



NOWRA CBD COMMERCIAL CORE AND MIXED USE ZONES
**STUDY OF BUILDING HEIGHT AND FLOOR
SPACE RATIO CONTROLS**

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EXECUTIVE SUMMARY

Nowra has been identified as a 'Major Regional Centre' within the *South Coast Regional Strategy* (2007). At present the draft *Shoalhaven Local Environmental Plan* (SLEP) 2013 does not have controls on height or FSR for the proposed B3 and B4 Zones in the Nowra CBD. The governing control is currently stipulated in the *Illawarra Regional Environmental Plan* (under the *Environmental Planning and Assessment Act 1979*), now a Deemed State Environmental Policy, which requires that any building that is proposed to be a height of more than 11 metres obtains the concurrence from State Government.

Jackson Teece was commissioned by the Shoalhaven City Council to carry out a study of the Height and Floor Space Ratio (FSR) controls for the proposed Nowra CBD Commercial Core (B3) and Mixed Use (B4) Zones. The NSW Department of Planning and Infrastructure stipulates that the Local Environmental Plans (LEPs) indicate height and FSR information for Regional Centres. This study will inform the setting of these controls in the *Shoalhaven Local Environmental Plan* (SLEP), as well as complementary controls in the Development Control Plan (DCP) for the above zones.

The Council has undertaken several key studies in the past few years including the draft *Nowra CBD Urban Design Master Plan* prepared by Arup in partnership with Hill PDA (January 2011; hereafter referred to as 'Master Plan 2011') and the *Nowra CBD Economic Analysis – Commercial Development Contributions* by AECgroup (February 2013). This study responds to, and builds on, the strategies and recommendations made in the above reports.

An initial desktop analysis was carried out by Jackson Teece which included a review of all relevant planning controls, all relevant studies undertaken previously, and a site analysis which covered issues such as the land use, land ownership, heritage buildings, building density, destinations and movement patterns, and topography and flood affected land. This analysis is presented in the *Technical Review and Analysis Summary Report* (Appendix 1).

The determination of the height in the Nowra town was led primarily by the desired built form. The issues, opportunities and constraints identified in the technical review and analysis contributed to the identification of the built form characteristics that are to be achieved through the new height controls. The recommended height controls are illustrated in Figure A.

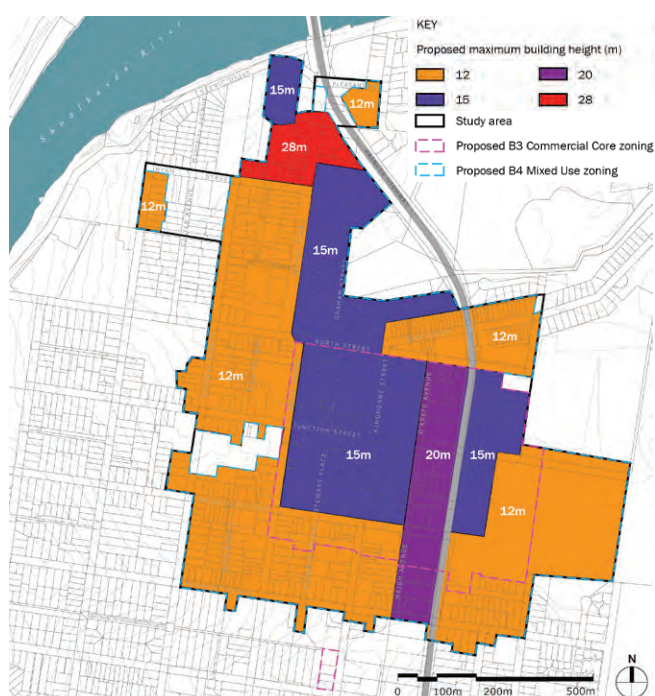


Fig. A: Proposed maximum building height for Nowra CBD

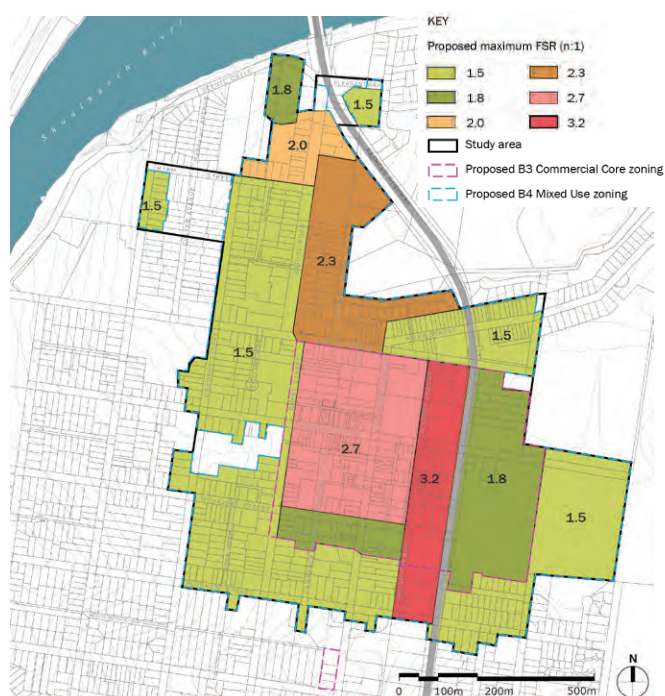


Fig. B: Proposed FSR for Nowra CBD

The determination of FSR within the study area was a result of several inputs including the desired built form characteristics, the building heights and a number of key parameters such as building use, overshadowing and setbacks and building separation. Capacity testing of sites was undertaken on over fifteen different sites and scenarios in order to arrive at the final determination of FSR. See Figure B for the proposed FSR controls.

The following should be considered in the Urban Design DCP:

Detailed Setback Controls to ensure that:

- overshadowing is avoided where desired whilst achieving the built form objectives.

Built Form Controls to ensure that:

- the desired street character is established in the different areas of the town.
- open space controls are in place as relevant to zoning of areas.
- a fine grain pedestrian connectivity at ground level is maintained through street blocks.
- important views to destinations and identified land uses are maintained.
- important vistas to the surrounding landscape context are maintained.

Controls on Heritage sites to ensure that:

- developments on heritage sites/ buildings are cognisant of its heritage values.
- developments adjacent to heritage sites are sympathetic to the heritage values of the sites/ buildings.

View studies to ensure that:

- built form controls maintain views and vistas as required.

1. INTRODUCTION

1.1 PURPOSE

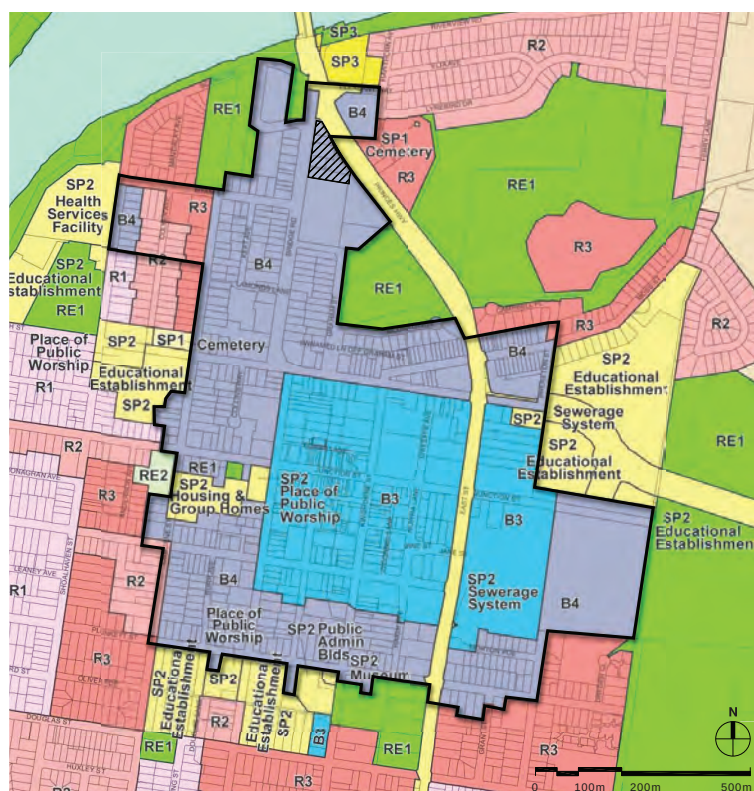
Jackson Teece has been commissioned by the Shoalhaven City Council to carry out a study of the Height and Floor Space Ratio (FSR) controls for the proposed Nowra CBD Commercial Core (B3) and Mixed Use (B4) Zones. The NSW Department of Planning and Infrastructure stipulates that the Local Environmental Plans (LEPs) indicate height and FSR information for Regional Centres. This study will inform the setting of these controls in the *Shoalhaven Local Environmental Plan* (SLEP), as well as complementary controls in the Development Control Plan (DCP) for the above zones.

The height and FSR recommendations are made based on the Master Plan 2011 vision, and various economic studies undertaken by the Council, and aims to facilitate the growth of Nowra CBD into a Major Regional Centre within the next 20 to 30 years.

1.2 BACKGROUND

Nowra has been identified as a 'Major Regional Centre' within the *South Coast Regional Strategy* (2007). At present the draft *Shoalhaven Local Environmental Plan* (SLEP) 2013 does not have controls on height or FSR for the proposed B3 and B4 Zones in the Nowra CBD. The governing control is currently stipulated in the *Illawarra Regional Environmental Plan* (under the *Environmental Planning and Assessment Act 1979*), now a Deemed State Environmental Policy, which requires that any building that is proposed to be a height of more than 11 metres obtains the concurrence from State Government.

The Council has commissioned several key studies in the past few years including the draft *Nowra CBD Urban Design Master Plan* prepared by Arup in partnership with Hill PDA (January 2011; hereafter referred to as 'Master Plan 2011') and the *Nowra CBD Economic Analysis – Commercial Development Contributions* by AECgroup (February 2013). This study responds to and builds on the strategies and recommendations made in these reports.



The recommendations in this report are based upon the findings presented in the *Technical Review and Analysis Summary Report* prepared by Jackson Teece (See Appendix 1).

KEY

- Study area
- DCP No. 119 site

Cadastrate

- Cadastrate 20110517 SCC

Zone

- | | |
|--|---|
| B3 Commercial Core | RE1 Public Recreation |
| B4 Mixed Use | RE2 Private Recreation |
| R1 General Residential | SP2 Infrastructure |
| R2 Low Density Residential | SP3 Tourist |
| R3 Medium Density Residential | W2 Recreational Waterways |

Fig. 1.1: Nowra CBD zoning map showing extent of study area (Zoning map source: Draft Shoalhaven LEP; 2013)

1.3 CONSULTATION

Feedback was sought on the draft height and FSR recommendations from the key stakeholders. Jackson Teece and the Council met with 'Nowra CBD Action' and Councillors on 1st May 2013 where a presentation was made on the outcome of the technical review and analysis, methodology and proposed draft maximum building height and FSR controls. The feedback received from this consultation has been incorporated into the recommendations in this report.

1.4 REPORT STRUCTURE

This study is comprised of the following parts:

- *Nowra CBD Commercial Core and Mixed Use Zones - Study of Building Height and FSR Controls*, which is this document.
- *Technical Review and Analysis Summary*, which provides background information for this study and is attached as Appendix 1.
- *Overshadowing Studies for Selected Areas*, which compare overshadowing of existing and example built form envelopes for three selected areas within the Nowra town centre and is attached as Appendix 2.

This report is structured in the following manner:

Chapter 1 – Introduction

Chapter 2 – Presents the key findings of the Technical Review and Analysis Summary

Chapter 3 – Presents the relevant definitions of terms as per the draft SLEP and DCPs

Chapter 4 - Presents the determination of maximum building height

Chapter 5 – Presents the determination of FSR

Chapter 6 – Provides a detailed overshadowing study for selected areas

Chapter 7 – Presents recommendations on height and FSR as well as other related areas.

2. ISSUES, OPPORTUNITIES AND CONSTRAINTS

A desktop analysis was carried out by Jackson Teece which included a review of all relevant planning controls, all relevant studies undertaken previously, and a site analysis which covered issues such as the land use, land ownership, heritage buildings, building density, destinations and movement patterns, and topography and flood affected land. This analysis is presented in the *Technical Review and Analysis Summary Report* (see Appendix 1).

A key document that has informed the outcomes of the analysis is the draft *Nowra CBD Urban Design Master Plan* and its associated documents (*Draft Nowra CBD Urban Design Master Plan - Strategic Direction; Background Reports; and Ideas + Illustrations*, Arup Consultants, 2011; *Draft Nowra CBD Master Plan – Market Assessment*, Hill PDA, 2011)

The key findings of this analysis in the form of issues, opportunities and constraints are presented below:

2.1 ISSUES

1. **Nowra needs to be a 'Place' offering services and amenities that are not offered elsewhere:** At present Nowra CBD has to compete with surrounding coastal towns at a number of levels. However Nowra township, being a larger centre, needs to offer services and amenities that smaller coastal towns are not able to offer. This differentiation needs to be planned and incentivised in all development controls to enable the future transformation of the township.

