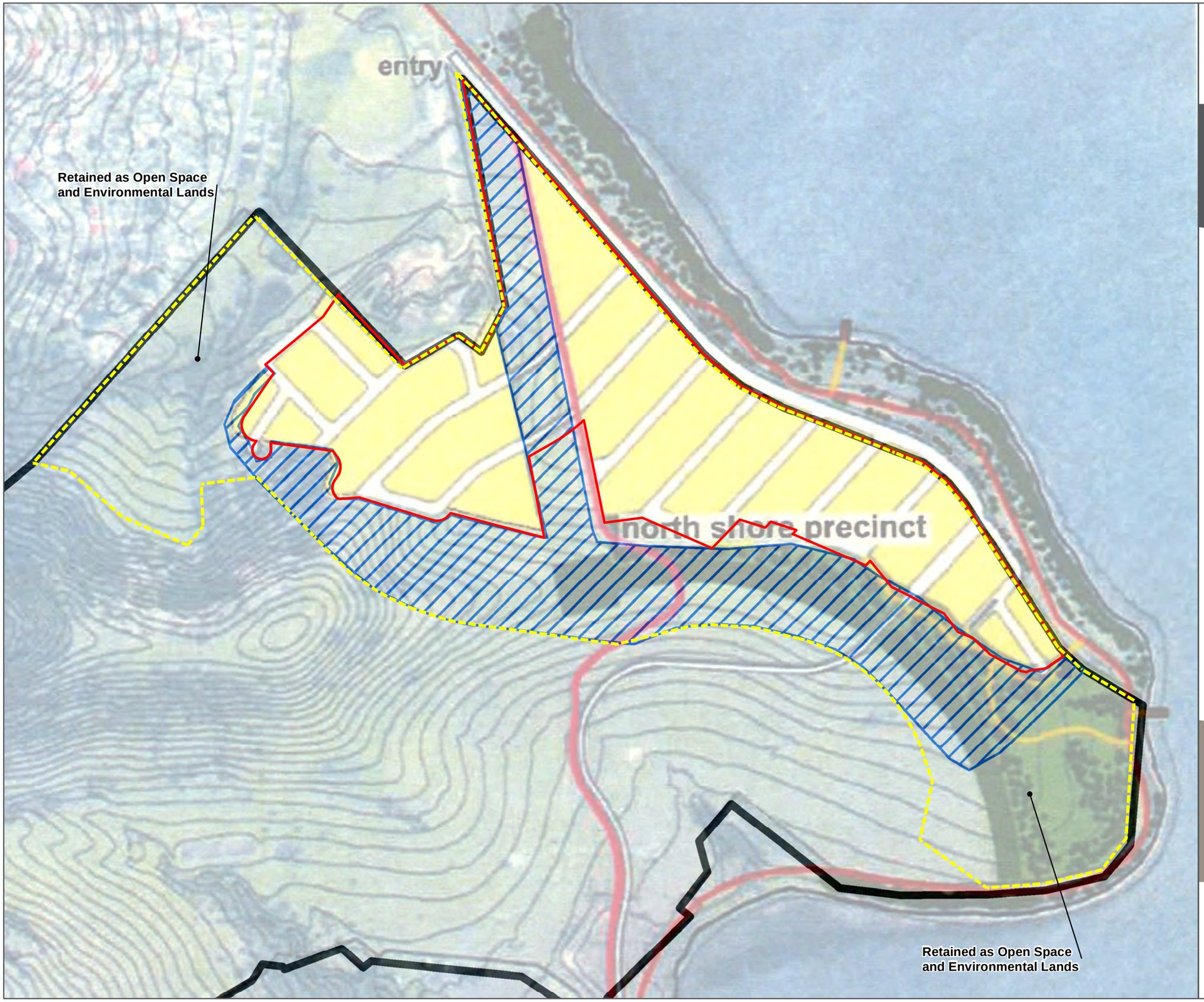


BRIDGEHILL

Comparison of Approved and Proposed Land Uses North Shore Precinct

TALLAWARRA LANDS

Legend

- Concept Plan Boundary
- Concept Approval
- Proposed Superlot Boundary

Proposed Land Use

- Residential Lands

1:4,514 Scale at A3

Metres

0 50 100 150 200

N

Cardno

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2018-05-30 | Project: 82017142
Coordinate System: GDA 1994 MGA Zone 56
Map: 82017142-01-GS-054-ApprovedandProposedNorth 01.mxd 04
Aerial imagery supplied by nearmap (October, 2016)

3.2.2.1.2 Central Precinct

1. Residential Footprint

   The approved Concept Plan provides a residential footprint of approximately 33.77 hectares within the Central Precinct. The proposed modification to the Concept Plan increases this residential footprint to 33.85 hectares. Further investigations, post Concept Plan approval have deemed this additional land suitable for residential development. Key aspects to consider when investigating the suitability relate to noise, topography, visual and ecology, which are discussed in **Section 5**. The investigations found that subject to appropriate mitigation the proposed expansion is acceptable.

