minimum dimensional requirements except cross-through skip-stop dwellings which are 4m centre-to-centre so slightly less than 4m internal width. This is considered acceptable because the proposal provides a wide variety of dwelling typologies.                                                             |
| 4E   | Private Open Space and Balconies | ✓                         | All balconies and primary open space exceed minimum dimensions.                                                                                                                                                                                                                                                                                          |
| 4F   | Common Circulation and Spaces    | ✓<br>Minor non-compliance | Typical levels in the Esplanade building have 3 to 5 apartments per core. The Howard Street building is of unusual design and has up to 14 apartments per core due to the skip-stop unit planning. This is considered appropriate because the corridors have excellent access to daylight and outlook at each end so a high degree of amenity.           |
| 4G   | Storage                          | ✓                         | Storage size volumes for each apartment type exceed the minimum criteria. 50% or greater of the required storage volume is located with each apartment.                                                                                                                                                                                                  |





# SEPP 65 Design Statement

Lakehouse Village - Warners Bay





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Acronyms + Notes

SEPP - State Environmental Planning Policy  
DCP - Development Control Plan  
LEP - Local Environmental Plan  
FSR - Floor Space Ratio

Project  
Warners Bay

Prepared by  
Stewart Architecture + SHAC

Prepared for  
Bloc

Date  
November 2016

Revision  
Rev B

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The following documentation portrays the proposal for the blocks bound by the Esplanade, King Street and Howard Street, Warners Bay.

The design seeks to instil the sense of a ‘village’ development to this prominent block. As such, it was considered a vital design principle to break down the visual scale of the proposal by instilling distinct and legible ‘zones’ of the development which respond to both place and development controls under the Lake Macquarie Development Control Plan (2014).

The street wall binds the ‘base’ of the proposal, through a series of double-height masonry frames which step their way along each street interface. Encapsulated within these frames at street level are a series of smaller scaled commercial premises which are afforded the opportunity to activate the public domain. Colours, tones and materials are envisaged to vary to create an interesting and active public domain.

The architecture then ‘lightens’ up the building’s façade: distinct ‘middle’ and ‘upper’ languages are developed to aid in the breaking down of the building’s scale. It is the proposal’s almost complete adherence to the building envelope which aids the creation of these distinct languages. Each building steps appropriately as per this control to effectively minimise apparent bulk whilst also mitigating impact to the neighbouring buildings.

Particular concern was taken regarding the amenity of the existing dwellings to the south of site. As such, a generous (35m) ‘garden’ zone including resident recreational facilities has been created through the centre of site allowing abundant light through to these southern neighbours. Furthermore, the proposal’s slight encroachment to the King Street building envelope has been proposed in order to allow this building to set back further from the southern boundary: effectively creating a more appropriate interface with these dwellings.

This proposal also aims to provide excellent amenity to its residents. Most units have opportunity for lake outlook. Furthermore, the unit designs allow both excellent solar and cross-ventilation opportunities.

KEY PRINCIPLES

- A relaxed mixed-use development appropriate for the Warners Bay context.
- Fine-grain commercial modulation at ground floors.
- Extensive central gardens for residents.
- Clear residential address points and circulation.
- All residences receive morning and/or afternoon sun.
- Majority of residences have excellent natural ventilation.



# INTRODUCTION

# LAKEHOUSE VILLAGE | WARNERS BAY

**Purpose of the Report**

This Design Verification Statement has been prepared by Stewart Architecture on behalf of the Bloc, the owners of the site at the corner of King Street and The Esplanade, Warners Bay

The statement is submitted as part of the Development Application for the above site, and should be considered alongside the other documents prepared by the applicant team.

This Design Statement has been prepared to demonstrate that the proposed mixed-use multi-unit residential development has been designed to be consistent with the 9 principles outlined in the Apartment Design Guide (SEPP 65).

This submission to the SEPP 65 Urban Design Review Panel follows a previous presentation on 2nd November 2016. The design has been evolved to address all comments provided in this previous presentation; each resolution outlined in the following discussion of the nine design principles.

The proposal was presented to the Lake Macquarie City Council on 02 November 2016. A number of changes have been made to the proposal in response to feedback received at this meeting including;

- Basement entry relocated from King Street to Howard Street
- Commercial shopfront recessed from King Street to provide level outdoor seating area.

The proposal was further presented to the SEPP65 Urban Design Review Panel on 14 December 2016. Further changes and design refinements were made following endoresement recommendations by the panel, including:

- Revised interface to souther neighbouring development,
- Refinement of all facades to achieve a finer grain aesthetic treatment.

Supplementing this report are a series of architectural analysis and drawings, providing both explanation of and justification for the revised scheme.

These drawings are as follows:

- Cover page
- Local context sketch plan
- Streetscape Analysis: The Esplanade
- Streetscape Analysis: King Street
- Streetscape Analysis: Howard Street
- Aerial Photograph
- Site Survey
- Site Analysis
- Plan: All levels
- Building Elevation: The Esplanade
- Building Elevation: King Street
- Building Elevation: Howard Street
- Building Elevation: Internal Elevations
- Sections
- Perspectives
- Development summary



# SEPP65 Design Compliance Report

## Principle 1 : Context and Neighbourhood Character

*Good design responds and contributes to its context.*

*Context is the key natural and built features of an area, their relationship and the character they create when combined. It also includes social, economic, health and environmental conditions.*

*Responding to context involves identifying the desirable elements of an area's existing or future character. Well designed buildings respond to and enhance the qualities and identity of the area including the adjacent sites, streetscape and neighbourhood. Consideration of local context is important for all sites, including sites in established areas, those undergoing change or identified for change.*

The subject site is located in Warners Bay, on the corner of The Esplanade and King Street. Located within the 'Warners Bay Town Centre' area of Lake Macquarie City Council, it is situated prominently at the gateway of Warners Bay town and Lake Macquarie and its foreshore.

The site is currently comprised of eight separate Deposited Plans; housing a petrol station to the North-West, and four single dwelling to the South and North-East respectively. One lot is currently undeveloped and vacant. The site therefore serves additionally as the border between Warners Bay's commercial precinct to the North, and residential zone to the South and East. Broadly, the site's immediate context is typically small in scale: single storey residential dwellings are customary, and two-storey commercial buildings address the either the Lake's foreshore or their respective street.

However, there are some distinct exceptions to this. SP72323 – the lot immediately south of the subject site - currently houses three multi-residential buildings of varying scales. Two buildings addressing Howard Street are three storeys, with one building to The Esplanade of five storeys. Further, the lots immediately East of the subject site are currently under construction for a six storey residential building, housing 112 apartments plus supermarket and specialty shops.

This transition toward higher density building reflects the desired future character under the Warners Bay Town Centre Development Control Plan (DCP). Under this plan, Warners Bay is envisaged to develop in such a manner as to activate and invigorate The Esplanade with both commercial and residential premises. Furthermore, the site's immediate context is zoned in such a manner as to facilitate this future development. The blocks bound by The Esplanade, King and Lake Street in addition to those bound by The Esplanade, King and Queen Street are zoned B2 – Local Centre; permitting similar developments. Its broader context is zoned both B4 – Mixed Use and R3 – Medium Density Residential.

Noteworthy is the finer grain commercial character of the surrounding context from which the proposal derives its street wall language. The street wall is to be constructed in brick: giving a sense of materiality and scale to the immediate street.

Whilst the proposal is in keeping with the future strategic vision of the Warners Bay Town Centre, it responds to certain desirable aspects of the existing context.

The Warners Bay Town Centre DCP envisages that the commercial area north of the site will become a Market Place including the shared zone' Postmans Lane. The proposal provides an attractive visual culmination opposite Postmans Lane with stair to the central landscaped garden.



Lake Macquarie



King Street, towards the Lake



Neighbouring Development



The Esplanade



King Street and The Esplanade



King Street



King Street



Howard Street and King Street



## Principle 2 : Built Form and Scale

*Good design achieves a scale, bulk and height appropriate to the existing or desired future character of the street and surrounding buildings.*

*Good design also achieves an appropriate built form for a site and the building's purpose in terms of building alignments, proportions, building type, articulation and the manipulation of building elements. Appropriate built form defines the public domain, contributes to the character of streetscapes and parks, including their views and vistas, and provides internal amenity and outlook.*

The building form of the proposal has been derived in keeping with both the controls of the Lake Macquarie Development Control Plan, and the future 'building type C' controls under the Warners Bay Town Centre plan. The proposal therefore responds to the desired future character of Warners bay and its town centre.

The proposal is thus divided into three distinct elements:

- The 'base' which defines the street-wall and reflects the fine-grain commercial context,
- The slightly lighter 'middle' which mediates the transition between the dense base and light upper in response to the development controls, and,
- The lightest 'upper' component defining the building's top.

This design strategy allows the proposal to be developed in such a way as to be in keeping with the planning controls under the Lake Macquarie DCP. The height of the proposal sits below the 22 metres permissible on the site, whilst still facilitating expansive views across the city centre and lake. The definition of three distinct languages also aids in the articulation of the proposal; again lessening its visual scale.

The siting of buildings within the proposal is developed with particular regard to the amenity of the existing dwellings to the south of site. As such, a generous 'garden' zone - including resident recreational facilities - is created through the centre of site allowing abundant light through to these southern neighbours.

The lower 'base' defines the future street wall and therefore the streetscape and public domain. The framing of the street wall breaks down the scale of the proposal: facilitating small scale premises and their subsequent activation of the street domain. Its materiality is responsive to the human scale and provides a textural character to the immediate street-scape.

In response to previous comments from the SEPP65 UDRP;

- The relationship of the podium to the adjoining properties to the south has been refined to provide a deep-soil zone transitional space and landscape buffer between podium and boundary. Levels of the space are exactly aligned with adjacent properties.
- Ground floor residential units have been deleted from the proposal in lieu of active commercial tenancies.
- Interfaces of commercial tenancies with the to King Street have been developed to provide improved relationship with the gradient of the footpath. The space has been widened and planting included.





**Principle 3 : Density**

*Good design achieves a high level of amenity for residents and each apartment, resulting in a density appropriate to the site and its context.*

*Appropriate densities are consistent with the area's existing or projected population. Appropriate densities can be sustained by existing or proposed infrastructure, public transport, access to jobs, community facilities and the environment.*

The site is located amidst the Warners Bay Town Centre, within the B2 – Local Centre planning zone. As such, the allowable building height stands at 22 metres: with the proposal sitting neatly below this control. The proposal also maintains the prescribed building envelope with only one small encroachment to King Street. This minor encroachment has been proposed in order to allow facilitating in different manners each building to set further back from the southern boundary: effectively creating a more appropriate interface with these neighbouring dwellings.

Most significant to the amenity of future residents, and the existing residents located to the south of the site, is the proposed landscape zone to the site's centre. The success of such a space is multi-faceted: not only does it allow approximately a third of the site to be reclaimed for residents' use and therefore encouraging social interaction, but also, it ensures the ongoing amenity of the residential development to the south. Such a space softens the apparent density of the proposal: increasing opportunities for planting and therefore the proposal's impact to its broader neighbourhood context. A deep soil planting zone has been included to the southern boundary to further soften the building's interface.

Units have been designed efficiently with access and amenity in mind. The development also provides a mix of unit types, providing for a variety of lifestyles and resident numbers. The range of unit types within the development facilitate social diversity within the project.

The proposed apartment unit mix is:

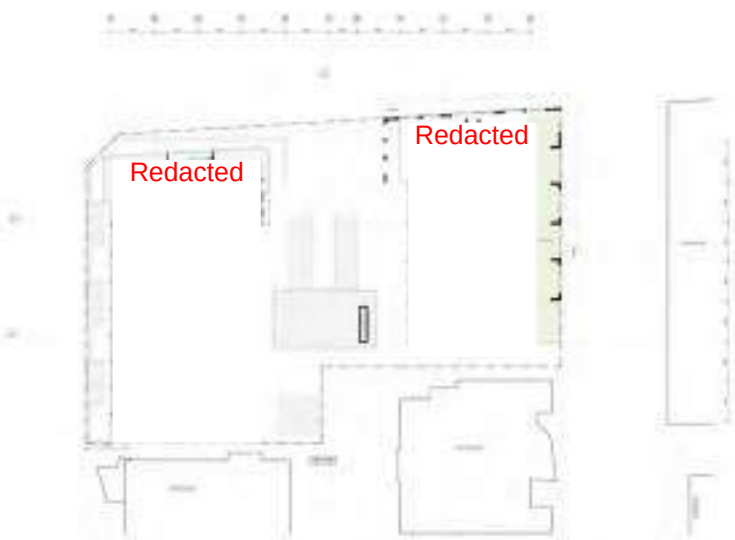
|   |           |     |
|---|-----------|-----|
| - | 1 bedroom | 23% |
| - | 2 bedroom | 50% |
| - | 3 bedroom | 27% |



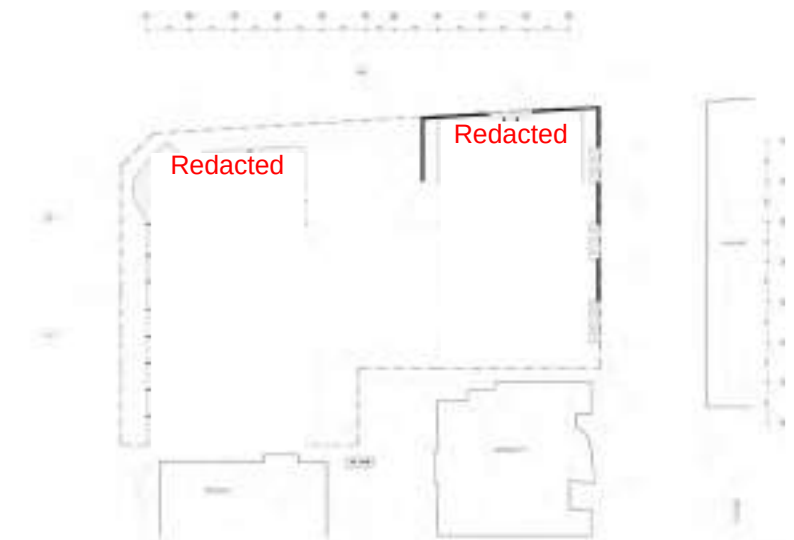
Lower Ground



Upper Ground



Typical Floor with Skip-Stop Lower Plan



Typical Floor with Skip-Stop Upper Plan

**Principle 4 : Sustainability**

*Good design combines positive environmental, social and economic outcomes.*

*Good sustainable design includes use of natural cross ventilation and sunlight for the amenity and liveability of residents and passive thermal design for ventilation, heating and cooling reducing reliance on technology and operation costs. Other elements include recycling and reuse of materials and waste, use of sustainable materials and deep soil zones for groundwater recharge and vegetation.*

The consideration to the project's interface with, and amenity of, the existing southern neighbours was deemed to be vital in the building design process. It was this key consideration – in tangent with the desire for expansive and outstanding communal open space – that ultimately determined the buildings' footprints. The proposal thus runs North-South, facilitating address to the Esplanade, Howard Street and the communal open space.

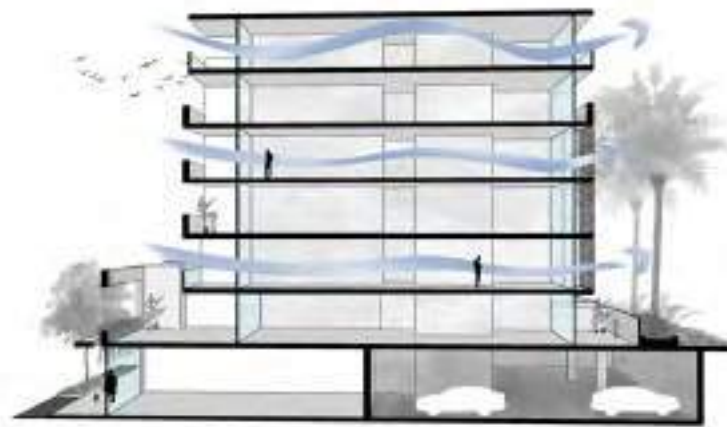
With this in mind: the proposal's access to daylight is assessed under the scope of extended hours (8-4pm), mid-winter. 79% of the units within the proposal therefore meet the minimum 2 hour standard; far exceeding the 70% stipulated in the Apartment Design Guide.

The proposal exceeds the minimum standard for cross ventilation; with 70% of units being naturally cross-ventilated due to their design incorporating more than one aspect.

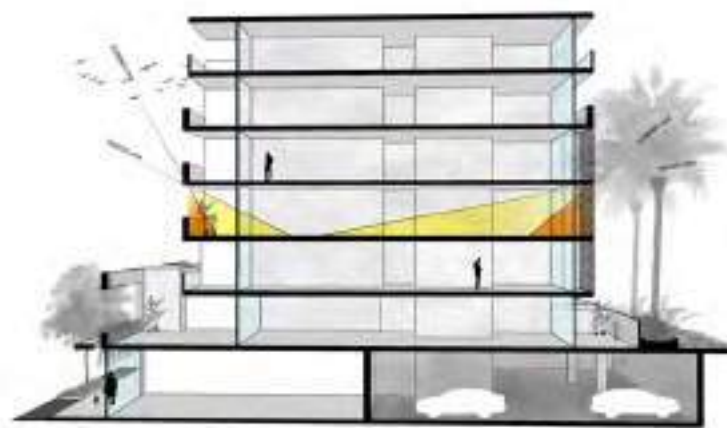
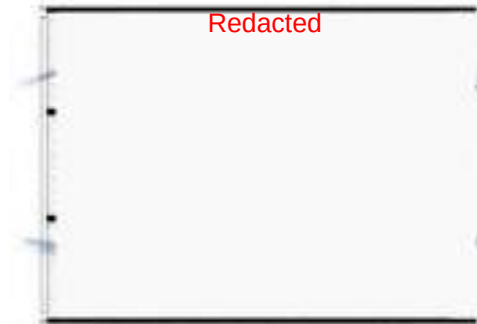
The proposed materials of the building have been selected to both ensure longevity, as well and the potential for material recycling; particularly within the street-wall 'base', and 'middle' components of the building.

The location of the communal open space has been determined with both solar amenity and connection to the broader neighbourhood context in mind. Its expanse and excellent access to northern light encourages year-round use.

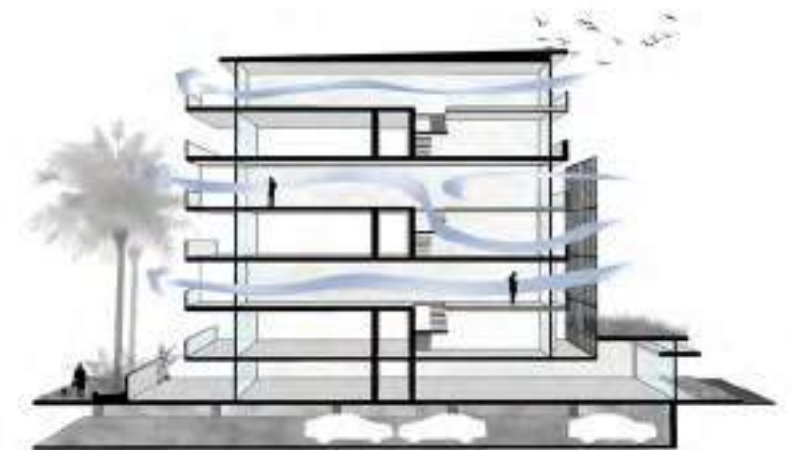
Finally, the project will meet the minimum BASIX requirements.



Cross-ventilation : The Esplanade



Solar Access : The Esplanade



Cross-ventilation : Howard Street



Solar Access : Howard Street



### Principle 5 : Landscape

*Good design recognises that together landscape and buildings operate as an integrated and sustainable system, resulting in attractive developments with good amenity. A positive image and contextual fit of well designed developments is achieved by contributing to the landscape character of the streetscape and neighbourhood.*

*Good landscape design enhances the development's environmental performance by retaining positive natural features which contribute to the local context, co-ordinating water and soil management, solar access, micro-climate, tree canopy, habitat values and preserving green networks.*

*Good landscape design optimises useability, privacy and opportunities for social interaction, equitable access, respect for neighbours' amenity and provides for practical establishment and long term management.*

A variety of landscaping strategies have been implemented to enhance the existing landscape context. The proposal seeks to connect with the landscaped lake edge through the provision of an expansive garden zone and the site's centre. This connection, currently broken by the extensive hard-scaped petrol station, is integral to the success of the proposal as a design which recognises the significance of its contextual landscape.

The proposal provides multiple opportunities for landscaping at different levels. To the street, additional street trees are proposed. These trees not only extend the landscaped shoreline through Warners Bay commercial heart, but also provide opportunities for shelter for commercial tenancies activating the streetscape.

At the podium, the garden heart of the proposal facilitates vast and varied landscape opportunities to be enjoyed by residents and visitors alike. Further, dwellings to this level are afforded the opportunity to create their own landscaped spaces within their private courtyards. This garden will occur over multiple levels: sympathetic to the existing contours and interface with neighbouring dwellings.

The street wall also facilitates opportunities of planting, softening its interface with the street. Terraces to level one in particular have the opportunity for broad planting.

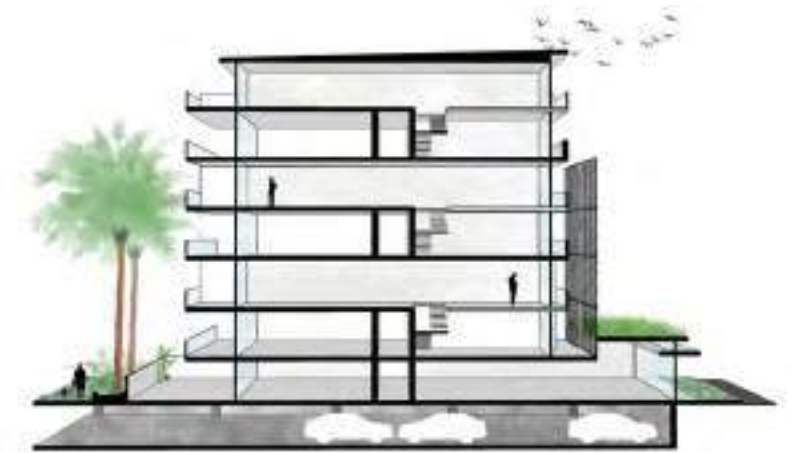
Finally, the proposal is located in the proximity of a range of recreational landscaped areas. Lake Macquarie and its extensive shoreline is directly accessible from the proposal. Similarly, soccer and Seaman Oval are a short walk away, with the Charlestown Recreation Reserve slightly further afield.

In response to previous comments from the SEPP65 UDRP;

- The communal landscape space has been significantly increased with unhindered northern aspect.
- This space is sufficiently large to support variation in levels and include large trees. Deep root planting zones are provided at the King Street entry stair and southern boundary interface with adjacent sites.
- The podium has been lowered to allow the central garden to be accessible at grade from Howard Street, as well as from some commercial tenancies from King Street.



Landscape Opportunities : The Esplanade



Landscape Opportunities : Howard Street



Podium Garden Landscape Strategy  
Refer Terras landscape plan for further information



**Principle 6 : Amenity**

*Good design positively influences internal and external amenity for residents and neighbours. Achieving good amenity contributes to positive living environments and resident well being.*

*Good amenity combines appropriate room dimensions and shapes, access to sunlight, natural ventilation, outlook, visual and acoustic privacy, storage, indoor and outdoor space, efficient layouts and service areas and ease of access for all age groups and degrees of mobility.*

The proposal has been designed to provide the maximum amenity to the future residents and its neighbours. It achieves – and often exceeds – minimum requirements of the Apartment Design Guide pertaining to solar access, natural ventilation, private open space and overlooking.

Each dwelling has access to private open space, which exceeds the minimum requirements, at all levels. Units lower to the street have been recessed within the street wall envelope maximising privacy and minimising overlooking concerns. A similar treatment has been implemented to the proposal's 'middle'. The upper-most levels have balconies sized to surpass the minimum requirements, and will receive appropriate solar access mid-winter. All units are afforded views across either Lake Macquarie, the internal garden zone, or both.

The units have been designed in such a manner as to ensure solar access, without detrimentally impacting the southern neighbouring dwellings; and that 70% are naturally cross-ventilated.

100% of the units are designed with their kitchens being less than 8 metres from a window.

In response to previous comments from the SEPP65 UDRP;

- The introduction of additional lift cores has maximised dual-aspect apartments and eliminated the use of light wells to achieve natural ventilation.
- All habitable rooms have ventilation, daylighting and outlook.
- All common corridors have ventilation, daylighting and outlook.
- The wide central garden with no built elements to the north significantly increases solar access to the garden. Slender building masses significantly increase solar access to adjacent properties to the south.
- Analysis of solar access to living rooms and decks of apartments has been analysed to confirm compliance with the ADG.



Ceiling Heights : The Esplanade



Ceiling Heights : Howard Street

- Commercial : 2.7m minimum;  
3.7m typical
- Non-habitable : 2.4m
- Habitable : 2.7m

**Principle 7 : Safety**

*Good design optimises safety and security within the development and the public domain. It provides for quality public and private spaces that are clearly defined and fit for the intended purpose. Opportunities to maximise passive surveillance of public and communal areas promote safety.*

*A positive relationship between public and private spaces is achieved through clearly defined secure access points and well lit and visible areas that are easily maintained and appropriate to the location and purpose.*

A range of strategies have been implemented within the design in order to optimise its safety and security. These include:

- Primary residential entries are clearly identifiable off all streetscapes. Their locations facilitate passive surveillance within these streets. Principle commercial entries address all streets, furthering surveillance opportunities.
- Car parking for residents and visitors is located in a secure carpark accessed via Howard Street. The carparks have been designed in such a manner as to allow clear lines of sight.
- Secure access to carparks, lobbies, and residential zones will be provided in the form of keys, swipe cards, or remote controllers. Residents will have direct access to their residential floors via lift access.
- Refer to CTPED report for further information

**Principle 8 : Housing Diversity + Social Interaction**

*Good design achieves a mix of apartment sizes, providing housing choice for different demographics, living needs and household budgets.*

*Well designed apartment developments respond to social context by providing housing and facilities to suit the existing and future social mix.*

*Good design involves practical and flexible features, including different types of communal spaces for a broad range of people and providing opportunities for social interaction among residents.*

This proposal incorporates a broad mix of unit typologies. One, two and three-bedroom units have been designed in order to respond to differing market desires and enable diversity within the proposal. Within this mix a range of unit types have been developed. These vary in overall footprint ensuring affordability for a range of demographics and budget types.

With Warners Bay looking at developing in the near future, this proposal encourages market diversity and will cater to the changing population dynamics.

Units have been designed to afford open-plan living and dining spaces for occupants. These spaces flow onto large balconies assisting flexible living arrangements.

A large communal space has been provided to the centre of the proposal facilitating a broad range of activities and encouraging year-round use. This variety of activities encourages social interaction between residents.



Private + Common Open Space : The Esplanade



Private + Common Open Space : Howard Street



**Principle 9 : Aesthetics**

*Good design achieves a built form that has good proportions and a balanced composition of elements, reflecting the internal layout and structure. Good design uses a variety of materials, colours and textures.*

*The visual appearance of a well designed apartment development responds to the existing or future local context, particularly desirable elements and repetitions of the streetscape.*

This proposal has been designed as a high quality architectural contribution to the local built environment and encapsulates the desired future character of the area whilst being respectful to its current context.

In keeping with the requirements of the Lake Macquarie Development Control Plan; a masonry street-wall has been instilled along all street elevations. Constructed of light masonry elements; it effectively breaks down apparent scale and bulk, bringing an appropriate human scale to the buildings' street interfaces.

Ample opportunities for planting are provided: softening the buildings interface with the streets, and its impact on neighbouring dwellings.

The further breaking down of the facades - in to distinct 'middle' and 'upper' elements only further this break down of scale. The uppermost levels are designed to seemingly 'float' above their more substantial counterparts - only accentuated by the fine roofscape.

Ultimately; this design responds positively to the existing Warners Bay neighbourhood and provides exceptional amenity to its future residents and those currently inhabiting the neighbouring dwellings.



The Esplanade



Howard Street

## ***7 – DCP COMPLIANCE TABLE***





## LMCC DCP 2014 Checklist

**Proposed Mixed Use Development  
482 The Esplanade Warners Bay**

| Part 4 – Development in Business Zones     |           |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISSUE                                      | RELEVANCE | COMMENT AND SECTION                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>INTRODUCTION</b>                        |           |                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Additional Controls for Specific Land Uses | Yes       | Given a component of the mixed use development is for a Residential Flat Building. Part 9 of LMCC LEP has also been addressed as has specific requirements of the Warners Bay Area plan.                                                                                                                                                                                                                                 |
| Aims for Development in Business Zones     | Yes       | The proposed development is considered to be consistent with the aims for development in Business Zones.                                                                                                                                                                                                                                                                                                                 |
| B2 Local Centres                           | Yes       | The proposed land uses are consistent with the identified preferred land uses which provide for commercial premises at ground level and residential apartments above.                                                                                                                                                                                                                                                    |
| <b>CONTEXT AND SETTING</b>                 |           |                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Site Analysis                              | Yes       | A Site Analysis Plan has been prepared and is provided as part of the Architectural Drawings within <b>Appendix 2</b> .                                                                                                                                                                                                                                                                                                  |
| Scenic Values                              | Yes       | As addressed within the SoEE and Visual Impact Statement provided within <b>Appendix 4</b> , it is not expected that the proposal will result in the loss of identified public or private view corridors. The height of the proposed building is within the prescribed height limit for the site with some minor exceptions and is considered to be in keeping with the desired character for the Warners Bay Area Plan. |
| Geotechnical                               | Yes       | A Geotechnical Assessment of the site has been undertaken. The site is within a Mines Subsidence Area and Mine Subsidence Board approval is required. A structural engineer has reviewed the proposal and provided structural engineers certificate refer <b>Appendix 10</b> .                                                                                                                                           |
| Cut and Fill                               | Yes       | Due to the slope of the site (4 metres from east to west) significant cut will be required to provide the proposed basement car parking. The design of the building uses the slope such that commercial frontage is provided at street level at both The Esplanade and Howard Street frontages. Bored Piles and shoring will be required.                                                                                |
| Mine Subsidence                            | Yes       | The proposed development is considered to be integrated development under Section 91 of the Environmental Planning and Assessment Act, 1979, because the proposed development is within a Mine Subsidence Area. Mine Subsidence Board is required under S15 of the Mine Subsidence Compensation Act 1961. Council will refer the application to the Mine Subsidence Board.                                               |
| Contaminated Land                          | yes       | Environmental reports have identified the site contains contaminated soils in the vicinity of the operational area of the existing service station. This material has been classified as General Solid Waste and will require disposal to an approved landfill site. Other non- contaminated material                                                                                                                    |

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|                                                                   |     | satisfies ENM criteria and can be used as fill on other sites. (Refer to <b>Appendix 11.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Acid Sulfate Soils                                                | Yes | The subject site is not identified as containing Acid Sulphate Soils. Refer to Environmental Reports ( <b>Appendix 11.</b> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Stormwater Management                                             | Yes | A Stormwater Management Report and Plan has been prepared and is included as <b>Appendix 9</b> .<br><br>The plans demonstrate that the proposed development is acceptable in terms of stormwater and drainage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Catchment Flood Management                                        | N/A | The site is not identified as being subject to flooding.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Lake Flooding and Tidal Inundation (incorporating sea level rise) | N/A | The site is not subject to Lake Flooding or Tidal inundation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Natural Water Systems                                             | N/A | No natural Water Systems are within close proximity to the site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Bushfire                                                          | N/A | The site is not on bushfire prone land                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Flora and Fauna                                                   | N/A | Trees on the site will be removed. Arborist Report has been prepared and is provided within Appendix F.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Preservation of Trees and Vegetation                              | N/A | The development form anticipated for the B2 zone and with the Warners Bay Area Plan anticipates the loss of trees across the site. Landscaping is to be provided including deep soil planting as part of the development. Refer to <b>Appendix 3.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| European Heritage                                                 | N/A | The subject site is not identified as containing any items of European Heritage Significance, nor is it identified as being located within either a heritage conservation area or within proximity to any known heritage items.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Aboriginal Heritage                                               | N/A | The subject site is not identified as containing any items of Aboriginal Heritage Significance, nor is it identified as being located within 100m of an Aboriginal Site or Place.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Natural Heritage                                                  | N/A | The subject site is not within 50m of an item of natural heritage significance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Social Impact                                                     | Yes | The proposed development will have several significant social and economic benefits to the local community. These include: <ul style="list-style-type: none"> <li>• Provision of additional housing to satisfy and contribute to on-going demand;</li> <li>• Increase housing choice and contribution to more affordable housing;</li> <li>• Provision of adaptable housing units as part of the development</li> <li>• Increased commercial opportunities and activation of the street frontage.</li> <li>• Contributes to meeting the objectives of urban communities including efficient use of land and associated ESD Principles; and</li> <li>• Capital investment will provide for local positions of employment.</li> </ul> |
| Economic Impact                                                   | Yes | The proposal will generate employment opportunities and associated spending during construction works and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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|                                                     |     | additional housing following completion.<br><br>The proposal will positively contribute to the Warners Bay Town Centre and surrounding area.                                                                                                                                                          |
| Lot Amalgamation                                    | Yes | The existing sites will be consolidated as part of the development.                                                                                                                                                                                                                                   |
| Utility Infrastructure                              | Yes | Public utility services including reticulated water and sewer, electricity, and telecommunications are available to the site and will be upgraded as necessary. It is understood underground electricity will be required for the development. A chamber substation is proposed off Howard Street.    |
| Sites where a Concept Plan is Required              | N/A | The site is not identified as requiring a concept plan.                                                                                                                                                                                                                                               |
| <b>STREETS AND PUBLIC SPACE</b>                     |     |                                                                                                                                                                                                                                                                                                       |
| Pedestrian Links through Buildings                  | Yes | The podium level provides for pedestrian access through the site. Public pedestrian links are not required.                                                                                                                                                                                           |
| Streetscape Improvements                            | Yes | The proposed development will upgrade and enhance the existing streetscape along all street frontages.                                                                                                                                                                                                |
| Non-discriminatory Access                           | Yes | A Disability Access Report has been provided with this application. Adaptable units, have been incorporated into the development. The Access Report is included as <b>Appendix 15</b> .                                                                                                               |
| Lighting                                            | Yes | Appropriate lighting will be installed throughout the development in accordance with Australian Standards.                                                                                                                                                                                            |
| <b>ACTIVE STREET FRONTAGE</b>                       |     |                                                                                                                                                                                                                                                                                                       |
| Ground Floor Residential Uses in the Business Zones | Yes | As required by the controls in this section of LMCC DCP 2014 and Clause 7.10 of LMCC LEP 2014 The proposal is also consistent with Clause 7.10(3) as the residential flat building proposed forms part of a mixed use development which includes ground floor commercial component.                   |
| Ground Floor Entries                                | Yes | The architecturally designed building has ensured that the entry to the commercial premises is located on the street frontage and clearly recognisable. King Street facades have been set back to facilitate access having regard for the slope of the site.                                          |
| Street Awnings                                      | Yes | A low profile awning has been provided along the each street frontage to complement the development and provide weather protection for pedestrians out the front of the Commercial Premises. The awning will not be continuous along King Street due to the podium between the two building elements. |
| <b>ACCESS AND PARKING</b>                           |     |                                                                                                                                                                                                                                                                                                       |
| Traffic and Vehicle Access                          | Yes | A Traffic Impact Assessment has been prepared and is provided within <b>Appendix 8</b> .<br><br>Vehicular Access to the site will be provided via Howard Street being the minor road of the three frontages. Two levels of basement car parking area proposed.                                        |
| Design of Parking and                               | Yes | As demonstrated by the Traffic Impact Assessment it is considered that the proposed development provides                                                                                                                                                                                              |



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| Service Areas               |     | sufficient and adequate on-site car parking to meet the requirements and design standards of this Section of LMCC DCP 2014 and Australia Standards AS2890.1-2004 Parking Facilities – Part 1 off-street car parking.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Bike Parking and Facilities | Yes | Bicycle parking has been provided within the basement car park of the development in nominated storage areas.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Motor Bike Parking          | Yes | Motorcycle parking has been provided within the basement car park of the development.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Car Parking Rates           | Yes | <p>The following rates for Commercial Premises and Residential Flat Buildings are applicable:</p> <p><b>Commercial Premises</b> – 1 space per 40m<sup>2</sup> GFA;<br/> <b>Residential Flat Buildings</b> – 0.5 spaces per 1 bedroom unit; 0.75 spaces per 2 bedroom units; 1 space per 3 bedroom units; and 0.25 spaces per unit for visitor parking.</p> <p>The site is located within the B2 Local Centre Zone and is located on a bus route</p> <p>Parking in excess of Council requirements has been provided. The allocation of parking spaces is to be addressed in the strata subdivision application.</p> <p>A 20% reduction in the number of visitor spaces is sought having regard for the over supply of allocated spaces to residential apartments, opportunities for multipurpose trips to commercial facilities and the availability of some kerb side parking in Howard Street and The Esplanade</p> |