'Placemaking' ventures will need to be integral to the transformation of the town to a Major Regional Centre in order to attract employment, residents and visitors.
2. **Character of Nowra CBD:** The township is located in a rural setting with long distance views which contributes to its specific character. Future development should aim to maintain the positive features and character of the town.
3. **Lack of legibility from the highway:** The issue of legibility is twofold. Firstly, the lack of visual legibility of the township from the highway, and the contrasting high level of visibility of Stockland Nowra, discourages passing commuters from entering the Nowra township. Secondly, the lack of legibility of a clear point of access or 'entrance' to the township from the highway acts to further discourage potential custom. The height and FSR controls should aim to achieve greater legibility for the township.
4. **Low incentive to develop due to various existing development controls:** It is considered, based on various expert studies undertaken by the Council, that several existing development controls (including parking requirements and contributions) have a collective result of being a disincentive to development. The height and FSR are two controls that are likely to have an impact on the level of development in the town.
5. **The wide distribution of destinations:** At present the two key destinations in terms of retail and commercial is the main street of Nowra town (Junction Street) and Stockland Nowra. Due to the two key destinations being divided by the highway, it acts to dilute the critical mass away from the town centre.



Fig. 2.1: Existing northern entry to Nowra town

2.2 OPPORTUNITIES

1. The *South Coast Regional Strategy* (2007) classifies Nowra as a 'Major Regional Centre'. This provides Nowra an opportunity to develop in to a centre that offers services, employment and amenities that other surrounding towns are not in a position to offer.
2. The Master Plan 2011 identifies a vast number of catalyst sites distributed widely within the township which are mainly Council owned sites. These sites provide great opportunities to catalyse the transformation of the town to achieve the desired future character.
3. There is an opportunity to create two or more gateway statements through built form enhancing the legibility of the entrance in to town. The Master Plan 2011 identifies three major gateways from the Princes Highway.
4. The location of the highway on the periphery of the township ensures ready access from surrounding regional locations.
5. The Nowra Commercial Core and the Mixed Use Zones are located well within a 5-10 minute walking catchment (400-800m) from the centre of the CBD (Junction Street).
6. The Nowra township is a base for important regional services including the Shoalhaven Hospital and the Cultural Precinct. There is an opportunity to encourage broader medical services and facilities for the region, cultural offerings as well as river and hinterland related tourism.
7. Nowra is uniquely placed alongside a river with stunning medium and long distant mountain and valley views that are visible from various locations within the township due to its topography.
8. Based on the AEC Group report (2013) there is a number of long term land holders, in the CBD and Mixed Use zones, that are interested in developing due to the lower costs associated with long term land ownership



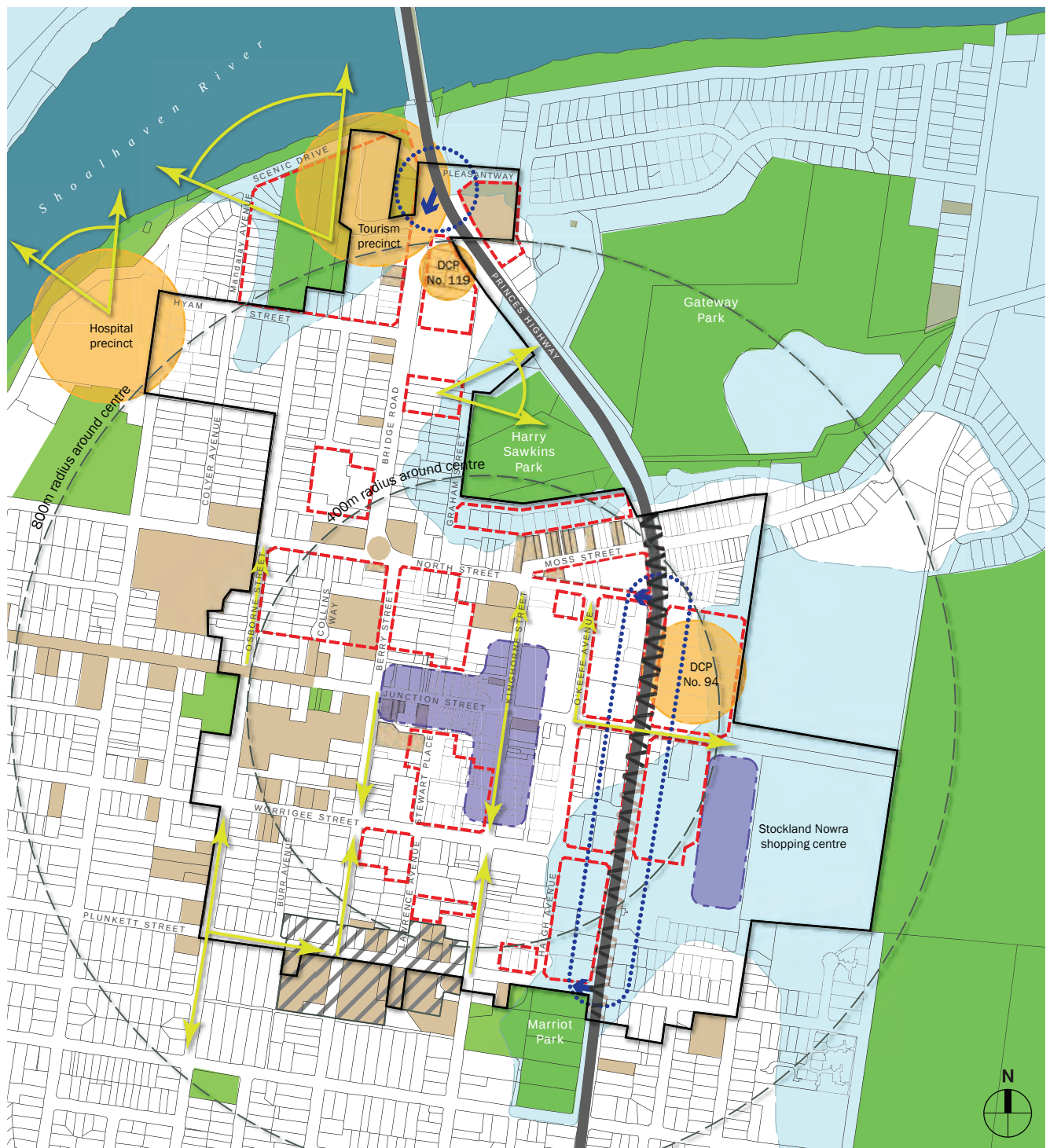
Fig. 2.2: Nowra town located alongside the Shoalhaven River (Source: Colin F. Douch, 2010)



Fig. 2.3: The highway as a barrier

2.3 CONSTRAINTS

1. Significant extents of the peripheral areas of the town and several areas within the town are subject to flooding. This will need to be considered in the planning of the future expansion and growth areas of the township.
2. Whilst the highway presents some opportunities in terms of access, it also acts as a barrier between the east and west sides of the town (Commercial Core B3 zone). The limited opportunities for crossing the highway (as a pedestrian and a driver) further heightens the problem.
3. The disconnected placement of Stockland Nowra on the eastern side of the highway acts to attract critical mass away from the township. New development controls need to ensure that the development on the western side of the highway provides legibility in terms of the existence of the CBD on the western side.
4. There are a number of heritage listed buildings in the town. These buildings need to be considered in the design of adjacent buildings including their architectural character, height and setbacks.



KEY



Study area

Opportunities:



Catalyst sites



Precincts



Long distant views



Princes Highway



Proposed major town entry to the CBD



Gateway to town

Constraints:



100 year floodline



Princes Highway as a barrier



Heritage items



Heritage conservation zone



Segregation of centre uses

Fig. 2.4: Opportunities and constraints of Nowra CBD commercial core and mixed use zones

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3. KEY RELEVANT PLANNING CONTROLS

An analysis of the key relevant planning controls was undertaken in the *Technical Review and Analysis Summary Report* (see Appendix 1). The relevant definitions and other controls are outlined below:

3.1 ILLAWARRA REGIONAL ENVIRONMENTAL PLAN

The *Illawarra Regional Environmental Plan* (under the *Environmental Planning and Assessment Act 1979*), now a Deemed State Environmental Policy, requires that any building that is proposed to be a height of more than 11 metres obtains the concurrence from State Government.

3.2 DRAFT SLEP 2013

The current draft SLEP has a standard citywide maximum building height limit of 11 metres. However, the triangular area to the north of the study area (covered by DCP No. 119) allows for maximum building heights of 16 to 28 metres. A maximum building height of 11 meters is proposed for a site to the east of the Princess Highway (covered by DCP 94). The draft SLEP height of building map is presented in Figure 3.1. These height limits will be reviewed and revised based on the outcomes of this detailed work.

The draft SLEP 2013 proposes a range of building heights from 7.5 to 8.5 meters in the residential areas surrounding the study area. These height limits will not be reviewed nor revised as part of this study.

Definition of building height (p.146):

building height (or height of building) means the vertical distance between ground level (existing) and the highest point of the building, including plant and lift overruns, but excluding communication devices, antennae, satellite dishes, masts, flagpoles, chimneys, flues and the like.

Definition of FSR (p.43):

The floor space ratio of buildings on a site is the ratio of the gross floor area of all buildings within the site to the site area.

Definition of site area (p.172):

site area means the area of any land on which development is or is to be carried out. The land may include the whole or part of one lot, or more than one lot if they are contiguous to each other, but does not include the area of any land on which development is not permitted to be carried out under this Plan.

Definition of gross floor area (p.155):

gross floor area means the sum of the floor area of each floor of a building measured from the internal face of external walls, or from the internal face of walls separating the building from any other building, measured at a height of 1.4 metres above the floor, and includes:

- (a) the area of a mezzanine, and
- (b) habitable rooms in a basement or an attic, and
- (c) any shop, auditorium, cinema, and the like, in a basement or attic, but **excludes:**
- (d) any area for common vertical circulation, such as lifts and stairs, and
- (e) any basement:
- (i) storage, and
- (ii) vehicular access, loading areas, garbage and services, and

- (a) plant rooms, lift towers and other areas used exclusively for mechanical services or ducting, and
- (b) car parking to meet any requirements of the consent authority (including access to that car parking), and
- (c) any space used for the loading or unloading of goods (including access to it), and
- (d) terraces and balconies with outer walls less than 1.4 metres high, and
- (e) voids above a floor at the level of a storey or storey above.

Additional provisions regarding ground floor uses within the commercial core:

7.13 Ground floor development on land within Zone B3 Commercial Core [local] (p.68)

(1) The objective of this clause is to ensure active uses are provided at the street level to encourage the presence and movement of people.

(2) Development consent must not be granted for development on the ground floor of a building on land within Zone B3 Commercial Core unless the consent authority is satisfied that the ground floor of the building:

(a) will not be used for the purpose of residential accommodation, other than lobbies for any commercial, residential, serviced apartment or hotel component of the development, and

(b) will be used to provide access for fire services or vehicle access, and

(c) will have at least one entrance and at least one other door or window on the front of the building facing the street other than a service lane

3.3 DCP 119

DCP 119 prepared in 2007, covers a triangular piece of land north of the Entertainment Centre at the corner of Bridge Road and the Princes Highway. This site is considered an important site in terms of its built form since it will contribute to the character of the northern 'major gateway'. The current DCP outlines 3 different height zones within the site up to 9 storeys, 7 storeys and 4 storeys and no FSR. In addition to the nominated heights, the DCP also details guidelines on built form, setbacks, overshadowing, views and landscape design.

This study reviews the maximum building height recommendations made in this DCP and could result in revised controls being applied to this site.

3.4 DCP 94

This DCP, prepared in 2000, nominates a height of 3 storeys (11 meters) for a site along the Princes Highway north of Stockland Nowra, allowing activities which relate to the fringe commercial zoning Business 3(b) under the Shoalhaven Local Environmental Plan 1985.

This study reviews the height recommendations made in this DCP and could result in revised controls being applied to this site.

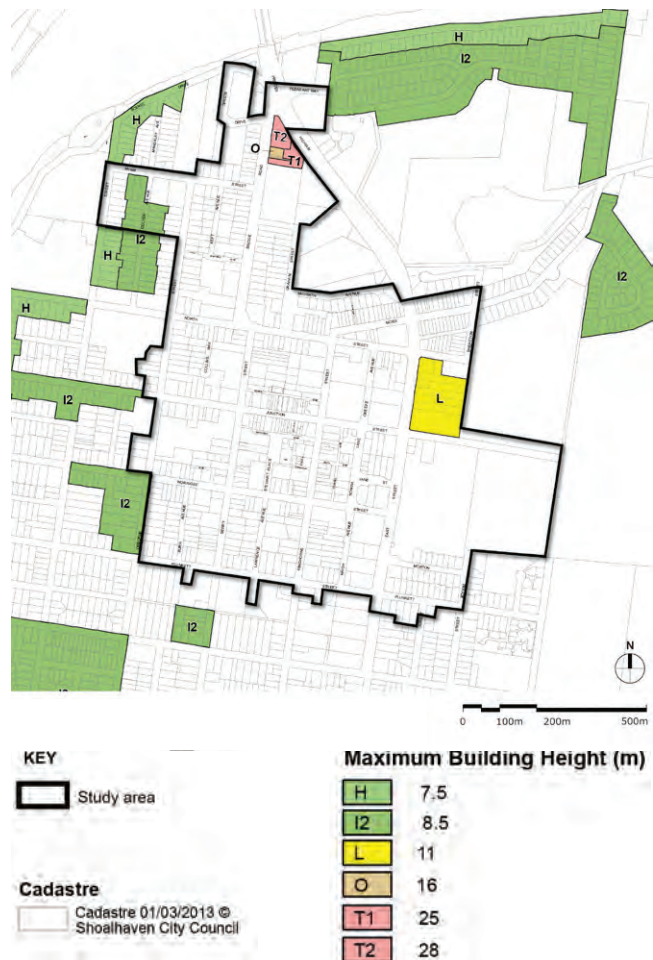


Fig. 3.1: Nowra CBD height of building map showing extent of study area (Height map source: Draft Shoalhaven LEP; 2013)

4. DETERMINATION OF HEIGHT

The determination of the height in the Nowra township was led primarily by the desired built form. The methodology adopted is described below.