2. Industrial Footprint

   The approved Concept Plan provides an industrial footprint of approximately 13.89 hectares within the Central Precinct. The proposed modification to the Concept Plan increases this industrial footprint to 16.91 hectares, however maintains a portion of environmental lands to the north to create a landscape buffer between the residential and industrial land uses.

   Additionally, it is proposed that the IN1 portion of the site be rezoned to IN2 to increase the light industrial lands within a consolidated area north of Yallah Bay Road, which there is currently a far higher demand for. Extensive areas of IN1 land are retained south of Yallah Bay Road. The consolidation of IN2 land north of the Road will provide an extended area for light industrial uses, which are compatible with the adjacent power station use.

   The location of the IN1 zone adjacent to the western side of the power station has the potential to simply push undesirable off site amenity impacts closer to residents in the Central Precinct. Whereas the specific intent of the IN2 zone as identified by the objective *"To minimise any adverse effect of industry on other land uses*". Consequently, the IN2 zone will act as a suitable buffer between the power station and the residential lands. Furthermore, it is understood that a key element of the Tallawarra Concept Approval was job creation. The extension of the IN2 zone is likely to facilitate a greater increase in jobs than IN1 land, due to the larger number of people generally employed in the lighter industrial land uses that are permissible in the zone given heavier industrial jobs are generally highly automated in the current industrial climate. The IN2 objectives are supportive of job creation with the following objectives of specific relevance:

   - *To encourage employment opportunities and to support the viability of centres.*
   - *To support and protect industrial land for industrial uses.*
   - *To encourage appropriate forms of industrial development which will contribute to the economic and employment growth of Wollongong.*

   In summary, the extension of the IN2 zoned land will help to facilitate employment within the Tallawarra precinct while providing a more appropriate land use buffer.

3. Open Space and Environment Footprint

   The approved Concept Plan provides an open space and environmental footprint of approximately 14.72 hectares. The proposed modification to the Concept Plan reduces this footprint to 12.35 hectares to allow for increased residential and industrial land uses.

4. Neighbourhood Centre Footprint

   The reduced neighbourhood centre footprint is considered appropriate, as the size of the approved neighbourhood centre footprint is excessive compared to the anticipated demand for commercial and retail space in the area. The residual neighbourhood centre land will more than adequately cater for the retail and commercial needs of the surrounding residents.

The adjustments to the land use boundaries within the Central precinct are described in **Table 3-2** below.