#### DEVELOPMENT DESIGN

|                                                          |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| Front Setbacks – Main Street Shops in B1 B2 and B3 Zones | Yes | <p>The Esplanade frontage is built to the boundary at street level other than that the entries and an area for landscaping has been set back from the boundary. The King Street façade has been set back to facilitate pedestrian access and address the slope of the land. The Howard Street frontage is built to the boundary. It is considered the design solution satisfies the objectives of this clause.</p> <p>The Howard Street Building is built to the boundary at street level for the commercial frontage. A roof garden is provided above level 1 and the building setback from the street for all upper level apartments.</p> |
| Façade Articulation                                      | Yes | The development has incorporated façade articulation into the design. Refer to SEPP 65 Design Verification Statement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Building Exteriors                                       | Yes | The design has included design elements and high quality materials and finishes which are consistent with the controls of this Section of the LMCC DCP 2014.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Building Separation                                      | Yes | The building has been designed to comply with the building separation requirements for residential flat buildings in accordance with SEPP 65 Design Quality of Residential Flat Buildings and the accompanying                                                                                                                                                                                                                                                                                                                                                                                                                              |

|                                      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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|                                      |     | <p>Residential Flat Building Design Code.</p> <p>A Design Verification Statement has also been provided in support of the development plans provided in <b>Appendix 6</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Side and Rear Setbacks               | Yes | <p>The development does not comply with side boundary setback controls for the Lakefront Building. The DCP specifies that buildings where possible must be built to the side boundary at street level and to the second level. This is achieved. The depth should however not exceed 12 metres from the street boundary. The Lakefront building has a depth of greater than 12 metres with a wall length of 20.4 metres broken up with a 4.8 metre long void. If the above is not achieved the DCP states that buildings must otherwise be setback a minimum of 1.5 metres from the side boundary for the first and second floor and 3.0 metres for the third level</p> <p>The Lakefront Building is built to the southern boundary for the first four levels. In support of this position it is submitted that the length of wall built to the boundary is only 20.4 metres broken up by a 4.8 metre long void adjacent to bathrooms which is set back from the boundary. No openings are provided to the boundary other than glazed bathroom windows. Privacy is therefore not an issue. Privacy screens are provided on balcony edges. Part 10 Warners Bat Area Plan CI 7.3 specifies for Building Type C specifies each façade must be at least 3 storeys high at the street boundary. This supports more than 2 levels being built to the boundary.</p> <p>The setback of the adjoining building from the boundary will allow some light and ventilation for those dwellings.</p> <p>The Howard Street building is built to boundary at the street level which creates a wall as the site slopes away from Howard Street. With the exception of the stair and lift well located on the southern end of the building the building is set back 4.88 metres. The lift and stair well is set back 2.2 metres. No windows are proposed in the southern elevation of the building.</p> |
| Minimum Landscaped Area              | Yes | <p>Landscaping Plans (Category 3) for the proposed development have been prepared and are provided within <b>Appendix 3</b>. The proposed landscape design has included street tree planting, raised planting beds, and deep soil planting.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Building Depth                       | Yes | <p>All proposed habitable floor spaces areas are within nine metres of an adequate natural light source.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Maximum Occupied Area                | Yes | <p>The proposed development does not exceed the allowed maximum occupied area.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Setbacks from Residential Zoned Land | N/A | <p>Adjoining land is zoned B2</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Building Height                      | Yes | <p>The maximum building height map under Lake Macquarie</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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|                                   |     | LEP 2014 for the area prescribes a maximum building height of 22m for the site. CI 6.12 and Part 10 Warners Bay Area Plan specifies a maximum of 6 storeys. The proposed building complies within the allowable height limit around the site perimeter however due to ground level variation there are minor height exceedances with respect to lift over runs and part of the roof structure. Refer to SoEE it is considered the objectives of the standard are satisfied by the design outcome and the one additional storey will not have a significant impact on surrounding development.                                                                                                                                                                                                                                                                                                                                                         |
| Building Height at the Street     | Yes | The proposal will provide three storeys in height along both street frontages in accordance with Part 10 of DCP 2014.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Floor to Ceiling Heights          | Yes | The proposal is compliant with the minimum floor to ceiling height limits. Ground Floor commercial, upper floors commercial 3.0 residential 2.7.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Roofs                             | Yes | The proposed roof form is to be flat. 2% pitch. Due to the relative height, extent and location of lift over runs it is not considered necessary for them to be integrated within the roof or within an architectural roof feature.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Views                             | Yes | <p>A Visual Impact Statement has been prepared to accompany the Development Application. A copy of this is provided within <b>Appendix 4</b>.</p> <p>The proposed building does not intercept any public or private view corridors. The proposed building fits within the building envelope anticipated in the Warners Bay Area Plan. The development will provide a positive streetscape outcome and the building will frame the view of the Lake from King street.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Balconies and Communal Open Space | Yes | The proposed development proposes to provide a 88.2m <sup>2</sup> communal outdoor area. In addition to this each unit will have a principle private open space area in the form of a balcony which all exceed the required 8m <sup>2</sup> minimum area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Planting on Structures            | Yes | A raised garden bed is proposed to be provided around the edge of the Communal Terrace Area on Level 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Solar Access and Orientation      | Yes | <p>The proposed development is generally compliant with this element of LMCC DCP 2014 and the Architect has given particular consideration to ensure solar orientation of the communal open space area and living areas for each of the individual units. The proposal orientates living rooms and private open spaces to the north or west (to access lake views).</p> <p>26% of apartments have north orientation and receive sunlight throughout the day.</p> <p>The remaining 74% of apartments have living rooms and private open space orientation to the west and receive direct sunlight for 3 hours between 9am and noon.</p> <p>100% of apartments receive direct sunlight between 9am and 3pm at mid-winter (exceeding the minimum requirement of 85%)</p> <p>A Shadow Diagram Plan has been prepared as part of the proposed development application and is submitted with the architectural plans provided within <b>Appendix 2</b>.</p> |



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| Energy Efficient and Generation | Yes | The architectural design development has been designed to achieve the energy requirements of the BCA. All buildings will achieve a minimum 5 star green rating. The design incorporates efficiencies such as water reuse and energy minimisation while ensuring tenant and comfort through appropriate window screens, glazing, energy efficient air conditioning systems and lighting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Visual Privacy                  | Yes | Visual privacy to external dwellings has been considered and no windows are proposed other than frosted bathroom windows are proposed on the southern boundary. Screens will be provided on ends of balconies to minimise direct or close views.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Acoustic Privacy                |     | An acoustic of the development has been undertaken. The development can achieve internal comfort levels in accordance with Australian Standards this is achieved through.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Safety and Security             | Yes | <p>The proposed development responds to the CPTED principles based on the following:</p> <ul style="list-style-type: none"> <li>Given the proposal seeks to upgrade the entire site and associated landscaping, significant passive surveillance opportunity will exist to deter anti-social behaviour;</li> <li>The site is located at the southern end of a well established commercial area with new and upgraded commercial facilities within a residential fringe. Passive surveillance opportunities exist from surrounding businesses; and</li> <li>Appropriate lighting and CCTV will be installed throughout the development.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>LANDSCAPE</b>                |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Landscape Design                | Yes | <p>Landscaping Plans (Category 3) for the proposed development have been prepared by Terras Landscape Architects and are provided within <b>Appendix 3</b> of this report.</p> <p>Development of the site will require removal of existing trees on the site. The site will be transformed from low scale residential and commercial uses to a modern mixed use development site.</p> <p>It is proposed to provide a sustainable landscape outcome that includes soft landscaping and built form elements. The deep soil zone on the southern boundary is lower than the podium level to soften visual impact to neighbours. Significant planting will be provided at the entry to the podium level off King Street.</p> <p>The proposed development will upgrade and enhance the existing streetscape. Paving of footways and street tree planting will compliment site landscaping. Landscaping will provide visual relief and screening and quality communal open space for residents. In keeping with LMCC requirements and crime prevention through environmental</p> |

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|                                                    |     | design (CPTED) practices, the landscape is designed to ensure adequate visual surveillance will be maintained.                                                                                                                                                                                                                                                                                                                                                                                |
| Street Trees and Streetscape improvements          | Yes | The proposed development will upgrade and enhance the existing streetscape. Footpaths will include full width paving with streets trees.                                                                                                                                                                                                                                                                                                                                                      |
| Landscape and Tree Planting in Front Setback Areas | Yes | Planting is provided in setbacks to The Esplanade.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Landscape and Tree Planting in Car Parks           | N/A | All parking is under the building.                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>OPERATIONAL REQUIREMENTS</b>                    |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Demolition and Construction Waste Management       | Yes | Waste disposal from the proposed demolition and construction will be undertaken by an appropriate contractor. Any left-over building materials will be recycled where possible at a licensed recycling facility. Any non-recyclable items will be removed from site and transported to a licensed waste management facility. Excavated material classified as Solid Waste will be disposed of to landfill.                                                                                    |
| Waste Management                                   | Yes | <p>Storage and Collection areas for garbage and recycling have been provided within a designated area within the Basement Car Park. Waste collection is proposed via by a private contractor with bins will generally be presented to Howard Street for collection.</p> <p>Establishment of a loading zone adjacent to the bin collection area is requested.</p> <p>Overall it is considered that the development can be adequately serviced with regard to waste storage and collection.</p> |
| On-site Sewage Management                          | N/A | The proposed development will be connected to reticulated sewer.                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Liquid Trade Waste and Chemical Storage            | N/A |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Erosion and Sediment Control                       | Yes | All relevant measures will be undertaken to prevent erosion and sediment impacts, in accordance with the DCP and erosion and sediment control plan provided where applicable during construction works. A copy of the Erosion and Sediment Control Plan is provided within <b>Appendix 9</b> . Groundwater is discussed in the Remediation Action Plan included in <b>Appendix 11</b> .                                                                                                       |
| Air Quality                                        | NA  | Construction management will occur as per conditional requirements. No operation air quality impacts are anticipated.                                                                                                                                                                                                                                                                                                                                                                         |
| Noise and Vibration                                | Yes | An Acoustic Assessment of the proposed development has been undertaken by Spectrum Acoustic and is provided within <b>Appendix 13</b> . The assessment has confirmed that there is no acoustic reason why the proposal cannot be supported.                                                                                                                                                                                                                                                   |

| Part 9 – Specific Land Uses – Residential Flat Buildings |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISSUE                                                    | RELEVANCE | COMMENT AND SECTION                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>RESIDENTIAL FLAT BUILDINGS</b>                        |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Site Requirements                                        | Yes       | The development site has an area of 5093m <sup>2</sup> and direct frontage to The Esplanade, King Street and Howard Streets. Street frontages exceed 20 metres.                                                                                                                                                                                                                                                                                                      |
| Housing Mix                                              | Yes       | The proposal provides a mix of dwelling types. The proposal comprises the following:<br><br>26 x 1 Bedroom Units;<br><br>56 x 2 Bedroom Units; and<br><br>30 x 3 Bedroom Units.                                                                                                                                                                                                                                                                                      |
| Street Setback                                           | N/A       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Side Setback                                             | Yes       | Residential flat buildings must be setback a minimum of 3.0 metres according to DCP. Setbacks are discussed in the SoEE while the proposal does not comply with setbacks privacy issues have been addressed by not facing widows to the south for habitable rooms. Shadow diagrams have been produced for both the proposal and a complying development outcome and there is no difference in the impact. Refer to <b>Appendix 2 (Additional Shadow diagrams)</b>    |
| Site Coverage                                            | N/A       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Landscape Area                                           | Yes       | Landscaping Plans (Category 3) for the proposed development have been prepared and are provided within <b>Appendix 3</b> .<br><br>The proposed landscape design has included street tree planting, garden beds, planter boxes and hard landscaped areas. While some deep soil planting is provided it does not meet the 20% requirement. Deep root zones are less than 7% of site area. Raised planters are used to ensure substantial planting at the podium level. |
| Planting on Structures                                   | Yes       | Planter boxes, pots have been used to provide landscaping over the structured car park.                                                                                                                                                                                                                                                                                                                                                                              |
| Landscape and Tree Planting in Front Setback Areas       | Yes       | As shown on the Landscape Plans provided within <b>Appendix 3</b> where practical street trees will be provided.<br><br>Landscaping is considered appropriate given the sites urban context.                                                                                                                                                                                                                                                                         |
| Street Trees                                             | Yes       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

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| Principle Private Open Space | Yes | The proposed development proposes to provide approximately 1800 m <sup>2</sup> of communal outdoor area. In addition to this each unit will have a principle private open space area in the form of a balcony which all can either achieve or exceed the required 8m <sup>2</sup> minimum area.                                                                                                                                                                              |
| Services                     | Yes | Where required plants and all air-conditioning units will be acoustically insulated.                                                                                                                                                                                                                                                                                                                                                                                         |
| Driveways and Parking Areas  | Yes | <p>The proposed development complies with all of the controls applicable for driveways and parking areas. The proposal is consistent with the following:</p> <ul style="list-style-type: none"> <li>• On-site parking has been provided in 2 basement levels of the development;</li> <li>• Stacked parking has been provided where two spaces per apartment are proposed,</li> <li>• Access is to be provided via the secondary street frontage (Howard Street).</li> </ul> |
| Adaptable Dwellings          | Yes | 11 adaptable dwellings and 22 liveable 'silver' class dwellings are provided. This achieves the target for universal design in the Apartment Design Guide. Part 9 of Council's DCP 2014 requires for residential flat buildings of more than 10 dwellings, one adaptable dwelling must be provided for every 10 dwellings.                                                                                                                                                   |
| Waste Management             | Yes | <p>Waste management for the proposed development will be carried out in accordance with Council's Waste Management Guidelines.</p> <p>A Site Waste Minimisation and Management Plan (SWMMP) (Council's pro-forma) has been prepared and is included as <b>Appendix 12</b>.</p>                                                                                                                                                                                               |



| Part 10 - Town Centre Area Plans – Warners Bay |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISSUE                                          | RELEVANCE | COMMENT AND SECTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>INTRODUCTION</b>                            |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Town Centre Structure                          | Yes       | The proposed development is consistent with the desired Town Centre Structure in particular objective d as the proposal will provide mixed use commercial and residential development on the site. The Warners bay Town Centre lies on low ground surrounded by a vegetated ridge line. The setting is best appreciated from the open water of the Lake and vantage points around the lake. The Warners bay Area Plan if fully implemented will change the character of the built landscape.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Environmental Constraints                      |           | The site is above RL 3.0 m AHD. Preliminary investigations indicate that acid sulfate soils are not present on the site. The site is within a mine subsidence area                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Desired Future Character                       |           | The proposal is consistent with the built form and land use character envisaged in the Warners Bay Area Plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>DEVELOPMENT CONTROLS</b>                    |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Building Types                                 | Yes       | <p>The site is identified as being suitable for Building Type C in the Area Plan. Objectives include ensuring higher building do not have an adverse visual impact on the treed ridgeline back drop to Warners Bay. Establish a clear street wall with smaller facades and good quality architectural detailing. The following controls apply:</p> <ul style="list-style-type: none"> <li>• Each façade must be at least three storeys high at the street boundary</li> <li>• Each façade must be no more than 10m in width</li> <li>• Wider building must be composed of narrower facades</li> <li>• Façade predominantly masonry construction with punched voids for balconies windows and doors</li> <li>• Shop front glazing at street level to be between 70 and 90% of the frontage width.</li> <li>• Continuous glazing not acceptable.</li> </ul> <p>The building design attempts to break the facade by providing a top middle and bottom to the development. The framing elements provided on the lower levels also break up the façade at the street level.</p> |
| Concept Plan Sites                             | N/A       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Mix of Uses                                    | Yes       | Street level commercial development provides opportunities for cafes / restaurants that would complement extended trading hours.<br>Residential development is provided on the upper levels                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Public Domain                                  |           | Upgrading of the footways and providing development at street level that activates the street will provide positive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

|                                 |  |                                                                                                                                                                                              |
|---------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 |  | public domain outcomes.                                                                                                                                                                      |
| Pedestrian and cycle facilities |  | Footways will be upgraded as part of the development                                                                                                                                         |
| Public transport                |  | The area plan shows a bus stop on King Street west of Howard Street a bus shelter will be provided by the developer.                                                                         |
| Upgraded Road Facilities        |  | Future Plans to upgrade the intersection of King Street and The Esplanade to provide traffic signals are noted.                                                                              |
| Car Parking                     |  | Appropriate levels of car parking are provided.                                                                                                                                              |
|                                 |  |                                                                                                                                                                                              |
| <b>BUILDING DESIGN</b>          |  |                                                                                                                                                                                              |
| Building Height                 |  | Maximum number of storeys is exceeded but building fits with height limits other than minor exceedances noted in SOEE and addressed in clause 4.6 exception report.                          |
| Maximum Occupied Area           |  | Maximum Occupied area complies with requirement of maximum 50% of site area. Units only area is 1890 m <sup>2</sup> which is 37% of site. Including balconies is 2560 m <sup>2</sup> or 50%. |
| Balconies                       |  | Balconies are an extension of the built form and form a continuous street façade. Balconies are not set back from the face of the building.                                                  |

## ***8 – TRAFFIC AND PARKING ASSESSMENT***







# TRAFFIC & PARKING ASSESSMENT

**MIXED USE DEVELOPMENT  
LAKEHOUSE VILLAGE**

**LOTS 1 & 2 IN DP 1116535, LOTS 3 & 4 IN DP 32518,  
LOT 122 IN DP 578045 AND LOTS 1, 2, & 3 IN DP 155951**

**482 – 488 THE ESPLANADE, 12 – 16 KING STREET  
& 1 HOWARD STREET, WARNERS BAY**

**PREPARED FOR: BLOC (ACT) PTY LTD**

**MARCH 2017**

17/021

**TRAFFIC AND PARKING ASSESSMENT  
BLOC (ACT) Pty Ltd****MIXED USE DEVELOPMENT  
LOTS 1 & 2 IN DP 1116535, LOTS 3 & 4 IN DP 32518,  
LOT 122 IN DP 578045 AND LOTS 1, 2, & 3 IN DP 155951****482 – 488 THE ESPLANADE, 12 – 16 KING STREET  
& 1 HOWARD STREET, WARNERS BAY**

Intersect Traffic Pty Ltd (ABN: 43 112 606 952)

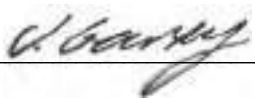
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email: jeff@intersecttraffic.com.au**QUALITY ASSURANCE**

This document has been prepared, checked and released in accordance with the Quality Control Standards established by Intersect Traffic Pty Ltd.

| Issue | Date     | Description                     | By |
|-------|----------|---------------------------------|----|
| A     | 13/03/13 | Draft                           | PA |
| B     | 20/03/17 | Edit                            | JG |
| C     | 22/03/17 | Final Proof / Client Amendments | JG |
| D     |          | Approved                        | JG |

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This document has been authorised by



Date      March 2017

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# EXECUTIVE SUMMARY

Intersect Traffic Pty Ltd has been engaged by BLOC (ACT) Pty Ltd to prepare a traffic and parking assessment report for a mixed-use development on Lots 1 & 2 in DP 1116535, Lots 3 & 4 in DP 32518, Lot 122 in DP 578045 and Lots 1, 2, & 3 in DP 155951, 482 – 488 The Esplanade, 12 – 16 King Street & 1 Howard Street, Warners Bay.

The proposal involves the demolition of all the buildings on the site and the construction of a mixed-use development containing two levels (basement and lower ground) of on-site parking, six (6) commercial tenancies (lower ground and ground floor) and one hundred and twelve (112) 1, 2 & 3 bedroom residential apartments within two separate towers above the lower ground floor (presenting as seven levels to the street). A new combined entry / exit driveway and access crossing provides vehicular access off Howard Street approximately 30 metres south of King Street. The development concept plans are shown in **Attachment A**. The report has concluded the following:

- ◆ The proposed development is likely to generate approximately 106 vtpd during the AM weekday peak traffic periods, 78 vtpd during the PM weekday peak traffic periods or 687 vtpd. This only represents an increase on existing site traffic of approximately 27 vtpd in the AM peak and no increase in the PM peak.
- ◆ The local road network around the site has sufficient capacity to cater for the development without the need to upgrade the local road network.
- ◆ The proposed development therefore does not adversely impact on the local road network.
- ◆ The proposed vehicular access to the site is suitable and would comply with Australian Standard AS2890.1 – 2004 *Parking facilities – Part 1 Off street car parking* and Lake Macquarie City Council's DCP 2014 – Revision 6 – Part 9 – *Specific Land Uses Residential Flat Buildings - Section 13.12 of the Driveways and Parking Areas*.
- ◆ The proposed access also complies with RMS requirements for vehicular access to be off a secondary road if possible for developments on classified roads. The removal of the existing accesses off King Street and The Esplanade also results in a positive impact on the road network and this needs to be considered in any merits based assessment of the development.
- ◆ The proposed on-site car parking supply and layout is suitable and would comply with Australian Standard AS2890.1 – 2004 *Parking facilities – Part 1 Off street car parking* and Lake Macquarie City Council's Warners Bay Town Centre Area Plan and its DCP (2014) for residential and business zones.
- ◆ The servicing arrangements within the development are suitable though Council approval for a 15 metre loading zone on Howard Street immediately north of the development's vehicular access will be required.
- ◆ Suitable public transport services already exist to the site and no additional services or infrastructure is required. S94 contributions collected from the development will be used to upgrade a number of bus stops in King Street; and
- ◆ It is not considered that the external pedestrian and bicycle traffic generated by the development would not be significant enough to provide a nexus for the provision of additional external pedestrian and bicycle infrastructure (on or off road) to the site as the existing infrastructure near the site is considered satisfactory for the scale of development proposed. However the pedestrian footpath along the three site frontages would need to be reconstructed to full width in accordance with the requirements of Lake Macquarie City Council's Warners Bay Town Centre Area Plan.

Having carried out this traffic impact assessment for a mixed-use development on Lots 1 & 2 in DP 1116535, Lots 3 & 4 in DP 32518, Lot 122 in DP 578045 and Lots 1, 2, & 3 in DP 155951, 482 – 488 The Esplanade, 12 – 16 King Street & 1 Howard Street, Warners Bay it is recommended that the proposal can be supported from a traffic impact perspective as it will not adversely impact on the local and state road network and complies with the requirements of Lake Macquarie City Council, Australian Standards and NSW Roads and Maritime Services.

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# 1. INTRODUCTION

Intersect Traffic Pty Ltd has been engaged by BLOC (ACT) Pty Ltd to prepare a traffic and parking assessment report for a mixed-use development on Lots 1 & 2 in DP 1116535, Lots 3 & 4 in DP 32518, Lot 122 in DP 578045 and Lots 1, 2, & 3 in DP 155951, 482 – 488 The Esplanade, 12 – 16 King Street & 1 Howard Street, Warners Bay.

The proposal involves the demolition of all the buildings on the site and the construction of a mixed-use development containing two levels (basement and lower ground) of on-site parking, six (6) commercial tenancies (lower ground and ground floor) and one hundred and twelve (112) 1, 2 & 3 bedroom residential apartments within two separate towers above the lower ground floor (presenting as seven levels to the street). A new combined entry / exit driveway and access crossing provides vehicular access off Howard Street approximately 30 metres south of King Street. The development concept plans are shown in **Attachment A**.

This report is required to support a development application to Lake Macquarie City Council and allow the Council and NSW Roads and Maritime Services (RMS) to assess the proposal in respect of its impact on the local and state road network.

This report presents the findings of the traffic assessment and includes the following:

1. An outline of the existing situation near the site.
2. An assessment of the traffic impacts of the proposed development including the predicted traffic generation and its impact on existing road and intersection capacities.
3. Reviews parking, public transport, pedestrian and cycle way requirements for the proposed development, including assessment against Council and RMS standards and requirements.
4. Presentation of conclusions and recommendations.



## 2. SITE DESCRIPTION

The subject site is shown in **Figure 1** below. It is located on the south-eastern corner of the King Street / The Esplanade roundabout intersection at Warners Bay on the southern outskirts of the Warners Bay shopping and commercial area.

The site contains eight separate land titles as follows:

- ◆ Lot 1 in DP 1116535 - 482 The Esplanade and 16 King Street, Warners Bay;
- ◆ Lot 2 in DP 1116535 - 482 The Esplanade and 16 King Street, Warners Bay;
- ◆ Lot 3 in DP 32518 – 486 – 488 The Esplanade, Warners Bay;
- ◆ Lot 4 in DP 32518 - 486 – 488 The Esplanade, Warners Bay;
- ◆ Lot 122 in DP 578045 - 16 King Street and 482 The Esplanade, Warners Bay;
- ◆ Lot 1 in DP 155951 – 14 King Street, Warners Bay;
- ◆ Lot 2 in DP 155951 – 12 King Street, Warners Bay; and
- ◆ Lot 3 in DP 155951 – 1 Howard Street, Warners Bay.

The site has a total area of approximately 5,094 m<sup>2</sup> and is zoned B2 – Local Centre pursuant to Lake Macquarie City Council's LEP (2014). The site has frontage to King Street, The Esplanade and Howard Street and currently contains a service station and four (4) residential dwellings. Site vehicular accesses include: 2 commercial crossings at the service station and 1 residential crossing at King Street; 1 commercial crossing at the service station and 2 residential crossings at The Esplanade; as well as 2 residential crossings at Howard Street. **Photographs 1 & 2** below shows some of the existing site development while **Photographs 3 & 4** shows some of the existing vehicular accesses at the site.



**Figure 1 – Site Location**





*Photograph 1 - Existing Site Development – King Street*



*Photograph 2 - Existing Site Development – Howard Street*



*Photograph 3 - Existing Vehicular accesses – King Street*



*Photograph 4 - Existing Vehicular accesses – The Esplanade*



### 3. EXISTING ROAD NETWORK

King Street, The Esplanade and Howard Street are the roads predominately impacted by the proposed mixed use development.

**King Street** connects the nearby Lakelands suburb and traffic from northwest, north and north eastern suburbs of Lake Macquarie areas to Warners Bay and to The Esplanade for travel to the east and west along the Lake Macquarie foreshore. It is a sub arterial road (B89) which is a classified road and therefore is under the care and control of the NSW Roads and Maritime Services (RMS). Under a functional road hierarchy, it functions as a sub-arterial road connecting sub regions in the lower Hunter area. King Street is generally a four-lane two-way high standard sealed urban road with marked lane widths between 3.3 and 4.1 metres. Near The Esplanade both sides of King Street have kerb and gutter with on-street parking prohibited along the site frontage on the approach to the roundabout intersection with The Esplanade. Time limited (2 hours) angled on-street parking exists on King Street on the northern side of the street opposite the development. A 40 km/h speed limit applies to this section of road as a high pedestrian area being within the Warners Bay Town Centre and at the time of inspection King Street was observed to be in good condition. **Photograph 5** shows King Street near the site.



**Photograph 5 - King Street near the site**

**The Esplanade** runs along the foreshore of Lake Macquarie at Warners Bay. It collects and distributes traffic from and to the local residential and commercial streets of Warners Bay. South of King Street it continues as the same sub arterial road (B89) as King Street which is a classified road and therefore is under the care and control of the NSW Roads and Maritime Services (RMS). North of King Street it is a major local road and is under the care and control of Lake Macquarie City Council. Under a functional road hierarchy, it functions as a major collector road connecting local roads in the area and distributing traffic to other transportation routes. The Esplanade is a four-lane two-way high standard sealed urban road with lane widths between 3.2 and 3.4 metres. In the vicinity of King Street both sides of the road have kerb and gutter. Along the site frontage a parallel parking lane exists on the eastern side of the road only and a 40 km/h speed limit applies to this section of road. At the time of inspection, The Esplanade was observed to be in good condition. **Photograph 6** shows The Esplanade near the site.



***Photograph 6 – The Esplanade near the site***

**Howard Street** under a functional road hierarchy operates as a local two-way two-lane urban street providing vehicular access to properties along its length. It connects to both King Street and The Esplanade creating an urban block and near the site has a sealed carriageway width of approximately 11.5 metres providing a single lane of travel in each direction. Both sides of the road have kerb and gutter and parking lanes which are approximately 2.7 metres wide. A 50 km/h speed zoning exists in front of the proposed site access in Howard Street though 40 km/h applies near King Street. At the time of inspection Howard Street was observed to be in good condition.

**Photograph 7** shows Howard Street near the site.



***Photograph 7 – Howard Street near the site***



## 4. ROAD NETWORK IMPROVEMENTS

There are no known road upgrades near the site that will increase the capacity of the surrounding road network. Lake Macquarie City Council has identified within its Warners Bay Town Centre Plan that the existing roundabout at the King Street / The Esplanade intersection will be upgraded to traffic signals in the future. Whilst this would provide some additional capacity within this intersection and thus the local road network it is thought this upgrade has more to do with pedestrian safety i.e. safer road crossing facilities for pedestrians rather than road network capacity issues particularly in regard to The Esplanade.

Improvements to the local road network may be undertaken in the future in line with Lake Macquarie City Council's and NSW Roads and Maritime Services Works Programmes.



## 5. TRAFFIC VOLUMES

On behalf of Intersect Traffic Pty Ltd, Northern Transport Planning and Engineering (NTPE) undertook manual traffic counts at the Esplanade /King Street roundabout intersection on 23rd February 2017 to determine the likely AM and PM peak hour traffic flows. From the counts obtained the 8:00 AM to 9:00 AM and 5:00 PM to 6:00 PM periods were determined as the peak AM and PM count periods respectively. The manual traffic count sheets sourced from the NTPE counts are shown in **Attachment B**. These counts identified the following approximate current peak hour traffic counts:

- ◆ 1,618 vtpm (AM) and 1,597 vtpm (PM) in King Street;
- ◆ 1,765 vtpm (AM) and 2,089 vtpm (PM) in The Esplanade north; and
- ◆ 2,445 vtpm (AM) and 2,546 vtpm (PM) in The Esplanade south;

These traffic volumes in King Street and The Esplanade have been adopted as the existing peak traffic volumes for assessment in this report.

Adopting a background traffic growth rate of 1.5 % per annum (lower Hunter average background traffic growth) the likely 2027 traffic volumes also adopted for this report are as follows;

- ◆ 1,880 vtpm (AM) and 1,855 vtpm (PM) in King Street;
- ◆ 2,050 vtpm (AM) and 2,425 vtpm (PM) in The Esplanade north; and
- ◆ 2,840 vtpm (AM) and 2,955 vtpm (PM) in The Esplanade south;

## 6. ROAD CAPACITY

The capacity of the road network is generally determined by the capacity of intersections. However, RMS' *RTA's Guide to Traffic Generating Developments* provides some guidance on mid-block capacities and likely levels of service.

For urban roads *Table 4.3 and 4.4* of the RMS' *RTA's Guide to Traffic Generating Developments*, reproduced below, provides some guidance on mid-block capacities and likely levels of service.

**Table 4.3**  
**Typical mid-block capacities for urban roads with interrupted flow**

| Type of Road          | One-Way Mid-block Lane Capacity (pcu/hr) |       |
|-----------------------|------------------------------------------|-------|
| Median or inner lane: | Divided Road                             | 1,000 |
|                       | Undivided Road                           | 900   |
| Outer or kerb lane:   | With Adjacent Parking Lane               | 900   |
|                       | Clearway Conditions                      | 900   |
|                       | Occasional Parked Cars                   | 600   |
| 4 lane undivided:     | Occasional Parked Cars                   | 1,500 |
|                       | Clearway Conditions                      | 1,800 |
| 4 lane divided:       | Clearway Conditions                      | 1,900 |

Source: - RTA's Guide to Traffic Generating Developments (2002).

**Table 4.4**  
**Urban road peak hour flows per direction**

| Level of Service | One Lane (veh/hr) | Two Lanes (veh/hr) |
|------------------|-------------------|--------------------|
| A                | 200               | 900                |
| B                | 380               | 1400               |
| C                | 600               | 1800               |
| D                | 900               | 2200               |
| E                | 1400              | 2800               |

Source: - RTA's Guide to Traffic Generating Developments (2002).

A desirable level of service on an urban road is generally considered to be a level of service (LoS) C or better however on sub-arterial roads such as King Street and The Esplanade south and major collector roads such as The Esplanade north a LoS D is still considered acceptable. Noting a LoS E on two-lanes per direction flow occurs when mid-block traffic volumes exceed 2,800 vtpd the two-way four-lane mid-block traffic volume threshold for a LoS D is 5,600 vtpd. This means the two-way four-lane mid-block traffic volume threshold for a LoS D for King Street and The Esplanade is 5,600 vtpd.

Therefore, it is considered that King Street and The Esplanade near the site have two-way mid-block road capacities of up to 5,600 vtpd and this road network capacity has been adopted in this report.

## 7. ALTERNATE TRANSPORT MODES

Public transport in the area is provided by both Newcastle Buses and Ferries and Hunter Valley Buses. Newcastle Buses and Ferries runs route 363 (Warners Bay to Newcastle) near the site providing convenient public transport access to these centres as well as Stockland's Glendale, Cardiff Railway Station, John Hunter Hospital and Broadmeadow Railway Station. Hunter Valley Buses runs Route 269 (Toronto to Charlestown) providing access to many other bus routes to railway stations and destinations.

Route maps for these services are provided within **Attachment C**. Bus stops are provided within convenient walking distance (< 200 metres). **Photograph 8** shows one of the bus stops near the development on John Street 150 metres northeast of the site.



**Photograph 8 – Bus stop in the vicinity of the site.**

A 1.2-metre-wide concrete pedestrian footpath exists over the King Street frontage that connects to The Esplanade as shown below in **Photograph 9**. It also connects the subject site to the footways in The Esplanade. The various widths of concrete footpaths in The Esplanade south of King Street are as shown in **Photograph 10** below. Footpaths in Howard Street adjacent to the site are predominately full width grass at present.

Safe access for pedestrians from these footpaths on the site frontages to other footways in the area are provided via a network of kerb ramps and signalised crossings near to the site. The signalised pedestrian crossing at the King Street / John Street intersection, adjacent to the site, facilitates safe passage for pedestrians between both sides of King Street and John Street (where the nearest bus stop is located). Safe crossing facilities for pedestrians are available within pedestrian phases on all legs of the intersection. The signalised pedestrian crossing is shown in **Photograph 8**.

Kerb ramps and a pedestrian refuge between The Esplanade and the foreshore park adjacent to the site south of King Street are shown in **Photograph 9** below. This also provides access to the shared pathway which runs along the length of the foreshore.





*Photograph 9 – Footpath in King Street over the frontage of the site.*



*Photograph 10 – Footpath in The Esplanade south of the site.*





*Photograph 11 – Pedestrian facilities adjacent to the site in The Esplanade.*



*Photograph 12 – Signalised pedestrian facilities adjacent to the site in King Street.*

There is no on-road cycleway provided in the immediate vicinity of the proposed development site and cyclists would be required to share the travel lanes with all other vehicles. However, the shared pathway, depicted in **Photograph 13**, runs parallel to The Esplanade. It is approximately



2.5 metres wide and provides a very scenic and safe route for pedestrians and cyclists along the foreshore.



**Photograph 13 – Signalised pedestrian facilities adjacent to the site in King Street.**

Lake Macquarie City Council proposes as part of its 'Cycleway Strategy 2021' to provide improvements to the cycleway network in surrounding areas as denoted by the broken lines in **Figure 2** below. This indicates an extension to the existing on-road cycleway network in King Street is proposed to connect to the off-road cycleway along the Foreshore.



Off-road (blue), On-road (red) -----Existing (solid line) - - - - Proposed (broken line)

**Figure 2 – Cycleway facilities - on/off road, existing/proposed**

## 8. DEVELOPMENT PROPOSAL

The proposed development involves the demolition of the existing service station, dwellings and commercial premises on the site and the construction of two seven-storey mixed use development buildings with basement and ground level car parking, commercial premises on ground level and 112 one, two and three bedroom residential apartments within the upper levels of the two buildings.

Specifically, the development consists of the following:

- ◆ Demolition of the existing service station, residential dwellings, commercial premises and associated buildings on the site;
- ◆ Construction of six (6) commercial tenancies with a total floor area of 1,514 m<sup>2</sup> Gross Floor Area (GFA). The Lakefront building contains four (4) commercial tenancies with a floor area of 949 m<sup>2</sup> GFA while the Howard Street building contains two (2) commercial tenancies with a floor area of 565 m<sup>2</sup> GFA;
- ◆ Construction of sixty (60) residential apartments in the Lakefront Building over six levels comprising - fourteen (14) – one (1) bedroom apartments, twenty eight (28) – two (2) bedroom apartments and eighteen (18) – three (3) bedroom apartments;
- ◆ Construction of fifty two (52) residential apartments in the Howard Street Building over seven levels comprising - twelve (12) – one (1) bedroom apartments, twenty eight (28) – two (2) bedroom apartments and twelve (12) – three (3) bedroom apartments;
- ◆ One hundred and twenty two (122) undercover car parks including two (2) accessible car parks on basement level 1 with one hundred and one (101) resident car parks, including three (3) small car parks and twenty one (21) spaces for visitor use. Twenty four (24) of the resident car spaces are stacked parking. Storage cages for resident use are also located in basement level 1;
- ◆ Eighty five (85) undercover car parks including three (3) accessible car parks on lower ground level with forty eight (48) resident car parks, including eighteen (18) stacked car parks, thirty (30) spaces for the commercial premises and seven (7) spaces including one (1) accessible space for visitor use. Storage cages for resident use are also located in basement level 1;
- ◆ Construction of ancillary recreational facilities for the development including a swimming pool and gymnasium.
- ◆ Removal of the existing access crossings to King Street, The Esplanade and Howard Street as well as reinstatement of the kerb and gutter / footpath at these locations including the upgrading of the footpath along the site frontage to full width construction as per Lake Macquarie City council's requirements;
- ◆ Construction of a new combined entry / exit driveway access crossing 6 metres wide to Howard Street;
- ◆ Property drainage to Lake Macquarie City Council's requirements; and
- ◆ Landscaping.

The development concept plans are shown in **Attachment A**.

## 9. TRAFFIC GENERATION

The *RTA's Guide to Traffic Generating Development's* provides information on the traffic generating potential of developments.

Table 3.7 of the above guide, the summary table of land use traffic generation rates requires for:

### 1. Commercial premises

- Daily vehicle trips per 100 m<sup>2</sup> GFA = 10
- PM \* hourly vehicle trips per 100 m<sup>2</sup> GFA = 2

\*The AM peak hourly rate is assumed to be the same as the PM peak hourly rate for the purposes of this assessment.

Further *RMS Technical Note TDT 13/04* also provides updated traffic generation rates based on more recent survey work for certain development types including for high density residential flat buildings.

### 2. High density residential flat buildings provide the following table for guidance.

| Weekday Rates                                | Sydney Average | Sydney Range | Regional Average | Regional Range |
|----------------------------------------------|----------------|--------------|------------------|----------------|
| AM peak (1 hour) vehicle trips per unit      | 0.19           | 0.07-0.32    | 0.53             | 0.39-0.67      |
| AM peak (1 hour) vehicle trips per car space | 0.15           | 0.09-0.29    | 0.35             | 0.32-0.37      |
| AM peak (1 hour) vehicle trips per bedroom   | 0.09           | 0.03-0.13    | 0.21             | 0.20-0.22      |
| PM peak (1 hour) vehicle trips per unit      | 0.15           | 0.06-0.41    | 0.32             | 0.22-0.42      |
| PM peak (1 hour) vehicle trips per car space | 0.12           | 0.05-0.28    | 0.26             | 0.11-0.40      |
| PM peak (1 hour) vehicle trips per bedroom   | 0.07           | 0.03-0.17    | 0.15             | 0.07-0.22      |
| Daily vehicle trips per unit                 | 1.52           | 0.77-3.14    | 4.58             | 4.37-4.78      |
| Daily vehicle trips per car space            | 1.34           | 0.56-2.16    | 3.22             | 2.26-4.18      |
| Daily vehicle trips per bedroom              | 0.72           | 0.35-1.29    | 1.93             | 1.59-2.26      |

The **higher** values of the regional range rates from this table are considered applicable and have been adopted for this assessment.