4.1 METHODOLOGY

The issues, opportunities and constraints identified in the technical review and analysis contributed to the identification of the following built form characteristics that should be achieved through height controls:

1. A **strong built form** for the proposed Commercial Core (B3) area that is emphasised through the built form character contributing to the legibility of the centre.
2. Enhanced legibility of the town and its entries by creating gateway locations through a clear built form hierarchy. The Master Plan 2011 identifies three major gateways at the northern and southern entries from the Princes Highway.
 - Note: There are current traffic issues in relation to the Bridge Road entrance in to town. Its proximity to the bridge (river crossing) doesn't allow for adequate traffic collecting prior to turning into Bridge Road leading to traffic congestion. This may be resolved through the re-alignment of the Bridge Road-Princes Highway intersection to a southern location. However, since this issue is outside the scope of this document, we have assumed that this will be resolved at a point in the future.
3. A **higher level of connectivity between the eastern and western segments of the Commercial Core** through pedestrian and vehicular crossings that are integral to built form and open spaces.
4. **Encourage more residential uses** within the proposed Commercial Core and Mixed Use Zones.
5. A built form character with a **distribution of density / land uses** as appropriate to ensure that all traffic entering the town is not required to access the CBD core area.
6. A built form that **responds to the demand for tourism related services** including accommodation along the river front. The built form here would need to be sensitive to its highly exposed position and also ensure that through views are not blocked.
7. A built form that is **sympathetic to heritage** elements and aids in the conservation of these elements that add a layer of richness to the town.
8. Higher density mixed use (with upper level residential uses) buildings in **areas of higher services and amenity** such as transport interchanges, town squares and parks and open spaces.

Further assumptions made in the assessment are:

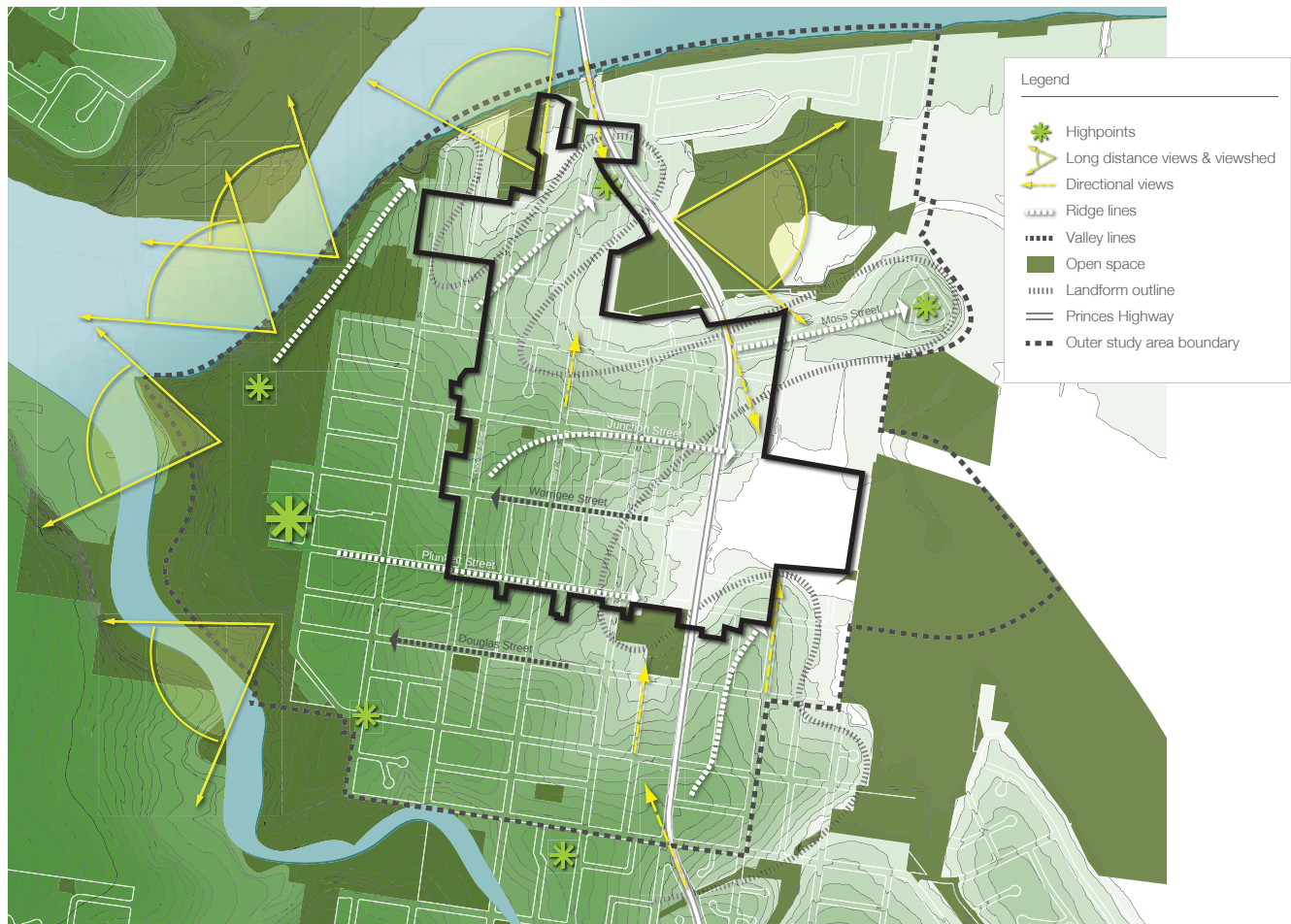
- Accommodating increased levels of population densities are also influenced by the capacity of the town to accommodate demand in other areas including infrastructure services and traffic. These other aspects fall outside the scope of this study. It is assumed that these studies will be carried out separately. Current areas of traffic congestion, such as at the river crossing/ Bridge Road intersection, are assumed to be resolved.

4.2 RECOMMENDATIONS ON HEIGHT

The recommendations for height in the Nowra Commercial Core and Mixed Use zones have aimed to address all of the above built form objectives. These recommendations (Fig 4.3) are discussed below. It should be noted that the undulating topography of the CBD influences how the built form is perceived in its context.



Fig. 4.1: Perception of height controls in areas of undulating topography



Nowra CBD building height and floor space ratio study area

Fig. 4.2: Landform characteristics and key views (Landform characteristics map source: Draft Nowra CBD Urban Design Master Plan - Background Report B; ARUP; 2011)

12m Zone / 3-4 Storeys

A maximum building height of 12m, allowing for buildings of up to 4 storeys has been recommended for most of the land proposed to be zoned (B4) Mixed Use. This provides a transition in height between the Commercial Core and the detached residential in the residential zones.

15m Zone / 4-5 Storeys

The proposed Commercial Core (B3) zone, is largely determined as a 15m maximum building height area allowing for a maximum of 5 storeys.

In addition to the Commercial Core, area around Harry Sawkins Park have also been determined as a 15m height area capturing the higher level of amenity offered by the park, to encourage mixed use/ residential developments.

The northern part of the potential tourism precinct along Scenic Drive is also determined as a 15m height area to ensure that the character of the river foreshore is minimally impacted and through views are maintained for the rest of the tourism precinct.

20m Zone / 6 Storeys

A 20m height zone is determined in the area to the west of the Princes Highway between North and Plunket Streets and O'Keefe Avenue. This area comprises two of the major gateway locations signalling the entry into town. The site

is also well placed to accommodate large scale mixed use buildings with views east to the hinterland from the upper floors.

In addition, these taller buildings have the potential to act as a buffer between the Commercial Core and the highway.

28m Zone / 8 Storeys

A 28m maximum building height has been determined for the greater part of the tourism zone north of Hyam Street. This area is also identified as the major gateway in to Nowra CBD and is well placed to provide the built form to signify the entry to the Nowra Regional Centre as well as capture the opportunities created by its location in proximity to the river foreshore with significant views to the hinterland.

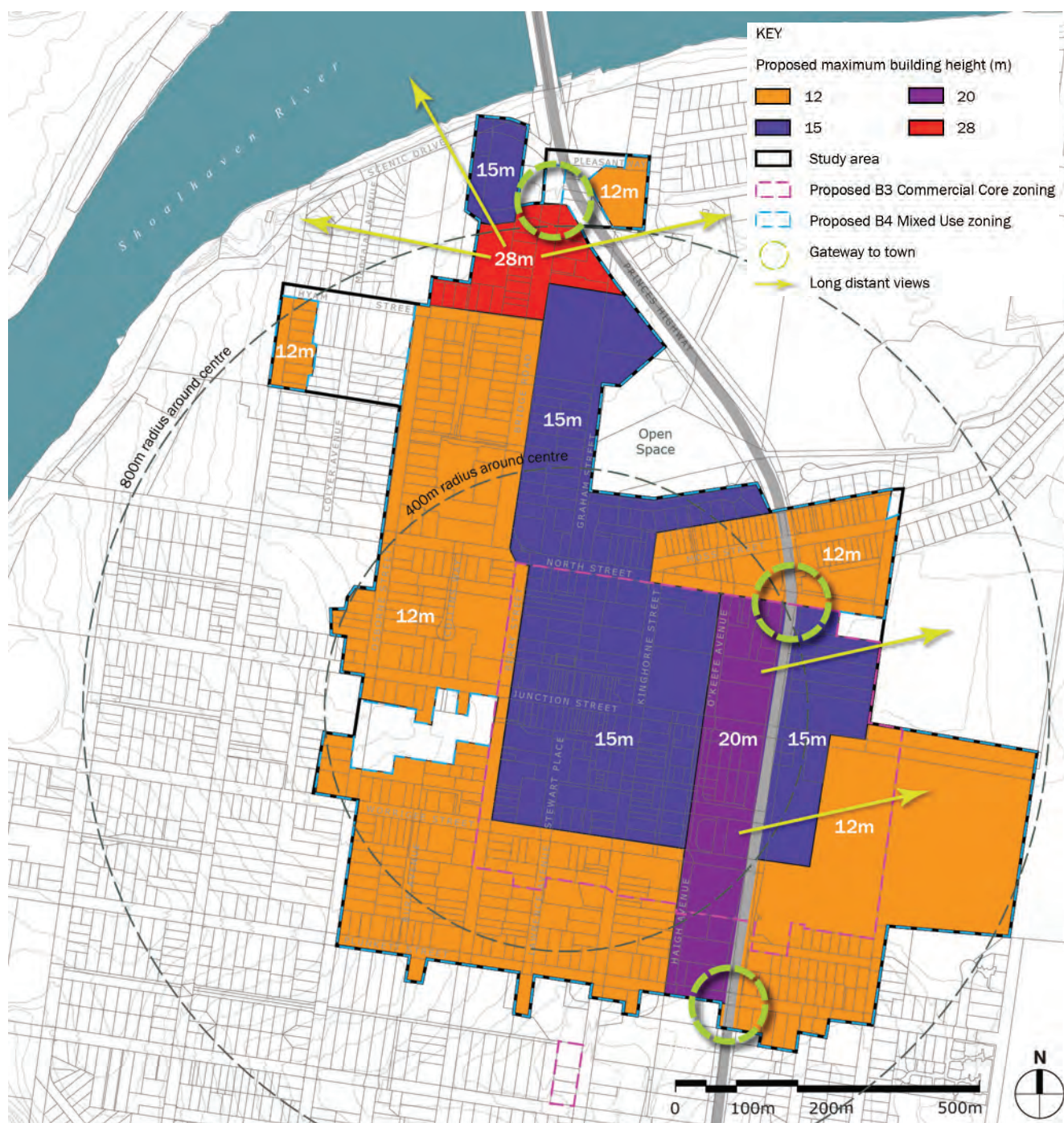


Fig. 4.3: Recommended maximum building height for Nowra CBD



Fig. 4.4: View 1 - Aerial (Source: Colin F. Douch, 2010)