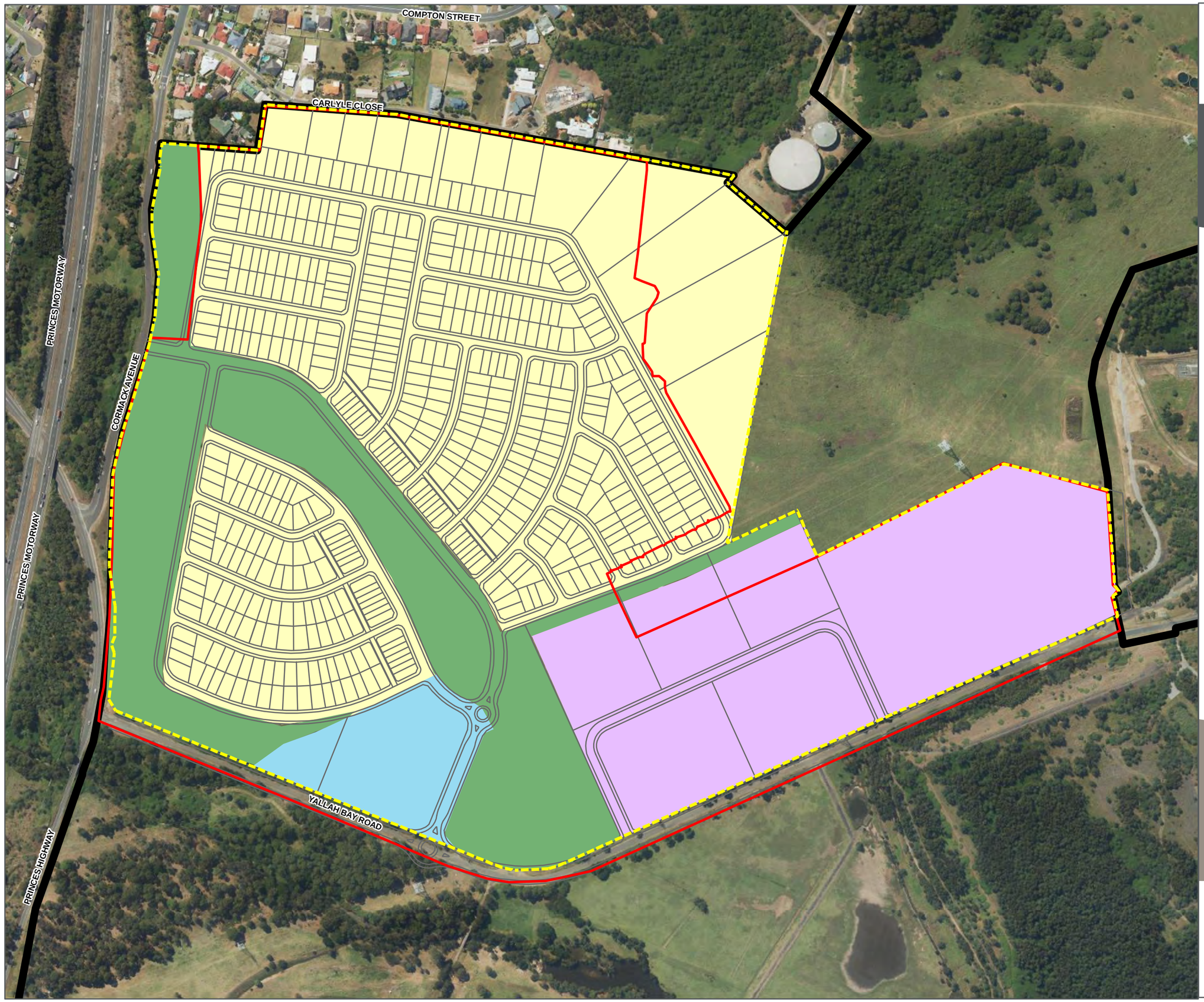
Table 3-2 Proposed Changes to Land Uses within the Central Precinct

Land Use	Proposed Land Use Changes	Existing Land Use Area	Proposed Land Use Area	Justification
Residential	Expand the R2 – Low Density Residential zone into the E3 – Environmental Management zone. Expand the R2 – Low Density Residential zone into the R5 – Large Lot Residential zone. Expand the R5 – Large Lot Residential zone into the E3 – Environmental Management zone.	The existing residential footprint within the Central Precinct on the approved Concept Plan is 33.77 hectares.	The proposed residential footprint within the Central Precinct is 40.17 hectares.	Further investigations, post Concept Plan approval have deemed this land suitable for residential development. Key aspects to consider when investigating the suitability relate to noise, topography, visual and ecology, which are discussed in **Section 5**. The investigations found that subject to appropriate mitigation the proposed expansion is acceptable.
Industrial	Expand the IN2 – Light Industrial zone north into the IN1 – General Industrial zone.	The existing industrial footprint within the Central Precinct on the approved Concept Plan is 13.89 hectares.	The proposed industrial footprint within the Central Precinct is 16.91 hectares.	The approved Concept Plan provides an industrial footprint of approximately 13.89 hectares within the Central Precinct. The proposed modification to the Concept Plan increase this industrial footprint to 16.91 hectares, however maintains a portion of environmental lands to the north to create a landscape buffer between the residential and industrial land uses.
Open Space and Environment	Expand the E3 – Environmental Management zone into the R2 – Low Density Residential Zone. Expand the E3 – Environmental Management zone west into the B1 – Neighbourhood Centre zone.	The existing environmental footprint within the Central Precinct on the approved Concept Plan is 14.72 hectares,	The proposed environmental footprint within the Central Precinct is 12.35 hectares.	The environmental lands are reduced due to the expansion of the industrial and residential footprints. These are considered more appropriate land uses for the site to cater for the projected housing and employment demand. Several areas that were identified on the approved Concept Plan for residential development have been changed to environmental lands to provide a minor offset for the loss of environmental lands in other areas throughout the Central Precinct. The E3 area is proposed to be extended westwards to accommodate a park and sports