The appropriate rates for **high density residential flat** development are therefore:

*Daily vehicle trips per unit = 4.78*

*AM Peak vehicles trips per unit (regional range) = 0.67*

*PM Peak vehicles trips per unit (regional range) = 0.42*

The estimated daily and peak hour traffic volumes generated by the proposed development are therefore calculated as follows (rounded up) noting the development contains 112 units and 1,514 m<sup>2</sup> of commercial tenancies:

$$\begin{aligned} \text{Daily trips} &= 10 / 100 \times 1,514 + 112 \times 4.78 \text{ vtpd} \\ &= \mathbf{687 \text{ vtpd}}. \end{aligned}$$

$$\begin{aligned} \text{Weekday AM peak hour trips} &= 2 / 100 \times 1,514 + 112 \times 0.67 \text{ vtph} \\ &= \mathbf{106 \text{ vtph}}. \end{aligned}$$

$$\begin{aligned} \text{Weekday PM peak hour trips} &= 2 / 100 \times 1,514 + 112 \times 0.42 \text{ vtph} \\ &= \mathbf{78 \text{ vtph}}. \end{aligned}$$



It is noted that the existing development on the site includes;

- ◆ Service station with a site area of 1,800 m<sup>2</sup>;
- ◆ Four (4) dwellings; and
- ◆ Small Café/Restaurant (60 m<sup>2</sup> GFA).

Using the rates contained in the *RTA's Guide to Traffic Generating Developments* and *RMS Technical Note TDT 13/04* the existing site development has the potential to generate the following peak traffic volumes;

$$\begin{aligned}\text{Daily trips} &= 4 \times 7.4 + 60/100 \times 60 + 10 \times (0.04 \times 1800) \text{ vtpd} \\ &= \mathbf{786 \text{ vtpd.}}\end{aligned}$$

$$\begin{aligned}\text{Weekday AM peak hour trips} &= 0.85 \times 4 + 60/100 \times 5 + 0.04 \times 1800 \text{ vtph} \\ &= \mathbf{79 \text{ vtph.}}\end{aligned}$$

$$\begin{aligned}\text{Weekday PM peak hour trips} &= 0.9 \times 4 + 60/100 \times 5 + 0.04 \times 1800 \text{ vtph} \\ &= \mathbf{79 \text{ vtph.}}\end{aligned}$$

Therefore in terms of the critical AM and PM peak hour periods the new development is only likely to increase traffic flows on the local road network by;

$$\begin{aligned}\text{Weekday AM peak hour trips} &= 106 - 79 \\ &= \mathbf{27 \text{ vtph.}}\end{aligned}$$

$$\begin{aligned}\text{Weekday PM peak hour trips} &= 78 - 79 \\ &= \mathbf{-1 \text{ vtph.}}\end{aligned}$$

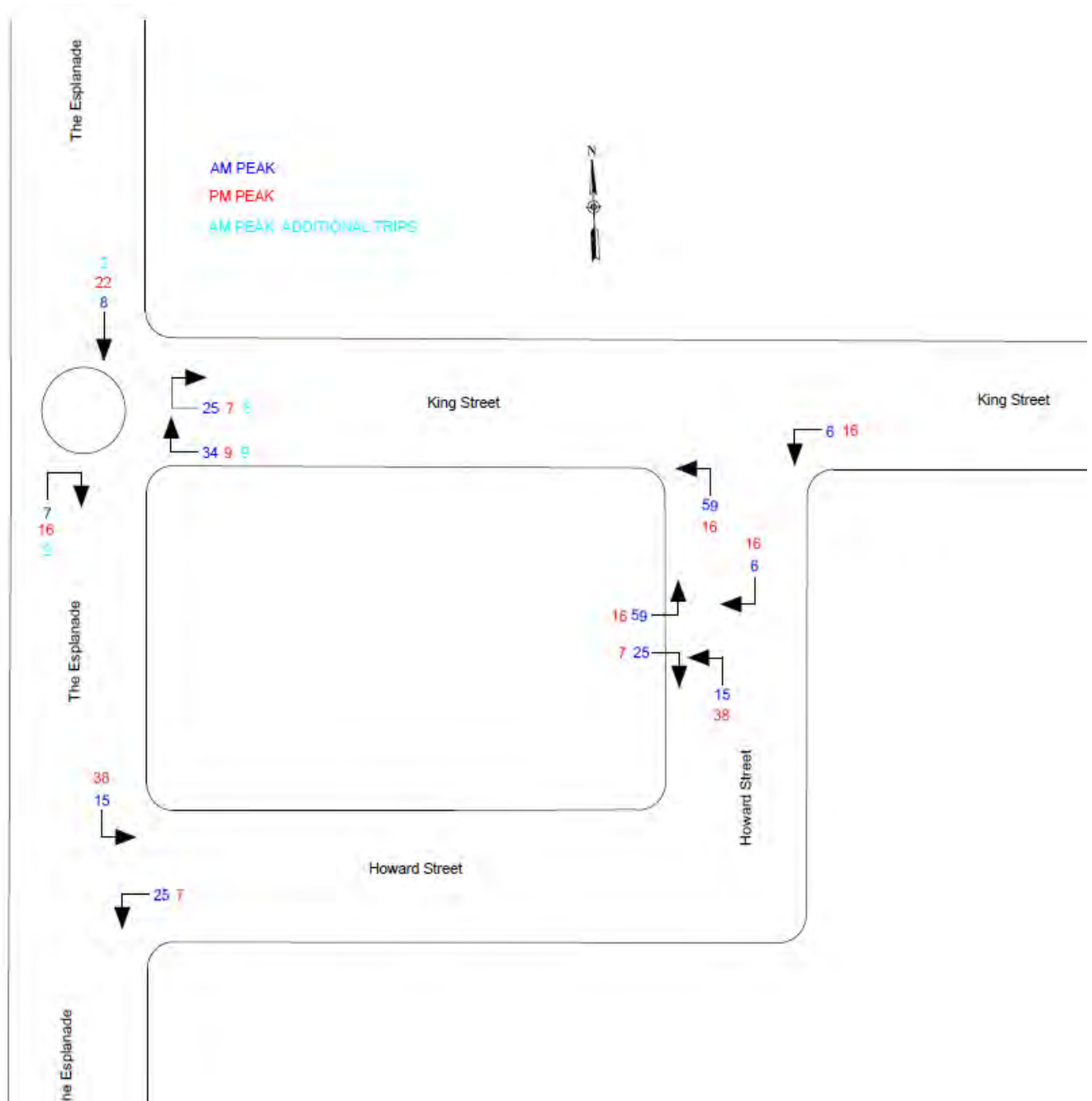
Therefore the development will only increase traffic on the local and state road network in the AM peak by up to 27 vtph.

It is noted however that there will be a redistribution of traffic and whilst traffic increases on King Street and The Esplanade will be negligible there will be a significant increase in traffic on Howard Street of in the order of 100 vtph in the AM peak and 70 vtph in the PM peak.

The additional development traffic needs to be distributed through the road network and the likely development trip distribution adopted for this assessment is:

- ◆ In the AM peak 80 % of traffic is outbound and 20 % of traffic is inbound;
- ◆ 30 % of inbound traffic will approach via Howard Street from King Street.
- ◆ 70 % of inbound traffic will approach via Howard Street from The Esplanade
- ◆ 70 % of outbound traffic will exit via Howard Street to King Street.
- ◆ 30 % of inbound traffic will exit via Howard Street to The Esplanade.
- ◆ At the King Street / The Esplanade roundabout 40 % of outbound traffic will turn right into The Esplanade and 30 % of outbound traffic will do a U-turn.
- ◆ At the King Street / The Esplanade roundabout 40 % of inbound traffic will head straight through on The Esplanade towards Howard Street and 30 % of inbound traffic will do a U-turn on The Esplanade to head towards Howard Street.

The resulting trip distribution for the development is presented diagrammatically in **Figure 3** below with the likely resulting additional AM trips over existing traffic at the King Street / The Esplanade roundabout also shown.



**Figure 3 – Development traffic trip distribution**

# 10. TRAFFIC IMPACTS

## 10.1 Road Network & Intersection Capacity

This assessment (**Section 5**) has determined that King Street and The Esplanade currently have peak hour traffic volumes in the order of 1,618 vtp/h for King Street and 2,546 vtp/h for The Esplanade which could be expected to increase up to 1,880 vtp/h and 2,955 vtp/h respectively in 2027, allowing for a 1.5 % per annum background traffic growth.

**Section 6** of this report determined that the likely LoS D mid-block two-way capacity of King Street and The Esplanade is in the order of 5,600 vtp/h. This indicates that King Street and The Esplanade have some spare mid-block capacity and are operating satisfactorily for their relative positions within the road hierarchy. This was confirmed by observation on site.

In regard to Howard Street whilst no traffic counts were undertaken on the site given the through road connections to both King Street and The Esplanade and the level of residential development in the street it would be expected that current peak hour traffic volumes would be in the order of 100 vtp/h maximum. Noting the RMS Guidelines (Table 4.6 of the *RTA's Guide to Traffic Generating Developments (2002)*) as shown below indicates that the environmental capacity of a local street would be a maximum of 300 vtp/h it is concluded that Howard Street is operating within its environmental capacity goal. Therefore Howard Street also has scope to accept additional traffic from this development without the residential amenity in the street being adversely impacted upon.

Table 4.6  
Environmental capacity performance standards on residential streets

| Road class | Road type  | Maximum Speed (km/hr) | Maximum peak hour volume (veh/hr) |
|------------|------------|-----------------------|-----------------------------------|
| Local      | Access way | 25                    | 100                               |
|            | Street     | 40                    | 200 environmental goal            |
|            |            |                       | 300 maximum                       |
| Collector  | Street     | 50                    | 300 environmental goal            |
|            |            |                       | 500 maximum                       |

Note: Maximum speed relates to the appropriate design maximum speeds in new residential developments. In existing areas maximum speed relates to 85th percentile speed.

Source RTA's Guide to Traffic generating Developments (2002)

**Section 9** of this report determined that the proposed mixed use development is likely to generate a maximum of approximately 118 vtp/h in King Street, 42 vtp/h on any leg of The Esplanade and 65 vtp/h on any leg of Howard Street with development traffic distributed as per **Figure 3**. It is noted this assessment ignores existing traffic from the development site therefore is a conservative worst case assessment with the real impact probably being slightly less than reported in this document. A summary of the impact on the road network traffic volumes and the two-way mid-block road network capacities is shown below in **Table 1**.

Table 1 – Two way mid-block road capacity assessment

| Road                               | 2017 AM peak (vtp/h) | 2017 PM peak (vtp/h) | 2027 AM peak (vtp/h) | 2027 PM peak (vtp/h) | Road Capacity |
|------------------------------------|----------------------|----------------------|----------------------|----------------------|---------------|
| King Street                        | 1736                 | 1629                 | 1998                 | 1887                 | 5600          |
| The Esplanade north of King Street | 1807                 | 2120                 | 2092                 | 2456                 | 5600          |
| The Esplanade south of King Street | 2477                 | 2591                 | 2872                 | 3009                 | 5600          |
| Howard Street                      | 165                  | 145                  | 181                  | 161                  | 300           |

This assessment shows the local and state road network will remain within its technical and environmental capacity goals post development through to 2027. Therefore, it is concluded that the local and state road network has sufficient spare two way mid-block capacity to cater for the increase in traffic generated by the development.

With the Howard Street intersections with King Street and The Esplanade being left in and left out only intersections the only intersection likely to be adversely impacted on by the development is the King Street / The Esplanade roundabout. The impacts of the development on this intersection are best assessed using the Sidra intersection modelling software. This software package predicts likely delays, queue lengths and thus levels of service that will occur at intersections. Assessment is then based on the level of service requirements of the RMS shown below;

**Table 4.2**  
Level of service criteria for intersections

| Level of Service | Average Delay per Vehicle (secs/veh) | Traffic Signals, Roundabout                                                                              | Give Way & Stop Signs                     |
|------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------|
| A                | < 14                                 | Good operation                                                                                           | Good operation                            |
| B                | 15 to 28                             | Good with acceptable delays & spare capacity                                                             | Acceptable delays & spare capacity        |
| C                | 29 to 42                             | Satisfactory                                                                                             | Satisfactory, but accident study required |
| D                | 43 to 56                             | Operating near capacity                                                                                  | Near capacity & accident study required   |
| E                | 57 to 70                             | At capacity; at signals, incidents will cause excessive delays<br>Roundabouts require other control mode | At capacity, requires other control mode  |

Source: - RTA's Guide to Traffic Generating Developments (2002)

Assumptions made in this modelling for this intersection were;

- ◆ The intersection was modelled as per the current layout and speed zoning;
- ◆ Existing traffic volumes used were as recorded by NTPE on 23<sup>rd</sup> February 2017;
- ◆ Development traffic was distributed as per **Figure 3** therefore did not consider existing traffic generated by the current site development. The assessment is therefore a conservative worst case assessment.
- ◆ A background traffic growth of 1.5 % per annum was adopted..

The results of the modelling are show below in **Table 2** while the Sidra Movement Summary Sheets are provided in **Attachment D**.

**Table 2 – Sidra results – King Street / The Esplanade roundabout**

| Model                 | Deg. Satn (v/c) | Average Delay (s) | Worst Level of Service | 95 % back of queue length (cars) |
|-----------------------|-----------------|-------------------|------------------------|----------------------------------|
| 2017 AM               | 0.617           | 3.4               | A                      | 5.2                              |
| 2017 PM               | 0.668           | 5.8               | A                      | 5.2                              |
| 2017 AM + development | 0.635           | 6.6               | A                      | 5.9                              |
| 2017 PM + development | 0.687           | 6.2               | A                      | 5.5                              |
| 2027 AM + development | 0.831           | 12                | A                      | 13.2                             |
| 2027 PM + development | 0.899           | 10.8              | A                      | 11.9                             |



The Sidra modelling shows that the King Street / The Esplanade roundabout will continue to operate satisfactorily post development through to beyond 2027, in both the AM and PM peak periods, without the need for upgrading. Average delays, LoS and back of queue lengths for all movements remain within the satisfactory criteria set by the RMS.

It can therefore be concluded that the proposed development will not adversely impact on the local and state road network.

## 10.2 Access

From observation on site it has been determined that suitable safe sight distance at the proposed vehicular access to the site in accordance with Australian Standard requirements (AS2890.1 – 2004 *Parking facilities – Part 1 Off street car parking*) which is 35 to 45 metres for a 40 km/h speed environment is available to the north and south of the access off Howard Street. It is noted the access being off Howard Street complies with RMS requirements for access to be off a secondary road if possible for developments on classified roads. The removal of the existing accesses to the site off King Street and The Esplanade also results in a positive impact on the road network and this needs to be considered in any merits based assessment of the development.

Further as the site provides resident and employee parking (Class 1A) for between 101 and 300 vehicles fronting a local road a category 2 access facility is required. AS2890.1 – 2004 *Parking facilities – Part 1 Off street car parking* denotes a category 2 access as a combined entry exit 6 metres to 9 metres wide. As the development proposes a combined entry / exit at least 6 metres wide it is concluded that the proposed access crossing is compliant with AS2890.1 – 2004 *Parking facilities – Part 1 Off-street car parking*.

In addressing compliance with *Lake Macquarie City Council's DCP 2014 – Revision 6 – Part 9 – Specific Land Uses Residential Flat Buildings - Section 13.12 of the Driveways and Parking Areas* also requires a single driveway access with a minimum width of 5.5 metres. Therefore the proposal is compliant with this requirement.

Overall it is concluded that the proposed vehicular access to the site is suitable and would comply with AS2890.1 – 2004 *Parking facilities – Part 1 Off street car parking* and *Lake Macquarie City Council's DCP 2014 – Revision 6 – Part 9 – Specific Land Uses Residential Flat Buildings - Section 13.12 of the Driveways and Parking Areas*.

## 10.3 On-site car parking

On-site car parking provision needs to be in accordance with Australian Standard AS2890.1 – 2004 *Parking facilities – Part 1 Off street car parking* and *Lake Macquarie City Council's Warners Bay Town Centre Area Plan*. The car parking provision rates applicable for residential flat buildings and commercial space / business sourced from the Warners Bay Town Centre Area Plan are as follows:

|                                    |   |                                    |
|------------------------------------|---|------------------------------------|
| 1 bedroom units                    | - | 0.5 car spaces per dwelling;       |
| 2 bedroom units                    | - | 0.75 car space per dwelling;       |
| 3 bedroom units                    | - | 1 car space per dwelling;          |
| Plus                               |   |                                    |
| Visitor parking                    |   | 0.25 spaces per dwelling;          |
| Business / Office / Retail Premise | - | 1 space per 40 m <sup>2</sup> GFA. |
| Accessible parking                 | - | 1 space per 50 car parks.          |

Under Council's Business Zone and Residential Zone DCP's the following additional bicycle and motor bike parking is also required in the development;

*Bicycle storage areas for residents;*

*One bike parking space per 20 car spaces for customers and short term users;*

*One bike parking space per 20 employees with suitable end of trip facilities;*

*One motor bike parking space per 20 spaces for residents; and*

*One motorbike parking space per 20 cars for employees and customers.*

Therefore, the on-site parking requirement for the development can be calculated as shown in **Table 3** and **Table 4** below.

**Table 3 – LMCC on-site car parking requirement**

| Land-use                                        | Quantity | Parking Rate | No. Spaces |
|-------------------------------------------------|----------|--------------|------------|
| 1 bedroom apartment (no.)                       | 26       | 0.5          | 13         |
| 2 bedroom apartment (no.)                       | 56       | 0.75         | 42         |
| 3 bedroom apartment (no.)                       | 30       | 1            | 30         |
| Visitors (no. apartments)                       | 112      | 0.25         | 28         |
| Commercial/business/retail (m <sup>2</sup> GFA) | 1514     | 0.025        | 38         |
| <b>Total</b>                                    |          |              | <b>151</b> |

**Table 4 – LMCC on-site bike and motor bike parking requirement**

| Land-use                          | Quantity | Parking Rate | No. Spaces             |
|-----------------------------------|----------|--------------|------------------------|
| Resident bike parking             |          |              | storage areas required |
| Staff bike parking (per employee) | 40       | 0.05         | 2                      |
| Visitor bike parking              | 151      | 0.05         | 8                      |
| <b>Total Bike parking</b>         |          |              | <b>10</b>              |
| <b>Total Motor Bike parking</b>   | 151      | 0.05         | <b>8</b>               |

The development provides 149 residential car parking spaces, 30 commercial car parking spaces and 28 visitor car parking spaces which represents a 56 space excess on the car parking required for the development. Five Australian Standard compliant accessible spaces are provided throughout the car park which is again compliant with LMCC DCP requirements. The excess parking is within the resident parking (64 spaces) areas while the visitor car parking provided is compliant with the LMCC DCP requirement and an 8 space deficiency exists in the commercial parking area. Currently no motor bike or bicycle parking is shown on the plans therefore a deficiency exists for this type of parking also.

The additional resident parking is provided to meet the market with purchasers of 2 and 3 bedroom units often seeking 2 car parks rather than a single car park. The current provision of resident car parks allows a single space to be provided to all units which is the current market expectation while the excess allows some flexibility in providing the customers desire for additional resident parking. The advantage of providing additional resident parking is that the visitor parking has a better chance to be used for what it is provided for i.e. visitors to the complex rather than being the overflow parking area for the residents.

Further the current provision of car parking results in small 20 % deficiency in commercial parking spaces. It is considered this can be supported by Lake Macquarie City Council as the deficiency is within the range that their DCP allows and the provision of 30 commercial parking spaces should be sufficient to meet the likely employee parking requirements for the commercial premises. Customers of these premises are unlikely to utilise the undercover parking as it will not be obvious to them, they are more likely to park elsewhere in the Warners Bay Town Centre and combine their trip making purpose and there is an availability of shared on and off-street public parking in the Warners Bay Town Centre.

A 20 % reduction in visitor car parking (down to 22 visitor car parks) could also be supported on the same basis of multi-purpose trip making and the availability of on and off-street public parking in the area though the development currently provides the required visitor car parking. The provision of an excess of resident parking also means there is less pressure on the visitor car parking as overflow resident parking further supporting the argument for a reduced visitor car parking supply within the development.

Regarding the deficiency in bicycle parking and motor bike parking spaces there is adequate room in the proposed car parking areas to remove some of the excess residential parking to provide the required 8 motorbike spaces and suitable bicycle storage areas therefore this requirement could be conditioned on any consent issued for the proposal.

In assessing the proposed car parking layout against the requirements of Australian Standard AS2890.1 – 2004 *Parking facilities – Part 1 Off street car parking* the following is noted;

- ◆ The car spaces are a minimum 2.4 metres x 5.4 metres with end bay parks provided with additional width as required by the Standard;
- ◆ The accessible spaces are 2.4 metres x 5.4 metres with a 2.4 metre clear area adjacent;
- ◆ The aisle width / shared driveway is a minimum 5.8 metres wide;
- ◆ The submitted plans show suitable forward entry and exit from the car parking spaces.

Overall it is concluded that the proposed on-site car parking supply and layout is suitable and would comply with Australian Standard AS2890.1 – 2004 *Parking facilities – Part 1 Off street car parking* and *Lake Macquarie City Council's DCP 2014 Revision 6 – Part 4 – Developments in Business Zones Section 5 – Access and Parking*.

## 10.4 Servicing

The development has been designed such that waste collection will be undertaken using private contractor with kerbside collection from Howard Street with a bin area provided near the vehicle access from Howard Street. For this reason Council approval for a 15 metre loading zone on Howard Street immediately north of the developments vehicular access is sought to facilitate servicing of the site. The commercial tenancies proposed would typically be serviced by small rigid vehicles for stationary and food and drink supplies that could utilise existing on-site commercial parking bays during non-peak parking demand periods. Larger vehicles which would be infrequent would be required to service from the kerbside in the proposed loading zone on Howard Street.

Overall it is concluded that the servicing arrangements within the development are suitable.

## 10.5 Alternate Transport Modes

The site is currently serviced by public transport (bus) services provided by Newcastle Buses and Ferries as well as Hunter Valley Buses providing a suitable service to all necessary services, facilities and locations near the site. Therefore, suitable public transport services already exist to the site and no additional services or infrastructure required. It is noted that under the LMCC Developer Contributions plan for the Glendale Contributions Catchment the development is required to pay a S94 contribution and works this will fund includes the upgrading of a number of bus stops in King Street, Warners Bay.

It is considered that the external pedestrian and bicycle traffic generated by the development would not be significant enough as to provide a nexus for the provision of additional external pedestrian and bicycle paths (on or off road) to the site and the existing infrastructure is considered satisfactory for the scale of development proposed. It would however be expected that full width reconstruction of the footpath around the site in accordance with the Warners Bay Town Centre Area Plan would be required of this development.

# 11. CONCLUSIONS

This traffic and parking assessment of a mixed-use development on Lots 1 & 2 in DP 1116535, Lots 3 & 4 in DP 32518, Lot 122 in DP 578045 and Lots 1, 2, & 3 in DP 155951, 482 – 488 The Esplanade, 12 – 16 King Street & 1 Howard Street, Warners Bay has concluded the following:

- ◆ The proposed development is likely to generate approximately 106 vtpd during the AM weekday peak traffic periods, 78 vtpd during the PM weekday peak traffic periods or 687 vtpd. This only represents an increase on existing site traffic of approximately 27 vtpd in the AM peak and no increase in the PM peak.
- ◆ The local road network around the site has sufficient capacity to cater for the development without the need to upgrade the local road network.
- ◆ The proposed development therefore does not adversely impact on the local road network.
- ◆ The proposed vehicular access to the site is suitable and would comply with Australian Standard AS2890.1 – 2004 *Parking facilities – Part 1 Off street car parking* and Lake Macquarie City Council's DCP 2014 – Revision 6 – Part 9 – *Specific Land Uses Residential Flat Buildings - Section 13.12 of the Driveways and Parking Areas*.
- ◆ The proposed access also complies with RMS requirements for vehicular access to be off a secondary road if possible for developments on classified roads. The removal of the existing accesses off King Street and The Esplanade also results in a positive impact on the road network and this needs to be considered in any merits based assessment of the development.
- ◆ The proposed on-site car parking supply and layout is suitable and would comply with Australian Standard AS2890.1 – 2004 *Parking facilities – Part 1 Off street car parking* and Lake Macquarie City Council's Warners Bay Town Centre Area Plan and its DCP (2014) for residential and business zones.
- ◆ The servicing arrangements within the development are suitable though Council approval for a 15 metre loading zone on Howard Street immediately north of the development's vehicular access will be required.
- ◆ Suitable public transport services already exist to the site and no additional services or infrastructure is required. S94 contributions collected from the development will be used to upgrade a number of bus stops in King Street; and
- ◆ It is not considered that the external pedestrian and bicycle traffic generated by the development would not be significant enough to provide a nexus for the provision of additional external pedestrian and bicycle infrastructure (on or off road) to the site as the existing infrastructure near the site is considered satisfactory for the scale of development proposed. However the pedestrian footpath along the three site frontages would need to be reconstructed to full width in accordance with the requirements of Lake Macquarie City Council's Warners Bay Town Centre Area Plan.

# 12. RECOMMENDATION

Having carried out this traffic impact assessment for a mixed-use development on Lots 1 & 2 in DP 1116535, Lots 3 & 4 in DP 32518, Lot 122 in DP 578045 and Lots 1, 2, & 3 in DP 155951, 482 – 488 The Esplanade, 12 – 16 King Street & 1 Howard Street, Warners Bay it is recommended that the proposal can be supported from a traffic impact perspective as it will not adversely impact on the local and state road network and complies with the requirements of Lake Macquarie City Council, Australian Standards and NSW Roads and Maritime Services.