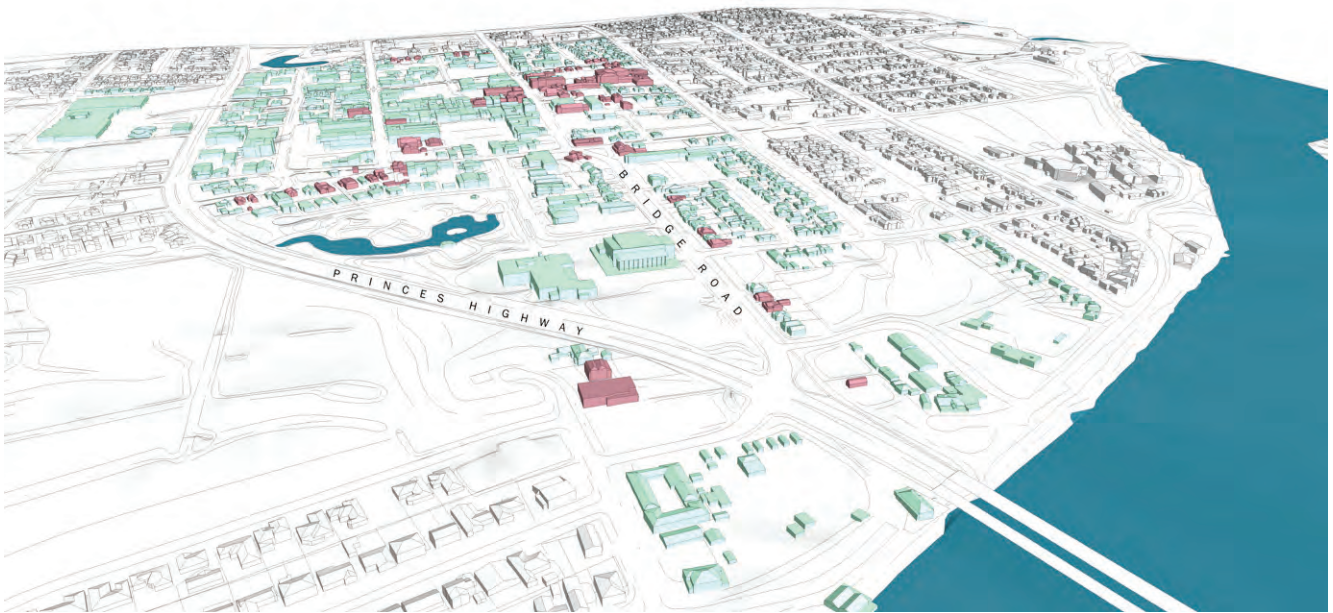


Fig. 4.5: View 1 - Nowra CBD

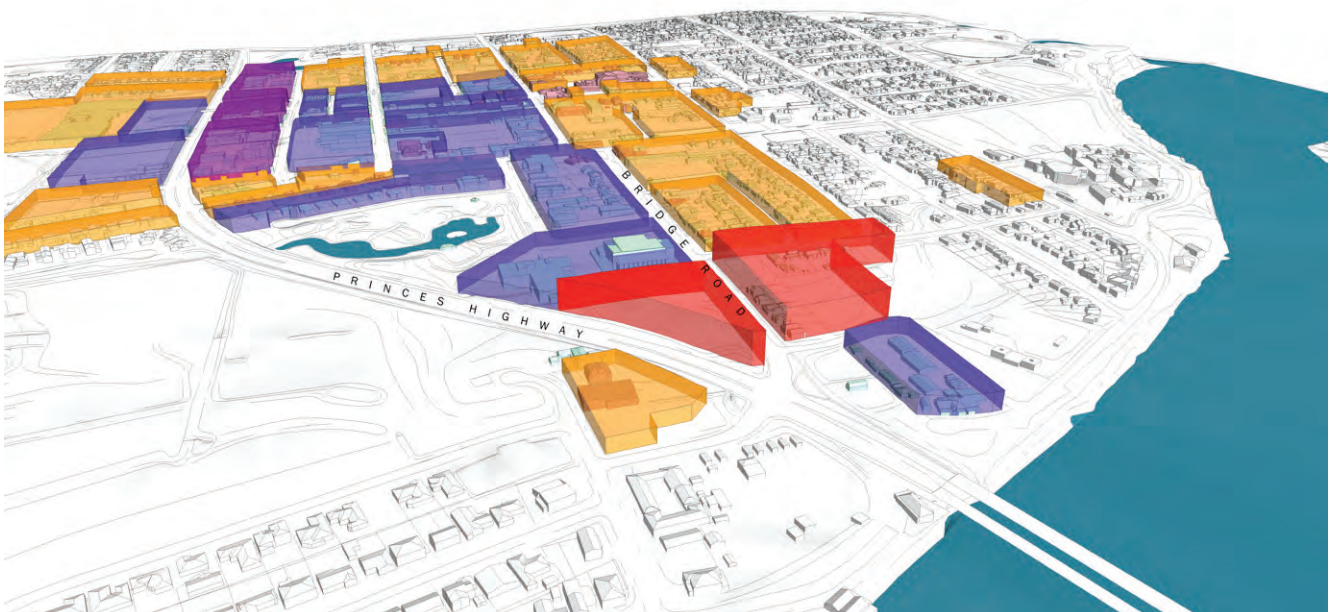


Fig. 4.6: View 1 - Proposed maximum building height



Fig. 4.7: View 2 - Aerial (Source: Colin F. Douch, 2010)

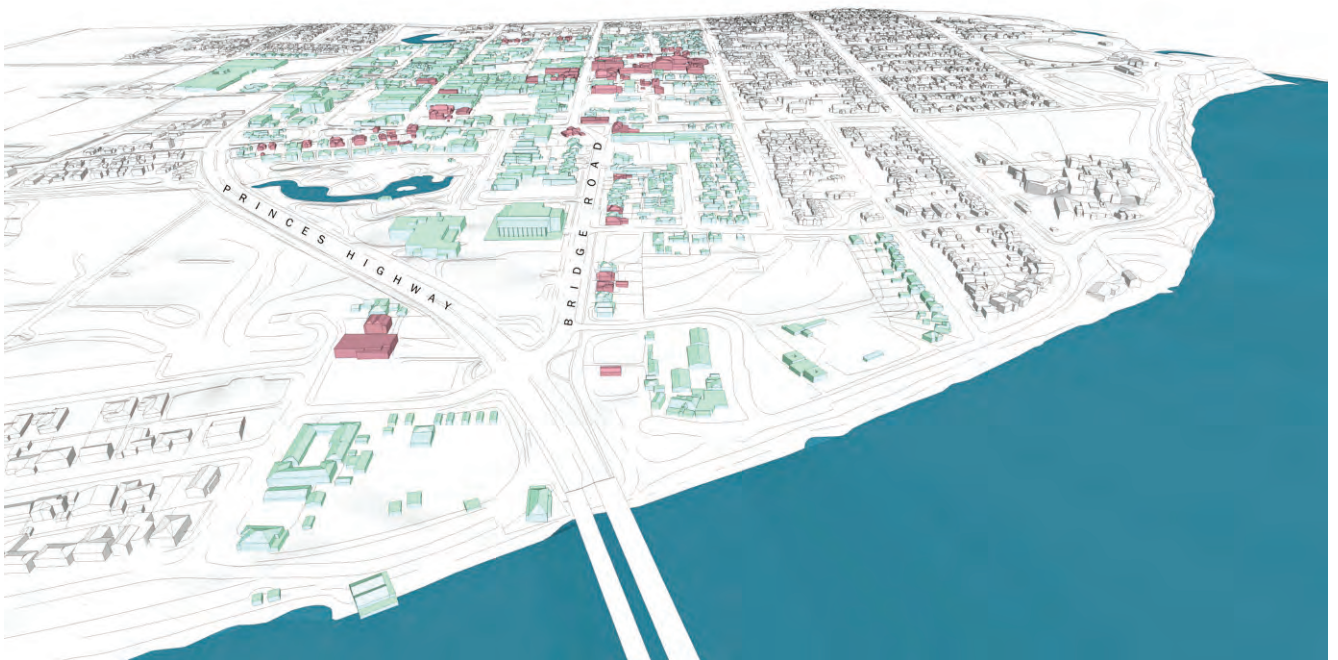


Fig. 4.8: View 2 - Nowra CBD

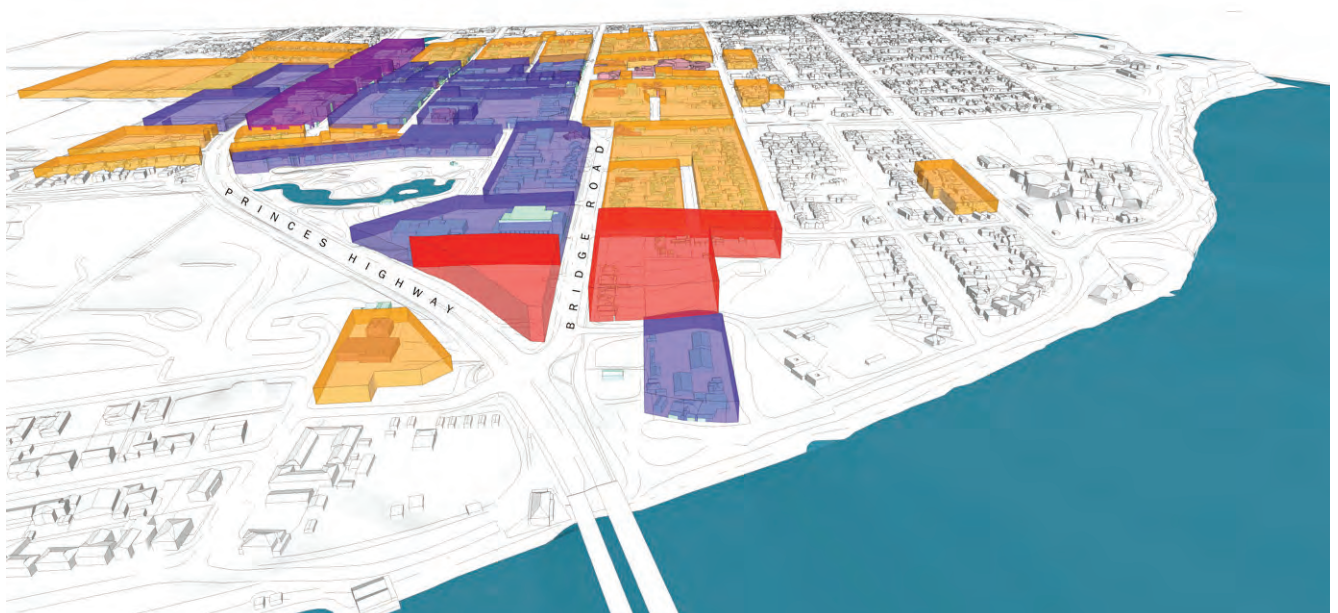


Fig. 4.9: View 2 - Proposed maximum building height



Fig. 4.10: View 3 - Aerial (Source: Colin F. Douch, 2010)