Land Use	Proposed Land Use Changes	Existing Land Use Area	Proposed Land Use Area	Justification
				facility as proposed by the Concept Plan. The sports facility is currently part located within IN2 land and does not align with the IN2 zone objectives. The relocation of the sports and park area will allow industrial development to occur on the industrial zoned land, with these facilities located adjacent, providing a buffer to the neighbourhood centre.
Neighbourhood Centre		The existing neighbourhood centre footprint within the Central Precinct on the approved Concept Plan is 5.05 hectares.	The proposed neighbourhood centre footprint within the Central Precinct is 3.62 hectares.	The reduced neighbourhood centre footprint is considered appropriate as the size of the approved neighbourhood centre footprint is excessive compared to the anticipated demand for commercial and retail space in the area. The residual neighbourhood centre land will more than adequately cater for the retail and commercial needs of the surrounding residents.

Figure 3-4 below shows the proposed land uses within the Central Precinct.

Figure 3-5 below compares the approved land uses with the proposed land uses within the Central Precinct.



BRIDGEHILL

Proposed Land Uses Central Precinct

TALLAWARRA LANDS

Legend

- Concept Plan Boundary
- Concept Approval
- Indicative Lot Layout
- Proposed Superlot Boundary

Proposed Land Use

- Residential Lands
- Open Space and Environmental Lands
- Industrial Lands
- Neighbourhood Centre Lands