**JR Garry BE (Civil), Masters of Traffic**  
**Director**  
**Intersect Traffic Pty Ltd**

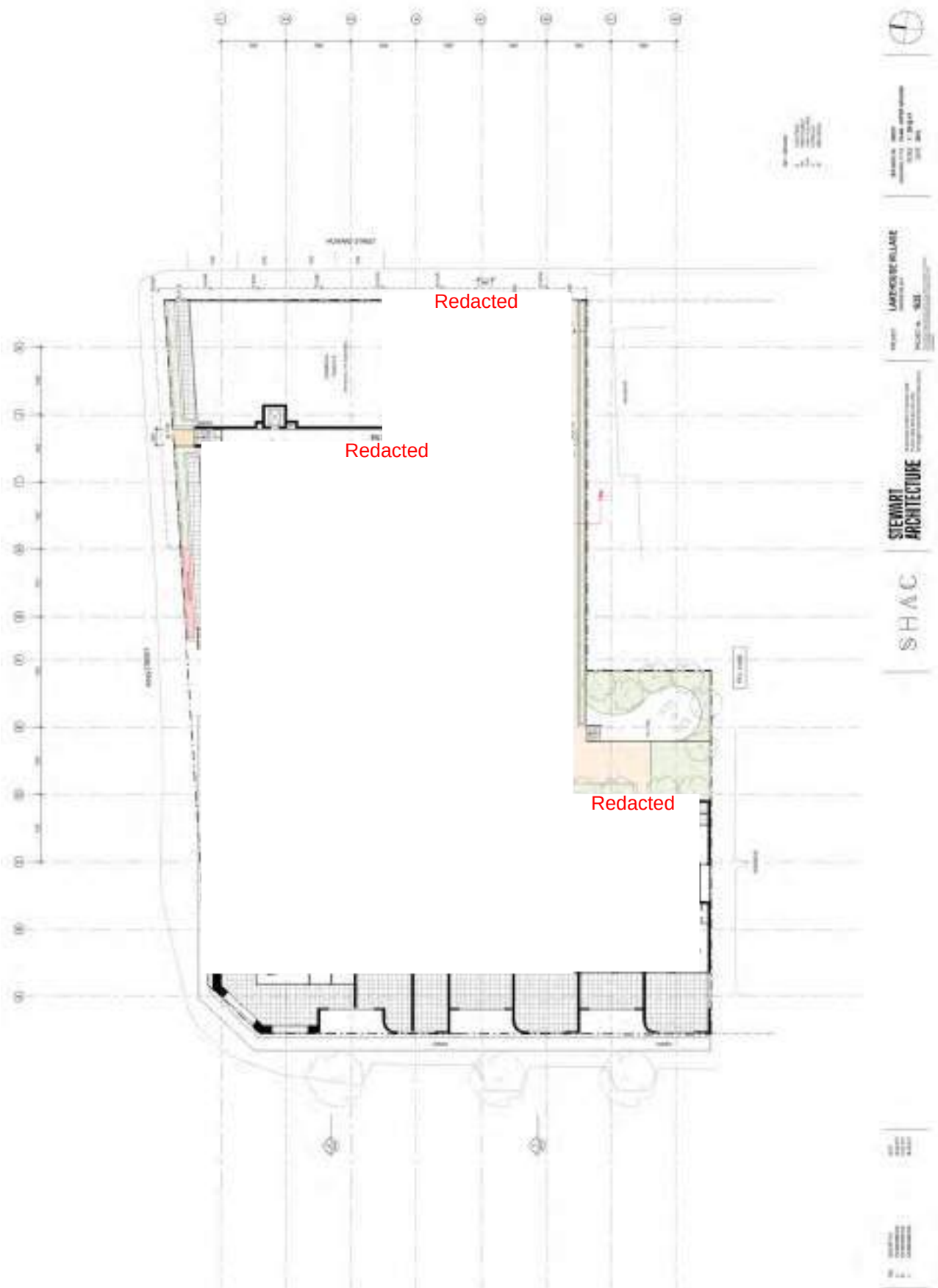


# ATTACHMENT A

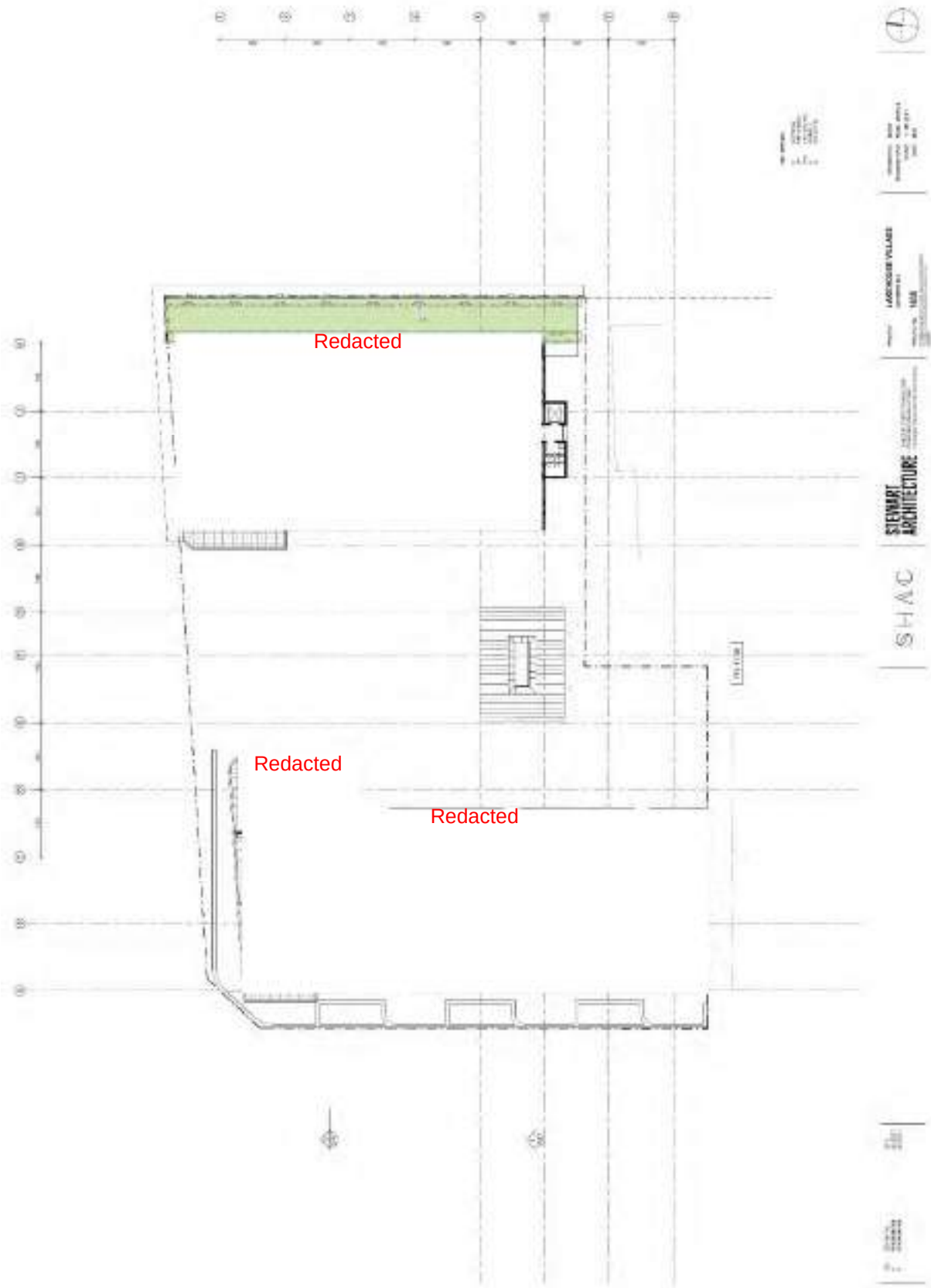
## DEVELOPMENT PLANS

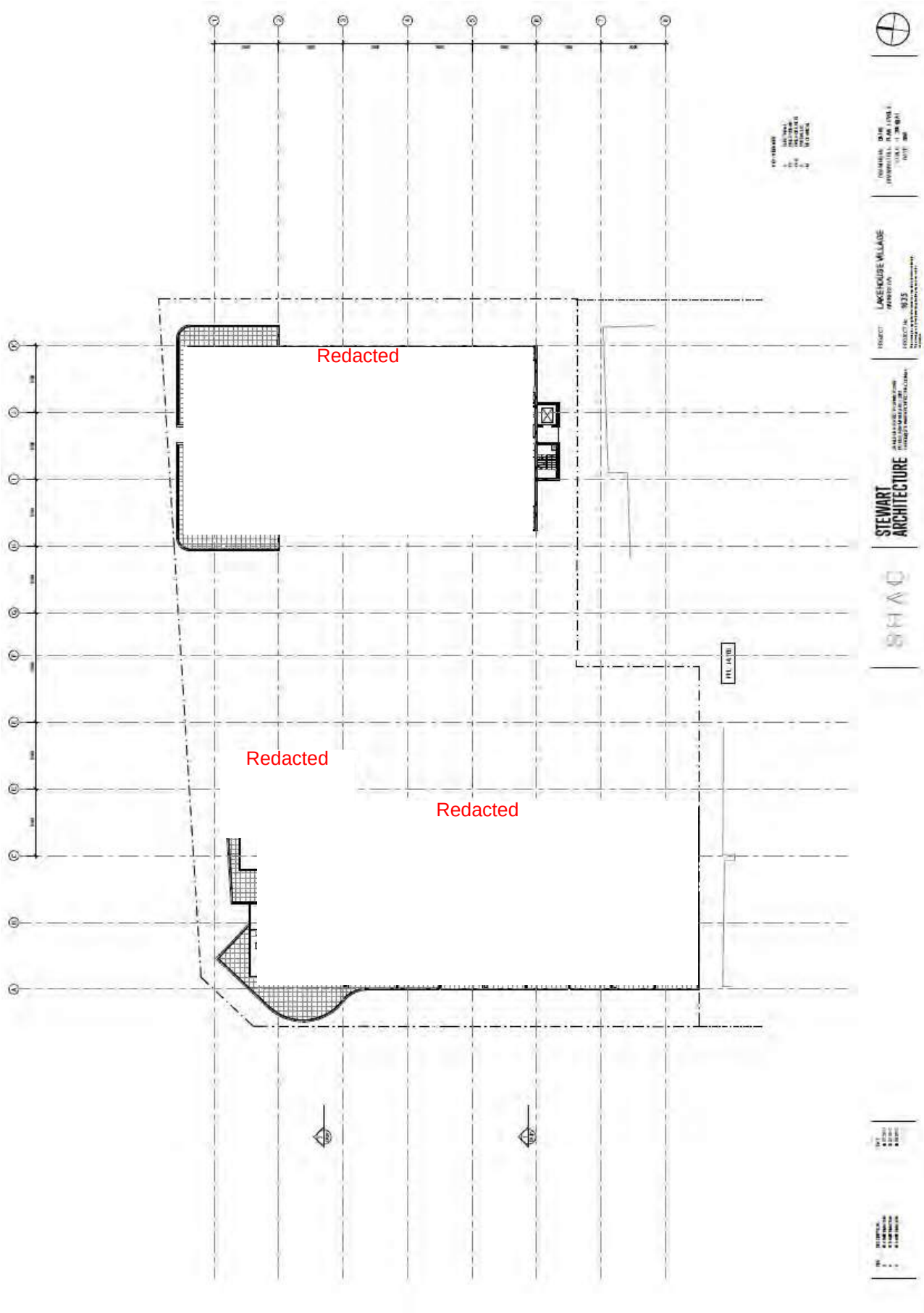


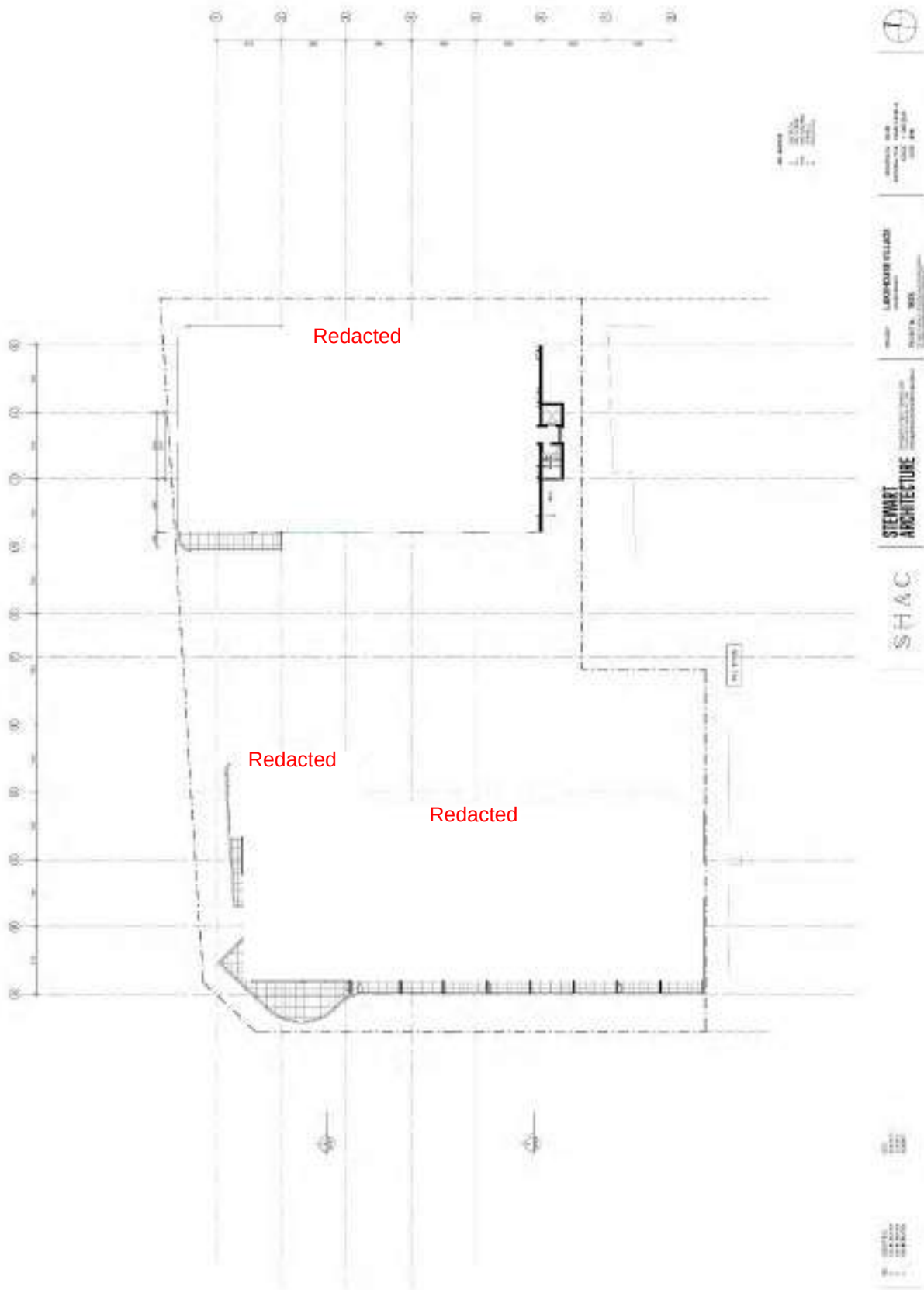


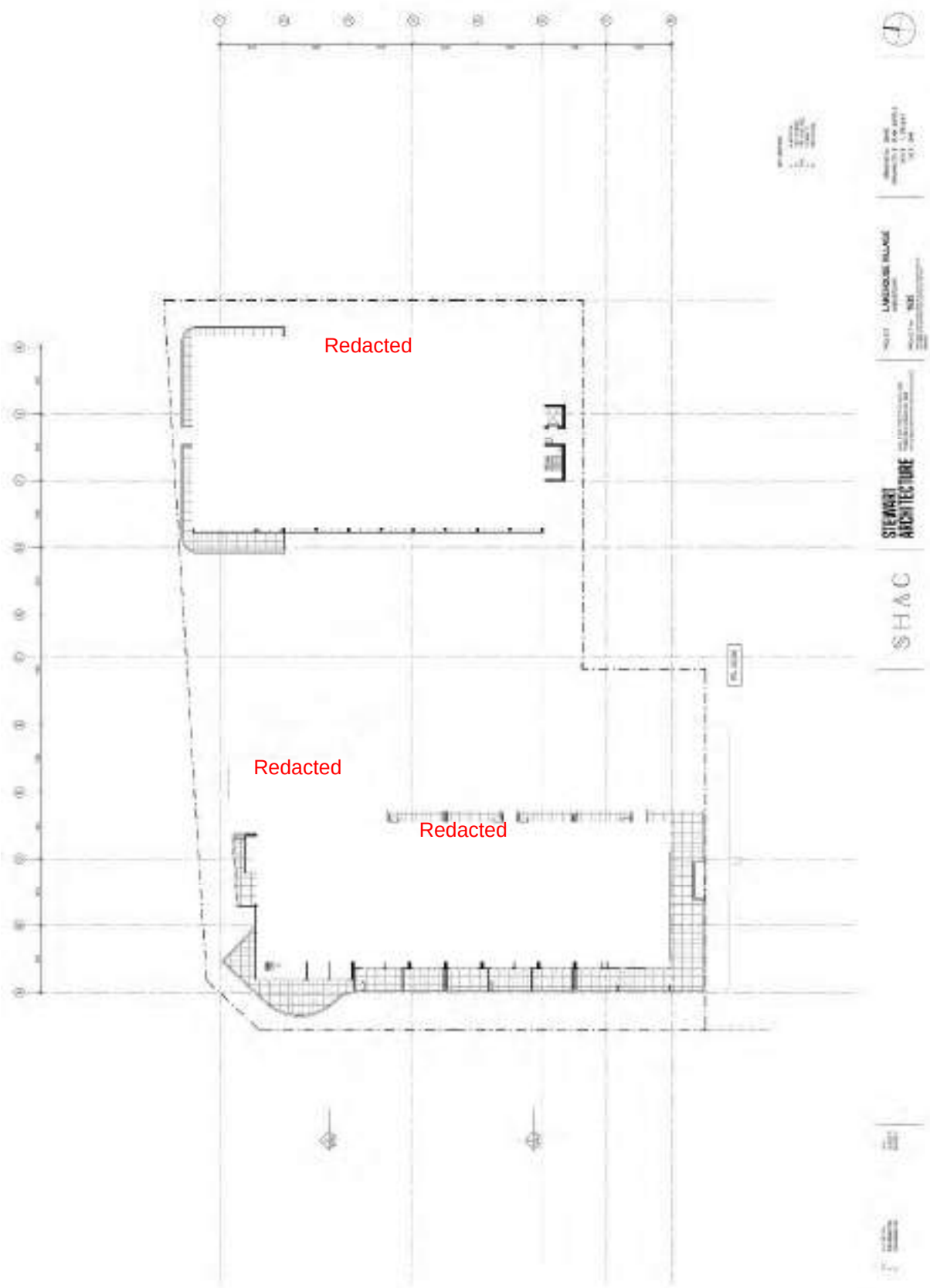






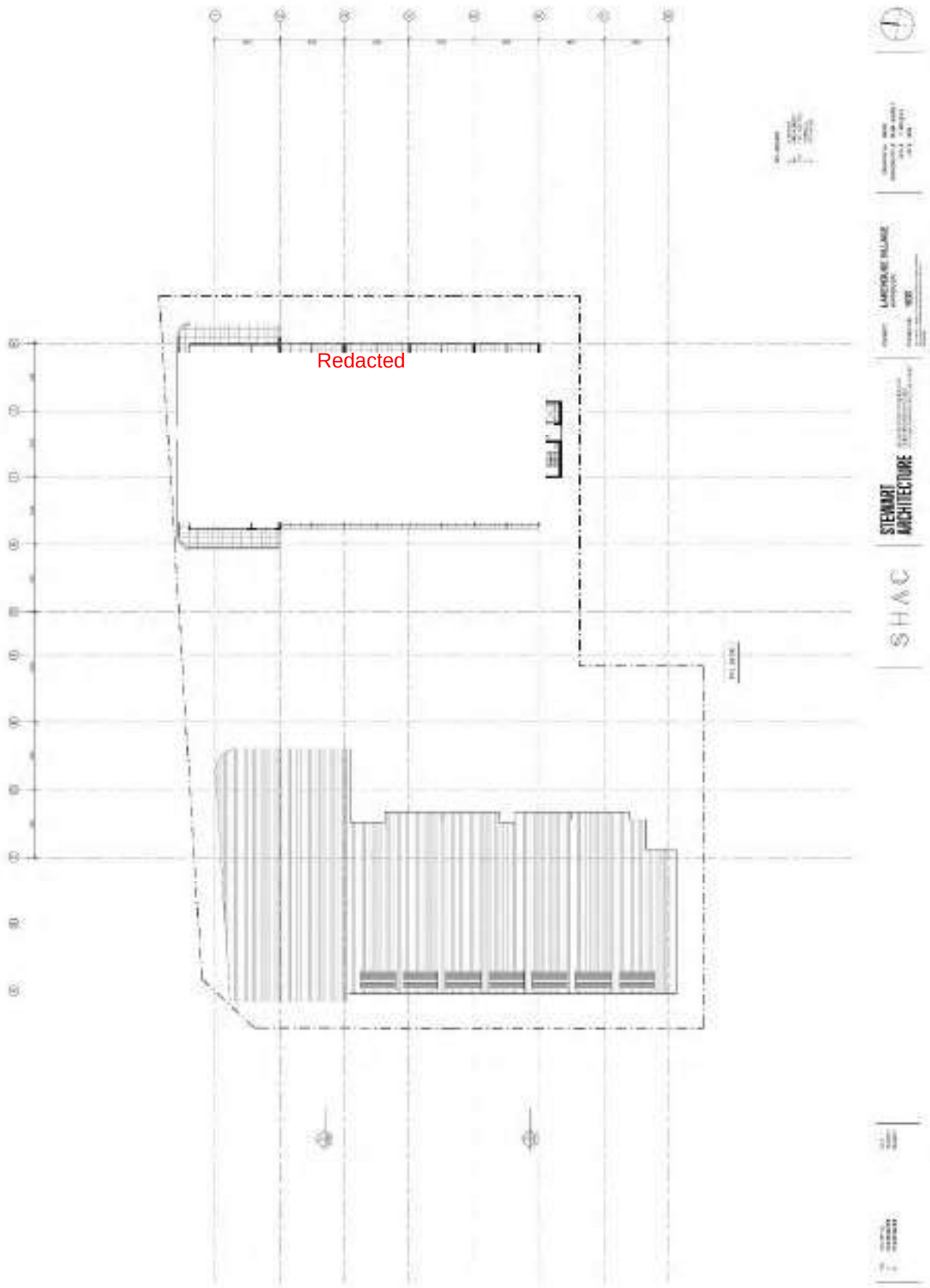


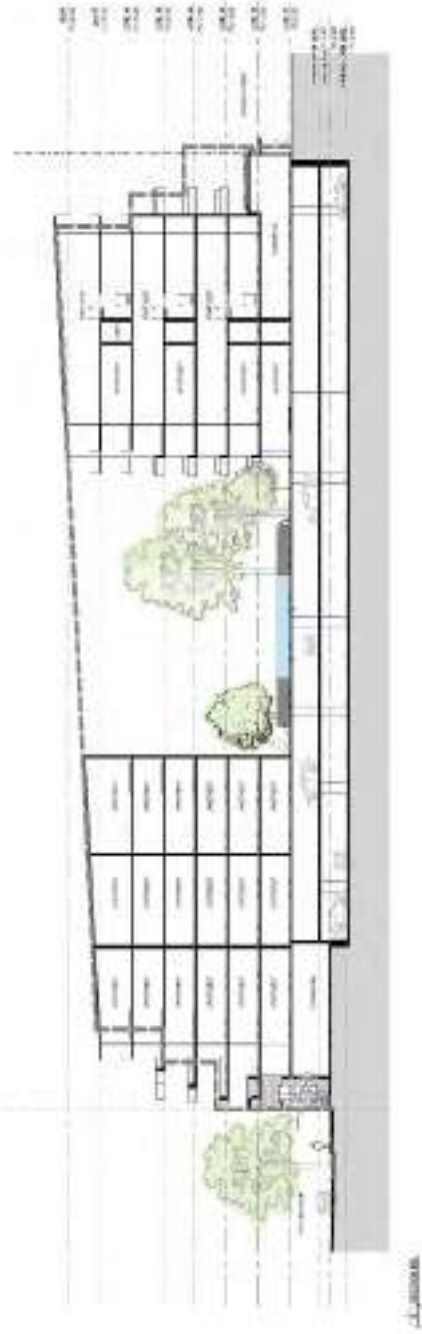
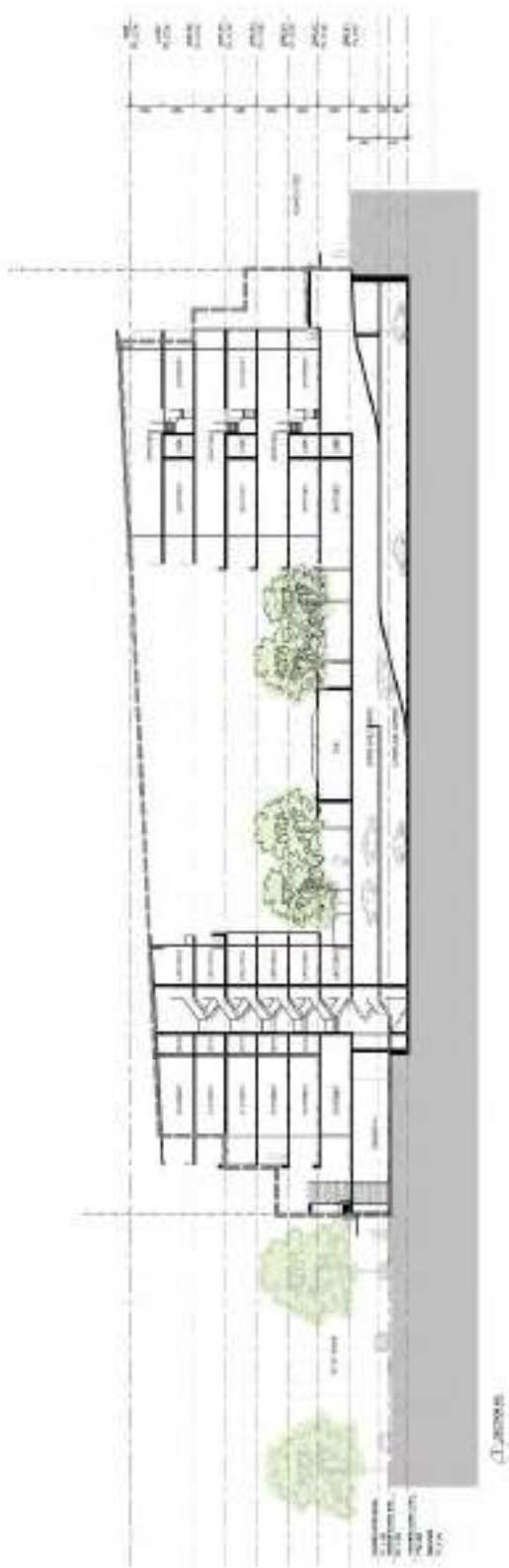












Project No. 1000  
Project Name: Warners Bay  
Project Location: Warners Bay, NSW

Project No. 1000  
Project Name: Warners Bay  
Project Location: Warners Bay, NSW

Project No. 1000  
Project Name: Warners Bay  
Project Location: Warners Bay, NSW

Project No. 1000  
Project Name: Warners Bay  
Project Location: Warners Bay, NSW

Project No. 1000  
Project Name: Warners Bay  
Project Location: Warners Bay, NSW

# ATTACHMENT B

## TRAFFIC DATA



22/2/2017 - THE ESPLANADE / KING ST, WARNERS BAY

18:00 &lt;&lt;&lt; HOUR ENDING

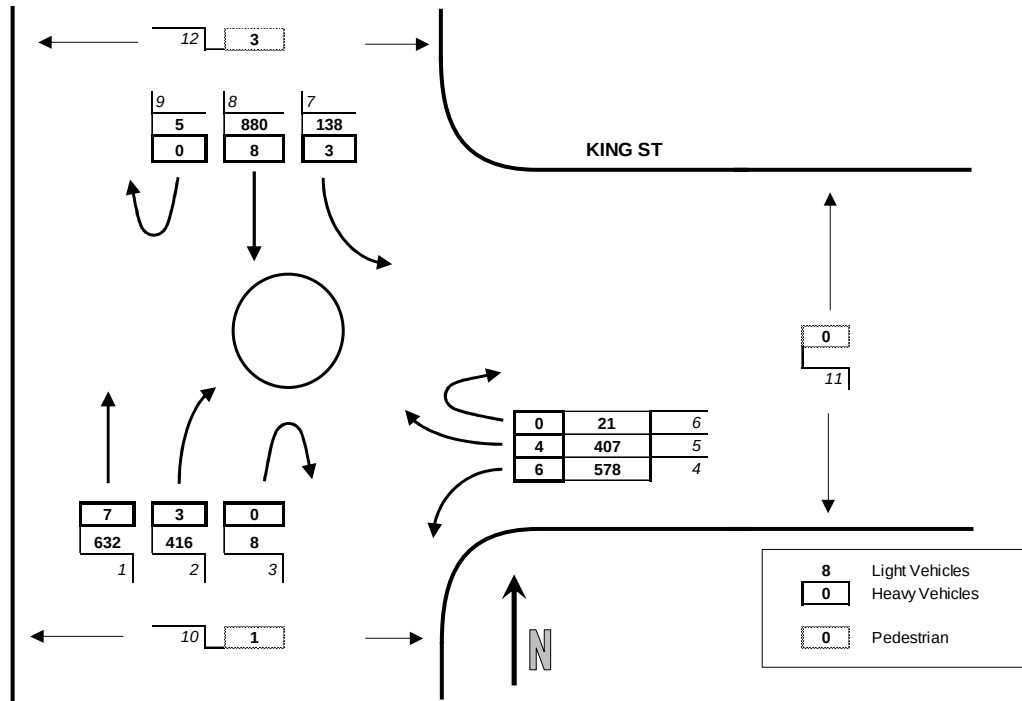
Wednesday

Summary:

**THE ESPLANADE / KING ST****3085** Total Light Vehicles**31** Total Heavy Vehicles**4** Total Pedestrians

THE ESPLANADE

KING ST



23/2/2017 - THE ESPLANADE / KING ST, WARNERS BAY

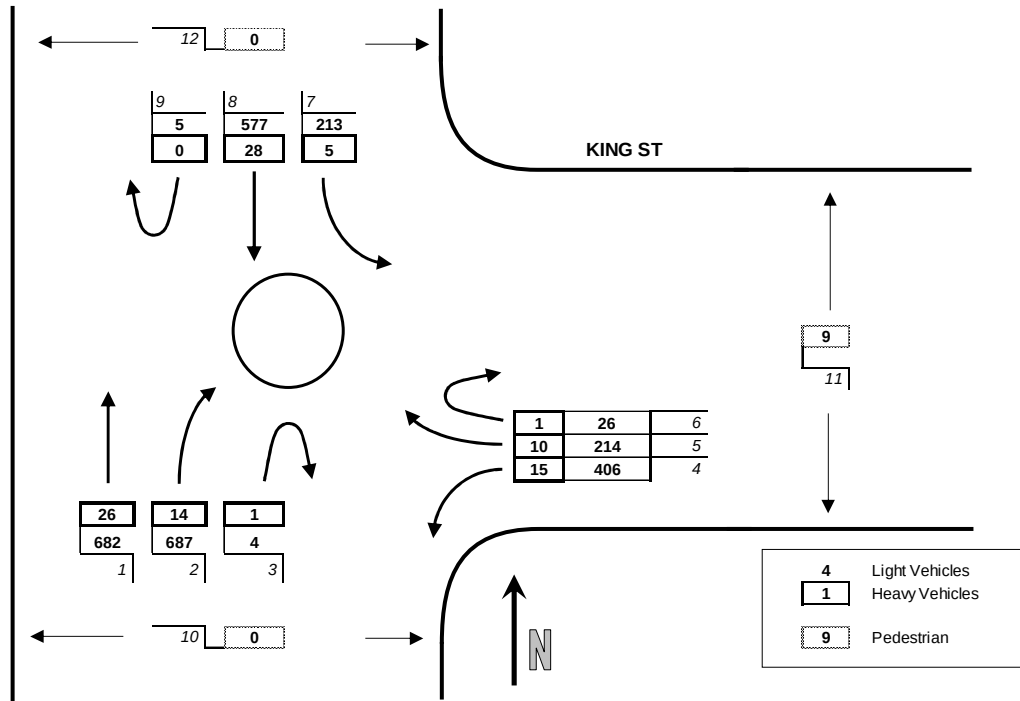
9:00 &lt;&lt;&lt; HOUR ENDING

Thursday

Summary:

**THE ESPLANADE / KING ST****2814** Total Light Vehicles**100** Total Heavy Vehicles**9** Total PedestriansQuality Surveys  
172612

THE ESPLANADE

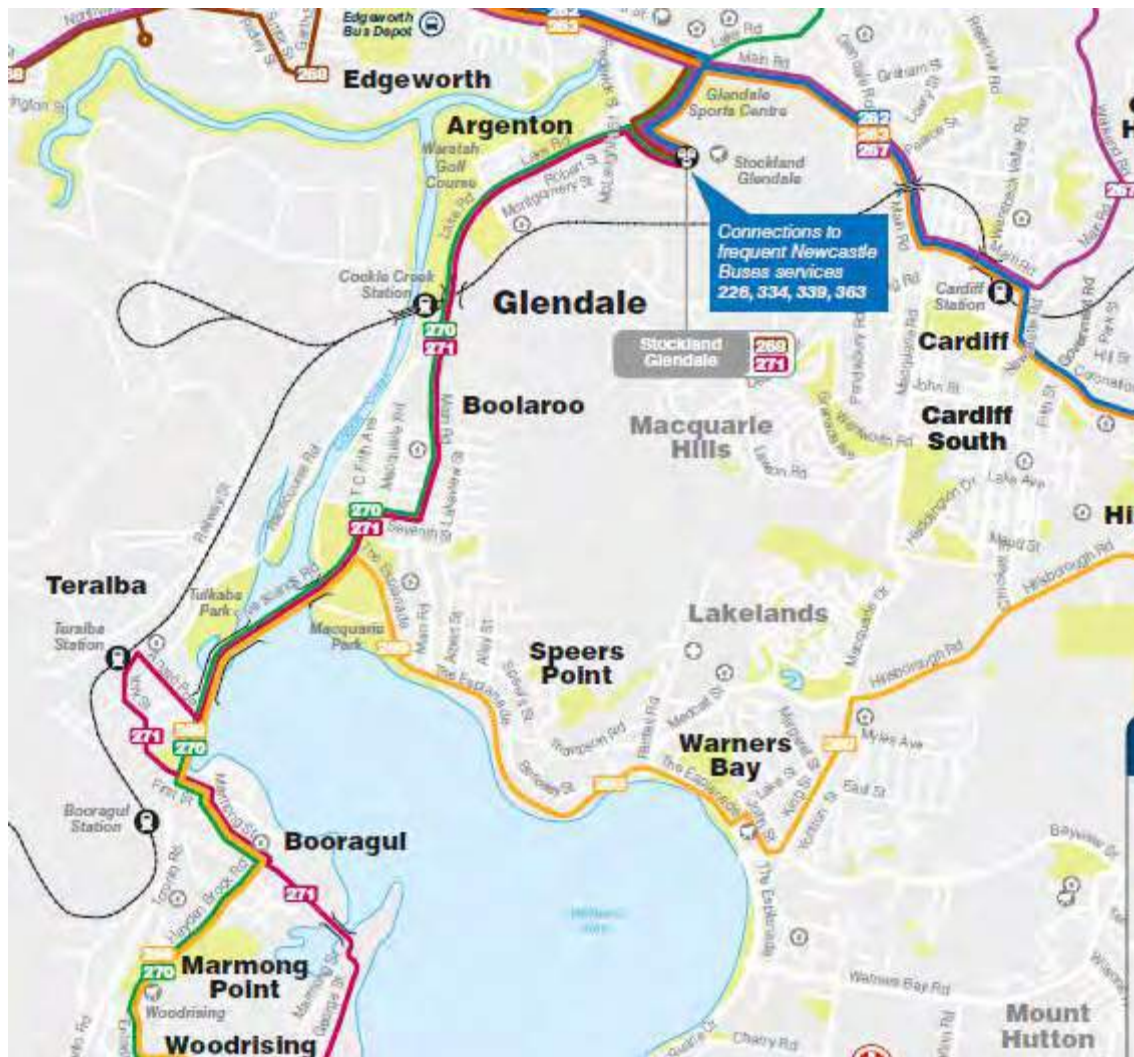


# ATTACHMENT C

## BUS ROUTE MAPS









# **ATTACHMENT D**

## **SIDRA MOVEMENT SUMMARY TABLES**



## MOVEMENT SUMMARY

 Site: 2017 AM

King Street / The Esplanade  
Warners Bay  
Roundabout

| Movement Performance - Vehicles |        |                    |            |               |                   |                  |                                |            |              |                             |                    |
|---------------------------------|--------|--------------------|------------|---------------|-------------------|------------------|--------------------------------|------------|--------------|-----------------------------|--------------------|
| Mov ID                          | OD Mov | Demand Total veh/h | Flows HV % | Dep. Satn v/c | Average Delay sec | Level of Service | 50% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: The Esplanade            |        |                    |            |               |                   |                  |                                |            |              |                             |                    |
| 2                               | T1     | 708                | 3.7        | 0.572         | 2.1               | LOS A            | 4.5                            | 32.5       | 0.60         | 0.30                        | 39.7               |
| 3                               | R2     | 701                | 2.0        | 0.617         | 7.3               | LOS A            | 5.2                            | 37.4       | 0.65         | 0.68                        | 38.7               |
| 3u                              | U      | 5                  | 20.0       | 0.617         | 9.1               | LOS A            | 5.2                            | 37.4       | 0.65         | 0.68                        | 39.6               |
| Approach                        |        | 1414               | 2.9        | 0.617         | 4.7               | LOS A            | 5.2                            | 37.4       | 0.62         | 0.49                        | 39.2               |
| East: King Street               |        |                    |            |               |                   |                  |                                |            |              |                             |                    |
| 4                               | L2     | 421                | 3.6        | 0.439         | 3.8               | LOS A            | 2.6                            | 19.0       | 0.68         | 0.64                        | 38.6               |
| 6                               | R2     | 224                | 4.5        | 0.327         | 7.9               | LOS A            | 1.6                            | 12.0       | 0.65         | 0.78                        | 38.6               |
| 6u                              | U      | 27                 | 3.7        | 0.327         | 9.4               | LOS A            | 1.6                            | 12.0       | 0.65         | 0.78                        | 39.5               |
| Approach                        |        | 672                | 3.9        | 0.439         | 5.4               | LOS A            | 2.6                            | 19.0       | 0.67         | 0.69                        | 38.6               |
| North: The Esplanade            |        |                    |            |               |                   |                  |                                |            |              |                             |                    |
| 7                               | L2     | 218                | 2.3        | 0.559         | 7.7               | LOS A            | 5.1                            | 36.5       | 0.89         | 0.96                        | 37.5               |
| 8                               | T1     | 605                | 4.6        | 0.559         | 7.6               | LOS A            | 5.1                            | 36.5       | 0.88         | 0.96                        | 38.4               |
| 9u                              | U      | 5                  | 0.0        | 0.559         | 14.0              | LOS A            | 4.7                            | 34.5       | 0.89         | 0.99                        | 39.8               |
| Approach                        |        | 828                | 4.0        | 0.559         | 7.7               | LOS A            | 5.1                            | 36.5       | 0.88         | 0.96                        | 38.1               |
| All Vehicles                    |        | 2914               | 3.4        | 0.617         | 5.7               | LOS A            | 5.2                            | 37.4       | 0.71         | 0.68                        | 38.8               |

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



## MOVEMENT SUMMARY

 **Site: 2017 AM + development**

King Street / The Esplanade  
Warners Bay  
Roundabout

| Movement Performance - Vehicles |        |                                |         |                  |                         |                     |                                      |                        |                 |                                   |                          |
|---------------------------------|--------|--------------------------------|---------|------------------|-------------------------|---------------------|--------------------------------------|------------------------|-----------------|-----------------------------------|--------------------------|
| Mov ID                          | OD Mov | Demand Flows<br>Total<br>veh/h | HV<br>% | Deq. Satn<br>v/c | Average<br>Delay<br>sec | Level of<br>Service | 95% Back of Queue<br>Vehicles<br>veh | Queue<br>Distance<br>m | Prop.<br>Queued | Effective<br>Stop Rate<br>per veh | Average<br>Speed<br>km/h |
| South: The Esplanade            |        |                                |         |                  |                         |                     |                                      |                        |                 |                                   |                          |
| 2                               | T1     | 708                            | 3.7     | 0.635            | 3.6                     | LOS A               | 5.9                                  | 41.9                   | 0.71            | 0.57                              | 39.3                     |
| 3                               | R2     | 701                            | 2.0     | 0.635            | 7.8                     | LOS A               | 5.9                                  | 41.9                   | 0.70            | 0.72                              | 38.7                     |
| 3u                              | U      | 12                             | 8.3     | 0.635            | 9.4                     | LOS A               | 5.9                                  | 41.9                   | 0.70            | 0.72                              | 39.6                     |
| Approach                        |        | 1421                           | 2.9     | 0.635            | 5.7                     | LOS A               | 5.9                                  | 42.0                   | 0.71            | 0.65                              | 39.0                     |
| East: King Street               |        |                                |         |                  |                         |                     |                                      |                        |                 |                                   |                          |
| 4                               | L2     | 421                            | 3.6     | 0.445            | 3.9                     | LOS A               | 2.7                                  | 19.5                   | 0.70            | 0.66                              | 38.6                     |
| 6                               | R2     | 258                            | 3.9     | 0.390            | 8.0                     | LOS A               | 2.1                                  | 15.3                   | 0.68            | 0.81                              | 38.5                     |
| 6u                              | U      | 52                             | 1.9     | 0.390            | 9.4                     | LOS A               | 2.1                                  | 15.3                   | 0.68            | 0.81                              | 39.5                     |
| Approach                        |        | 731                            | 3.6     | 0.445            | 5.7                     | LOS A               | 2.7                                  | 19.5                   | 0.69            | 0.72                              | 38.6                     |
| North: The Esplanade            |        |                                |         |                  |                         |                     |                                      |                        |                 |                                   |                          |
| 7                               | L2     | 218                            | 2.3     | 0.591            | 8.8                     | LOS A               | 5.7                                  | 41.1                   | 0.92            | 1.03                              | 37.2                     |
| 8                               | T1     | 613                            | 4.6     | 0.591            | 8.7                     | LOS A               | 5.7                                  | 41.1                   | 0.92            | 1.05                              | 37.9                     |
| 9u                              | U      | 5                              | 0.0     | 0.591            | 15.1                    | LOS B               | 5.3                                  | 38.4                   | 0.91            | 1.06                              | 39.3                     |
| Approach                        |        | 836                            | 3.9     | 0.591            | 8.8                     | LOS A               | 5.7                                  | 41.1                   | 0.92            | 1.04                              | 37.7                     |
| All Vehicles                    |        | 2988                           | 3.3     | 0.635            | 6.6                     | LOS A               | 5.9                                  | 42.0                   | 0.76            | 0.76                              | 38.6                     |

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## MOVEMENT SUMMARY

 **Site: 2027 AM + development**

King Street / The Esplanade  
Warners Bay  
Roundabout

| Movement Performance - Vehicles |        |                    |            |               |                   |                  |                                |            |             |                             |                    |
|---------------------------------|--------|--------------------|------------|---------------|-------------------|------------------|--------------------------------|------------|-------------|-----------------------------|--------------------|
| Mov ID                          | OD Mov | Demand Total veh/h | Flows HV % | Des. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: The Esplanade            |        |                    |            |               |                   |                  |                                |            |             |                             |                    |
| 2                               | T1     | 814                | 3.7        | 0.759         | 6.0               | LOS A            | 9.8                            | 69.8       | 0.87        | 0.88                        | 38.9               |
| 3                               | R2     | 806                | 2.0        | 0.759         | 9.9               | LOS A            | 9.8                            | 69.8       | 0.85        | 0.89                        | 38.2               |
| 3u                              | U      | 13                 | 7.7        | 0.759         | 11.6              | LOS A            | 9.8                            | 69.8       | 0.85        | 0.89                        | 39.1               |
| Approach                        |        | 1633               | 2.9        | 0.759         | 8.0               | LOS A            | 9.8                            | 69.8       | 0.86        | 0.89                        | 38.5               |
| East: King Street               |        |                    |            |               |                   |                  |                                |            |             |                             |                    |
| 4                               | L2     | 484                | 3.5        | 0.551         | 4.9               | LOS A            | 3.9                            | 28.2       | 0.79        | 0.88                        | 38.4               |
| 6                               | R2     | 292                | 4.1        | 0.480         | 9.1               | LOS A            | 3.0                            | 21.3       | 0.76        | 0.93                        | 38.3               |
| 6u                              | U      | 56                 | 1.8        | 0.480         | 10.5              | LOS A            | 3.0                            | 21.3       | 0.76        | 0.93                        | 39.3               |
| Approach                        |        | 832                | 3.6        | 0.551         | 6.7               | LOS A            | 3.9                            | 28.2       | 0.77        | 0.90                        | 38.4               |
| North: The Esplanade            |        |                    |            |               |                   |                  |                                |            |             |                             |                    |
| 7                               | L2     | 251                | 2.4        | 0.831         | 22.8              | LOS B            | 13.2                           | 95.2       | 1.00        | 1.50                        | 32.6               |
| 8                               | T1     | 704                | 4.5        | 0.831         | 23.4              | LOS B            | 13.2                           | 95.2       | 1.00        | 1.49                        | 33.0               |
| 9u                              | U      | 6                  | 0.0        | 0.831         | 30.2              | LOS C            | 11.7                           | 85.3       | 1.00        | 1.48                        | 33.9               |
| Approach                        |        | 961                | 4.0        | 0.831         | 23.2              | LOS B            | 13.2                           | 95.2       | 1.00        | 1.49                        | 32.9               |
| All Vehicles                    |        | 3426               | 3.4        | 0.831         | 12.0              | LOS A            | 13.2                           | 95.2       | 0.88        | 1.06                        | 36.8               |

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## MOVEMENT SUMMARY

 Site: 2017 PM

King Street / The Esplanade  
Warners Bay  
Roundabout

| Movement Performance - Vehicles |        |                                |         |                  |                         |                     |                                      |               |              |                                   |                          |
|---------------------------------|--------|--------------------------------|---------|------------------|-------------------------|---------------------|--------------------------------------|---------------|--------------|-----------------------------------|--------------------------|
| Mov. ID                         | OD Mov | Demand Flows<br>Total<br>veh/h | HV<br>% | Deg. Satn<br>v/c | Average<br>Delay<br>sec | Level of<br>Service | 95% Back of Queue<br>Vehicles<br>veh | Distance<br>m | Prop. Queued | Effective<br>Stop Rate<br>per veh | Average<br>Speed<br>km/h |
| South: The Esplanade            |        |                                |         |                  |                         |                     |                                      |               |              |                                   |                          |
| 2                               | T1     | 639                            | 1.1     | 0.536            | 3.4                     | LOS A               | 4.3                                  | 30.6          | 0.73         | 0.64                              | 39.2                     |
| 3                               | R2     | 419                            | 0.7     | 0.536            | 8.5                     | LOS A               | 4.2                                  | 29.9          | 0.74         | 0.78                              | 38.8                     |
| 3u                              | U      | 8                              | 0.0     | 0.536            | 9.9                     | LOS A               | 4.2                                  | 29.9          | 0.74         | 0.78                              | 39.8                     |
| Approach                        |        | 1066                           | 0.9     | 0.536            | 5.4                     | LOS A               | 4.3                                  | 30.6          | 0.73         | 0.63                              | 39.1                     |
| East: King Street               |        |                                |         |                  |                         |                     |                                      |               |              |                                   |                          |
| 4                               | L2     | 584                            | 1.0     | 0.668            | 6.4                     | LOS A               | 5.2                                  | 37.0          | 0.83         | 1.00                              | 37.9                     |
| 5                               | R2     | 411                            | 1.0     | 0.609            | 10.7                    | LOS A               | 4.1                                  | 29.0          | 0.81         | 1.01                              | 37.8                     |
| 5u                              | U      | 21                             | 0.0     | 0.609            | 12.2                    | LOS A               | 4.1                                  | 29.0          | 0.81         | 1.01                              | 38.7                     |
| Approach                        |        | 1016                           | 1.0     | 0.668            | 8.3                     | LOS A               | 5.2                                  | 37.0          | 0.82         | 1.01                              | 37.8                     |
| North: The Esplanade            |        |                                |         |                  |                         |                     |                                      |               |              |                                   |                          |
| 7                               | L2     | 141                            | 2.1     | 0.520            | 4.2                     | LOS A               | 4.0                                  | 28.4          | 0.72         | 0.54                              | 38.4                     |
| 8                               | T1     | 888                            | 0.9     | 0.520            | 3.6                     | LOS A               | 4.0                                  | 28.4          | 0.72         | 0.56                              | 39.4                     |
| 9u                              | U      | 5                              | 0.0     | 0.520            | 9.9                     | LOS A               | 3.9                                  | 27.8          | 0.72         | 0.57                              | 41.0                     |
| Approach                        |        | 1034                           | 1.1     | 0.520            | 3.7                     | LOS A               | 4.0                                  | 28.4          | 0.72         | 0.56                              | 39.3                     |
| All Vehicles                    |        | 3116                           | 1.0     | 0.668            | 5.8                     | LOS A               | 5.2                                  | 37.0          | 0.76         | 0.73                              | 38.7                     |

Level of Service (LOS) Method: Delay (RTA NSW)

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akapelk M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## MOVEMENT SUMMARY

 Site: 2017 PM + development

King Street / The Esplanade  
Warners Bay  
Roundabout

| Movement Performance - Vehicles |         |                                |         |                     |                         |                     |                                      |               |                 |                                   |                          |
|---------------------------------|---------|--------------------------------|---------|---------------------|-------------------------|---------------------|--------------------------------------|---------------|-----------------|-----------------------------------|--------------------------|
| Mov ID                          | OD Mov. | Demand Flows<br>Total<br>veh/h | HV<br>% | Deq.<br>Satn<br>vic | Average<br>Delay<br>sec | Level of<br>Service | 95% Back of Queue<br>Vehicles<br>veh | Distance<br>m | Prop.<br>Cueued | Effective<br>Stop Rate<br>per veh | Average<br>Speed<br>km/h |
| South: The Esplanade            |         |                                |         |                     |                         |                     |                                      |               |                 |                                   |                          |
| 2                               | T1      | 639                            | 1.1     | 0.555               | 3.7                     | LOS A               | 4.7                                  | 33.2          | 0.76            | 0.59                              | 39.2                     |
| 3                               | R2      | 419                            | 0.7     | 0.555               | 8.8                     | LOS A               | 4.6                                  | 32.2          | 0.76            | 0.82                              | 38.7                     |
| 3u                              | U       | 24                             | 0.0     | 0.555               | 10.3                    | LOS A               | 4.6                                  | 32.2          | 0.76            | 0.82                              | 39.6                     |
| Approach                        |         | 1082                           | 0.9     | 0.555               | 5.8                     | LOS A               | 4.7                                  | 33.2          | 0.76            | 0.68                              | 39.0                     |
| East: King Street               |         |                                |         |                     |                         |                     |                                      |               |                 |                                   |                          |
| 4                               | L2      | 584                            | 1.0     | 0.687               | 6.8                     | LOS A               | 5.5                                  | 39.2          | 0.85            | 1.03                              | 37.7                     |
| 6                               | R2      | 420                            | 1.0     | 0.648               | 11.4                    | LOS A               | 4.6                                  | 32.5          | 0.83            | 1.05                              | 37.5                     |
| 6u                              | U       | 28                             | 0.0     | 0.648               | 12.9                    | LOS A               | 4.6                                  | 32.5          | 0.83            | 1.05                              | 38.4                     |
| Approach                        |         | 1032                           | 1.0     | 0.687               | 8.9                     | LOS A               | 5.5                                  | 39.2          | 0.84            | 1.04                              | 37.6                     |
| North: The Esplanade            |         |                                |         |                     |                         |                     |                                      |               |                 |                                   |                          |
| 7                               | L2      | 141                            | 2.1     | 0.543               | 4.6                     | LOS A               | 4.4                                  | 31.5          | 0.75            | 0.61                              | 38.4                     |
| 8                               | T1      | 910                            | 0.9     | 0.543               | 4.0                     | LOS A               | 4.4                                  | 31.5          | 0.75            | 0.63                              | 39.3                     |
| 9u                              | U       | 5                              | 0.0     | 0.543               | 10.4                    | LOS A               | 4.3                                  | 30.6          | 0.75            | 0.65                              | 40.9                     |
| Approach                        |         | 1056                           | 1.0     | 0.543               | 4.1                     | LOS A               | 4.4                                  | 31.5          | 0.75            | 0.63                              | 39.2                     |
| All Vehicles                    |         | 3170                           | 1.0     | 0.687               | 6.2                     | LOS A               | 5.5                                  | 39.2          | 0.78            | 0.78                              | 38.6                     |

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



## MOVEMENT SUMMARY

 Site: 2027 PM + development

King Street / The Esplanade  
Warners Bay  
Roundabout

| Movement Performance - Vehicles |        |                                |         |                  |                         |                     |                                      |               |                 |                                   |                          |
|---------------------------------|--------|--------------------------------|---------|------------------|-------------------------|---------------------|--------------------------------------|---------------|-----------------|-----------------------------------|--------------------------|
| Mov ID                          | OD Mov | Demand Flows<br>Total<br>veh/h | HV<br>% | Deg. Satn<br>v/c | Average<br>Delay<br>sec | Level of<br>Service | 95% Back of Queue<br>Vehicles<br>veh | Distance<br>m | Prop.<br>Queued | Effective<br>Stop Rate<br>per veh | Average<br>Speed<br>km/h |
| South: The Esplanade            |        |                                |         |                  |                         |                     |                                      |               |                 |                                   |                          |
| 2                               | T1     | 735                            | 1.1     | 0.694            | 6.3                     | LOS A               | 7.9                                  | 55.8          | 0.91            | 0.96                              | 38.7                     |
| 3                               | R2     | 482                            | 0.8     | 0.694            | 11.6                    | LOS A               | 7.6                                  | 53.3          | 0.91            | 1.03                              | 37.7                     |
| 3u                              | U      | 25                             | 0.0     | 0.694            | 13.1                    | LOS A               | 7.6                                  | 53.3          | 0.91            | 1.03                              | 38.6                     |
| Approach                        |        | 1242                           | 1.0     | 0.694            | 8.5                     | LOS A               | 7.9                                  | 55.8          | 0.91            | 0.99                              | 38.3                     |
| East: King Street               |        |                                |         |                  |                         |                     |                                      |               |                 |                                   |                          |
| 4                               | L2     | 672                            | 1.0     | 0.899            | 15.8                    | LOS B               | 11.9                                 | 84.0          | 0.99            | 1.49                              | 34.5                     |
| 6                               | R2     | 482                            | 1.0     | 0.862            | 19.2                    | LOS B               | 8.9                                  | 63.0          | 0.96            | 1.36                              | 34.9                     |
| 6u                              | U      | 31                             | 0.0     | 0.862            | 20.6                    | LOS B               | 8.9                                  | 63.0          | 0.96            | 1.36                              | 35.6                     |
| Approach                        |        | 1185                           | 1.0     | 0.899            | 17.3                    | LOS B               | 11.9                                 | 84.0          | 0.98            | 1.43                              | 34.7                     |
| North: The Esplanade            |        |                                |         |                  |                         |                     |                                      |               |                 |                                   |                          |
| 7                               | L2     | 162                            | 1.9     | 0.679            | 7.1                     | LOS A               | 7.5                                  | 52.9          | 0.90            | 0.95                              | 37.9                     |
| 8                               | T1     | 1043                           | 0.9     | 0.679            | 6.6                     | LOS A               | 7.5                                  | 52.9          | 0.90            | 0.97                              | 38.7                     |
| 9u                              | U      | 6                              | 0.0     | 0.679            | 13.1                    | LOS A               | 7.2                                  | 50.6          | 0.90            | 0.98                              | 40.2                     |
| Approach                        |        | 1211                           | 1.0     | 0.679            | 6.7                     | LOS A               | 7.5                                  | 52.9          | 0.90            | 0.96                              | 38.6                     |
| All Vehicles                    |        | 3638                           | 1.0     | 0.899            | 10.8                    | LOS A               | 11.9                                 | 84.0          | 0.93            | 1.12                              | 37.2                     |

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



## ***12 – WASTE MANAGEMENT PLAN***





## 9.2 APPENDIX 2 - SITE WASTE MINIMISATION AND MANAGEMENT PLAN - DEMOLITION, CONSTRUCTION & ON-GOING OPERATION OF PREMISES

To facilitate waste management and reduction Council requires on-site sorting and storage of waste products pending re-use or collection.