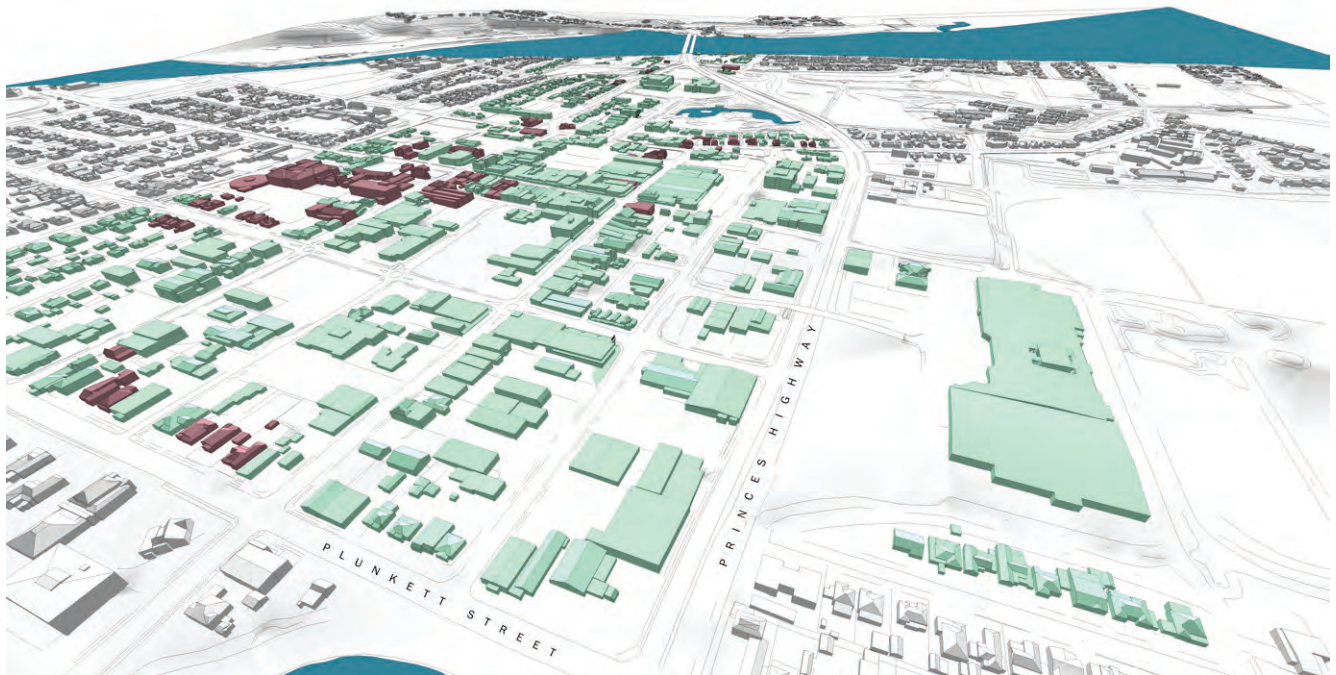


Fig. 4.11: View 3 - Nowra CBD

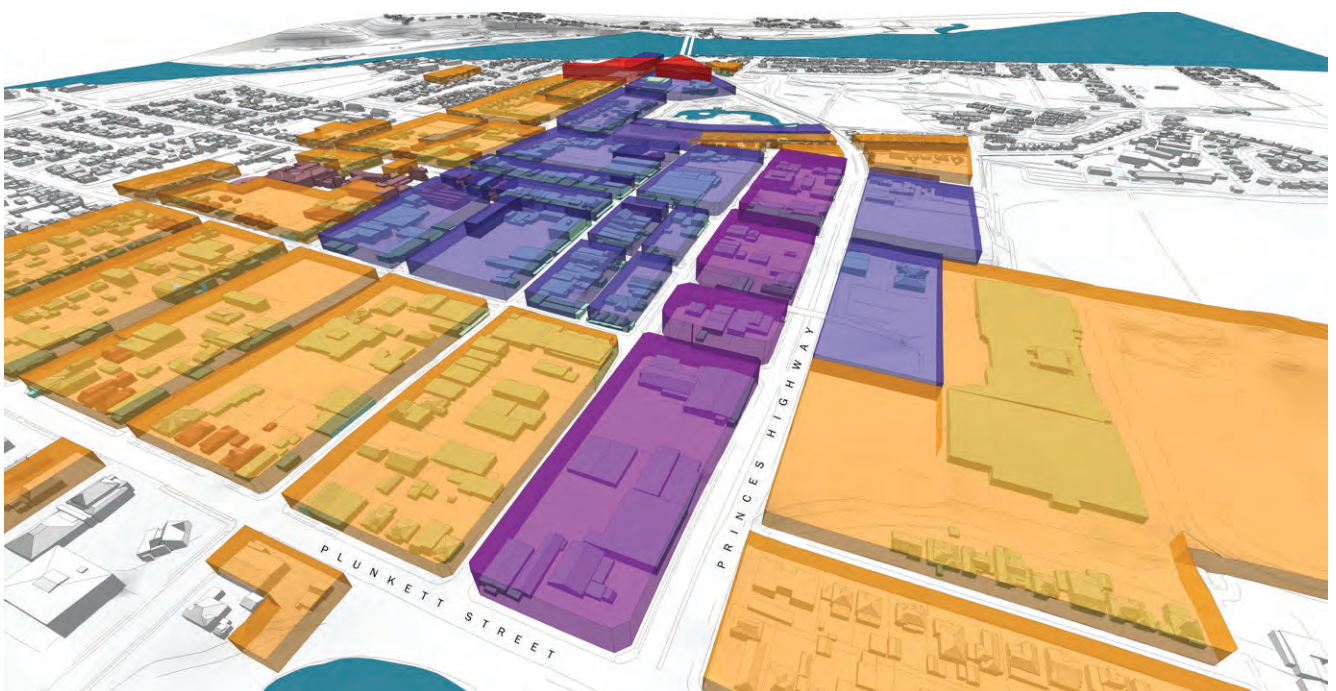


Fig. 4.12: View 3 - Proposed maximum building height



Fig. 4.13: View 4 - Aerial (Source: Colin F. Douch, 2010)

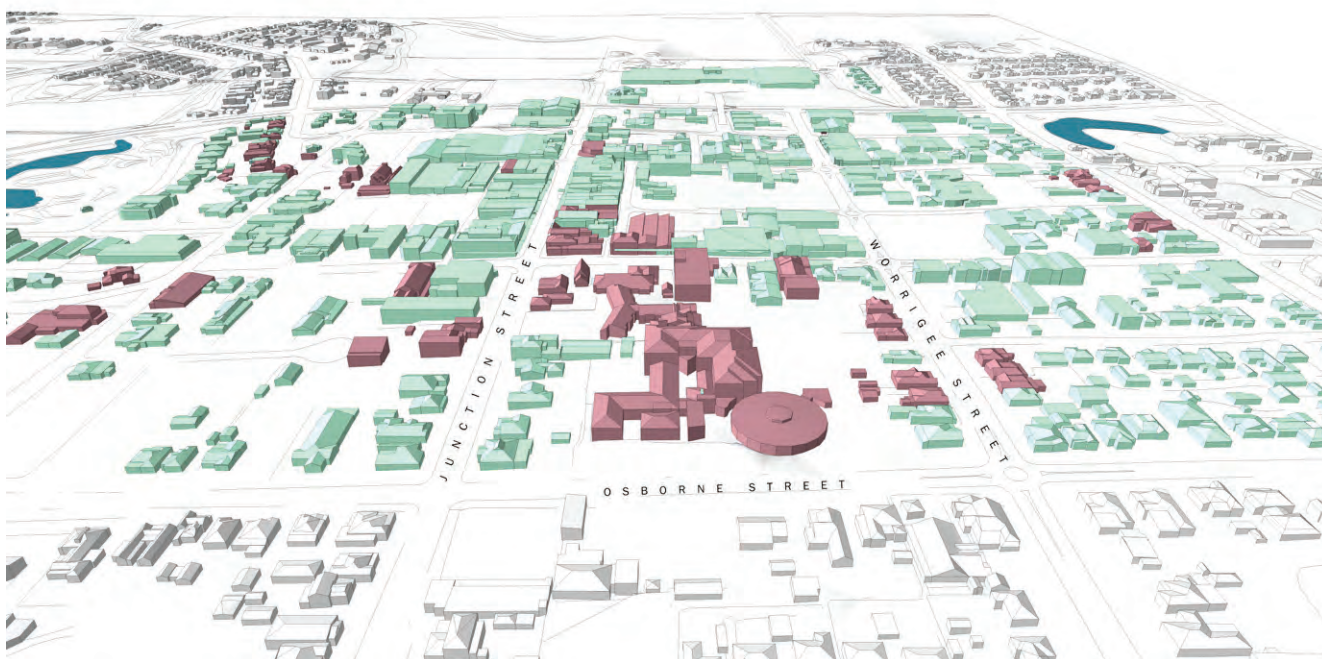


Fig. 4.14: View 4 - Nowra CBD

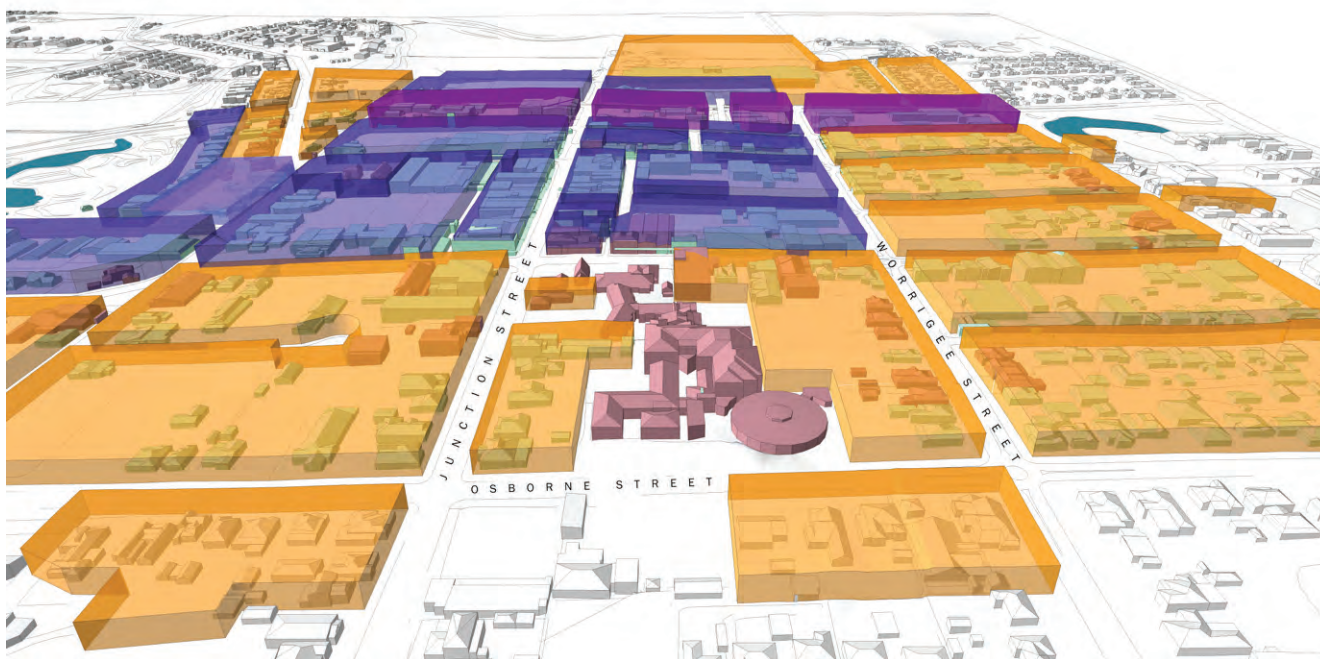


Fig. 4.15: View 4 - Proposed maximum building height



Fig. 4.16: View 5 - Aerial (Source: Colin F. Douch, 2010)



Fig. 4.17: View 5 - Nowra CBD

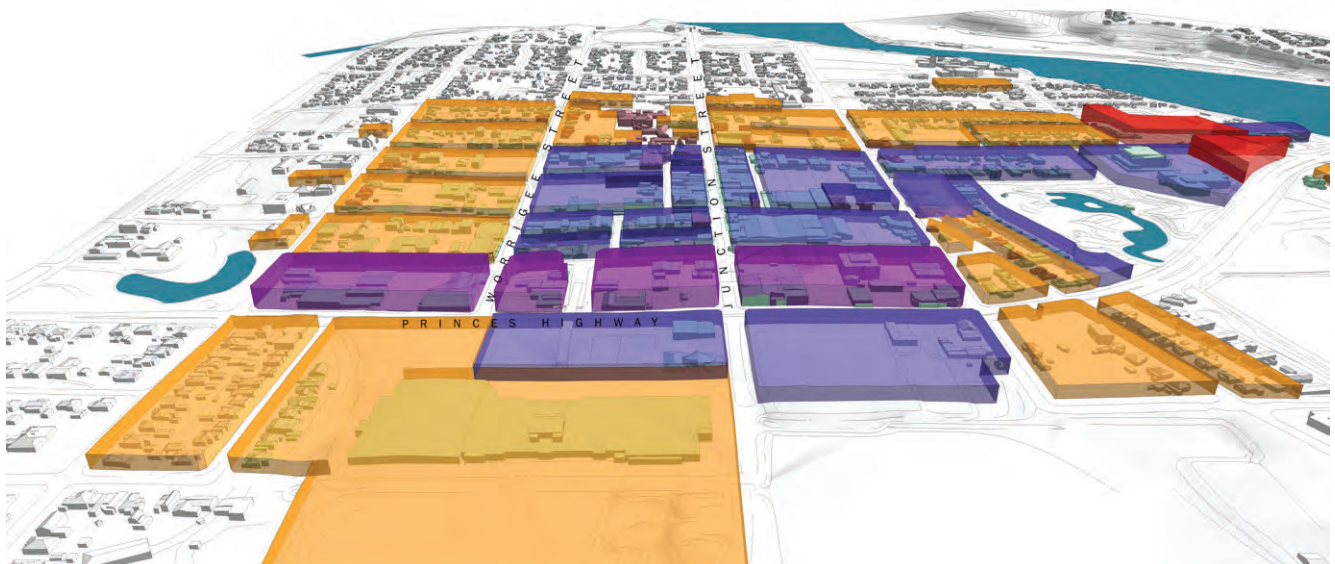


Fig. 4.18: View 5 - Proposed maximum building height

5. DETERMINATION OF FSR

The determination of FSR within the study area was a result of the desired built form characteristics, the previously defined building heights and a number of key parameters. These parameters and other assumptions that were taken into consideration in the capacity testing of sites are described below.

5.1 METHODOLOGY

Key parameters and related assumptions that influence the built form envelope are identified as follows:

1. **The likely land use for the site:** The land uses proposed for a site dictates the floor plates and other controls such as solar access requirements. In the capacity testing of FSRs for the site, we explored a range of possible land uses allowed within the particular Zoning under the draft SLEP 2013.
2. **Building setbacks to avoid overshadowing:** Typical street widths were examined to ensure that over shadowing of footpaths were avoided as far as possible (Figure 5.2). The following assumptions were made:
 - Overshadowing was a concern primarily from the south and west facing buildings.
 - The angle of the sun at 12 noon in mid-winter, which is 32 degrees, was taken as the determining angle for testing of overshadowing (Figure 5.1).
 - In the worst case scenario (mid winter), it was aimed to ensure that there would be solar access to the opposite footpath in the least.

(See Chapter 6 and Appendix 2 for detailed analysis of overshadowing for selected areas)

3. **Building separation:** Buildings overlooking each other require separation for privacy and comfort based on the land use. Building separation for residential uses is stipulated in the Flat Residential Design Code. These guidelines have been adopted where appropriate.
4. **Built form controls:** It is understood that the Council may introduce built form controls within a DCP to ensure that new development within the next 20-30 years achieve a built form character that meets its vision for Nowra. Provision was made for these controls based on assumptions for key areas such as Junction Street.
5. **Heritage related building controls:** It was assumed that there will be controls related to building on or adjacent to heritage listed buildings. Where capacity testing was done adjacent to heritage listed buildings, potential controls based on its category of listing were adopted.
6. **View corridors:** Key view corridors were identified and maintained.
7. **Car parking requirements:** Different scenarios were tested based on current council car parking requirements. Scenarios without parking provision were also tested depending on the zoning of the selected site.