The applicable sections of this Site Waste Minimisation and Management Plan must be completed and submitted with a Development Application.

Completing the relevant sections of this Plan will assist in identifying the type of waste that will be generated and in advising Council how you intend to reuse, recycle or dispose of the waste.

The information provided through this form and development proposal plans will be assessed against the controls within Council's Development Control Plan which aim to reduce the amount of construction and demolition waste to landfill and promote waste avoidance, re-use and recycling.

This form can be copied to allow further information if space is insufficient in the provided table.

### OUTLINE OF PROPOSAL

Site Address: CAN KING STREET EXPLANADE, HOWARD  
ST. WARNERS BAY, NSW.

Applicant's Name & Address: ANDREW PEDNIN  
2/13 NATIONAL CIRCUIT, BARTON,  
CANBERRA.

Phone: 62606362 Fax: 62607269

Mobile: 043086779 E-mail: ANDREW.PEDNIN@DOC.COM.AU

Buildings and Other Current Structures on the Site: 4x HOUSES,  
1x SERVICE STATION

Brief Description of Proposal: DEMOLITION OF THE ABOVE,  
BUILD 113 UNITS, 1500M<sup>2</sup> COMMERCIAL  
AND ASSOCIATED BASEMENT CARPARKING.

The details provided on this form are the intentions for managing waste relating to this project only.

Signature of Applicant: [Signature] Date: 21/04/17





## Waste Management Guideline

**DEMOLITION STAGE**

| MATERIALS ON-SITE       |                                            | DESTINATION                                                     |                                                      |                                       |
|-------------------------|--------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------|---------------------------------------|
| TYPE OF MATERIAL        | ESTIMATED VOLUME (M <sup>3</sup> ) / WL(t) | REUSE AND RECYCLING                                             |                                                      | DISPOSAL                              |
|                         |                                            | ON-SITE<br>*Specify proposed reuse or on-site recycling methods | OFF-SITE<br>*Specify contractor and recycling outlet | *Specify contractor and landfill site |
| Excavation Material     |                                            |                                                                 |                                                      |                                       |
| Green Waste             | 120                                        |                                                                 | 120m <sup>3</sup>                                    |                                       |
| Bricks                  | 380                                        |                                                                 | 380M <sup>3</sup>                                    |                                       |
| Concrete                | 80                                         |                                                                 | 80M <sup>3</sup> CONCRETE RECYCLING TERAALBA         |                                       |
| Timber - Please specify | 20                                         |                                                                 | 20M <sup>3</sup>                                     |                                       |
| Plasterboard            | 40                                         |                                                                 |                                                      | 40m <sup>3</sup>                      |
| Metals - Please specify | 20                                         |                                                                 | 20M <sup>3</sup>                                     |                                       |
| Other - Please specify  |                                            |                                                                 |                                                      |                                       |
| Other - Please specify  |                                            |                                                                 |                                                      |                                       |

Note: Details of site area to be used for on-site separation, treatment and storage (including weather protection) should be provided on the plan drawings accompanying a Development Application.



## Waste Management Guideline

**CONSTRUCTION STAGE**

| MATERIALS ON-SITE       |                                             | DESTINATION                                                     |                                                      |                                                   |
|-------------------------|---------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------|
| TYPE OF MATERIAL        | ESTIMATED VOLUME (M <sup>3</sup> ) / WL (t) | REUSE AND RECYCLING                                             |                                                      | DISPOSAL<br>*Specify contractor and landfill site |
|                         |                                             | ON-SITE<br>*Specify proposed reuse or on-site recycling methods | OFF-SITE<br>*Specify contractor and recycling outlet |                                                   |
| Excavation Material     | 7000                                        |                                                                 | TBA                                                  |                                                   |
| Green Waste             | —                                           |                                                                 |                                                      |                                                   |
| Bricks                  | 5 M <sup>3</sup>                            |                                                                 | 5 M <sup>3</sup>                                     |                                                   |
| Concrete                | 40 M <sup>3</sup>                           |                                                                 | 40 M <sup>3</sup> CONCRETE & TERRAZZO                |                                                   |
| Timber – Please specify | 15 M <sup>3</sup>                           |                                                                 | 15 M <sup>3</sup>                                    |                                                   |
| Plasterboard            | 150 M <sup>3</sup>                          |                                                                 |                                                      | 150 M <sup>3</sup>                                |
| Metals – Please specify | 45 M <sup>3</sup>                           |                                                                 | 45 M <sup>3</sup>                                    |                                                   |
| Other – Please specify  | 750 M <sup>3</sup>                          |                                                                 |                                                      | 750 M <sup>3</sup> GENERAL WASTE                  |
| Other – Please specify  |                                             |                                                                 |                                                      |                                                   |

Note: Details of site area to be used for on-site separation, treatment and storage (including weather protection) should be provided on the plan drawings accompanying a Development Application.





## Waste Management Guideline

### USE OF PREMISES

| TYPE OF WASTE TO BE GENERATED                                                                                                                                                                | EXPECTED VOLUME PER WEEK                                                                                                                               | PROPOSED ON-SITE STORAGE AND TREATMENT FACILITIES                                                                                                         | DESTINATION                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Please specify, for example: <ul style="list-style-type: none"> <li>Glass</li> <li>Paper</li> <li>Food waste</li> <li>Off-cuts</li> <li>Organic (trees, off-cuts, lawn clippings)</li> </ul> | <ul style="list-style-type: none"> <li>Litres or m<sup>3</sup></li> <li>See Appendix 1 for estimates relating to Commercial and Retail Uses</li> </ul> | For example: <ul style="list-style-type: none"> <li>Waste storage and recycling area</li> <li>On-site composting</li> <li>Compaction equipment</li> </ul> | <ul style="list-style-type: none"> <li>Recycling</li> <li>Disposal</li> <li>Please specify contractor</li> </ul> |
| 113 UNITS @ 80/L/week                                                                                                                                                                        | 9040 m <sup>3</sup>                                                                                                                                    | WASTE STORAGE                                                                                                                                             | DISPOSAL                                                                                                         |
| 113 UNITS @ 50/L/week                                                                                                                                                                        | 5600 m <sup>3</sup>                                                                                                                                    | RECYCLING STORAGE                                                                                                                                         | RECYCLING                                                                                                        |
| COMMERCIAL 10L/100/m <sup>2</sup> /PER DAY                                                                                                                                                   | 150 m <sup>3</sup>                                                                                                                                     | WASTE STORAGE                                                                                                                                             | DISPOSAL                                                                                                         |
|                                                                                                                                                                                              | 150 m <sup>3</sup>                                                                                                                                     | RECYCLING STORAGE                                                                                                                                         | RECYCLE                                                                                                          |
|                                                                                                                                                                                              |                                                                                                                                                        |                                                                                                                                                           |                                                                                                                  |
|                                                                                                                                                                                              |                                                                                                                                                        |                                                                                                                                                           |                                                                                                                  |
|                                                                                                                                                                                              |                                                                                                                                                        |                                                                                                                                                           |                                                                                                                  |

Note: Details of site area to be used for on-site separation, treatment and storage (including weather protection) should be provided on the plan drawings accompanying a Development Application.



## ON-GOING MANAGEMENT

Describe how you intend to ensure on-going management of waste on-site (e.g. Lease conditions, on-site caretaker/manager).

\* Private Contractor collection from  
Howard Street





## ***13 – NOISE IMPACT ASSESSMENT***







Project No: 171395

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## Noise Impact Assessment Mixed Use and Residential Development Corner King Street & The Esplanade, Warners Bay, NSW

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Prepared for:

Yahav Property Investment (Warners Bay) Pty Ltd

Author:

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Principal / Director

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**Neil Pennington**  
*B.Sc., B. Math.(Hons)*  
Principal / Director

April 2017

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## APPENDICES

Appendix I – PROPOSED FLOOR PLANS

Appendix II – NOISE LOGGER CHARTS

## INTRODUCTION

This report provides the results, findings and recommendations arising from an acoustical assessment of a proposed commercial and residential development to be constructed on land on the corner of King Street and The Esplanade, Warners Bay, NSW. The development is to consist of two separate buildings with two levels of car parking, ground floor residential units and commercial space and residential units up to the seventh floor.

Site details have been obtained from inspections and also with reference to plans obtained from the proponent (plans by Stewart Architecture, dated 2016).

The assessment was requested to support a D.A. to Lake Macquarie City Council (LMCC).

**Table 1** contains a glossary of commonly used acoustic terms and is presented as an aid in understanding this report.

| TABLE 1<br>GLOSSARY OF ACOUSTICAL TERMS |                                                                                                                                                                                                                    |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Term                                    | Definition                                                                                                                                                                                                         |
| dB(A)                                   | The quantitative measure of sound heard by the human ear, measured by the A-Scale Weighting Network of a sound level meter expressed in decibels (dB).                                                             |
| SPL                                     | Sound Pressure Level. The incremental variation of sound pressure above and below atmospheric pressure and expressed in decibels. The human ear responds to pressure fluctuations, resulting in sound being heard. |
| STL                                     | Sound Transmission Loss. The ability of a partition to attenuate sound, in dB                                                                                                                                      |
| Lw                                      | Sound Power Level radiated by a noise source per unit time re 1pW.                                                                                                                                                 |
| Leq                                     | Equivalent Continuous Noise Level – The summation of noise events integrated over a selected period of time. This noise descriptor is commonly used to correlate noise exposure and human annoyance.               |
| L1                                      | Average Peak Noise Level - the level exceeded for 1% of the monitoring period                                                                                                                                      |
| L10                                     | Average Maximum Noise Level - the level exceeded for 10% of the monitoring period.                                                                                                                                 |
| L90                                     | Average Minimum Noise Level - the level exceeded for 90% of the monitoring period and recognised as the Background Noise Level.                                                                                    |

## BACKGROUND TO THE PROPOSAL

The proposal is to demolish the existing buildings on the site and construct a seven storey development in two residential buildings with lower level car parks, commercial space and residential space on the ground floor and up to seven floors of residential above this (see **Appendix I**).

The site may be potentially impacted by noise from traffic on King Street and The Esplanade.

From an acoustic point of view the significant sections of the development will be:

- Road traffic noise intrusion,
- Mechanical plant associated with residential and commercial premises, and
- Traffic noise associated with the development.

## EXISTING ACOUSTIC ENVIRONMENT

Traffic noise levels were measured on the site and supplemented with data from previous noise measurements made in the near vicinity.

A Rion NL-4.2 sound level meter set up an environmental noise logger was installed on the site, on the first floor verandah of number 482 The Esplanade from 21th to 24th March, 2017. Since the dominant noise source in the area is road traffic, the NSW Industrial Noise Policy (INP) requires a minimum of three days valid data, which was successfully obtained during the survey.

The microphone had full line of sight to the road (and traffic) and was approximately the same distance from the edge of traffic as the closest façade of the proposed development.

In addition to this, data was obtained from previous noise logging undertaken for a nearby project. To this end, a noise logger was located on the fence line of at the boundary of numbers 51 and 53 King Street, from Friday, 23rd until Friday 30th October, 2015.

Each instrument was programmed to accumulate environmental noise data continuously over sampling periods of fifteen (15) minutes duration for the entire monitoring period. Internal software calculates and stores the Ln Percentile Noise Levels for the chosen sampling period, which are then retrieved for detailed analysis.



**Tables 2 and 3** show a summary of the relevant measured data, which is also shown graphically in **Appendix II**. The acoustic environment of the area is characterised by noise from road traffic, with some contributions from commercial and domestic sources, particularly during the day.

| <b>TABLE 2</b><br><b>MEASURED AMBIENT NOISE LEVELS</b><br><b>482 THE ESPLANADE 21/3/17 to 24/3/17</b> |                    |         |       |
|-------------------------------------------------------------------------------------------------------|--------------------|---------|-------|
|                                                                                                       | Noise Levels dB(A) |         |       |
| Percentile                                                                                            | Day                | Evening | Night |
| L90                                                                                                   | 58                 | 56      | 41    |
| Leq                                                                                                   | 64                 | 63      | 59    |
| Leq (1 hr)                                                                                            | 66                 |         | 62    |

| <b>TABLE 3</b><br><b>MEASURED AMBIENT NOISE LEVELS</b><br><b>51 KING STREET 23/10/15 to 30/10/15</b> |                    |         |       |
|------------------------------------------------------------------------------------------------------|--------------------|---------|-------|
|                                                                                                      | Noise Levels dB(A) |         |       |
| Percentile                                                                                           | Day                | Evening | Night |
| L90                                                                                                  | 49                 | 41      | 29    |
| Leq                                                                                                  | 62                 | 59      | 56    |
| Leq (1 hr)                                                                                           | 64                 |         | 61    |

## NOISE ASSESSMENT CRITERIA

### Mechanical Plant

Noise emissions from all mechanical plant at the site must comply with criteria determined using procedures in the *NSW Industrial Noise Policy* (INP). The same will apply to any noise emissions from the communal area on the ground floor.

The INP sets out two separate noise criteria designed to ensure developments meet environmental noise objectives. The first criteria account for intrusive noise and the others apply to the protection of amenity of particular land uses. Depending on the existing acoustic environment, a new development is usually assessed by applying both criteria to the situation and adopting the more stringent of the two.

The amenity criterion is designed to protect areas from increasing industrial noise. As such, the acceptable noise levels for various receiver types listed in the INP refer only to noise from industrial sources.

The data shows that the noise levels from the King Street logger are lower than those from the logger located at The Esplanade. For

conservatism the noise measurements from the King Street logger have been used to determine the environmental noise criteria as per the procedures in the INP.

The site in question is relatively remote from major industrial noise sources. The measured noise levels were dominated by emissions from road traffic. Noise from nearby commercial areas would not have significantly influenced the measured results.

In this instance then the Intrusiveness criteria (background + 5dB(A)) are the ones applicable to the assessment. The Project Specific Noise Levels for residential receivers for this assessment are thus shown in **Table 4**.

| <b>TABLE 4</b><br><b>PROJECT SPECIFIC NOISE GOALS</b>  |                                                            |
|--------------------------------------------------------|------------------------------------------------------------|
| Period                                                 | Intrusiveness Criterion*<br>L <sub>eq</sub> (15 min) dB(A) |
| Day (7 a.m. to 6 p.m. 6 days, 8 a.m. to 6 p.m. Sunday) | <b>54</b>                                                  |
| Evening (6 p.m. to 10 p.m.)                            | <b>46</b>                                                  |
| Night (all other times)                                | <b>35**</b>                                                |

\* - Rating Background Level (RBL) + 5 dB. RBL is the median value of each ABL (Assessment Background Level) over the entire monitoring period. The ABL is a single figure representing the "L90 of the L90's" for each separate day of the monitoring period.

\*\* - Minimum RBL of 30 dB(A) adopted per procedures in the INP.

### Received Road Traffic Noise

The development is on the corner of King Street and The Esplanade, Warners Bay and parts of it may, therefore, be potentially impacted by noise emissions from road traffic on those roads.

In NSW new residential developments near busy roads must meet internal noise goals in the Infrastructure SEPP (Department of Planning NSW, 2007). The SEPP (2007) is supported by the Department of Planning guideline "Development near Rail Corridors and Busy Roads – Interim Guideline" (2008) (Guideline) which gives the following criteria in Section 3.5:

- In any bedroom in the building: **35 dB(A) L<sub>eq</sub>** at any time 10pm – 7am, and
- Anywhere else in the building (other than a garage, kitchen, bathroom or hallway): **40dB(A) L<sub>eq</sub>** at any time.

These criteria originated from the Rail Infrastructure Corporation (RIC) publication "Consideration of Rail Noise and Vibration in the Planning Process" (2003). In the RIC document it is explicit that the criteria apply with windows and doors closed.

The Guideline doesn't contain criteria in relation to commercial premises. At the time of writing this report there is no end user for the commercial spaces in the development.

Criteria for this area has been taken from AS/NZS 2107 2000, Acoustics—Recommended design sound levels and reverberation times for building interiors.

This Standard details recommended design sound levels for restaurants and coffee bars in public buildings and small retail outlets or show rooms as **45 dB(A) Leq**, and this will be adopted here for the commercial areas.

### Generated Road Traffic Noise

Noise generated by road traffic associated with a proposed development is assessed separate to site noise using the OEH accepted Intermittent Traffic Noise guidelines. This is due to the non-continuous nature of traffic flow to and from the site.

The NSW Road Noise Policy (RNP) as adopted by Roads and Maritime Services (RMS) NSW, recommends various criteria for different road developments and uses.

Traffic generated by the current proposal will enter and leave the site via Howard Street. This would be regarded as a local road as per definitions in the RNP. An extract Table 3 of the RNP relating to land use developments with the potential to create traffic on local roads is shown in **Table 5**.

| <b>TABLE 5</b>                                                                                                |                         |                           |
|---------------------------------------------------------------------------------------------------------------|-------------------------|---------------------------|
| <b>BASE TRAFFIC NOISE OBJECTIVE</b>                                                                           |                         |                           |
| Situation                                                                                                     | Recommended Criteria    |                           |
|                                                                                                               | Day - (7am - 10pm)      | Night (10pm – 7am)        |
| Existing residences affected by additional traffic on existing local roads generated by land use developments | 55 Leq(1hr)<br>External | 50 Leq (1 hr)<br>External |

## NOISE ASSESSMENT

### Mechanical Plant

The proposed building is at the development application stage. As such, locations and specifications of all mechanical plant items have yet to be finalised.

Noise from mechanical plant may impact on surrounding residential areas. As it is possible some mechanical plant may run at any time of the day, the lower, or limiting, of the criteria, that for night-time, has been used here to determine any potential noise impacts. This is, **35 dB(A) Leq (15 min)** for all surrounding residential receivers.

### Air Conditioning

Each unit will be individually air conditioned by split systems with the condenser unit mounted on each verandah.

Typically air conditioner condensers for this sort of application have an Lw in the range 66 to 70 dB(A). For a condenser with an average Lw of 68 dB(A) Leq, this means that compliance with the most stringent night time criterion will be achieved at a minimum, unshielded, distance of 17m.

In reality the balcony of each unit will be separated from others by a blade wall which will provide additional noise attenuation. As a result of this, it is unlikely that there will be any adverse impacts due to noise emissions from the air conditioning condensers for each unit.

It is very important that vibrating equipment such as a/c condenser units must be mounted such that vibrations cannot transfer to the surrounding structure.

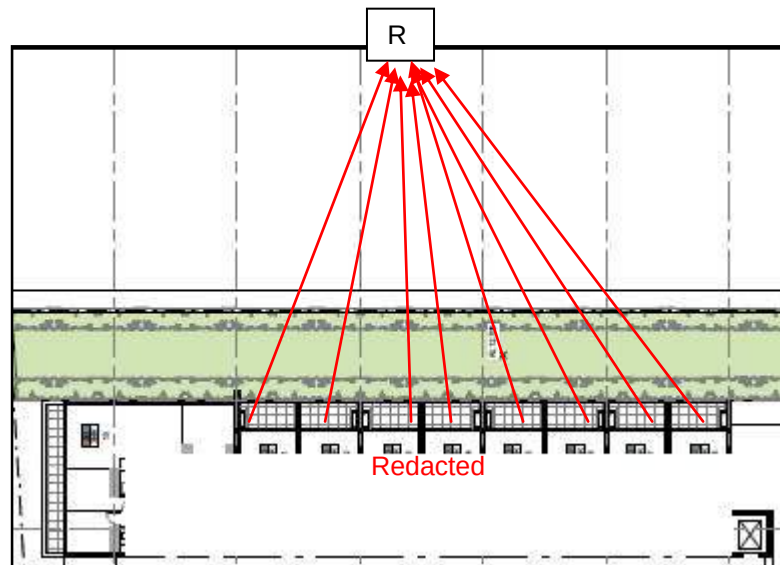
There will be a number of verandahs to units that face towards the rear of the site, and towards residential receivers. Those on lower floors may have line of sight to the residences across the road in Howard Street. Units on higher floors will be shielded from the boundary by the barrier effects of the verandah floor (as well as additional distance to the boundary).

To look at a worst case all condenser units on the Levels 2 and 3 of the building were considered to be operating at maximum capacity (i.e. 68 dB(A) Leq) for a full 15 minute period. For 16 units this equates to a combined Lw of 80 dB(A) Leq (15 min).

It is noted that each unit will be mounted on a verandah which will have a solid glass balustrading. This will act as an acoustic barrier in the direction of receivers. Assuming a 1.2m high balustrade the barrier insertion loss will be -7 dB(A) for a receiver directly across the road from a condenser.

The condensers will be at various distances from the boundary. For ease of calculation all were considered to be impacting on a single reception on the boundary at an average distance of 40m (see Point "R" on **Figure 1**). Assuming a direct line of sight from all 16 condensers to the reception point, this equates to a received noise of

40 dB(A) with a barrier insertion loss of 7, resulting in a received noise of **33 dB(A) Leq (15 min)**, which is below the most stringent night time criterion.



*Figure 1 – A/C Condensers – Approximate Location*

### Vent Fans

The development will have a car park vent fan which will have a roof mounted exhaust outlet via a riser adjacent to the gym.

Noise associated with vent fans can come from both “break out” through ducting, and from “down duct” noise emanating from the end of ducting. To reduce break out noise, lined ducting should be used where there is the possibility of noise impacting on adjoining or neighbouring apartments or residences. Rectangular sheet metal duct work attenuates low frequency noise, but in doing so has increased break out noise levels. Cylindrical duct work will have a reduced break out level (useful in exposed locations) but also reduced low frequency noise attenuation.

To minimise down duct noise, a silencer, or silencers could be fitted either directly after the fan, or near the end of the ductwork. If possible, restrictions to air flow near the outlet of duct work, such as 90 degree bends etc., should be avoided.

To avoid the possibility of structure borne noise due to vibrations, all duct work for car park venting must be isolated from the main structure of the building. Duct and pipe penetrations must be kept free of the structure either by externally lagging or by use of non-setting sealants at the point of penetration.

The fans will exhaust to the roof top a minimum of approximately 20m from the nearest receivers to the south, in Howard Street. A car park



vent will typically extend approximately 0.5m from the flat of the roof. The results of theoretical noise level calculations at the nearest point receiver are shown, below, in **Table 6**.

| <b>TABLE 6</b><br><b>RECEIVED NOISE – CAR PARK VENT FAN</b> |           |
|-------------------------------------------------------------|-----------|
| Item                                                        | dB(A) Leq |
| Sound Power Level (at outlet)                               | 65        |
| Distance Loss to Receiver, (20 m)                           | -36       |
| Shielding Effects (from roof)                               | -12       |
| Received Noise                                              | 17        |
| Criterion (Night)                                           | 35        |
| Noise Impact                                                | <b>0</b>  |

The results in Table 6 show that noise from the car park vent fans will comply with the most stringent night time criterion under the assessed conditions.

### Received Road Traffic Noise

Due to the multi storey design of the building the use of acoustic barriers, or similar treatments, to mitigate road traffic noise would not be possible. To achieve adequate internal noise levels under these circumstances, noise control is, typically, achieved through architectural modifications to standard residence design and the recommendation of minimum construction types.

The acoustically weak points in the façade of a multi storey building, such as that proposed, are windows or glass sliding doors. The supplied plans for the building show that many of the proposed units will have living rooms and bedrooms in façades that are exposed to traffic noise from King Street and The Esplanade. Each of these areas of occupancy will have windows or glass sliding doors in this façade.

Calculations to determine appropriate internal noise levels can be performed based on the room dimensions and glazing areas. All such dimensions and areas were determined by reference to, and scaling from, the appropriate site plans.

Once the noise level at the outer face of each glazed section was determined from the logger data, the required  $R_w$  was calculated in accordance with the mathematical procedure given in AS3671-1989 "Acoustics - Road traffic noise intrusion - Building siting and construction". This procedure is based on the required internal noise level as shown in Tables 3 and 3a of the Standard.

The residential sections of the development will be in two separate “buildings”. The eastern most of these buildings will front King and Howard Streets (Howard Building), whilst the western building will be on the corner of King Street and The Esplanade (Esplanade Building).

For the calculation of potential impacts the noise measurements from the logger at King Street will be used for all calculations relating to the Howard Building and the noise measurements from the logger on The Esplanade will be used for the Esplanade Building.

#### Sample Calculation

Detailed below is a sample calculation of the  $R_w$  for the glass sliding door in the Lounge Room of the southernmost unit on Level 2 of the Esplanade Building (as shown in **Figure 2**). This has line of sight to The Esplanade.

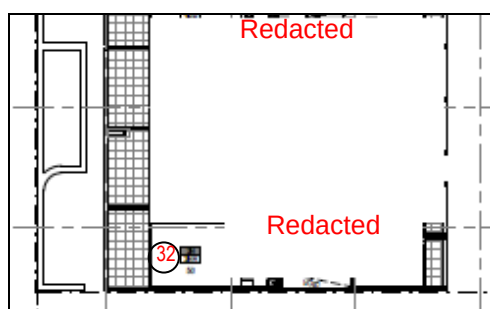


Figure 2 – Sample  $R_w$  Calculation

The measured  $Leq$  (1hr) night time (10 pm to 7am) noise levels were used in the calculations for bedrooms, whilst the  $Leq$  (1hr) day time (7am to 10pm) levels were used for all other areas.

The road traffic noise level at the window is 66 dB(A), (i.e.  $Leq$  (1hr) day time). As the criterion for the lounge room is 40 dB(A) the required traffic noise reduction is;

$$TNR = 66 - 40 = 26 \text{ dB(A)}.$$

The traffic noise attenuation,  $TNA$ , required of the window is calculated according to the equation given in Clause 3.4.2.6 of AS 3671,

$$TNA = TNR + 10\log_{10}[(S/S_f) \times 3/h \times 2T_{60} \times C] \quad \text{equation 1}$$

where

- $S$  = Surface area of windows =  $10\text{m}^2$
- $S_f$  = Surface area of floor =  $23\text{m}^2$
- $h$  = Ceiling height, assumed to be 2.4m
- $T_{60}$  = Reverberation time, 0.5s
- $C$  = No. of components in wall = 2 windows

Assuming that the room is acoustically average (neither too 'live' nor too 'dead') equation 9.26 in *Noise and Vibration Control*, L.L.Beraneek, 1971, gives a reverberation time of 0.46s. Consequently, the value of 0.5s was used in equation 1.

Using the values listed above gives

$$TNA = 26\text{dB(A)} \text{ for the windows.}$$

Substituting this value into the equation given in Clause 3.4.3.1 of AS3671 gives

$$Rw = TNA + 6 \approx 32. \text{ (note: the +6 is an allowance for the low frequency component of road and rail traffic noise)}$$

The results show that the glass door in the lounge room should be fitted with a system with an  $Rw$  of at least 32. Data from window manufacturers indicates that 6.38mm laminated glass would, typically, achieve  $Rw$  32.

Similar calculations to that outlined above were performed for the windows and glass sliding doors on all affected facades of all units with the results shown in the figures in Appendix I. The figures are notated with the  $Rw$  indicated at each window or glass door. As the room types are mirrored from floor to floor only windows and doors on representative floors are shown. Those windows and doors on floor not specifically shown in the Appendix are the same as for the corresponding window or door that is shown.

Published sound insulation performance in terms of  $Rw$  ratings relate to partitions tested in ideal laboratory conditions or opinions based on such measurements and suppliers must be able to ensure compliance with the detailed  $Rw$  ratings when windows are installed.

That is, the  $Rw$  of glazing systems varies with manufacturers and can be influenced by such things as seals, closing systems etc. As indicated, before installation, the glazing supplier should provide evidence that the proposed window systems to be fitted will meet the minimum  $Rw$  requirements detailed.

All windows must be in solid frames fitted as neatly as possible to the parent wall. Any remaining gaps between the frame and the parent wall must be filled with a flexible acoustic sealant prior to fitting of architraves.

All other windows to residential areas of the development may be standard glazing.

It is envisaged that the windows to any commercial space will be fitted with minimum 6mm safety glass which will provide adequate noise attenuation to achieve an internal noise level of 45 dB(A) Leq.

It is, however, recommended that a review of the acoustic requirements for the commercial space be undertaken should end users be determined to be particularly noise sensitive.

That is, for example, if part of the area is proposed as specialist offices (rather than retail or open plan office space) then there may be a requirement to provide greater attenuation.

### Generated Road Traffic Noise

Due to the non-continuous nature of traffic flow to and from the site the OEH accepted Intermittent Traffic Noise guidelines are used. **Equation 2** outlines the mathematical formula used in calculating the Leq,T noise level for intermittent traffic noise.

$$L_{eq,T} = L_b + 10 \log \left[ 1 + \frac{ND}{T} \left( \frac{10^{(L_{max} - L_b) / 10} - 1}{2.3} - \frac{(L_{max} - L_b)}{10} \right) \right] \quad \text{Equation 2}$$

Where;

- $L_b$  is background noise level, dB(A)
- $L_{MAX}$  is vehicle noise, dB(A)
- $T$  is the time for each group of vehicles (min)
- $N$  is number of vehicle trips
- $D$  is duration of noise of each vehicle (min)

Typical vehicle noise levels were sourced from Spectrum Acoustics library of technical data, while background noise levels are those measured by our unattended logger. The Lmax vehicle noise levels used in Equation 2 are the maximum predicted noise levels produced at the facade of a residence by vehicles entering and departing the site.

Traffic coming to or leaving the site and travelling on nearby roads is assessed separate to site noise and is subject to the road traffic criteria described earlier in this report.

Typically vehicles will come and go from a car park at a mixed use building, such as that proposed, at varying rates.

The approach in this assessment has been to determine the maximum number of vehicle movements that could be generated by the development to maintain compliance with the relevant criterion.

Impacts have been calculated to a theoretical receiver located 15 m from the centre of traffic flow with results shown in **Table 7**. An average sound power level of 98 dB(A) has been used in the calculations to represent a mix of heavy and light vehicles.

| <b>TABLE 7</b>                             |      |
|--------------------------------------------|------|
| <b>TRAFFIC NOISE – NEARBY ROADS</b>        |      |
| Typical Maximum Sound Power, dB(A)         | 98   |
| Distance Loss to Receiver, (15 m)          | 30   |
| Received Noise dB(A)                       | 66   |
| Traffic Volume, (cars/hr)                  | 35   |
| Time each vehicle audible at 60 kph (mins) | <0.1 |
| Background Noise Level dB(A)               | 30   |
| Calculated Traffic Noise, dB(A)(Leq 1 hr)  | 50   |
| Criteria (Night) dB(A) (Leq 1 hr)          | 50   |

The results in Table 7 show that there may be up to 35 vehicle movements generated (in one direction) by the development at night before the criterion is exceeded. Similar calculation show that there may be more than 110 vehicle movements during the day before the criterion is exceeded.

## CONCLUSIONS

A noise assessment has been carried out in regard to a proposed mixed use and residential development at the corner of King Street and The Esplanade, Warners Bay, NSW 51 – 53 King Street, Warners Bay, NSW. The development is to consist of residential units and commercial space.

The results of the assessment have shown that noise from mechanical plant will create no adverse impacts at any receiver.

Received noise from car park vent fans will be below the most stringent noise goal at all times.

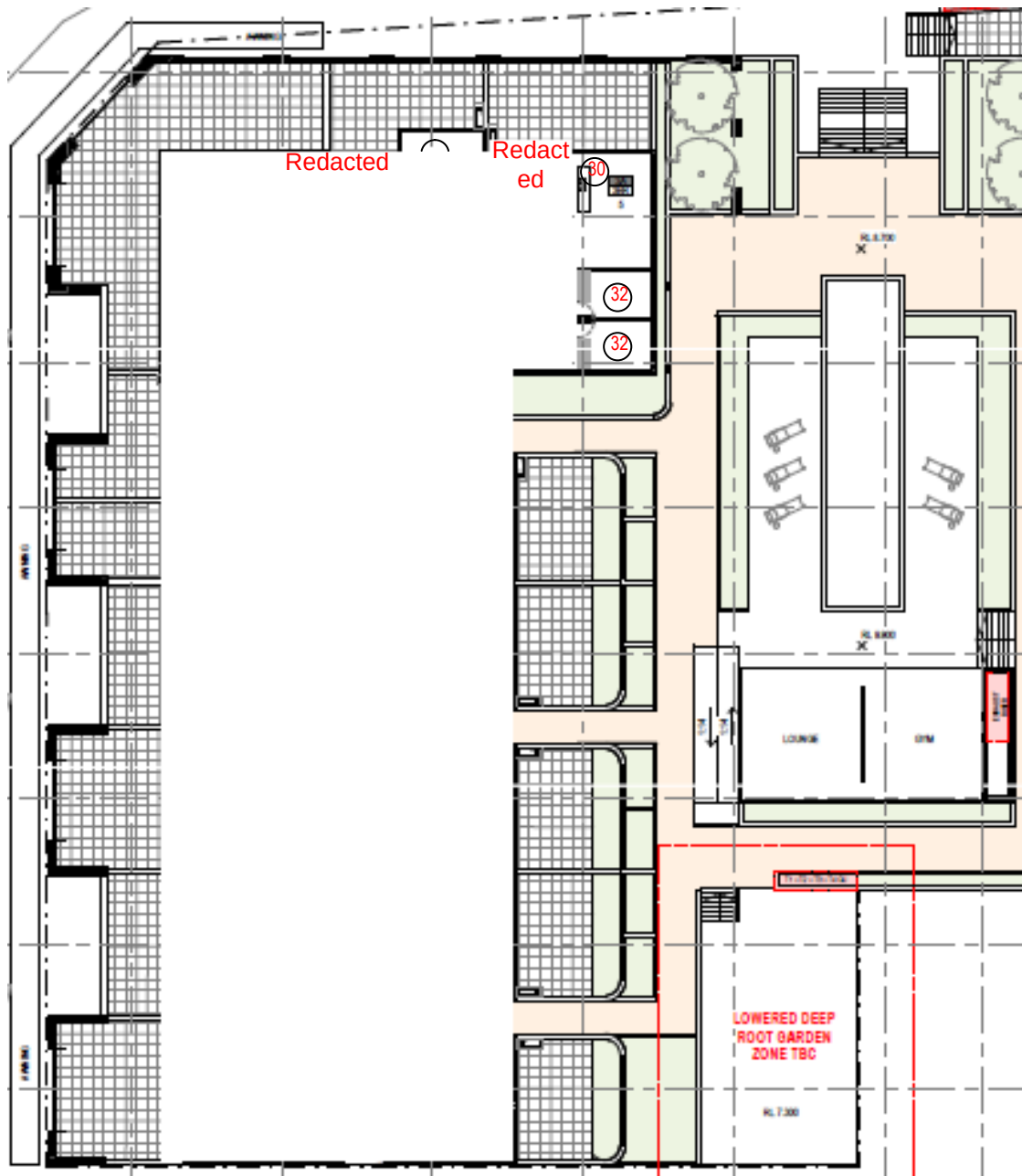
A schedule of windows has been determined that shows the minimum Rw for window/sliding door systems that must be achieved in order to attain an acceptable internal acoustic amenity for various areas of occupancy in the building.

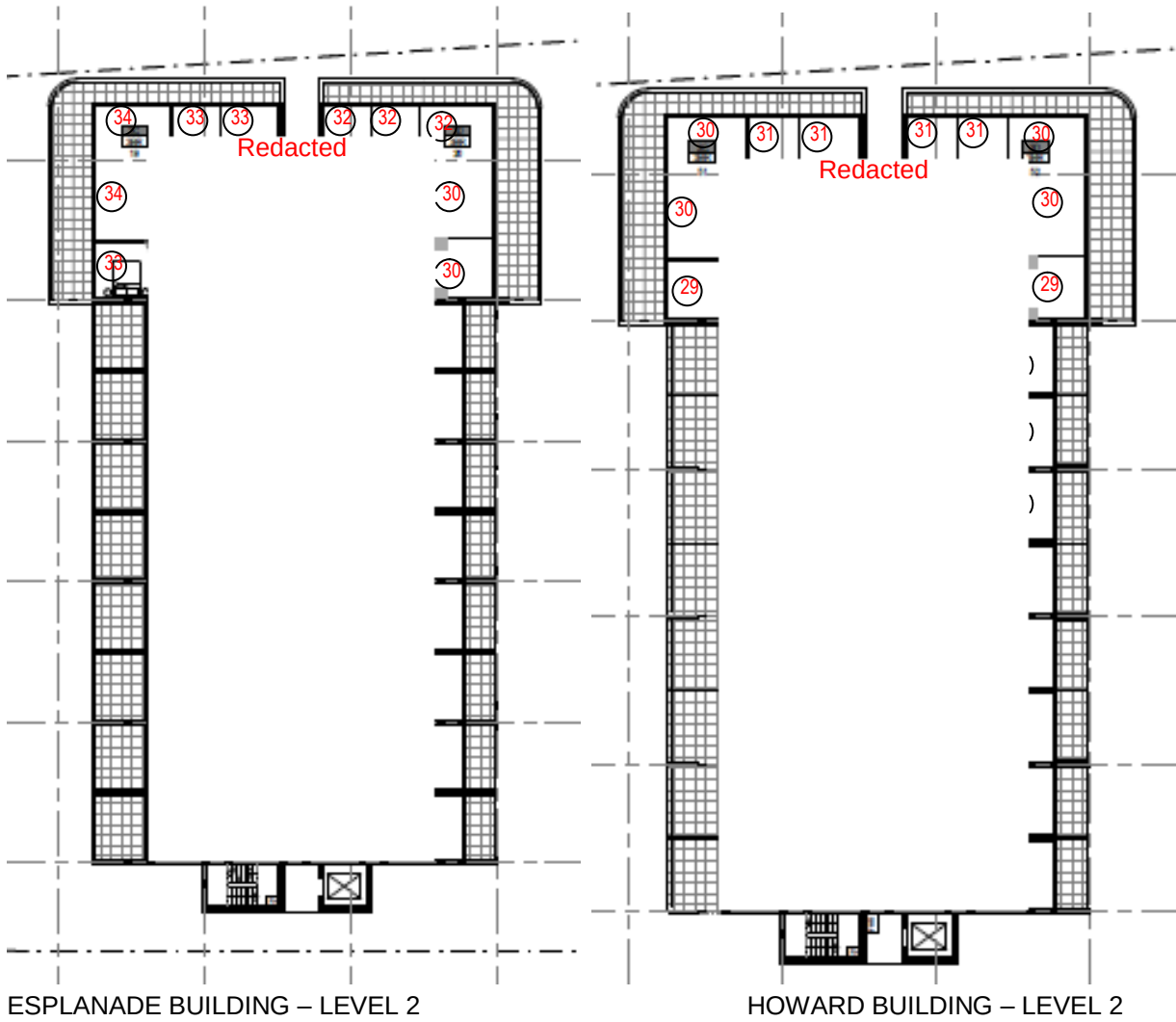


There will be no adverse noise impacts as a result of noise from traffic created by the development.

## Appendix I

### Proposed Floor Plans

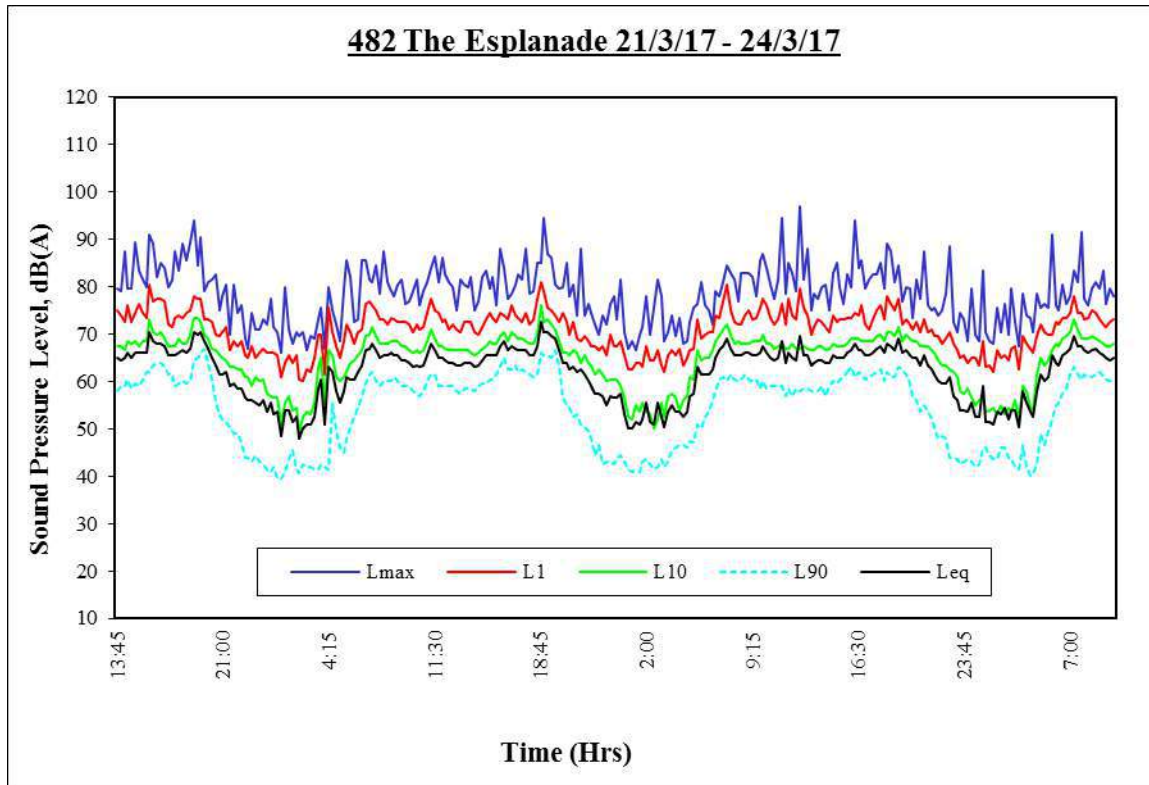


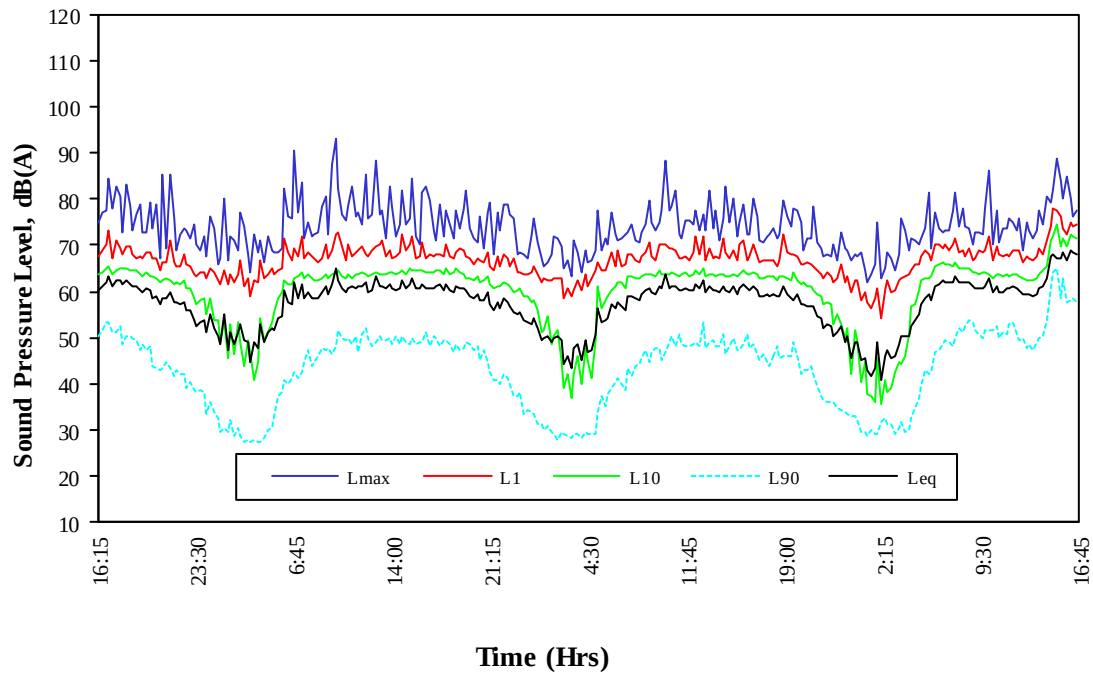
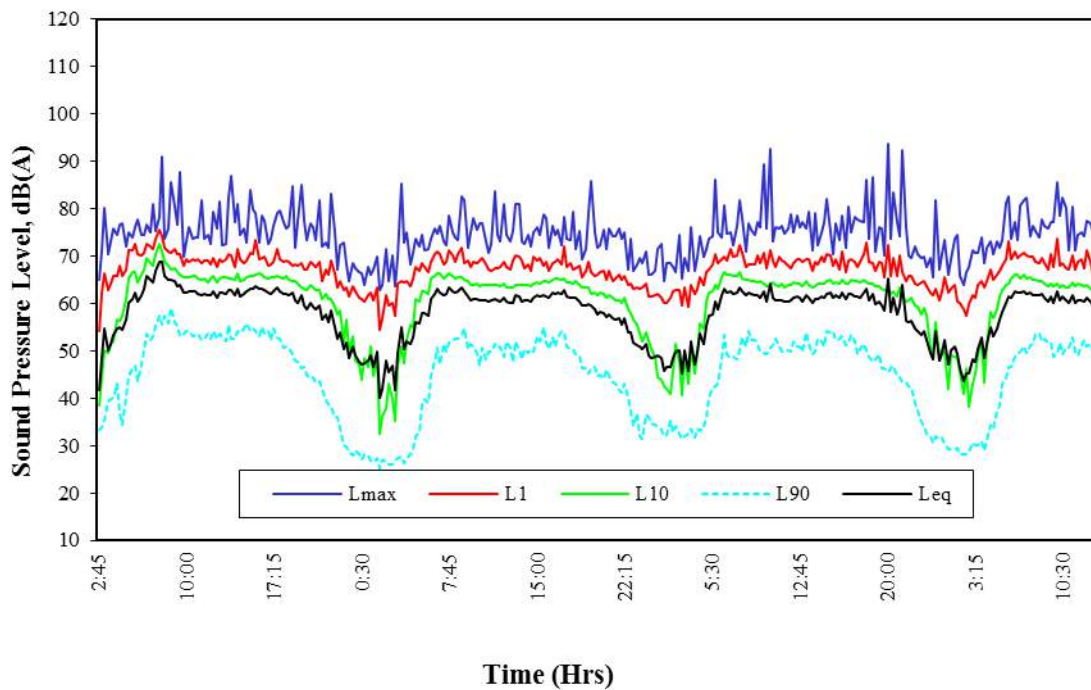


# Appendix I

## Noise Logger Charts





**51 King St 23/10/15 - 26/10/15****51 King St 26/10/15 - 12/10/15**



## ***14 – CRIME RISK ASSESSMENT***





JAMES MARSHALL & Co

# CPTED

**Mixed Use Development 482 The Esplanade, Warners Bay  
NSW.**

April 2017

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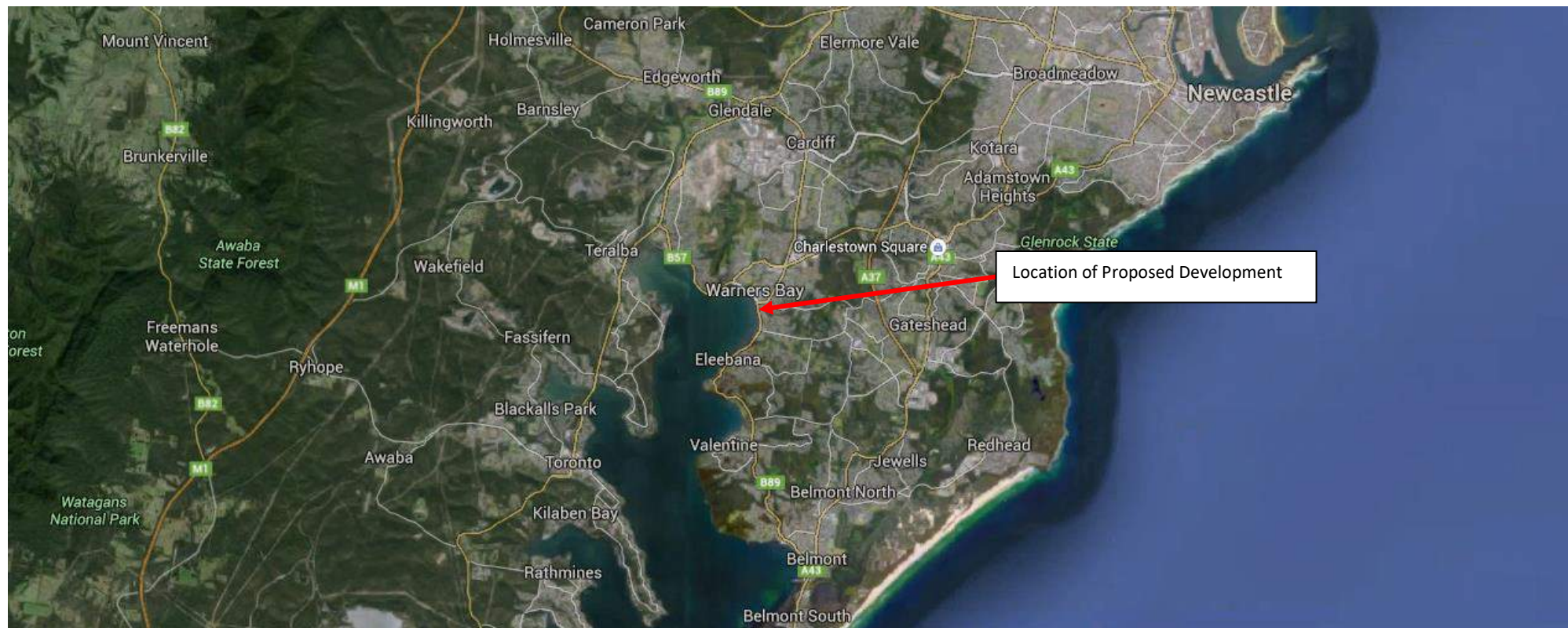
# 1. Introduction

James Marshall & Co has been engaged to prepare a Crime Prevention Through Environmental Design (CPTED) report for a proposed mix use development at 482 The Esplanade Warners Bay, NSW. The development is located on three street frontages and the total apartments for the Lake Front Building is 60 and the Howard Street Building 52 apartments. The proposal includes a mix of 1, 2 and 3 bedroom apartments and commercial spaces. There are 11 adaptable apartments proposed for the development.

The development site is highlighted in Figure 1 and regional context of the development site is shown in Figure 2.



**Figure 1: Development Site Highlighted.**



**Figure 2: Regional Context**

## 2. Safer By Design

### 2.1 Overview

This CPTED assessment has incorporated the following methodology:

- Site visit and land use assessment of the proposed development site and surrounding area.
- Consultation with identified stakeholders.
- Assessment of architectural drawings for the proposed development using Safer by Design principles.
- Assessment of crime statistics/data for both the Lake Macquarie LGA and area surrounding the development site.
- An assessment of whether this development is likely to contribute to an increased incidence of crime (or perceived) if it is approved.

The recommendations made in this report are consistent with Safer by Design principles.

In April 2001, the then NSW Department of Infrastructure, Planning and Natural Resources (Department of Planning and Environment) introduced Crime Prevention Legislative Guidelines to Section 79C of the Environmental Planning and Assessment Act, 1979. These guidelines require consent authorities to ensure that development provides safety and security to users and the community. If a development is thought to present a crime risk, the guidelines can be used to justify modification of the development on the grounds that crime risk cannot be appropriately minimised.

Councils and local police are encouraged to identify the types of development that will ‘typically’ require a crime risk assessment, and prepare a consultation protocol. Protocols are location (need) based agreements which outline the types of development that will be jointly assessed, how construction will occur and timeframes for consultation. Subject to council direction, development types not listed in local consultation protocols will not require a formal crime risk (CPTED) assessment.

CPTED is a crime prevention strategy that focuses on the planning, design and structure of cities, communities and neighbourhoods. It reduces opportunities for crime by using design and place management principles that reduce the likelihood of essential crime ingredients (law, offender, victim or target, opportunity) from intersecting in time and space.

This is because predatory offenders often make cost benefit assessment of potential victims and locations before committing crime. CPTED aims to create the reality (or perception) that the costs of committing crime are greater than the likely benefits. This is achieved by creating environmental and social conditions that:

- Maximise risk to offenders (increasing the likelihood of detection, challenge and apprehension);
- Maximise the effort required to commit crime (increasing the time, energy and resources required to commit crime);
- Minimise the actual and perceived benefits of crime (removing, minimising or concealing crime attractors and rewards); and
- Minimise excuse making opportunities (removing conditions that encourage / facilitate rationalisation of inappropriate behaviour).



## 2.2 CPTED Principles

CPTED employs four key strategies which are outlined below:

### 2.2.1 Territorial re-enforcement

Community ownership of public space sends 'signals' to the community. Places that feel owned and cared for are likely to be used, enjoyed and revisited. People who have guardianship or ownership of areas are more likely to provide effective supervision and are more likely to intervene if crime is taking place, or if there is a risk of crime occurring. Furthermore, criminals rarely commit crime in areas where the risk of detection is high.

Territorial re-enforcement uses actual and symbolic boundary markers, spatial legibility and environmental cues to 'connect' people with space, to encourage communal responsibility for public areas and facilities, and to communicate to people where they should not be and what activities are appropriate.

### 2.2.2 Surveillance

People feel safe in public areas when they can see and interact with others, particularly people connected with that space, such as shopkeepers or adjoining residents. Criminals are often deterred from committing crime in places that are well supervised.

Natural surveillance is achieved when normal space users can see and be seen by others. This highlights the importance of building layout, orientation and location; the strategic use of design; landscaping and lighting – it is a by-product of well planned, well designed and well used space.

Technical / mechanical surveillance is achieved through mechanical / electronic measures such as CCTV, help points and mirrored building panels. It is commonly used as a 'patch' to supervise isolated, high risk locations.

Formal (or Organised) surveillance is achieved through the tactical positioning of guardians. An example would be the use of the on-site supervisors, e.g. security guards at higher risk locations.

### 2.2.3 Access control

*Access control* treatments restrict, channel and encourage people and vehicles into, out of and around the development. Way-finding, desire-lines and formal/informal routes are important crime prevention considerations as they minimise opportunities for people to wander in areas where they are not supposed to. Effective access control can be achieved by using physical and symbolic barriers that channel and group pedestrians into areas, therefore increasing the time and effort required for criminals to commit crime.

Natural access control includes the tactical use of landforms and waterways features, design measures including building configuration, formal and informal pathways, landscaping, fencing and gardens.

Technical / Mechanical access control includes the employment of security hardware.

Formal (or Organised) access control includes on-site guardians such as employed security officers.

#### **2.2.4 Space / Activity Management**

Space / Activity Management strategies are an important way to develop and maintain natural community control. Space management involves the formal supervision, control and care of the development. All space, even well planned and well-designed areas need to be effectively used and maintained to maximise community safety. Conversely, places that are infrequently used are commonly abused. There is also a high correlation between urban decay, fear of crime and avoidance behaviour. The recommendations below relate to the general surrounds and also the internal layout to the development.

The proposed development has been assessed against these four principles. Furthermore, personal safety has been considered given the nature of the development.

#### **2.3 Author's Qualifications**

The CPTED Report has been undertaken by James Marshall. James has over twenty years' experience in the community development and social planning sector and during this time held a number of senior management roles in both the welfare sector and in local government. Some examples of experience relating to the preparation of crime risk assessments and Crime Prevention Through Environmental Design (CPTED) are illustrated below.

- McCabe Park, Wollongong (crime risk assessment and subsequent redesign).
- Wollongong City mall (crime risk assessment and redesign as well as policy development).
- Wollongong Youth Centre (crime risk assessment and subsequent redesign).
- Peace Park (Chinaman's Hollow) Cessnock (crime risk assessment in its development phase).
- Cessnock Civic precinct and main street upgrade (crime risk assessment in its development phase).
- Rotary Park, Kurri Kurri (crime risk assessment and redesign).
- ALDI Stores (Kurri Kurri, Taree, Muswellbrook and Mayfield).
- McDonalds Restaurants (Cessnock, Kurri Kurri, Dubbo, Tuncurry).
- Lake Macquarie Yacht Club
- Various aged care residential developments (Morisset, Whitebridge, Cessnock)
- KFC (Hunter Street Newcastle)
- New residential release areas (Dubbo City Council – Keswick Estate)
- Strategic site investigation and risk assessment (McDonald's, ALDI, private developers).
- Various open space assessments (Wollongong City Council, Cessnock City Council, Orange City Council, NSWLPMA).
- Coles Stores (various).
- One Stop Wine Barn (Cessnock).

These projects have involved the facilitation of a consultative approach with Council officers, NSW Police, business owners, users of the areas under review (target group focused), business chamber representatives etc. James understands the principles behind the crime risk assessment process, including the use of and application of crime statistics as well as the influencing factors of public safety and risk via urban design and use of public space.

James Marshall has also completed approved NSW Police Safer by Design training in 2012 as well as numerous short courses and programs on crime risk assessment and CPTED throughout his career.

### 3. Area Analysis

#### 3.1 Lake Macquarie Crime Characteristics

Lake Macquarie LGA is located in the Hunter Region of New South Wales, about 110 kilometres north of Sydney. Lake Macquarie City is bounded by Newcastle City in the north, the Tasman Sea in the east, Wyong Shire in the south and Cessnock City in the west. Lake Macquarie City is both a rural and residential area with some industrial land use. The City encompasses a total land area of about 750 square kilometres, of which a large proportion is National Park, State Forest and nature reserves.

Residential areas are dispersed around the lake and the largest population centres are located north of the lake (in suburban Newcastle) including Charlestown, Glendale and Cardiff. The other main population centres are Belmont, Morisset, Mount Hutton, Swansea, Toronto and Warners Bay.

The Lake Macquarie LGA is one of the fastest growing cities in the Hunter, and one of the largest cities in New South Wales. In summary:

- Estimated residential population of 202,347 as at March 2012
- The fourth most populous city in NSW, and in the top 7% in Australia for largest growth in a city
- Accounting for 37% of the Lower Hunter population
- Population distributed around the lake in over 90 communities. The median household income is \$922 per week, with the most significant change between 2001 and 2006, a growth in the highest income group of \$93,032 and over.
- Approximately 40% of the population hold educational qualifications, with the most significant change between 2001 and 2006, a growth in the number of people with bachelor or higher degrees.
- Population is expected to grow by 60,000 people between 2006-2031 creating demand for 36,000 new dwellings and 12,200 new jobs.

The vision for the City, held by Council and the community, is that it is a place:

- Where the environment is protected and enhanced.
- Where the scenic, ecological, recreational, and commercial values and opportunities of the Lake and coastline are promoted and protected.
- With a prosperous economy and a supportive attitude to balanced economic growth, managed in a way to enhance quality of life and satisfy the employment and environmental aims of the community.
- That recognises, encourages, develops its diverse cultural life and talents, protects, and promotes its heritage.
- That encourages community spirit, promotes a fulfilling lifestyle, enhances health and social well-being, encourages lifestyle choices, and has opportunities to encourage participation in sport and recreation.
- That promotes equal access to all services and facilities and enables all citizens to contribute to and participate in the City's economic and social development.
- That promotes affordable housing.

(Source: LMCC: Lifestyle 2030)

#### 3.2 Site Characteristics

The site of the proposed development is located on the corner of The Esplanade, Howard Street and King Street, Warners Bay. Figure 3 shows the land use characteristics of the area. Immediately to the south of the development site are residential unit complexes (including commercial premises (on the ground floor). The proposed development is within 100 meters of the Warners Bay commercial / retail area and is located adjacent to Lake Macquarie. The site is busy with traffic and pedestrians. The Warners Bay CBD is also active late into the evening due to lake side activities and cafes, restaurants etc.



Figure 3: Site Boundary (approximate) and Surrounding Characteristics

## 4. Crime Characteristics

### 4.1 Local Crime Characteristics

The Lake Macquarie Crime Prevention Strategy (2015 – 2018) identifies crime categories that are to be subject to resources and strategies. While the areas in the plan may be specific, it is important that new development does not create or contribute to the incidence of crime, or transfer an issue from one area to another. With that in mind, while the specific strategies may not directly relate to this development, knowledge of the general issues and the aims and goals of the Crime Prevention Plan are important.

The Lake Macquarie Crime Prevention Strategy (2015 – 2018) states that “an analysis of crime activity in Lake Macquarie provided by Lake Macquarie Local Area Command (LMLAC 2014) and statistical information available through the NSW Bureau of Crime Statistics (BOCSAR 2014) have been used to develop this crime profile. After further discussion and agreement with NSW Police the following two priority crime categories have been identified and will be targeted by the Lake Macquarie Crime Prevention Strategy (LMCPS).

- Steal from Dwelling / Break and Enter Dwelling (or Residential Burglary)
- Steal from Motor Vehicle

In addition to the two priority crime categories identified through consultation with NSW Police, the crime categories of Malicious Damage and Assault – Domestic Violence have also been included due to the high rate of occurrence.

The information presented in Table 1 indicates that there has been a decline in crime activity in all categories except for domestic violence which is recorded as stable across the latest three reporting years from October 2011 until September 2014. The largest improvement can be seen in the categories of break and enter – non dwelling, robbery and motor vehicle theft. The categories where there has been the least reportable improvement are assault, steal from person and steal from dwelling.

The most prevalent crime activities in the Lake Macquarie LGA continue to be malicious damage, steal from motor vehicle and break and enter – dwelling. This confirms the selection of these crime categories as priority areas for actions in this strategy”.

**Table 1: Historical Crime Data from 2011/12 to 2013/14 for Lake Macquarie LGA**

| Crime Activity / Category      | Occurrence<br>2011-2012 Year | Occurrence<br>2012-2013 Year | Occurrence<br>2013-2014 Year | 3 Year<br>Variance | 3 Year<br>Trend |
|--------------------------------|------------------------------|------------------------------|------------------------------|--------------------|-----------------|
| Assault (Alcohol Related)      | 572                          | 540                          | 489                          | - 83               | Fall 14%        |
| Assault (Non-DV)               | 852                          | 755                          | 717                          | - 135              | Fall 16%        |
| Assault (DV)                   | 693                          | 789                          | 693                          | 0                  | Stable          |
| Break and Enter – Dwelling     | 1062                         | 1021                         | 820                          | - 242              | Fall 23%        |
| Break and Enter – Non Dwelling | 713                          | 601                          | 344                          | - 369              | Fall 52%        |
| Malicious Damage               | 2702                         | 2311                         | 1975                         | - 727              | Fall 27%        |
| Robbery                        | 92                           | 82                           | 59                           | - 33               | Fall 46%        |
| Steal from Dwelling            | 609                          | 598                          | 551                          | - 58               | Fall 10%        |
| Steal from Motor Vehicle       | 1660                         | 1549                         | 1290                         | - 370              | Fall 22%        |
| Steal from Person              | 107                          | 104                          | 97                           | - 10               | Fall 9%         |
| Steal from Retail Store        | 703                          | 547                          | 586                          | - 117              | Fall 17%        |
| Motor Vehicle Theft            | 786                          | 727                          | 502                          | - 284              | Fall 36%        |

Source: LMCC Crime Prevention Strategy (2015 – 2018 p9).

**Table 2: Analysis of Break and Enter Offences for Lake Macquarie**

| Occurrence<br>Suburbs                                       | Occurrence<br>Days | Property Stolen                                                                                                                           | Victim Profile                                                                                                                              | Offender Profile                                   |
|-------------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Charlestown<br>Windale<br>Swansea<br>Warners Bay<br>Belmont | Friday<br>Tuesday  | Cash/Document (e.g.<br>currency, driver's licence).<br>Personal Item (e.g. wallet).<br>Home Entertainment<br>Equipment (e.g. television). | Unoccupied<br>residential premises<br>throughout the day<br>and both unoccupied<br>and occupied<br>premises during the<br>night, at random. | Drug offenders<br>and property<br>crime offenders. |

Source: LMCC Crime Prevention Strategy (2015 – 2018 p129).



**Table 3: Analysis of Steal from Dwelling Offences for Lake Macquarie**

| Occurrence Suburbs | Occurrence Days | Property Stolen                | Victim Profile                                                        | Offender Profile                            |
|--------------------|-----------------|--------------------------------|-----------------------------------------------------------------------|---------------------------------------------|
| Windale            | Monday          | Cash/Document                  | Victims are targeted at random where premises are unlocked/unsecured. | Opportunistic Crime committed by offenders. |
| Toronto            | Tuesday         | Communications                 |                                                                       |                                             |
| Belmont            | Saturday        | Equipment (e.g. mobile phone). |                                                                       |                                             |
|                    | Friday          |                                |                                                                       |                                             |

Source: LMCC Crime Prevention Strategy (2015 – 2018 p13).

**Table 4: Analysis of Steal from Motor Vehicle Offences for Lake Macquarie**

| Occurrence Suburbs | Occurrence Days | Property Stolen                                  | Victim Profile                                                | Offender Profile                            |
|--------------------|-----------------|--------------------------------------------------|---------------------------------------------------------------|---------------------------------------------|
| Charlestown        | Friday          | Cash/Document (e.g. currency, drivers' licence). | Victims leave vehicles unlocked or with valuables on display. | Opportunistic crime committed by offenders. |
| Cardiff            |                 | Personal Item (e.g. wallet)                      |                                                               |                                             |
| Belmont            |                 | Vehicle Plate                                    |                                                               |                                             |
| Warners Bay        |                 | Tools                                            |                                                               |                                             |

Source: LMCC Crime Prevention Strategy (2015 – 2018 p14).

**Table 5: Analysis of Malicious Damage Offences for Lake Macquarie**

| Occurrence Suburbs | Occurrence Days | Premise Type                                                            |
|--------------------|-----------------|-------------------------------------------------------------------------|
| <b>General</b>     |                 |                                                                         |
| Windale            | Friday          | Residential (e.g. house detached).                                      |
| Belmont            | Saturday        | Outdoor/Public Place (e.g. road/street).                                |
| Charlestown        |                 |                                                                         |
| <b>Graffiti</b>    |                 |                                                                         |
| Belmont            | Friday          | Business/Commercial (e.g. shopping complex [i.e. Lake Macquarie Fair]). |
| Mount Hutton       |                 | Residential (e.g. yard/fencing).                                        |
| Charlestown        |                 |                                                                         |

Source: LMCC Crime Prevention Strategy (2015 – 2018 p14).

**Table 5: Analysis of Assault – Domestic Violence Offences for Lake Macquarie**

| Occurrence Suburbs | Occurrence Days | Premise Type                       |
|--------------------|-----------------|------------------------------------|
| Windale            | Friday          | Residential (93%) - (BOCSAR 2015b) |
| Toronto            | Saturday        |                                    |
| Belmont            | Sunday          |                                    |
| Cardiff            |                 |                                    |

Source: LMCC Crime Prevention Strategy (2015 – 2018 p15).

Updated crime data for the Lake Macquarie Local Government Area (refer NSW Bureau of Crime Statistics and Research for the period 2009 - 2015) identifies that reported crime of; robbery; motor vehicle theft; steal from motor vehicle; steal from retail store, are generally ranged within the top 50 LGA's in NSW for the period. Refer Table 6.

**Table 6: Ranking of Reported Crime for Lake Macquarie LGA against each NSW LGA (2009 – 2015)**

| Reported Crime               | Ranking out of 139 NSW Local Government Areas (with a population greater than 3,000 people) |      |      |      |      |      |      |
|------------------------------|---------------------------------------------------------------------------------------------|------|------|------|------|------|------|
|                              | 2009                                                                                        | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
| Assault – Non DV Related     | 81                                                                                          | 76   | 81   | 73   | 83   | 87   | 85   |
| Assault – DV Related         | 64                                                                                          | 76   | 81   | 73   | 67   | 79   | 72   |
| Robbery                      | 73                                                                                          | 75   | 48   | 40   | 44   | 51   | 57   |
| B/E Dwelling                 | 71                                                                                          | 92   | 67   | 53   | 60   | 66   | 73   |
| B/E Non-Dwelling             | 52                                                                                          | 43   | 55   | 48   | 52   | 93   | 76   |
| MV Theft                     | 33                                                                                          | 24   | 15   | 13   | 12   | 31   | 25   |
| Steal from MV                | 38                                                                                          | 58   | 25   | 21   | 37   | 35   | 43   |
| Steal from Retail Store      | 31                                                                                          | 34   | 27   | 27   | 45   | 35   | 55   |
| Steal from Dwelling          | 76                                                                                          | 82   | 80   | 80   | 75   | 89   | 84   |
| Steal from Person            | 77                                                                                          | 66   | 52   | 61   | 53   | 46   | 54   |
| Malicious Damage to Property | 60                                                                                          | 58   | 50   | 57   | 68   | 63   | 64   |

Source: BOCSAR

The number of incidences of reported crime (selected offences) by premises is shown in Table 7. This information helps understand the correlation between premises type and the incidence of crime (and risk potential). Table 7 illustrates that crime is largely determined by the premises type, the opportunity and the risk of detection. For example, break and enter (dwellings) is usually in residential areas, during the day when occupants are away. The use of 'hot spot' maps shows where crime is concentrated (the higher concentration / number of the incidence of crime appear a darker shade of red). The purpose of this is to identify the areas / locations where crime is more likely to occur, as well as the incidence and type of crime so resources and strategies can be put into place to address specific issues. The hot spot maps for the proposed development site are shown below.