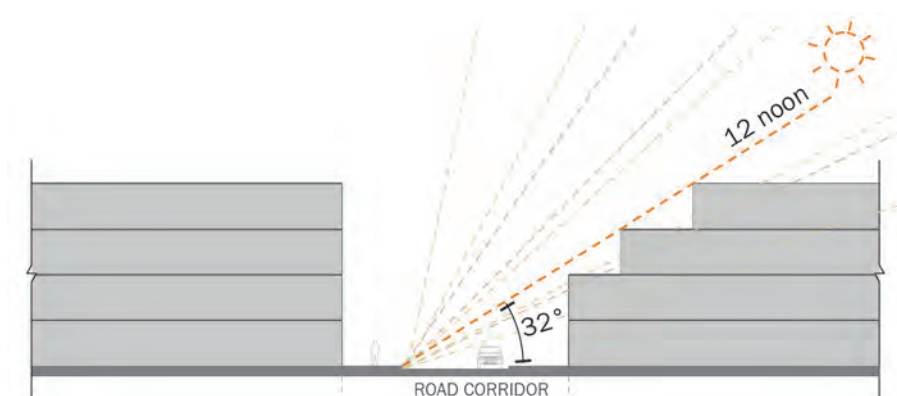


Fig. 5.1: Selected solar angle for overshadowing testing

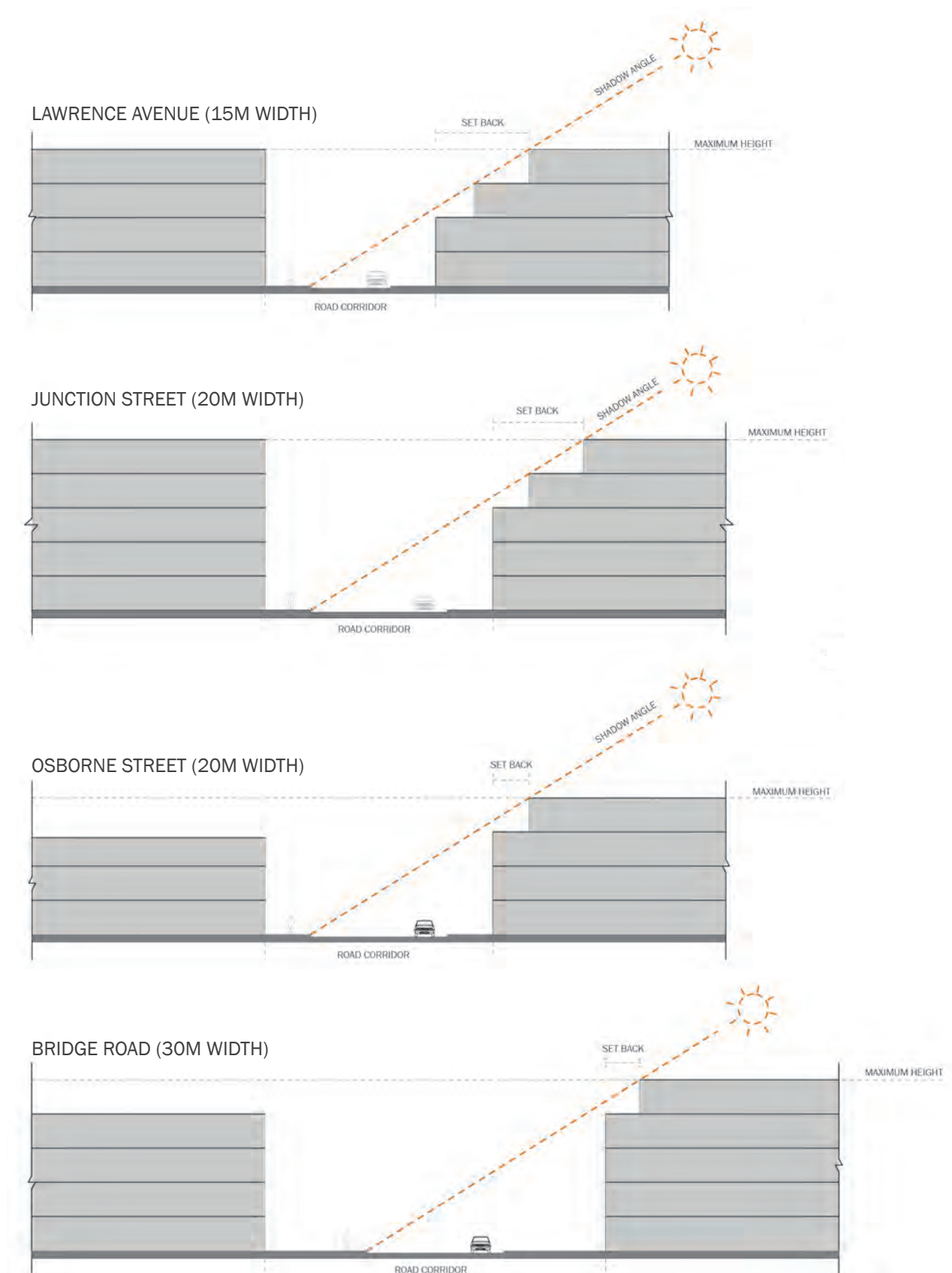


Fig. 5.2: Analysis of typical street widths to assess setback requirements

5.2 FSR TESTING

Capacity testing of sites was undertaken on over fifteen different site and scenarios in order to arrive at the final determination of FSR. The selection of the sites were based largely on catalyst sites as identified in the Master Plan 2011 and other sites considered suitable for testing (Figure 5.3). Several scenarios on at least one site for each height zone were considered.

The key assumptions made in the calculations for capacity testing are listed below.

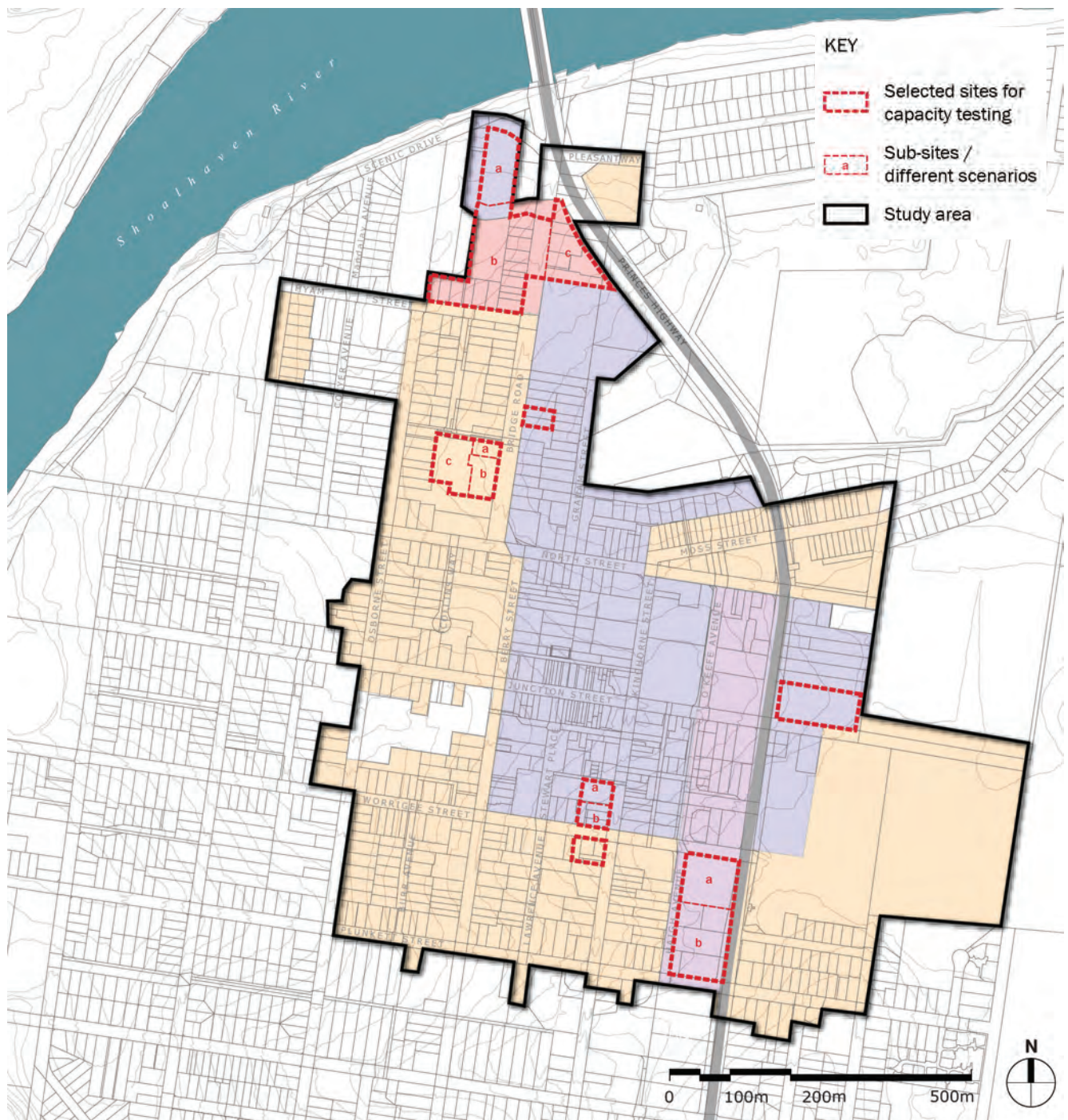


Fig. 5.3: FSR testing sites within Nowra CBD

General

In arriving at the GFA for sites the following were assumed:

- 85% of the total area of typical commercial floor plates equals the GFA of the development
- 75% of the total area of typical residential floor plates equals the GFA of the development

12m Zone / 3-4 Storeys

6 scenarios were tested within this zone.

- Mixed use buildings comprised of 2 levels of commercial/ retail uses and 2 levels of residential uses above.
- 30% allowance for communal open space.
- With/without on-grade parking for residents and visitors.
- 12m building separation between residential floors above.
- Maintained existing building setbacks from street.

15m Zone / 4-5 Storeys

6 scenarios were tested within this zone.

- Mixed use buildings comprised of 2 levels commercial/ retail and 3 levels residential uses above; and mixed use buildings comprised of 5 levels commercial/ retail.
- 18m building separation between residential floors above.
- High density development within the commercial core/ medium density development in mixed use zoned area.
- Building setbacks at the southern and eastern side of level 4 and 5 to avoid overshadowing of opposite footpath / public domain for buildings on corner blocks; no building setback for mid-block scenarios.

20m Zone / 6 Storeys

6 scenarios were tested within this zone.

- Mixed use buildings comprised of 3 levels commercial/ retail and 3 levels residential uses above and mixed use buildings comprised of 6 levels commercial/ retail (large floor plates).
- 18m building separation between residential floors above
- Building setbacks at the southern and eastern side of level 4, 5 and 6 to avoid overshadowing of opposite footpath / public domain; no building setback for mid-block scenarios.

28m Zone / 8 Storeys

3 scenarios were tested within this zone.

- Mixed use including 2 levels podium and 6 levels of residential towers above.
- Building separation between residential towers (also maintaining view corridors for adjacent tall buildings).
- Building setbacks to adjacent heritage building.
- Maintained existing building setbacks from street.

5.3 FSR RECOMMENDATIONS

The proposed FSR was arrived at based on the capacity testing of sites incorporating the key parameters (Figure 5.4).

1.5:1

This FSR has been proposed largely for the land proposed to be zoned Mixed Use (B4). The area is surrounded by low density residential uses, comprising mostly of single storey detached dwellings. To achieve a medium density built form that provides a transition from the higher density to the lower density built form, an FSR of 1.5:1 has been determined for this zone where the maximum building height is largely 12m.

1.8:1

This FSR is largely in relation to the proposed B(3) Commercial Core zone located to the east of the highway and south of the Commercial Core. The former, whilst removed from the main CBD to the west of the Princes Highway is well placed for larger scale low rise developments such as Stockland Nowra.

The small portion of land identified for an FSR of 1.8:1 at the river foreshore aims to achieve potentially a typical development of a larger scale base with a narrow medium rise tower for a use such as tourist accommodation. The aim is to ensure that visual impacts on the scenic river foreshore are minimised and through views are maintained for the taller buildings allowed to the south of the site.

2.0:1

An FSR of 2.0:1 has been proposed for the area identified as the northern major gateway and a potential tourism precinct. The relatively lower FSR coupled with the high building height allowance aims to achieve developments with a larger scale base and narrower residential towers such as for tourist accommodation which will allow through views to be maintained for multiple north facing buildings in this area.