**Table 7: Number of Incidents of Selected Offences Recorded by NSW Police by Premises Type**

| Premises Type *                       | Assault - non-domestic violence | Assault - domestic violence related | Sexual Offences | Robbery | Break and enter - dwelling | Break and enter - non-dwelling | Motor vehicle theft | Steal from motor vehicle | Steal from retail store | Steal from dwelling | Steal from person | Malicious damage to property | Trespass |
|---------------------------------------|---------------------------------|-------------------------------------|-----------------|---------|----------------------------|--------------------------------|---------------------|--------------------------|-------------------------|---------------------|-------------------|------------------------------|----------|
| Public Transport Facilities           | 29                              | 4                                   | 7               | 2       | 0                          | 2                              | 1                   | 3                        | 0                       | 0                   | 11                | 89                           | 3        |
| Retail/Wholesale                      | 73                              | 11                                  | 5               | 20      | 0                          | 111                            | 17                  | 76                       | 426                     | 0                   | 30                | 193                          | 16       |
| Outdoor/Public Place                  | 133                             | 44                                  | 26              | 14      | 0                          | 5                              | 169                 | 385                      | 2                       | 0                   | 11                | 272                          | 26       |
| Recreational Facilities               | 2                               | 1                                   | 0               | 0       | 0                          | 24                             | 3                   | 5                        | 0                       | 0                   | 3                 | 29                           | 0        |
| Industrial Sites                      | 1                               | 0                                   | 0               | 1       | 0                          | 67                             | 10                  | 36                       | 0                       | 0                   | 0                 | 25                           | 0        |
| Residential - Dwelling                | 247                             | 652                                 | 206             | 6       | 563                        | 0                              | 106                 | 62                       | 0                       | 253                 | 14                | 727                          | 9        |
| Residential - Outside of Dwelling     | 7                               | 9                                   | 1               | 0       | 153                        | 0                              | 158                 | 472                      | 0                       | 279                 | 0                 | 214                          | 0        |
| Residential - Temporary Accommodation | 7                               | 6                                   | 7               | 0       | 0                          | 10                             | 2                   | 2                        | 0                       | 0                   | 0                 | 14                           | 0        |
| Carpark                               | 12                              | 8                                   | 1               | 0       | 0                          | 1                              | 53                  | 160                      | 0                       | 0                   | 0                 | 80                           | 1        |
| Education                             | 49                              | 2                                   | 28              | 0       | 0                          | 60                             | 0                   | 2                        | 0                       | 0                   | 2                 | 101                          | 1        |
| Licensed Premises                     | 51                              | 3                                   | 1               | 2       | 0                          | 19                             | 3                   | 8                        | 52                      | 0                   | 6                 | 32                           | 6        |

Source: BOCSAR (Sourced 1 February 2017)

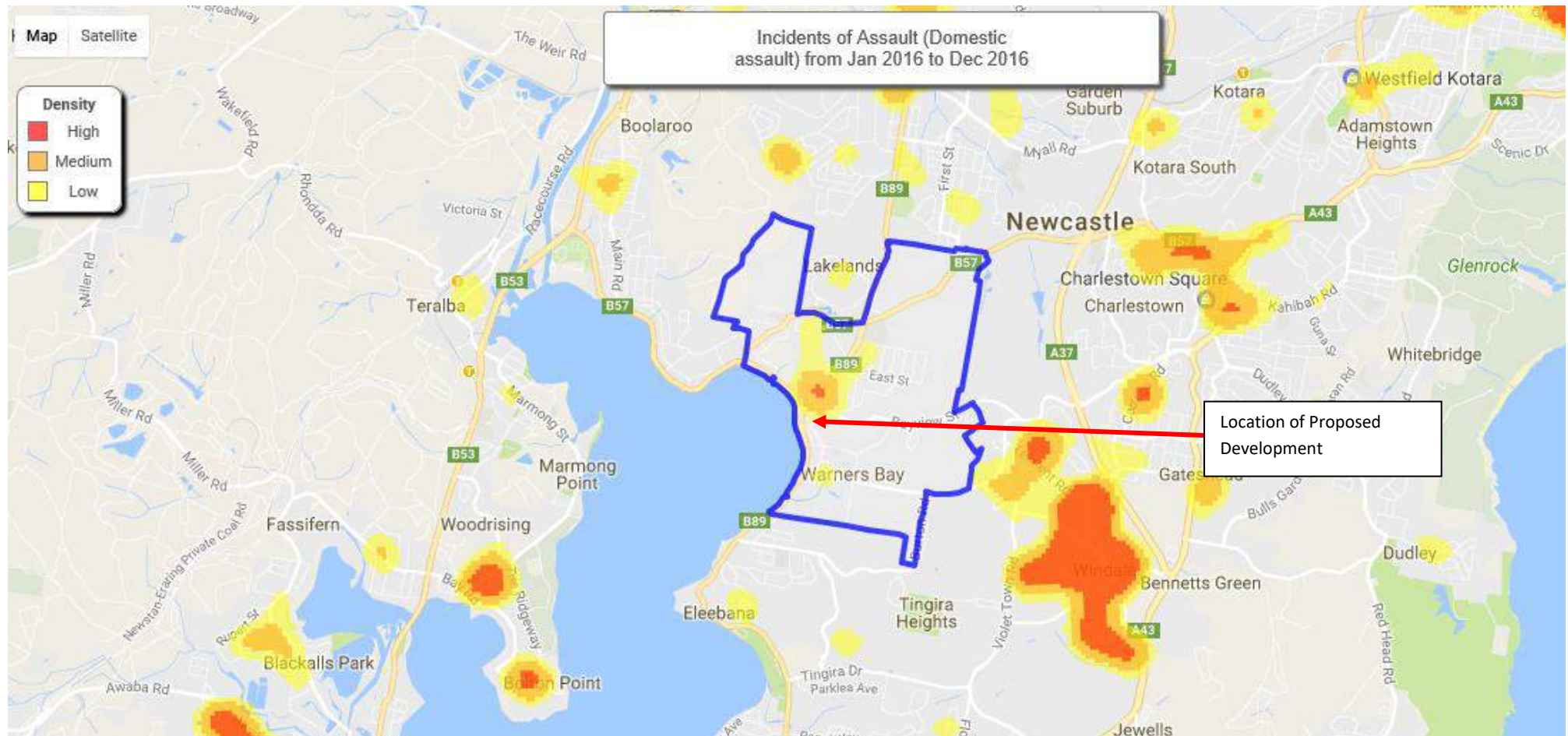


Figure 4: Incidents of Domestic Assault (January 2016 – December 2016)



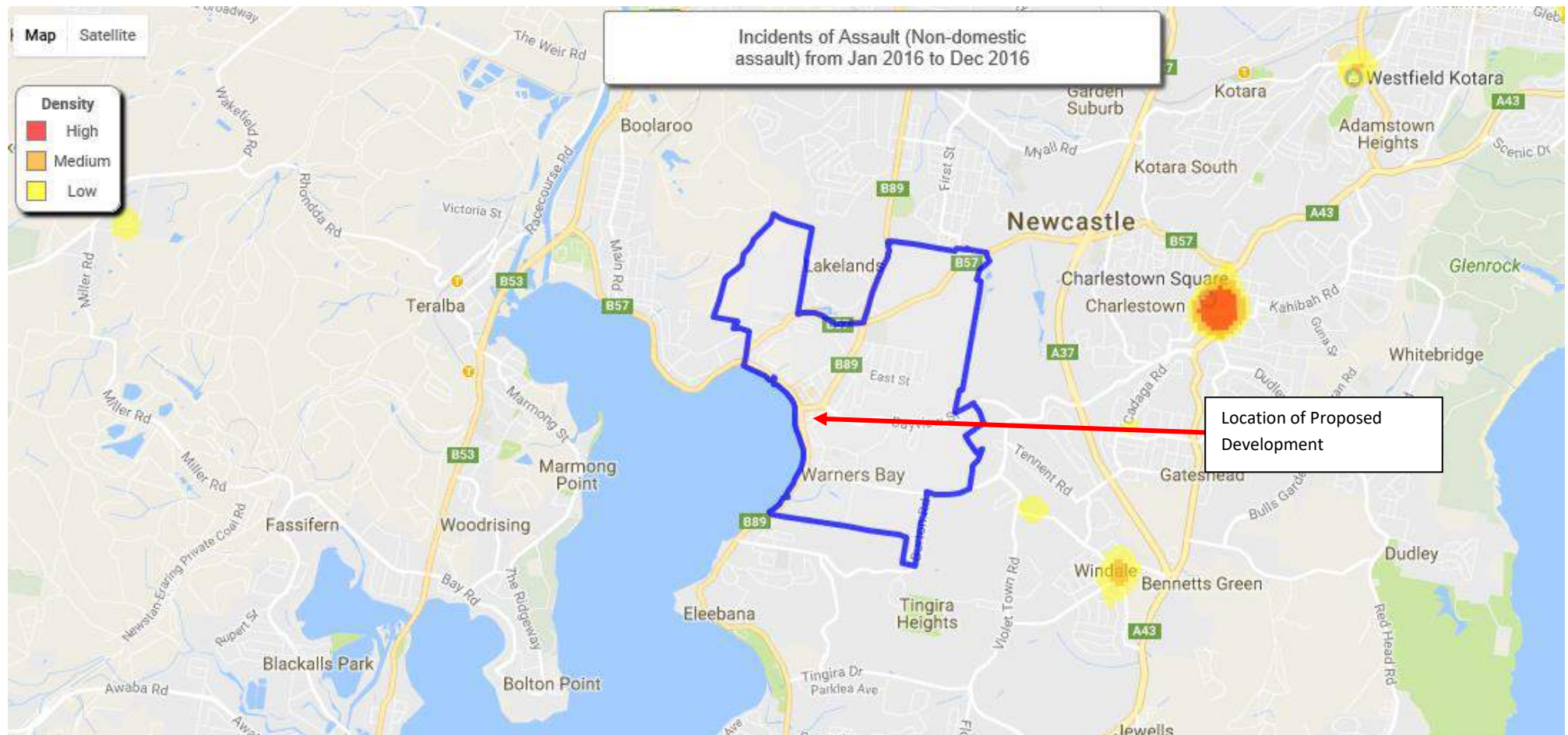


Figure 5: Incidents of Non-Domestic Assault (January 2016 – December 2016)





Figure 6: Incidents of Robbery (January 2016 – December 2016)

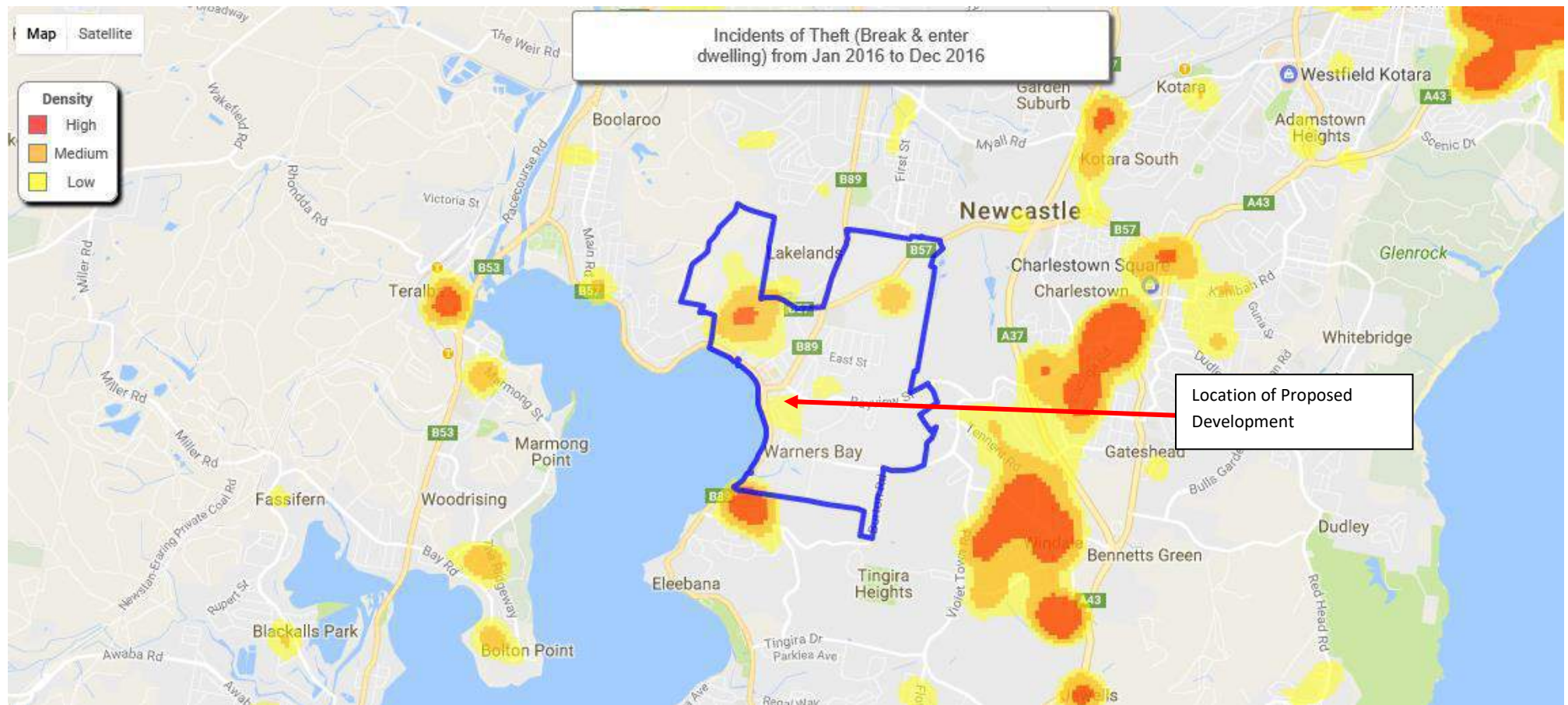


Figure 7: Incidents of Theft / Break and Enter Dwelling (January 2016 – December 2016)



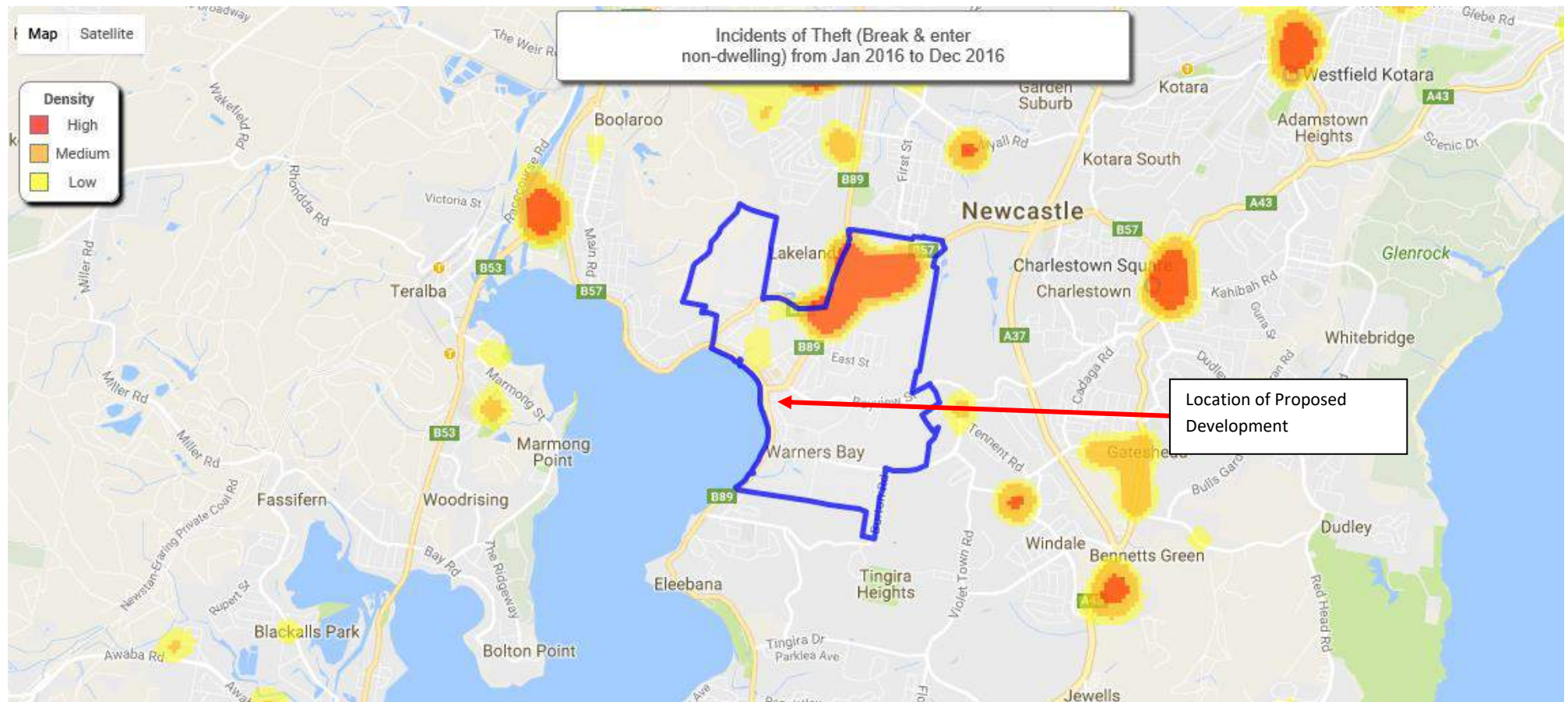


Figure 8: Incidents of Theft / Break and Enter Non - Dwelling (January 2016 – December 2016)

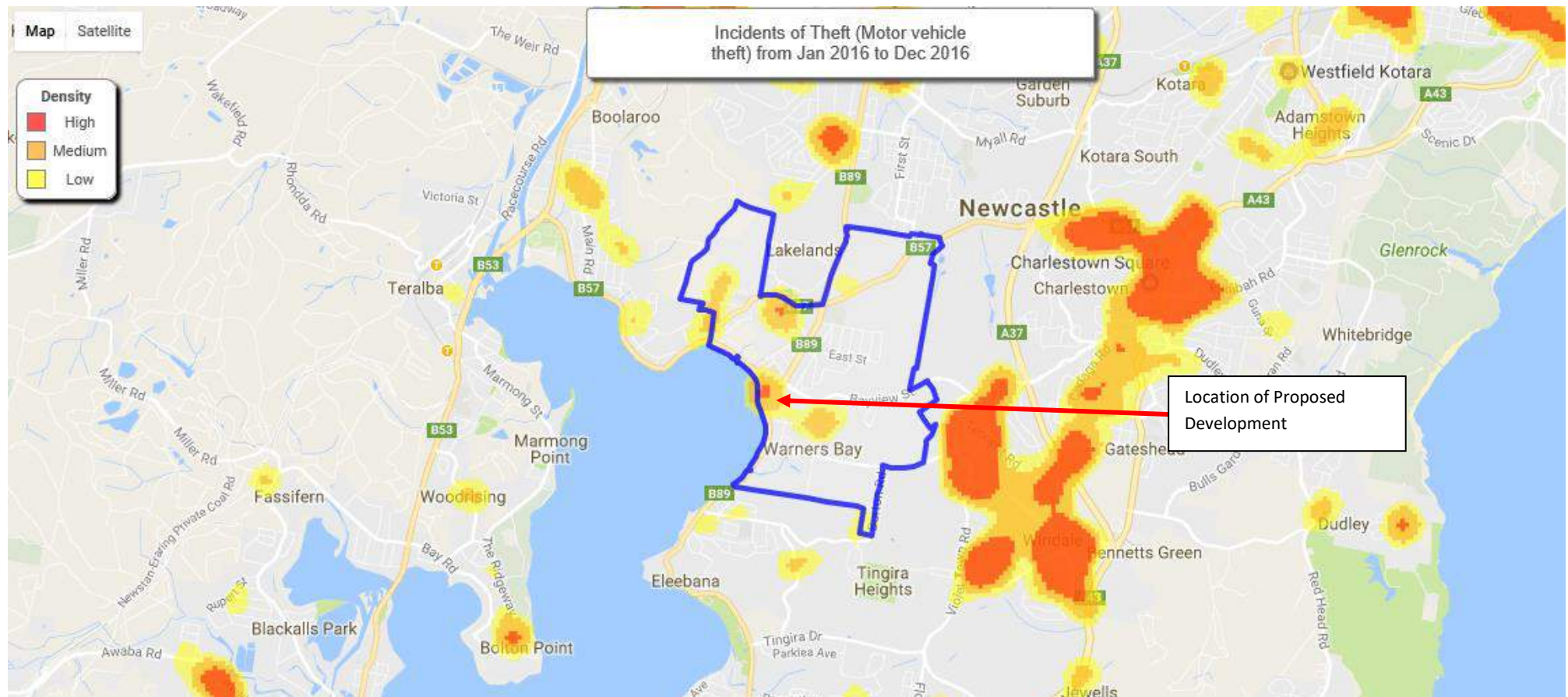


Figure 9: Incidents of Motor Vehicle Theft (January 2016 – December 2016)



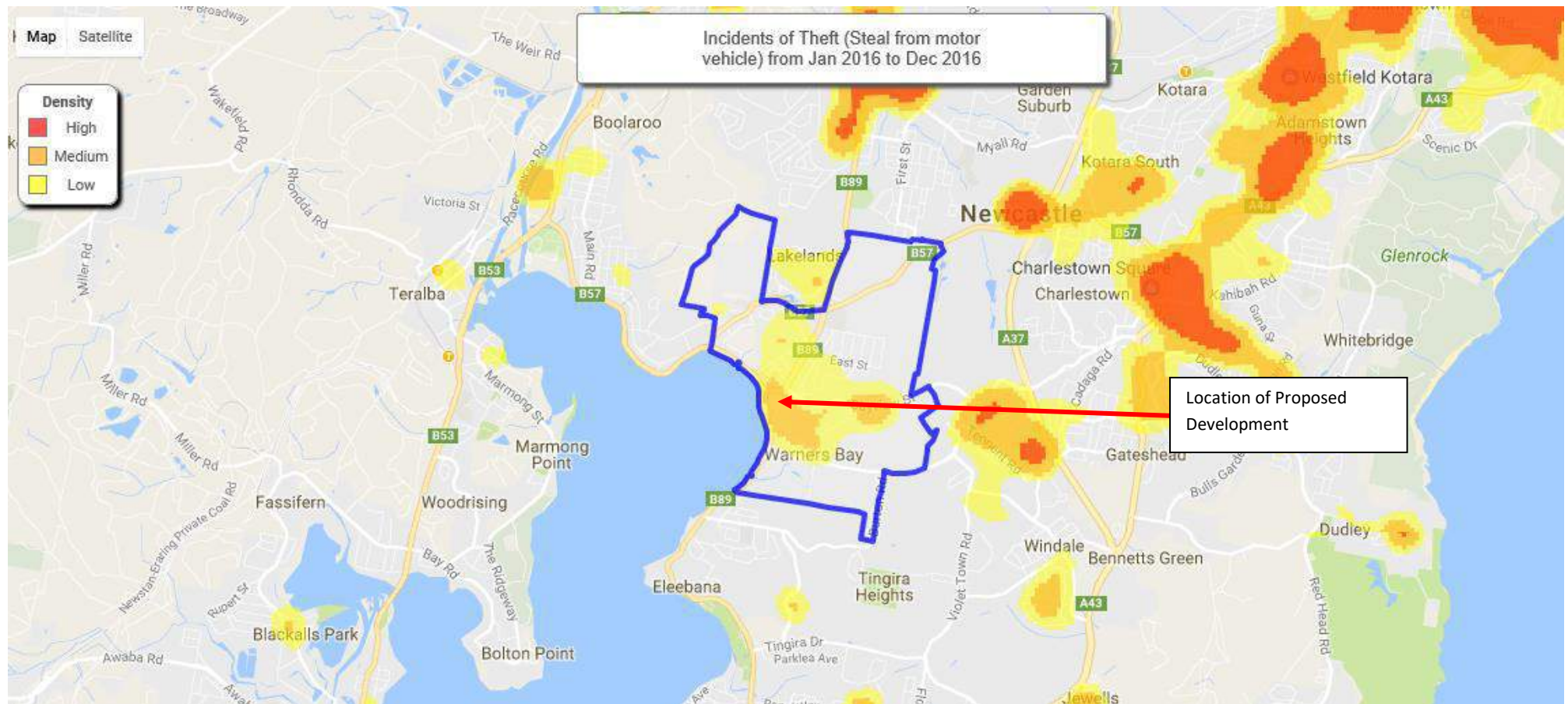
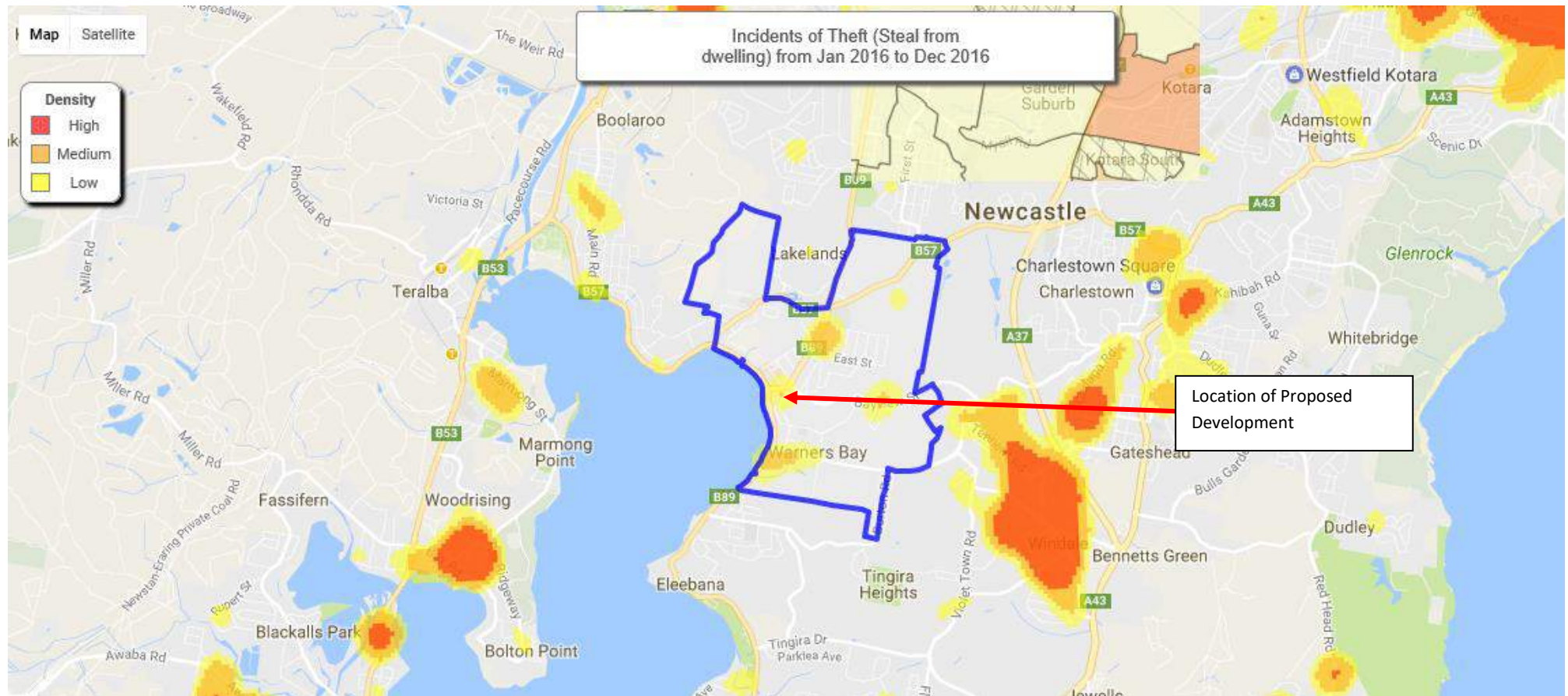
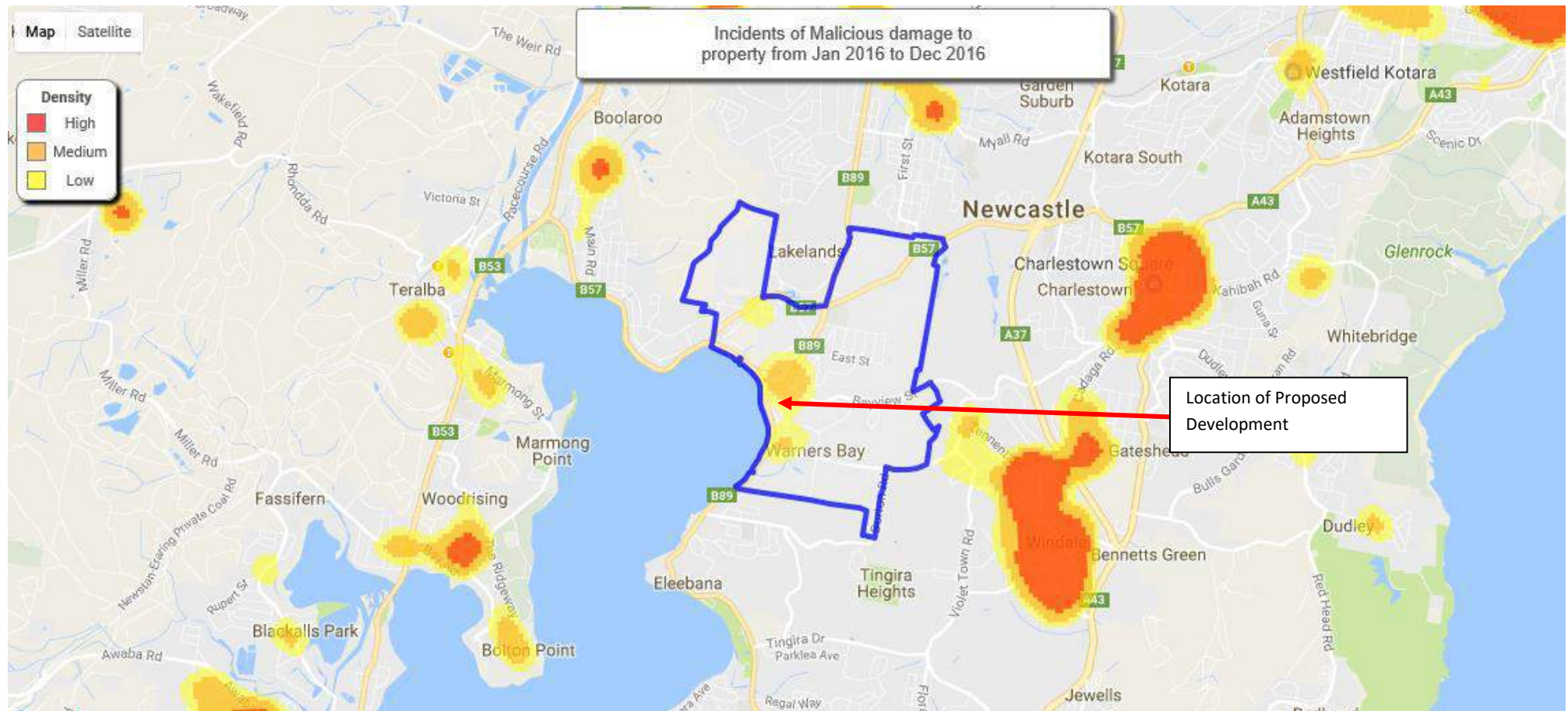


Figure 10: Incidents of Theft / Steal from Motor Vehicle (January 2016 – December 2016)





**Figure 12: Incidents of Theft / Steal From Dwelling (January 2016 – December 2016)**



**Figure 13: Incidents of Malicious Damage to Property (January 2016 – December 2016)**

Crime data from the Bureau of Crime Statistics and Research show the following influencing / contributing factors for the crime characteristics for the Lake Macquarie LGA:

- Outdoor and public spaces are more likely to be targets for assault, sexual offences, break and enter, theft of motor vehicle, steal from motor vehicle and malicious damage.
- Areas where late night hotel trading venues are located are areas where there is a high concentration of malicious damage and non-domestic assault.
- Retail stores are targeted for the highest amount of break and enter.
- Steal from motor vehicle is more likely from a car park.
- There is evidence of motor vehicle theft in areas isolated from public transport.
- Females are more likely to be victims of domestic violence related assault.
- Males are more likely to be victims of non-domestic violence related assault.
- Alcohol affectation is a factor but not the most significant factor in all crime categories in the Lake Macquarie LGA.

The crime trend data and hot spot maps clearly show that the proposed development site and surrounding area is an area where there are incidences of reported crime and the following crime characteristics occur in the area:

- Domestic Assault
- Steal from Dwelling
- Motor Vehicle Theft
- Steal from Motor Vehicle
- Malicious Damage to Property

These incidents of crime are likely to be opportunistic and factors to minimise opportunities are incorporated into the recommendations outlined in Section 5.

## 5. General Recommendations

The following CPTED principles are recommended for the proposed site:

### 5.1 Territorial re-enforcement

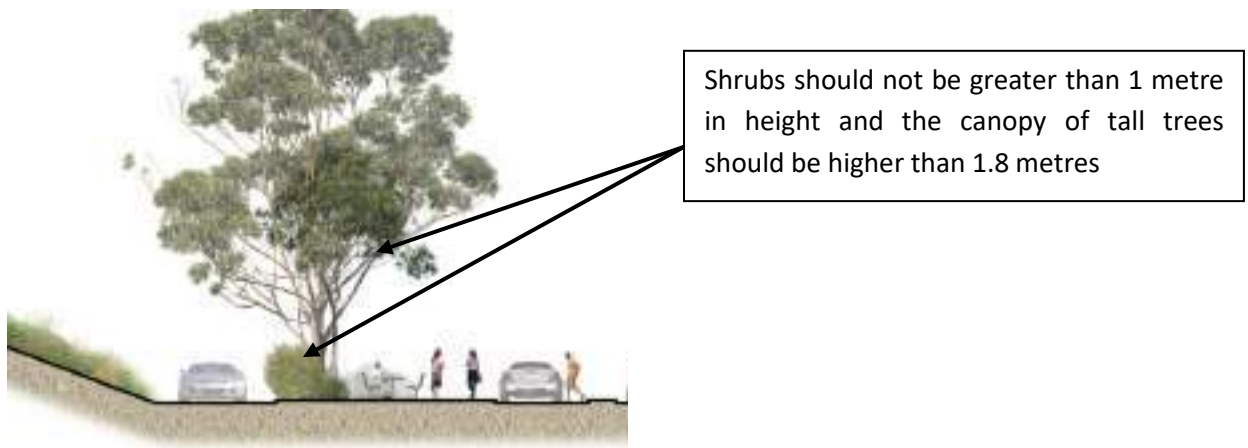
- The use of a fence will assist in creating territorial reinforcement along neighbouring property boundaries. The pool will be fenced as per pool safety standards.
- Signage at entry points into the site should be erected and clearly identify direction of travel and areas where entry is prohibited.
- Clearly signpost any area in the site where access is prohibited or is private.

### 5.2 Surveillance

- Landscaping should not inhibit natural surveillance (block sight lines) or provide concealment and entrapment opportunities. When selecting and maintaining vegetation, consideration should be given to the possibility of areas becoming entrapment sites in the future.

Heavy vegetation should also be avoided at the entrance areas of all the buildings throughout the site so as not to provide concealment opportunities and inhibit line of sight.

Shrubs should not be greater than 1 metre in height and the canopy of tall trees should be higher than 1.8 metres. Refer Figure 14.



**Figure 14: Landscaping not to Inhibit Line of Sight.**

- The building design should not inhibit natural surveillance (block sight lines) or provide concealment and entrapment opportunities. It is recommended that the set back of entry foyers and door recess be a maximum of 1 metre.
- Australian and New Zealand Lighting Standard 1158.1 – Pedestrian, requires lighting engineers and designers to consider crime risk and fear when selecting lamps and lighting levels.
- Front entry should be secure with secure access facility (i.e. buzzer and alarm to desired unit with CCTV camera to unit).
- Entry doors to have deadlocks, windows to be deadlocked to reduce opportunities for forced entry.
- Pathways / line of pedestrian travel should be lit with low lighting to mark the path of travel.
- Underground car park to be painted a light colour as it assists detect shadows and movement.

### 5.3 Access control

- All entry points (pedestrian and vehicle) should be clearly signposted and identify the area as being private property.
- Trees should not be planted close to the building as it creates a 'natural ladder' to the roof of any building.

### 5.4 Space / Activity Management

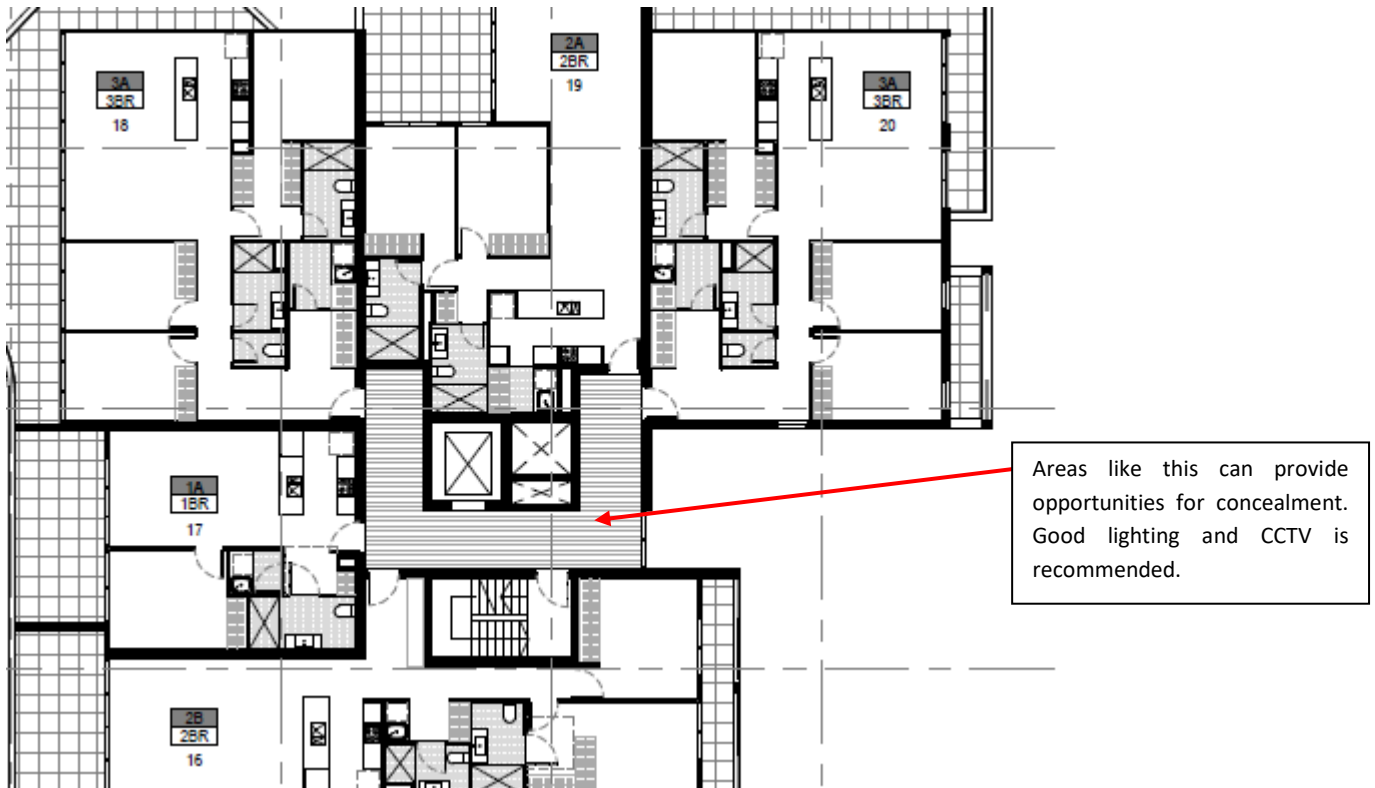
- Directional signage is to be provided throughout the development. The signage is to be clear and legible to aid 'way finding' throughout the development.
- Installation of 'Park Smarter' signage (or similar) is recommended to minimise opportunity for theft from vehicle.
- The area (including gardens, hard walls, fencing) should be well maintained. Any evidence of anti-social behaviour (e.g. graffiti, malicious damage, broken lights etc.) should be cleaned / fixed / replaced within 24 hours. A maintenance plan should be developed for the site.
- The garbage bin area to be secured and kept out of general sight.