2.3:1

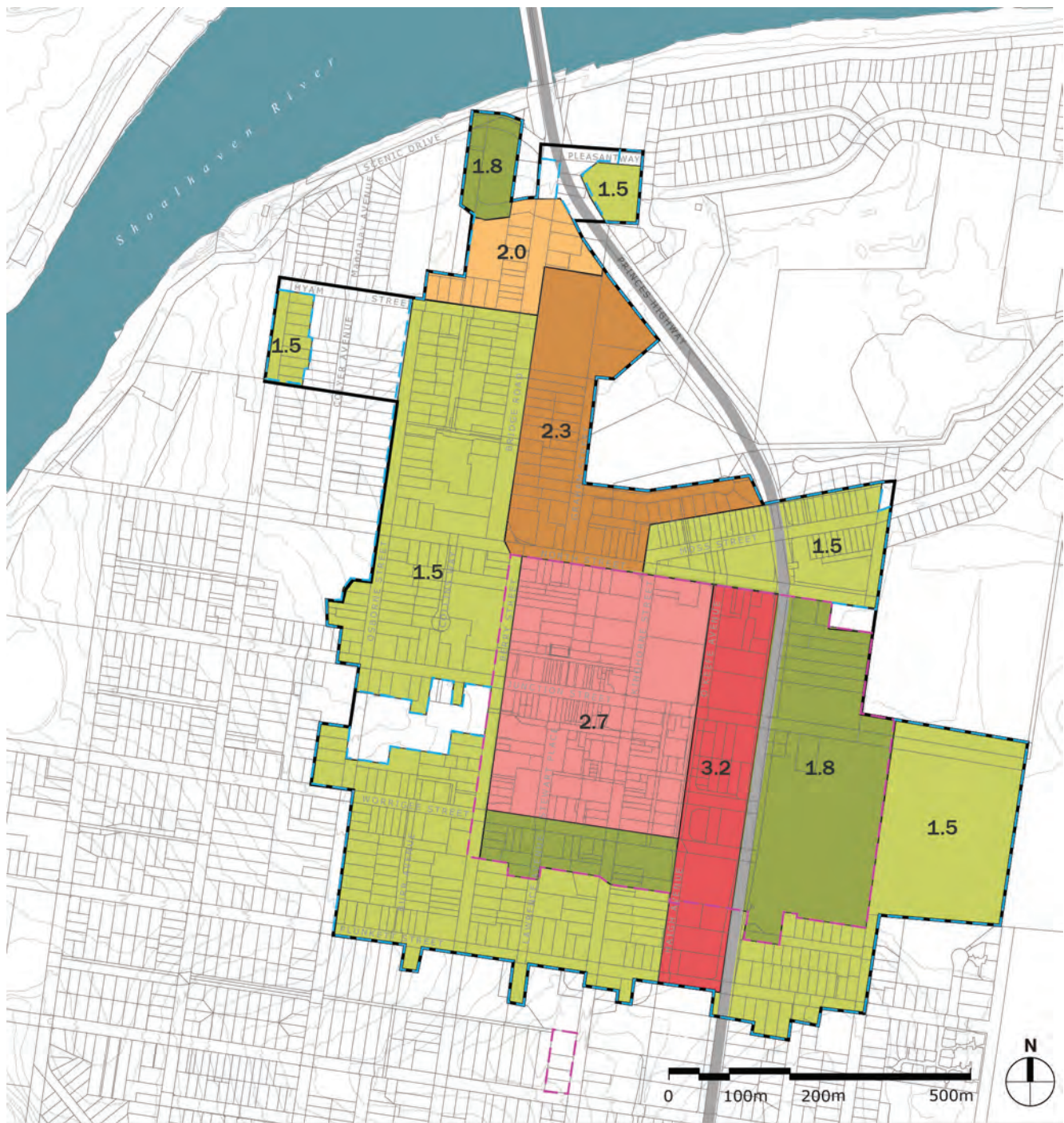
This FSR is in an area that coincides with the maximum building height of 15m surrounding Harry Sawkins Park. Due to the high quality amenity offered by the park, this area is seen to have potential to accommodate higher density residential uses within mixed use buildings.

2.7:1

This FSR is recommended in Nowra CBD, proposed to be zoned the Commercial Core (B3), to the area extending from North Street to Worrigee Street and Berry Street to O'Keefe Avenue. The aim is to encourage higher density mixed use developments with residential or commercial uses above. At the same time the FSR aims to promote the retention of the fine grain fabric of the CBD area which would be lost if the smaller sites were to amalgamate in to larger lots.

3.2:1

This area located to the west of the Princes Highway, allows a maximum height limit of 20m. The area accommodates the two major gateways in to the town from the Princes Highway. It is anticipated that taller, larger scale mixed use buildings requiring larger lots will locate here creating the gateway built form outcomes desired.



KEY

Proposed maximum FSR (n:1)

1.5	2.3	Study area
1.8	2.7	Proposed B3 Commercial Core zoning
2.0	3.2	Proposed B4 Mixed Use zoning

Fig. 5.4: Proposed FSR for Nowra CBD

6. TESTING OF OVERSHADOWING

An overshadowing study of the proposals was undertaken to ensure that the proposed height and FSR allowed potential built form envelopes that did not create problems with overshadowing.

The aim was to ensure that the additional height introduced did not detrimentally impact the solar access to the street. It was assumed that at 12 noon in mid winter (June) there should be solar access to the opposite pavement as a minimum.

Three areas were modelled with example building envelopes for the testing of overshadowing. The three selected areas being sections of Junction Street, Princes Highway and Bridge Road. As can be seen from Figures 6.2 – 6.7, the recommended additional building height does not detrimentally impact solar access to the street.

Overshadowing studies for the above three areas at 10am, 12 noon and 4pm in March, June and December were also undertaken. These illustrations can be found in Appendix 2.

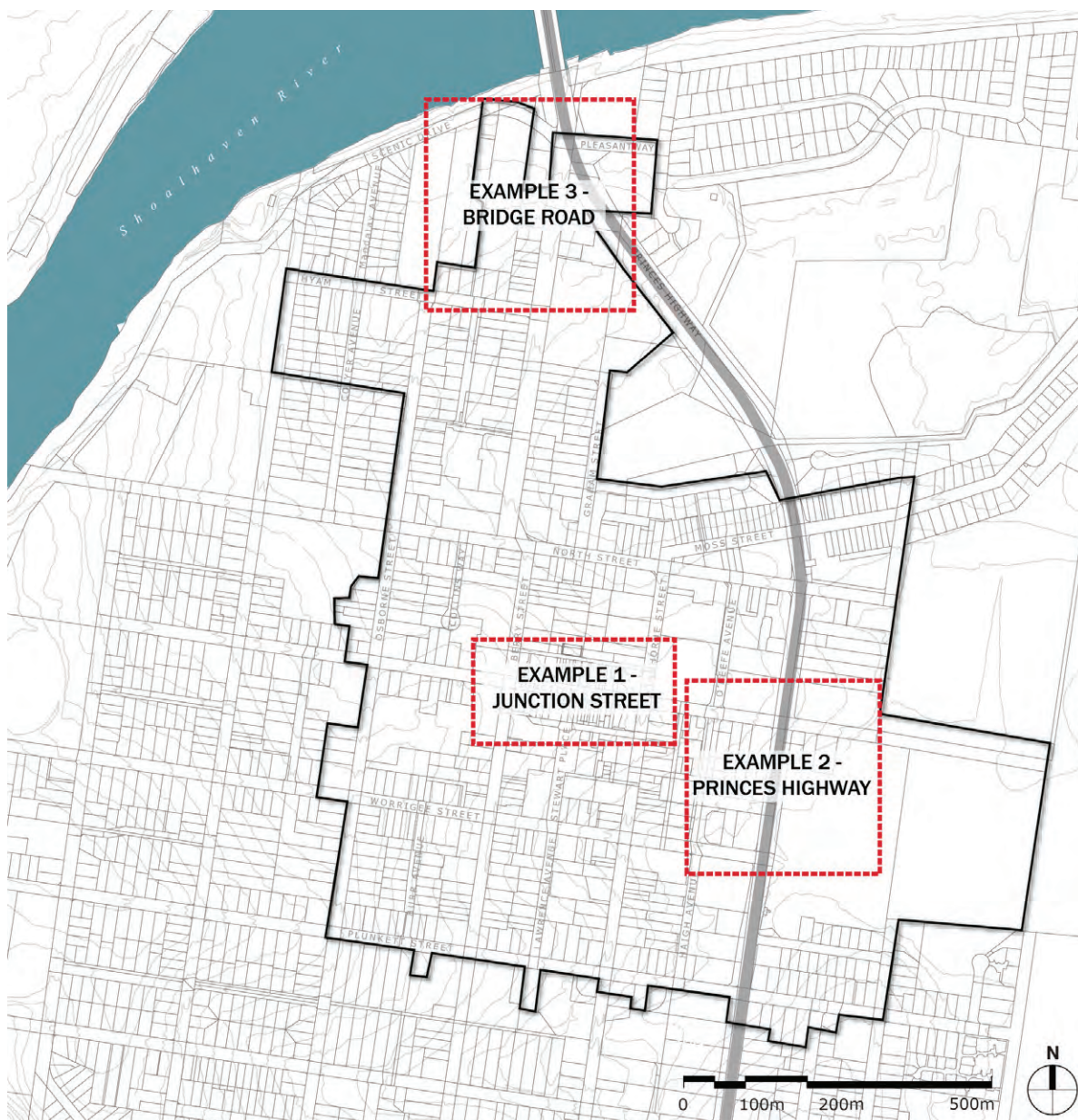


Fig. 6.1: Testing sites for overshadowing

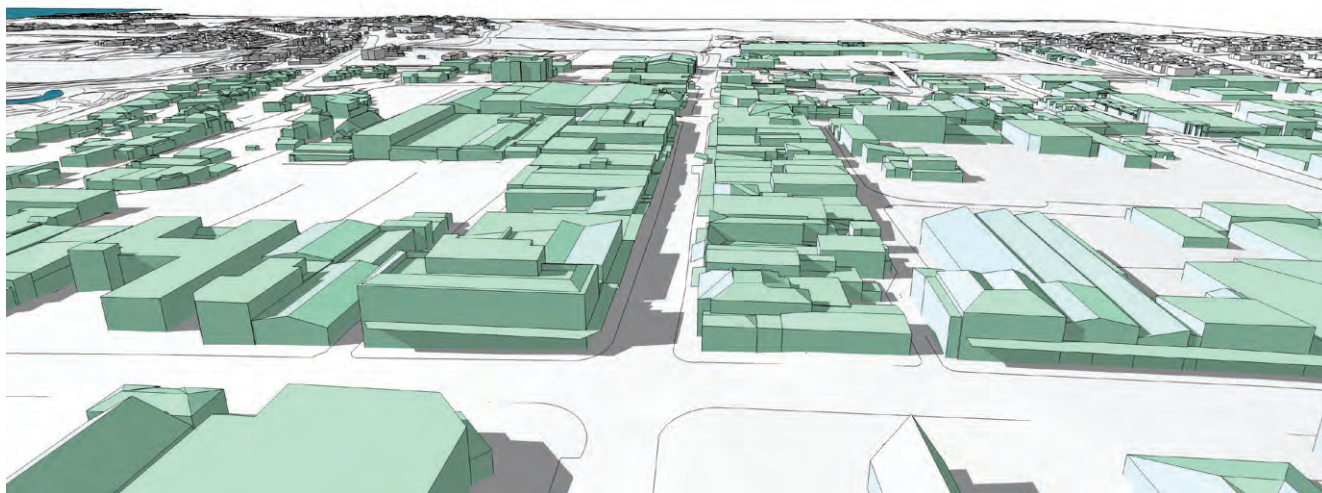


Fig. 6.2: Junction Street - Current overshadowing at 12 noon in June from existing built form

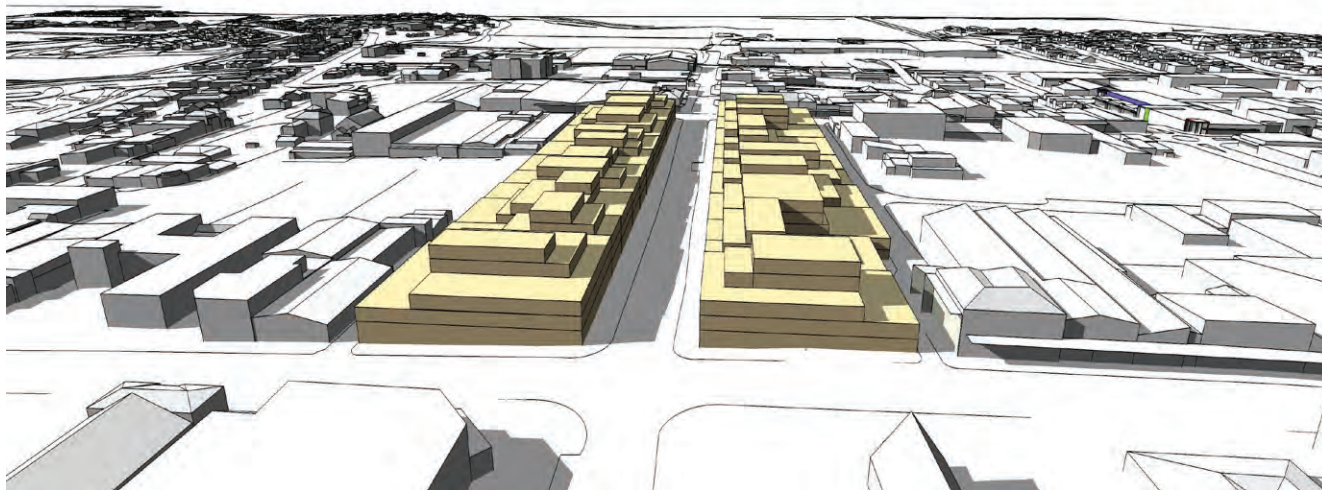


Fig. 6.3: Junction Street - Overshadowing at 12 noon in June with proposed building height

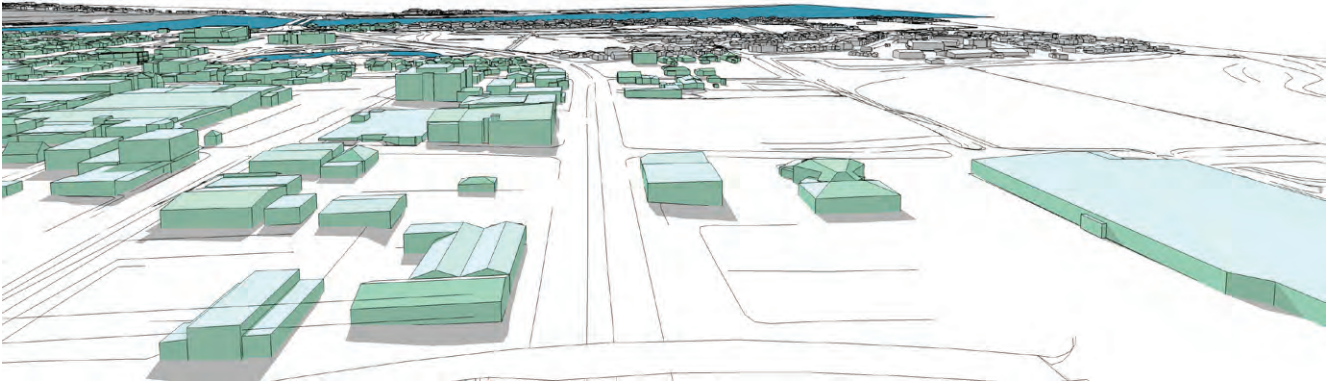


Fig. 6.4: Princes Highway - Current overshadowing at 12 noon in June from existing built form

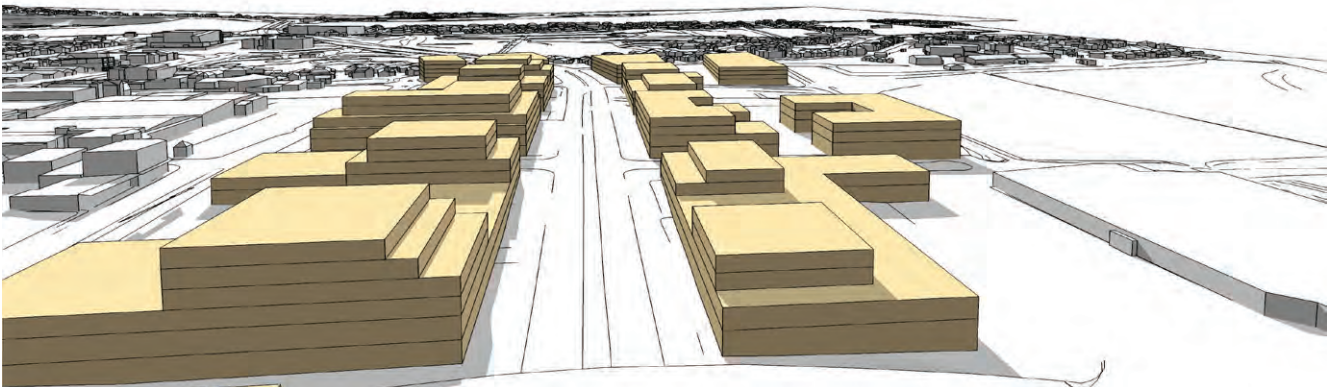


Fig. 6.5: Princes Highway - Overshadowing at 12 noon in June with proposed building height

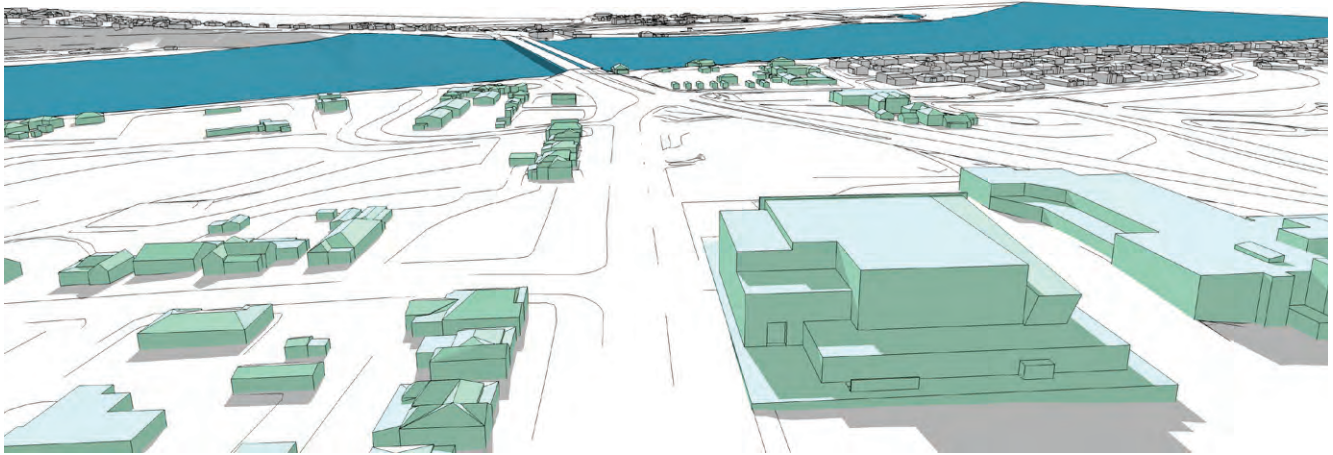


Fig. 6.6: Bridge Road - Current overshadowing at 12 noon in June from existing built form

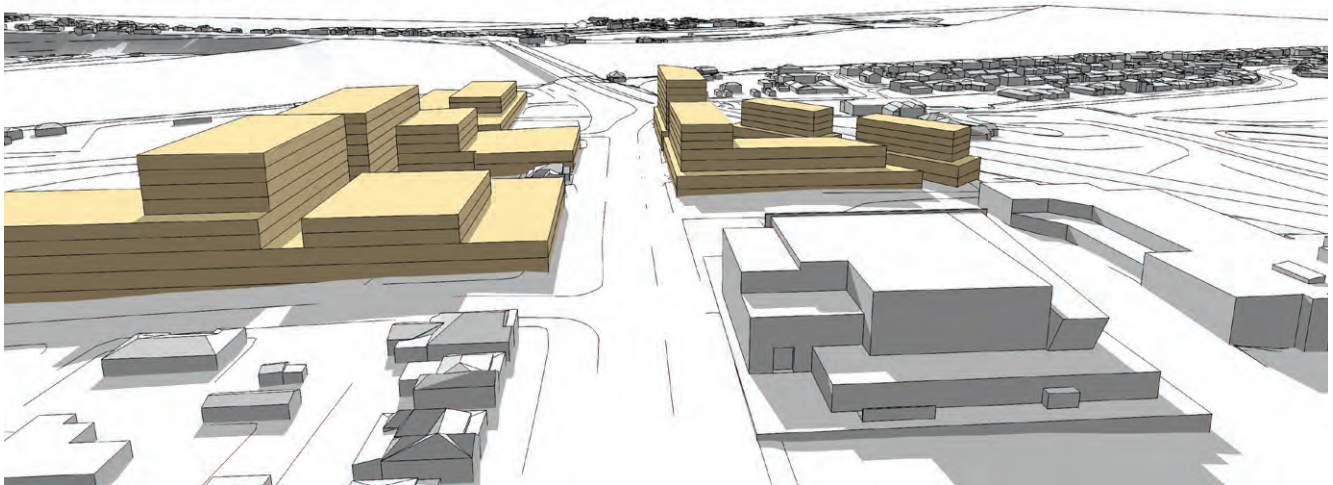
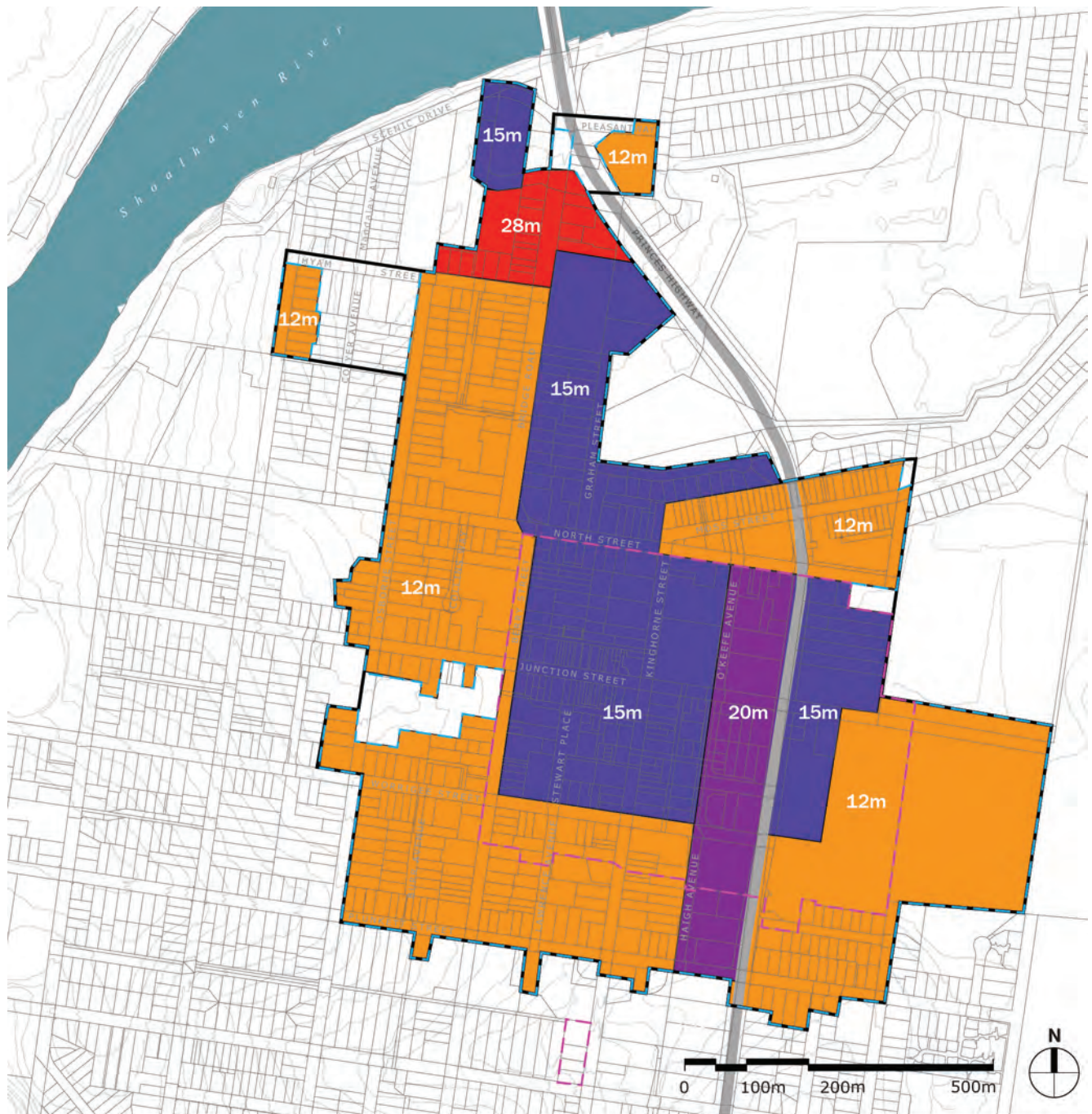


Fig. 6.7: Bridge Road - Overshadowing at 12 noon in June with proposed building height

7. RECOMMENDATIONS

7.1 HEIGHT AND FSR

The proposed maximum building height and FSR for the proposed Commercial Core (B3) and Mixed Use (B4) zones are illustrated in Figures 7.1 and 7.2.



KEY

Proposed maximum building height (m)

 12	 20
 15	 28

Study area

Proposed B3 Commercial Core zoning

Proposed B4 Mixed Use zoning

Fig. 7.1: Proposed maximum building height for Nowra CBD



7.2 OTHER RELATED RECOMMENDATIONS

The following should be considered in the Urban Design DCP:

Detailed Setback Controls to ensure:

1. That overshadowing is avoided where desired whilst achieving the built form objectives.

Built Form Controls to ensure:

1. The desired street character is established in the different areas of the town.
2. Open space controls are in place as relevant to zoning of areas.
3. A fine grain pedestrian connectivity at ground level is maintained through street blocks.
4. Important views to destinations and identified land uses are maintained.
5. Important vistas to the surrounding landscape context are maintained.

Controls on Heritage sites to ensure:

1. Developments on heritage sites/ buildings are cognisant of its heritage values.
2. Developments adjacent to heritage sites are sympathetic to the heritage values of the sites/ buildings.

View studies to ensure:

1. That built form controls maintain views and vistas as required

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