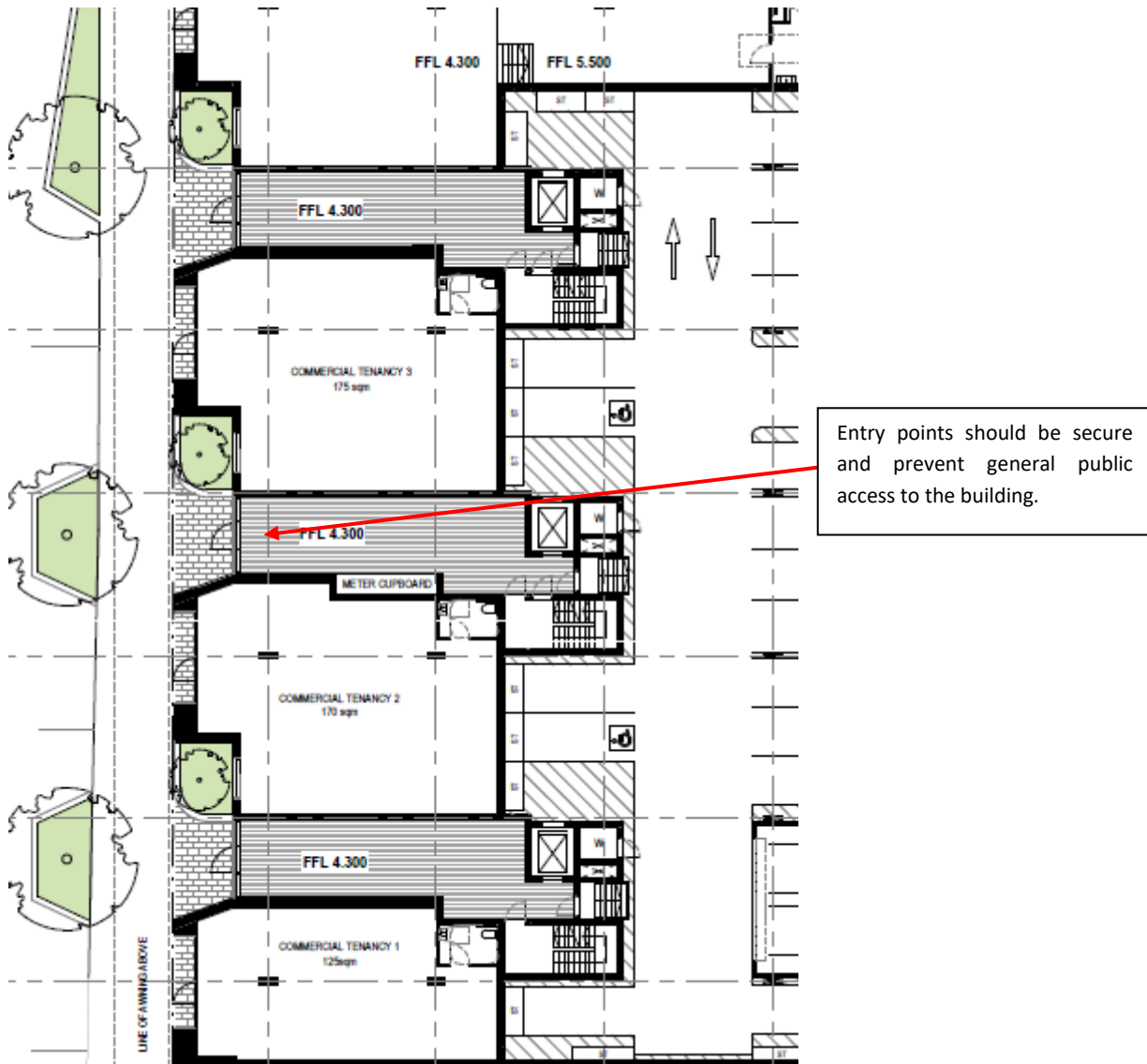
- Regular walk through to ensure the site is kept clean and also monitor the grounds.

### 5.5 Design Layout Comments

The following comments relate to the design of the proposed building.







## 6. Conclusion

James Marshall & Co has been engaged to prepare a Crime Prevention Through Environmental Design (CPTED) report for a proposed mix use development at 482 The Esplanade Warners Bay, NSW. The development is located on three street frontages. The proposal includes a mix of 1, 2 and 3 bedroom apartments and commercial spaces and the total number of apartments for the Lake Front Building is 60 and the Howard Street Building 52 apartments.

The CPTED assessment of the proposed development has taken into account factors such as the building design / layout, area characteristics and crime data for the LGA and suburb.

The crime trend data and hot spot maps clearly show that the proposed development site and surrounding area is an area where there are incidences of reported crime and the following crime characteristics occur in the area:

- Domestic Assault
- Steal from Dwelling

- Motor Vehicle Theft
- Steal from Motor Vehicle
- Malicious Damage to Property

These incidents are likely to be opportunistic however this risk should be taken into account. The recommendations in Section 5 can be easily implemented and will aim to address this potential risk.

Overall the design appears secure. The areas of potential concealment (highlighted in Section 5.5) are within a secure building so any risk is considered low. Safety can be enhanced via lighting and CCTV (although not essential).

The commercial use will add to the overall security of the building and the residential component will add to the overall safety of the area during after-hours periods.

With the adoption of the strategies listed in this report, the crime risk is considered to be low.



## ***15 – ACCESS REPORT***





# DESIGN REVIEW

## ACCESS

### Lakehouse Village

**482 The Esplanade,  
Warners Bay**

**Report Prepared for:** Stewart Architecture  
**Report Prepared by:** Lindsay Perry  
**Our Ref:** AN17-208539  
**Date:** 11 April 2017



☐ BUILDING CODE ☐ ACCESS CONSULTING ☐ ESSENTIAL SERVICES



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## DOCUMENT ACCEPTANCE

|             | Name                                                     | Signed | Date |
|-------------|----------------------------------------------------------|--------|------|
| Prepared by | Lindsay Perry<br>Associate<br>ACAA Accredited Member 136 |        |      |

## REVISION HISTORY

| Revision No. | Prepared by    | Description                    | Date          |
|--------------|----------------|--------------------------------|---------------|
| 00           | Lindsay Perryt | DRAFT report issued fro review | 4 April 2017  |
| 01           | Lindsay Perryt | Issued for DA                  | 11 April 2017 |

This report has been prepared based on the available time allocated to conduct the review, and all reasonable attempts have been made to identify key compliance matters pursuant to the BCA and additional issues which have been deemed an impediment to access provision and may increase Client risk of attracting a complaint under the DDA.

The information provided within this report is relevant to this project and the documentation referenced. As such the information provided may not be transferred to other projects. This report must not be issued for public comment or be used for any other purpose without prior permission from Philip Chun Access.

Philip Chun Access accepts no responsibility for any loss suffered as a result of any reliance upon such assessment or report other than providing guidance to alleviate access barriers in the built environment and reduce Client risk of attracting a complaint under the DDA.



## 1. EXECUTIVE SUMMARY

We have assessed the architectural documentation available to date and have reviewed the proposed building works with respect to the Building Code of Australia 2016 and Premises Standards. The design is at a point where the inherent BCA philosophies have been checked and development consent can be sought. The finer details with respect to BCA compliance can be finalised prior to the issue of a Construction Certificate.

The development has also been considered with respect to the provision of adaptable housing per Lake Macquarie City Council DCP and livable housing per SEPP 65. Both have been provided within the development.

The proposed development is capable of achieving a high level of accessibility for people with disabilities and meeting all the relevant standards.

The following items should be addressed during detail design to ensure compliance prior to construction:

- Accessible carparking layouts;
- Setback of the accessible ramp to Howard Street;
- Access to the pool for people with disabilities;
- Accessible entrance to adaptable apartments pre-adaption.





## 2. INTRODUCTION

This report documents a comprehensive review of the proposed project documentation with consideration to all aspects of accessibility to the site and throughout the development and with reference to the Building Code of Australia (BCA), Disability (Access to Premises – Buildings) Standards 2010 (Premises Standards), relevant Australian Standards as they relate to access to premises and the spirit and intent of the Disability Discrimination Act 1992 (*Cth*) (DDA).

This report has been prepared by Philip Chun Access with the aim of providing reasonable recommendations in regards to access to premises. Philip Chun Access has endeavoured to clearly identify each issue of concern with respect to the building element and with reference to relevant legislation and guidelines.

Matters that fall outside the scope of this report include structure or installation methods and assessment against Occupational Health and Safety legislation.

### 2.1 Site and Contexts

The site is located at 482 The Esplanade Warners Bay and has three street frontages being The Esplanade, King Street and Howard Street. The main pedestrian approach to the building is from the street footpath along The Esplanade where the residential lobbies and majority of commercial tenancies are located. Vehicular entrance to the site is from Howard Street.

The project consists primarily of residential apartments (112 in total) with five commercial tenancies provided at the street level. Adaptable and livable housing units are provided and evenly distributed.

### 2.2 Reviewed Documentation

This report is based upon the following architectural documentation produced by Stewart Architecture for Philip Chun Access review:

| Document No | Title                  | Revision |
|-------------|------------------------|----------|
| DA101       | Plan – Basement 1      | A        |
| DA102       | Plan – Lower Ground    | B        |
| DA103       | Plan – Upper Ground    | D        |
| DA104       | Plan – Level 2         | B        |
| DA105       | Plan – Level 3         | C        |
| DA106       | Plan – Level 4         | B        |
| DA107       | Plan – Level 5         | C        |
| DA108       | Plan – Level 6         | B        |
| DA109       | Plan – Level 7         | B        |
| DA110       | Plan – Roof            | A        |
| DA181       | Plan – Adaptable Units | B        |
| DA182       | Plan – Adaptable Units | B        |



### **2.3 Council Requirements**

Lake Macquarie City Council Development Control Plan 2014 requires the provision of adaptable units within the development. Part 9 – Specific Land Uses – 13 Residential Flat Buildings requires that one adaptable dwelling must be provided for every 10 dwellings (Clause 13.13.) As such, 12 adaptable apartments are required within this development (based on a total of 112 residential apartments). We note that this has been provided as discussed in subsequent sections of this report.

### **2.4 State Environmental Planning Policy (SEPP) 65 Apartment Design Guide**

The units and other facilities will be required to comply with the accessibility provisions of SEPP 65 (Apartment Design Guidelines) that require 20% of units to incorporate Liveable Housing Guidelines to silver level. These units can be included within the adaptable units required by Council's DCP.

### **2.5 Methodology**

Philip Chun Access aims to provide achievable recommendations related to the provision of access to premises based on current legislation and best practice options, enabling independent, equitable and functional access for all.

Accessibility is paramount in providing an inclusive environment for all users. Phillip Chun Access looks beyond basic compliance issues to ensure that all users are offered the opportunity to participate in society. We incorporate the principles of Universal Design into all of our work, taking a holistic approach in the provision of access for people with disabilities.



### 3. LEGISLATION

#### 3.1 The National Construction Code / The Building Code of Australia

The National Construction Code (NCC) comprises the Building Code of Australia (BCA) and the Plumbing Code of Australia (PCA). NCC is all encompassing and contains Volumes One, Two and Three; The Guide; and the Consolidated Performance Requirements. Detailed of these are as follows:

- Volume One contains the requirements for Class 2 to 9 (multi-residential, commercial, industrial and public) buildings and structures (BCA).
- Volume Two contains the requirements for Class 1 (residential) and Class 10 (non-habitable) buildings and structures.
- Volume Three contains the requirements for plumbing and drainage for all classes of buildings.
- The Guide is a companion manual to Volume One. The Guide provides clarification, illustration and examples for complex NCC provisions.
- Consolidated Performance Requirements provides a compilation of all NCC Performance Requirements and the supporting General Requirements in a single document.

The primary classification for the proposed buildings pursuant to the BCA is a Class 2, being a residential development.

| Level        | Proposed Use         | Building Classification |
|--------------|----------------------|-------------------------|
| Basement     | Carparking           | Class 7a                |
| Lower Ground | Carparking           | Class 7a                |
| Lower Ground | Commercial Tenancies | Class 5                 |
| Lower Ground | Residential Lobbies  | Class 2                 |
| Upper Ground | Residential Areas    | Class 2                 |
| Upper Ground | Commercial Tenancies | Class 5                 |
| Levels 2 - 7 | Residential Areas    | Class 2                 |

Part D3 of the BCA and Premises Standards prescribes the minimum requirement for access to a building. Access for people with disabilities is required through the principal pedestrian entrance and throughout the building in accordance with Table D3.1. The following table outlines the general building access requirements for this project:

| Class of building | Access requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Class 2</b>    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Common areas      | <p>From a pedestrian entrance <i>required</i> to be accessible to at least one floor containing <i>sole-occupancy units</i> and to the entrance doorway of each <i>sole-occupancy unit</i> located on that level.</p> <p>To and within not less than one of each type of room or space for use in common by the residents, including a cooking facility, sauna, gymnasium, <i>swimming pool</i>, common laundry, games room, individual shop, eating area, or the like.</p> <p>Where a ramp complying with AS 1428.1 or a passenger lift is installed-</p> <ul style="list-style-type: none"> <li>(a) to the entrance doorway of each sole-occupancy unit; and</li> <li>(b) to and within rooms or spaces for use in common by the residents,</li> </ul> <p>located on the levels served by the lift or ramp.</p> |



|                  |                                                                                                                                                                                                                                                                                                                                            |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Class 3</b>   |                                                                                                                                                                                                                                                                                                                                            |
| <b>Class 6</b>   | To and within all areas normally used by the occupants                                                                                                                                                                                                                                                                                     |
| <b>Class 7a</b>  | To and within any level containing <i>accessible</i> carparking spaces                                                                                                                                                                                                                                                                     |
| <b>Class 10b</b> |                                                                                                                                                                                                                                                                                                                                            |
| Swimming pool    | To and into <i>swimming pools</i> with a total perimeter greater than 40m, associated with a Class 1b, 2, 3, 5, 6, 7, 8 or 9 building that is <i>required</i> to be <i>accessible</i> , but not <i>swimming pools</i> for the exclusive use of occupants of a 1b building or a <i>sole-occupancy unit</i> in a Class 2 or Class 3 building |

### 3.2 Disability Discrimination Act 1992 (Cth) (DDA)

The accessibility assessment process covers all aspects of the infrastructure (premises), to the extent required to meet the objectives of the Disability Discrimination Act 1992 (Cth), including, however not limited to, Section 23 which relates to access to premises and facilities which the public may enter or use.

The Act is enforced primarily through a complaints mechanism, which allows individuals who have directly or indirectly experienced unlawful discrimination to seek a conciliated outcome through the Australian Human Rights Commission and, in the instance of unsuccessful conciliation, to bring an action in the Federal Magistrates Court or the Federal Court of Australia.

### 3.3 Access to Premises Standards – General

In contrast to building regulations, the DDA is not prescriptive. The implementation of the Premises Standards in 2010, and corresponding changes to the BCA, is a significant step towards achieving equal access to premises and is crucial to justice and social inclusion for people with disabilities.

It is noted that the Premises Standards are limited in scope, covering aspects of building compliance applicable under the BCA. It is acknowledged that the Premises Standards could address a broader range of accessibility issues including considerations to accessibility of parkland, playgrounds, transport vehicles, interior fit-out of buildings, and fixtures and fittings. As such, there are features which fall beyond the scope of the Standards which may be subject to the general complaints provisions of the DDA.

### 3.4 (NSW) State Environmental Planning Policy N0. 65 – Design Quality of Residential Apartment Development

SEPP 65 and the Apartment Design Guide apply to residential flat buildings, shop top housing and the residential component of mixed use developments within NSW. They apply to buildings that are three or more storeys and that have four or more dwellings in the following situations:

- The erection of a new building
- The substantial redevelopment or refurbishment of an existing building
- The conversion of an existing building to a residential flat building.

Objective 4Q-1 of Part 4 of the Apartment Design Guide requires Universal design features to be included in the apartment design to promote flexible housing for all community members. The design guidance for this objective is;

- Developments are to achieve a benchmark of 20% of the total apartments incorporating the Liveable Housing Guideline's silver level universal design features.



## 4. ACCESS AND APPROACH – EXTERNAL AREAS

External areas of the development generally comprise the pedestrian approach from the street footpaths along The Esplanade, King Street and Howard Street and the residential common areas at the upper ground level.

Entrances along The Esplanade provide easy access from the street footpath to commercial tenancies and the residential lobbies. While stairs provide access to residential common areas midway along King Street, the entrances to commercial tenancies along the King Street footpath are accessible to people with disabilities. An accessible ramp is provided for access to the development from the Howard Street footpath.

### 4.1 Approach from the Allotment Boundary (BCA Part D3.2)

The BCA requires that a continuous accessible path of travel within the meaning of AS1428 be provided from the allotment boundary at the main points of pedestrian entry to the main entrance.

*Drawings indicate that a formed footpath with areas conducive to an accessible path of travel has been provided from the allotment boundaries to the building entrances.*

*Detailed design should address the setback of the accessible ramp from the Howard Street boundary to facilitate the provision of handrail extensions and tactile indicators – refer to Appendix B for compliance requirements regarding pathways, ramps and walkways.*

### 4.2 Approach from the Accessible Carparking (BCA Part D3.2)

The BCA requires that a continuous accessible path of travel within the meaning of AS1428.1 (2009) be provided from the accessible carparking areas to the main entrance.

*Drawings indicate that a formed footpath with areas conducive to an accessible path of travel has been provided from the accessible carparking to the building entrances – lifts are provided as a part of the accessible path of travel between levels. Refer to Appendix B for compliance details.*

### 4.3 Approach between Buildings on Site (BCA Part D3.2)

The BCA requires that a continuous accessible path of travel within the meaning of AS1428 be provided between associated accessible buildings.

*Not applicable to this development.*

### 4.4 Accessible Carparking (BCA Part D3.5)

Accessible carparking, designed and constructed in accordance with AS 2890.6 (2009), is required to be provided as per the below ratio:

| Class of building to which the Class 7a building or carparking area is associated                   | Number of accessible carparking spaces required         |
|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| <b>Class 6</b>                                                                                      |                                                         |
| (a) Up to 1 000 carparking spaces; and                                                              | 1 space for every 50 carparking spaces or part thereof. |
| (b) for each additional 100 carparking spaces or part thereof in excess of 1 000 carparking spaces. | 1 space.                                                |





For Class 2 buildings, there is no requirement for accessible carparking. However, for adaptable housing units at least one allocated car space complying with AS4299 Clause 3.7 is required for each of the adaptable units.

*There are a total of 218 carparking spaces provided on the site, 13 of which are designated as accessible spaces. General configuration of the spaces appears to offer compliance with AS 2890.6 (2009). Refer to Appendix B for compliance requirements.*

*We assume twelve of these spaces will be allocated to the adaptable apartments per AS4299.*

#### **4.5 Building Entrance (BCA Part D3.2)**

A continuous, accessible path of travel must be provided through the principal pedestrian entrance and not less than 50% of all pedestrian entrances / exits.

Where the total floor area of the building exceeds 500m<sup>2</sup>, therefore the distance of travel between accessible and inaccessible entrances must not exceed 50m.

Where a door required to be accessible has more than one door leaf, one of the leaves must have a clear opening of 850mm.

*Single swinging doors are provided for entry to the residential areas of the development and appear to be capable of compliance - refer to Appendix B for compliance requirements.*

*Double swinging doors are provided for entry to the commercial components of the building and appear to be capable of compliance - refer to Appendix B for compliance requirements.*



## 5. ACCESSIBILITY PROVISIONS FOR INTERNAL AREAS – COMMERCIAL AND RESIDENTIAL COMMON AREAS

The internal areas of the development include the commercial tenancies and common areas of the residential component.

This report has been prepared to address the base building component of building works only. Fit-out of individual commercial tenancies will be subject to a separate development and as such do not form a part of this access report.

### 5.1 Internal Paths of Travel Generally (BCA Part D3.3)

BCA Part D3.3 requires that accessways complying with AS 1428.1 (2009) must be provided to and throughout areas of buildings required to be made accessible, including:

- Minimum corridor widths of not less than 1000mm;
- Passing spaces with a minimum width of 1800mm and minimum length of 2000mm to be provided in corridors at maximum 20m intervals where a direct line of sight is not available; and
- Turning spaces of minimum 1540mm width and minimum 2070mm length to be provided within 2m of the end of corridors and at maximum 20m intervals.

Note: a passing space may serve as a turning space.

Increased landings are required at changes of direction, including 1500mm x 1500mm turning spaces to facilitate a 60-90 degree turn.

*Drawings indicate that sufficient areas are provided for circulation purposes.*

### 5.2 Floor Finishes / Surfaces (BCA Part D3.3)

The following applies to interior finished and surface materials, in keeping with AS1428.1 (2009):

- Where carpet or any soft flexible materials are used as flooring material, the pile height or pile thickness is to be no greater than 11mm and the carpet backing to be not more than 4mm thick.
- Matting recessed within a continuous accessible path of travel to have a surface level difference to surrounding materials not more than 3mm for vertical and 5mm for rounded or bevelled edges.
- Grates are to have openings no greater than 13mm in diameter and any slotted openings to be no more than 13mm wide and orientated perpendicular to the dominant direction of travel.

*We recommend that the abovementioned items be addressed during subsequent design stages.*

### 5.3 Internal Doors – Circulation Areas

Doors and doorways to be provided with the following circulation clearances as per AS 1428.1 (2009):

**Table 5.3(a) – Hinged Door Requirements**

| Door Approach | Door opening direction | Clearances (mm) |            |                        |
|---------------|------------------------|-----------------|------------|------------------------|
|               |                        | Latch side      | Hinge side | Depth in front of door |
| Front         | Towards occupant       | 530             | 110        | 1450                   |
|               | Away from occupant     | 510             | -          | 1450                   |



|             |                    |     |     |      |
|-------------|--------------------|-----|-----|------|
| Latch Side  | Towards occupant   | 900 | 110 | 1670 |
|             | Away from occupant | 660 | 240 | 1240 |
| Hinge Side  | Towards occupant   | 900 | 660 | 1670 |
|             | Away from occupant | 340 | 560 | 1220 |
| Either Side | Towards occupant   | 900 | 660 | 1670 |
|             | Away from occupant | 660 | 560 | 1240 |

**Table 5.3(b) – Sliding Door Requirements**

| Door Approach | Clearances (mm) |            |                        |
|---------------|-----------------|------------|------------------------|
|               | Latch side      | Slide side | Depth in front of door |
| Front         | 530             | -          | 1450                   |
| Slide Side    | 395             | 660        | 1280                   |
| Latch Side    | 660             | 185        | 1230                   |
| Either Side   | 660             | 660        | 1280                   |

Note: the above clearances are based upon an unobstructed door opening of 850mm, which is the minimum required clearance. Unobstructed door openings greater than 850mm will have different requirements. This will be reviewed upon provision of a door schedule and detailed architectural drawings.

Where a door required to be accessible has more than one door leaf, one of the leaves must have a clear opening of 850mm.

The distance between successive doors within airlocks, vestibules and the like require a minimum 1450mm depth between swing doors, 900mm for the path of travel to ambulant toilet cubicles.

*Drawings indicate that doorways are provided with adequate circulation areas for compliance. For additional compliance requirements, refer to Appendix B.*

#### 5.4 Internal Doors – Operational Forces

Door operating forces to manual doors to meet the requirements of AS 1428.1 (2009), Clause 13.5.2 (e).

Ensure any door closers selected (and when installed) will meet the requirements for operating forces, that is:

- 20N to initially open the door;
- 20N to swing the door; and
- 20N to hold the door open between 60 and 90°.

*We recommend that the abovementioned items be addressed during subsequent design stages.*

#### 5.5 Exemptions (BCA Part D3.4)

Where full access is unachievable due to the functions of the space, there may be opportunity to access the area under the permitted exemptions of the BCA D3.4 which states:

The following areas are not required to be accessible:

- An area where access would be inappropriate because of the particular purpose for which the area is used.
- An area that would pose a health or safety risk for people with a disability.
- Any path of travel providing access only to an area exempted by (a) or (b).



## 5.6 Signage (BCA Part D3.6)

Braille and tactile signage is required to be provided throughout any building required to be made accessible in accordance with BCA specification D3.6 and AS1428.1 (2009) and must identify:

- Each sanitary facility
- Any space with a hearing augmentation system
- Accessible unisex facilities and indicate whether the facility is suitable for left or right handed use
- Ambulant accessible sanitary facilities on the door of the cubicle
- Where an entrance is not accessible, directional signage to identify nearest accessible entrance
- Where a bank of sanitary facilities is not provided with an accessible sanitary facility, directional signage to identify nearest accessible sanitary facility.
- Each door required by Part E4.5 to be provided with an exit sign and state "Exit" and "Level" followed by either the floor level number, the floor descriptor or combination of these.

*We recommend that the abovementioned items be addressed during subsequent design stages.*

## 5.7 Hearing augmentation (BCA Part D3.7)

A hearing augmentation system must be provided where an inbuilt amplification system is provided, other than one used for emergency purposes only as required by BCA Part D3.7.

Further, for buildings that are required to be accessible, the BCA (Part D3.7) requires hearing augmentation systems at service counters **where the user is screened from the service provider.**

Note: Consideration to the design specifications of AS 1428.5 (2010) is recommended, however is not mandatory to meet the Premises Standards.

*We do not foresee any requirements for hearing augmentation. If required by the BCA, we recommend that the abovementioned items be addressed during subsequent design stages.*

## 5.8 Tactile indicators (BCA Part D3.8)

Where a building is required to be made accessible, BCA Part D3.8 requires that tactile indicators must be provided, in accordance with AS1428.4.1 (2009)) to:

- A stairway
- A ramp, other than kerb ramp
- Any overhead obstruction less than 2m above the FFL, other than a doorway, where a suitable barrier has not been provided
- Where an accessway meets a vehicular way in the absence of a kerb or kerb ramp

*Tactile indicators will be required to stairs and ramps within the development and the requirements above should be addressed during detailed design stages.*

## 5.9 Swimming pools (BCA Part D3.10)

The BCA Part D3.10 requires access for persons with a disability to swimming pools with a total perimeter greater than 40m that are associated with as Class 1b, 2, 3, 5, 6, 7, 8, or 9 building that is required to be accessible (Table D3.1).

For pools required to be accessible by this clause, not less than one accessible entry / exit must be provided by means of a fixed or moveable ramp and an aquatic wheelchair; or a zero depth entry at a maximum gradient of 1:14; or a platform swimming pool lift; or a swing style swimming pool lift.



For pools with a perimeter greater than 70m, the use of a swing stile swimming pool lift is not permitted.

*The pool has a perimeter of approximately 44m. As such, an accessible means on entry to the pool is required. We recommend this be addressed during subsequent design stages.*

#### **5.10 Glazing on an accessway (BCA Part D3.12)**

BCA Part D3.12 requires that where full height glazing that can be mistaken for an unobstructed opening is provided along an accessway, the glazing must be provided with visual identification as per AS 1428.1 (2009).

*We recommend that the abovementioned items be addressed during subsequent design stages – refer to Appendix B for compliance requirements.*

#### **5.11 Slip Resistance (BCA Part D2.14)**

Landings in a stairway must have;

- (a) a surface with a slip-resistance classification not less than that listed in Table D2.14 when tested in accordance with AS 4586; or
- (b) a strip at the edge of the landing with a slip-resistance classification not less than that listed in Table D2.14 when tested in accordance with AS 4586, where the edge leads to a *flight* below.

*We recommend that the abovementioned items be addressed during subsequent design stages.*

#### **5.12 Thresholds (BCA Part D2.15)**

The threshold of a doorway must not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf unless—

- (a) in patient care areas in a Class 9a health-care building, the door sill is not more than 25 mm above the finished floor level to which the doorway opens; or
- (b) in a Class 9c aged care building, a ramp is provided with a maximum gradient of 1:8 for a maximum height of 25 mm over the threshold; or
- (c) in a building required to be accessible by Part D3, the doorway
  - (i) opens to a road or open space; and
  - (ii) is provided with a threshold ramp or step ramp in accordance with AS 1428.1 (2009); or

NSW D2.15 (d) and (e):

- (d) in a Class 9b building used as an entertainment venue, the door sill of a doorway opening to a road, open space, external stair landing or external balcony is not more than 50mm above the finished floor level to which the doorway opens; or
- (e) in other cases
  - (i) the doorway opens to a road or open space, external stair landing or external balcony; and
  - (ii) the door sill is not more than 190 mm above the finished surface of the ground, balcony, or the like, to which the doorway opens.

*We recommend that the abovementioned items be addressed during subsequent design stages – refer to Appendix B for compliance requirements.*





## 6. VERTICAL CIRCULATION – COMMERCIAL AND RESIDENTIAL COMMON AREAS

Lifts provide the main access between levels of the building. Stair and ramps are also provided as a means of access between levels.

### 6.1 Passenger Lifts (BCA Part E3)

Every passenger lift in an accessible building must be suitable for use by people with a disability and offer compliance with AS1725.12. Typically, the following is required to be provided:

#### Lift dimensions

- Lift floor dimensions of not less than 1100mm X 1400mm for lifts which travel not more than 12m.
- Lift floor dimensions of not less than 1400mm X 1600mm for lifts which travel more than 12m.
- Provision for a stretcher facility within at least one emergency lift required by E3.4, or where an emergency lift is not required, if passenger lifts are installed to serve any storey above an effective height of 12m, in at least one of those lifts to serve every floor served by lifts.

#### Lift Features

- Handrail complying with the provisions for a mandatory handrail in AS1735.12.
- Minimum clear door opening complying with AS1735.12.
- Passenger protection system complying with AS1735.12.
- Lift landing doors at the upper landing.
- Lift car and landing control buttons complying with AS1735.12.
- Lighting in accordance with AS1735.12.
- Emergency hands-free communication, including a button that alerts a call centre of a problem and a light to signal that the call has been received.

All passenger lifts serving more than 2 levels must possess:

- Automatic audible information within the lift car to identify the level each time the car stops.
- Audible and visual indications at each lift landing to indicate the arrival of the lift car.
- Audible information and audible indication must be provided in a range between 20-80dB(A) at a maximum frequency of 1500Hz.

*We recommend that the abovementioned items be addressed during subsequent design stages – refer to Appendix B for compliance requirements. The area proposed for the lift offers a floor area conducive to compliance.*

### 6.2 Accessible Ramps (BCA Part D3.3 & D3.11)

All accessible ramps must be designed and constructed in accordance with AS 1428.1 (2009) Clause 10. The maximum allowable gradient of the ramp is 1:14, minimum clear width to be 1000mm and maximum length between landings to be 9m (for 1:14 gradient).

On and accessway –

- (a) A series of connected ramps must not have a combined vertical rise of more than 3.6m; and
- (b) A landing for a step ramp must not overlap a landing for another step ramp or ramp.

*Two accessible ramps are provided within the development. One is located within the residential common area, the other for access to the site from Howard Street. We note that the ramp from Howard Street will need to be set back from the boundary to facilitate handrail extensions and tactile indicators as required by AS1428.1. We recommend that the*



*abovementioned items be addressed during subsequent design stages. – refer to Appendix B for compliance requirements.*

### **6.3 Stairs (BCA Part D3.3)**

All stairways, excluding fire-isolated stairs, must be designed and constructed in accordance with AS 1428.1 (2009) Clause 11 and include the provision of handrails, handrail extensions, opaque risers, contrasting nosing strips and tactile indicators.

Further to this is recommended that fire-isolated stairways proposed to be used as a means of general communication between floors should meet these enhanced requirements for the safety of all occupants.

Stairs are provided as a part of the approach to the building from King Street and within the residential common areas.

*We recommend that the abovementioned items be addressed during subsequent design stages – refer to Appendix B for compliance requirements.*

### **6.4 Fire Isolated Stairs (BCA Part D3.3)**

All fire-isolated stairways must possess luminance contrast to the stair nosing as per AS 1428.1 (2009) Clause 11.1(f) and (g).

As per BCA Clause D2.17 (vi), handrails within the fire isolated stairways are required to comply with Clause 12 of AS 1428.1 (2009). The height of handrails is to be between 865-1000mm and be consistent along the length of the stair. Consider the design of a staggered stair to avoid handrail extensions intruding into stairway landings, particularly in the down flight.

*We recommend that the abovementioned items be addressed during subsequent design stages – refer to Appendix B for compliance requirements.*



## 7. SANITARY AND OTHER FACILITIES – COMMERCIAL AND RESIDENTIAL COMMON AREAS

### 7.1 Unisex Accessible Toilets (BCA Part F2)

Accessible unisex sanitary compartments must be provided in accessible parts of the building in accordance with Table F2.4(a). That is:

| Class of building                                                                                                                                                    | Minimum accessible unisex sanitary compartments to be provided                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Class 2                                                                                                                                                              | Where <i>sanitary compartments</i> are provided in common areas, not less than 1                                                                                                                                                                                                                                    |
| Class 5, 6, 7, 8 and 9 — except for within a ward area of a Class 9a <i>health-care building</i>                                                                     | Where Part F2.3 of the <i>BCA</i> requires closet pans:<br>(a) 1 on every <i>storey</i> containing <i>sanitary compartments</i> ; and<br>(b) where a <i>storey</i> has more than 1 bank of <i>sanitary compartments</i> containing male and female <i>sanitary compartments</i> at not less than 50% of those banks |
| Class 10a — except:<br>(a) a Class 10a appurtenant to another Class of building; and<br>(b) a <i>sanitary compartment</i> dedicated to a single caravan/camping site | At each bank of <i>sanitary compartments</i> containing male and female <i>sanitary compartments</i> , not less than 1                                                                                                                                                                                              |

### Design

- An accessible unisex sanitary compartment must contain a closet pan, washbasin, shelf or bench top and adequate means of disposal of sanitary towels.
- The circulation spaces, fixtures and fittings of all accessible sanitary facilities must comply with the requirements of AS1428.1.
- Where two or more of each type of accessible unisex sanitary facility are provided, the number of left and right handed mirror image facilities must be provided as evenly as possible.
- The door to a fully enclosed sanitary compartment must:
  - (i) Open outwards; or
  - (ii) Slide; or
  - (iii) Be readily removable from the outside of the sanitary compartment,
 Unless there is a clear space of at least 1.2m measured in accordance with Figure F2.5, between the closet pan with the sanitary compartment and the doorway.
- An accessible sanitary facility must be located so that it can be entered without crossing an area reserved for one sex only.
- Where male sanitary facilities are provided in a separate location to female sanitary facilities, accessible unisex sanitary facilities are only required at one of these locations.

*Unisex accessible sanitary facilities are provided within each commercial tenancy meeting BCA requirements. General arrangement of fixtures and room sizes appear to be capable of compliance – refer to Appendix B for compliance requirements.*

*Note that if sanitary facilities are provided within residential common areas, a unisex accessible facility will be required. The sanitary facility associated with the plant areas is considered an exempt area.*



## 7.2 Unisex Accessible Showers (BCA Part F2)

Accessible unisex showers must be provided in accordance with Table F2.4(b). That is:

| Class of building                                                                                                                                            | Minimum accessible unisex showers to be provided                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Class 2                                                                                                                                                      | Where showers are provided in common areas, not less than 1.                                                        |
| Class 5, 6, 7, 8 and 9 — except for within a ward area of a Class 9a <i>health-care building</i>                                                             | Where Part F2.3 of the <i>BCA</i> requires 1 or more showers, not less than 1 for every 10 showers or part thereof. |
| Class 10a except –<br>(a) A Class 10a appurtenant to another Class of building; and<br>(b) A sanitary compartment dedicated to a single caravan/camping site | Where showers are provided, 1 for every 10 showers or part thereof.                                                 |

*Not applicable – no showers provided within commercial or common residential areas.*

## 7.3 Sanitary compartments for people with an ambulant disability (BCA Part F2)

At each bank of toilets where there are one or more toilets are provided in addition to an accessible unisex sanitary compartment at that bank of toilets, a sanitary compartment suitable for people with an ambulant disability (PAD) must be provided for use by males and females.

Design of the cubicles is to include the following:

- PAD cubicles within male and female toilets to be in compliance with AS1428.1 (2009).
- Width of PAD cubicles is to be 900–920mm.
- Provide grabrails to PAD cubicles.
- Provide 900 x 900mm circulation space in front of pan and each side of doors on path to the toilet. Doors are not to swing into circulation spaces.

*PAD cubicles are provided for gender specific use within commercial areas of the building – Tenancy 5 and 6. General arrangement of fixtures and room size appears to be capable of compliance – refer to Appendix B for compliance requirements.*



## 8. ADAPTABLE HOUSING PROVISIONS

A total of 112 apartments are proposed within the development, including a number of apartments have been designed to enable future adaptability. The Council requirement of one in ten units (10%) to be adaptable to Class C of AS4299 can be met. All adaptable units will require full compliance with the accessibility requirements for sole-occupancy units under the BCA, including a complying accessway as per AS 1428.1 (2009) to the entry door. Additional information regarding the design of adaptable housing units is provided in Appendix C.

The apartments nominated as adaptable include:

- Esplanade Building: Units 33-41 (Unit Types 1A & 2B)
- Howard St Building: Unit 20 and 26 (Unit Type 3D)

### 8.1 Design of Adaptable Units – Pre-adaption

To achieve the performance requirements of AS4299, **at the time of construction** the following are required for all adaptable units:

- **Access to and through the main entrance** with clear opening widths to entrances of not less than 850mm and appropriate circulation spaces per AS 1428.1 (2009) Clause 13.3.
- A **visitable toilet** on the entrance floor that complies with the requirements for sanitary facilities of AS4299. That is, a toilet that accommodates an area 900 x 1250mm between the pan and door swing.
- An **accessible path of travel from entrance to the visitable toilet**. Corridors to be minimum 1000mm wide and adequate circulation spaces at doorways required to meet AS1428.1 (2009) requirements.
- An **accessible path of travel from entrance to a living area**. Corridors to be minimum 1000mm wide and adequate circulation spaces at doorways required to meet AS1428.1 (2009) requirements.

*The designated adaptable units are considered capable of adaptation. Key elements required at the time of construction have been addressed in the design of the units. The number of nominated adaptable units is in keeping with Council DCP requirements.*

*The entrance to Unit Types 1A and 3D will need to be modified during detailed design to accommodate an accessible entrance in the pre-adapted state per AS4299 requirements.*

### 8.2 Design of Adaptable Units – Post-adaption

On adaption of the units, the following are required and should be considered in the design to ensure ease of adaption as required by AS4299:

- In regards to **internal doors**, each requires appropriate clear opening width with a minimum clear width of 820mm, with the door to the accessible bathroom meeting AS1428.1 (2009) requirements with a minimum clear width of 850mm. We recommend providing 850mm to all doors in adaptable units from the onset.
- Critical minimum **circulation areas** for adaptable units are as follows:
  - o 2250mm diameter clear space within living area to allow wheelchair access. Furniture arrangement will need modification.
  - o 1550mm clear to front of kitchen and laundry benches.
  - o turning space at foot of bed minimum 1540 mm wide and 2070mm long (in the direction of travel).
  - o door circulation in accordance with AS1428.1 (2009).





- The dimensions of **bathrooms** should provide scope for a post adapted bathroom that will provide sufficient circulation space per AS 1428.1 (2009).
- **Structural support** (such as structural ply sheeting) is recommended at toilet and shower grab rail zones to allow for ease of installation of any future fixings.
- **Service locations** should be considered in respect to the potential post adaption layouts, thereby allowing fixtures to easily be relocated.
- **Kitchen** layout to achieve a minimum circulation of 1550mm between opposing walls, cabinets and appliances to facilitate completion of a 180 degree turn by a wheelchair user. In addition the design of the kitchen is to accommodate for the potential of adaption including:
  - o an 800mm length of worktop that can be adjusted in height, with a removable base unit under
  - o the location of the fridge adjoining a suitable work surface
  - o potential to adjust sink height, with a sink bowl depth of 150mm - lever type taps to be provided to the side of the sink
  - o cooktops with side controls
  - o isolation switches for appliances to be accessible / reachable (e.g. oven and fridge / freezer)
  - o suitable oven height and worktop adjoining.
- The **main bedroom** within the adaptable units requires sufficient circulation space to permit movement by a wheelchair user, being not less than 1540mm x 2070mm clear circulation to at least one side and/or base of a queen size bed on post adaption.
- **Window sills** within the bedroom and living areas will be a maximum of 600mm and 730mm above finished floor level respectively, to enable viewing by persons in the seated position and persons who may be confined to bed (AS 4299:1995 Clauses 4.6.2 / 4.7.2).
- **Laundry facilities** and joinery to be designed to allow for adjustment to cater for accessibility in the future; the post adaption location will provide for a clear 1550mm approach to the facility.

*The designated adaptable units are considered capable of adaptation. Post-adaption layouts reflect the above mentioned features.*