1:4,500 Scale at A3

Metres

0 50 100 150 200

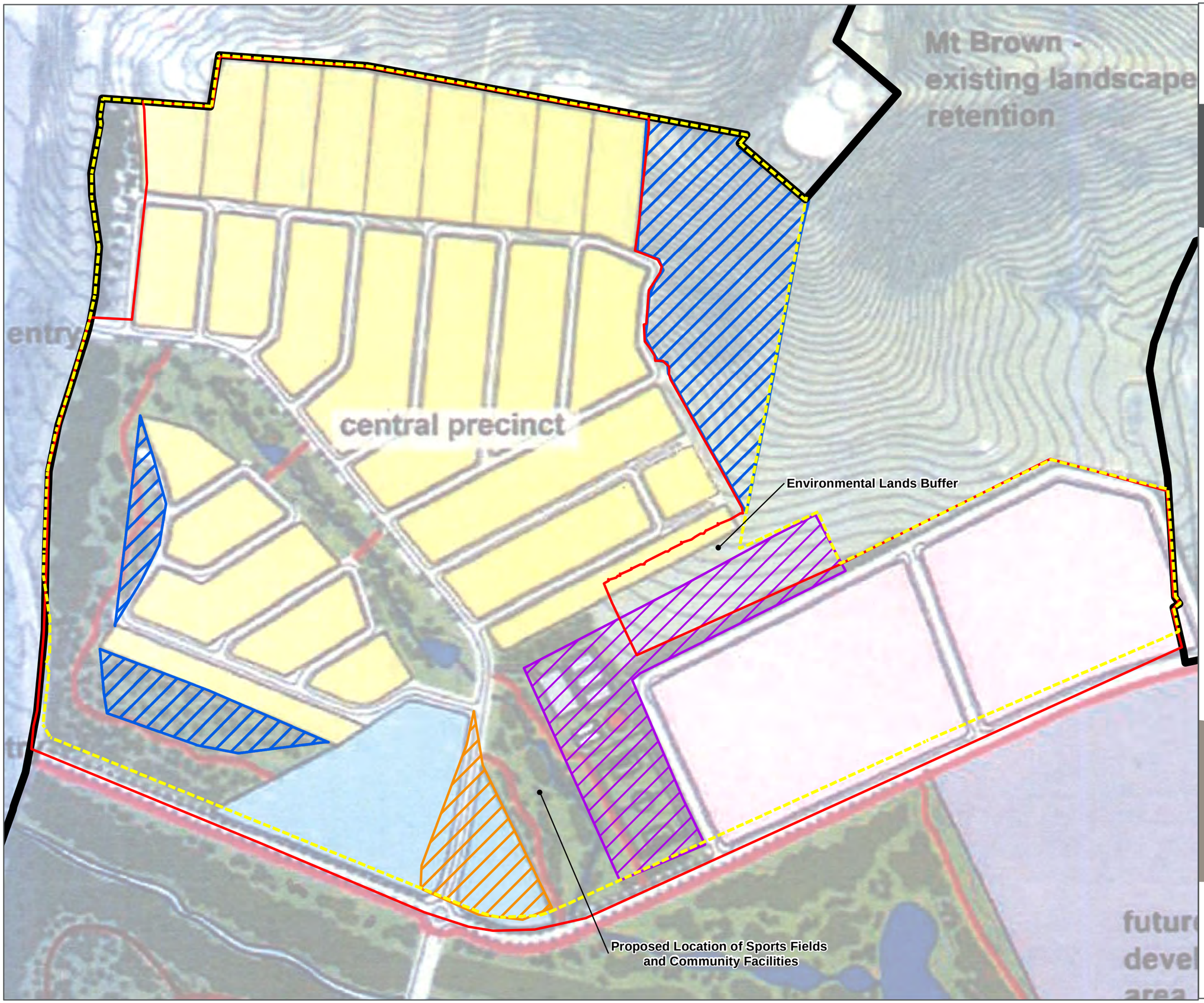
N

Cardno

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2018-05-24 | Project: 82017142
Coordinate System: GDA 1994 MGA Zone 56
Map: 82017142-01-GS-052-ProposedLandUseCentral.mxd 04
Aerial imagery supplied by LPI (2015)

Comparison of Approved and Proposed Land Uses Central Precinct

TALLAWARRA LANDS



Legend

- Concept Plan Boundary
- Concept Approval
- Indicative Lot Layout
- Proposed Superlot Boundary

Proposed Land Use Changes

- Residential Lands
- Industrial Lands
- Open Space and Environmental Lands

1:4,000 Scale at A3

Metres

0 50 100 150 200

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2018-05-30 | Project: 82017142
Coordinate System: GDA 1994 MGA Zone 56
Map: 82017142-01-GS-053-ApprovedandProposedCentral.mxd 04
Aerial imagery supplied by LPI (2015)

3.2.2.2 Increase Densities

In conjunction with the proposed changes to the boundaries of the two precincts discussed above, the modification to the approved Concept Plan also seeks to amend the provisions of Wollongong LEP 2009 to facilitate a greater mix of housing types and densities to meet the changing housing needs of the community. The proposed changes include:

> a reduction in the minimum lot size within the R2 zoned land

> an increase in the maximum height of building in certain areas

> an increase in the floor space ratio (FSR) in certain areas

The reductions to the minimum lot size are in keeping with other developments currently occurring throughout the Illawarra as discussed in Section 1. Both the URAs of Calderwood and West Dapto have seen lot sizes reducing to 300m^2 to meet the growing demand from the community for smaller and more affordable lots to meet the demographic changes occurring throughout the Region.

The proponent seeks a reduction of the minimum lot size throughout the R2 zoned land to 299m^2 in both the North Shore and Central precincts to further meet this growing demand for a range of lot sizes. It is envisaged that a range of lot sizes will be provided to ensure a diverse range of housing options are produced, enabling suitable lots for terrace, town house, villa and detached housing stock. The 299m^2 minimum lot size will not be applied to all lots with lots envisaged to range in size from 300m^2 up to 800m^2 for standard residential purposes.

The proposal also seeks for a strip of R2 land along the foreshore of Lake Illawarra be provided with a minimum lot size of 199m^2. The foreshore space is seen as a key location within the Tallawarra Lands site, with this space earmarked for activation. By providing a minimum lot size of 199m^2 along this section of land it is expected that further activation will occur. These lots will be ideally positioned to enable terrace style housing with rear lane access, enabling these dwellings to actively interface with the street and foreshore opposite creating an inviting environment for future residents and visitors to enjoy this enviable location.

Figure 3-1 details the modified Concept Plan for these two precincts, showing the full range of lot sizes that are envisaged to be included in the development of these areas.

The proposal also seeks to amend the existing Height of Building and FSR controls to facilitate the development outcome outlined in the modified concept plan. Where residential apartment buildings are identified, the maximum height of building is proposed to increase to 15m (4 storeys) with a FSR of 1.5:1. Where terrace style housing is proposed along the foreshore and open space areas, the FSR is proposed to increase to 0.75:1.

The proposed building heights and FSRs for the North Shore and Central precincts are shown in **Figure 4-3** and **Figure 4-4**.

3.2.2.3 Concept Approval Condition Amendments

A number of modifications are required to the Concept Approval both to reflect the changes in density and extent of development, along with Bridgehill only entering into an agreement with Energy Australia for the North Shore and Central Precincts. These changes are generally minor in nature, with the majority relating to clarifying the wordings of these conditions and addressing changes to the road network affecting the Central Precinct. Each of the conditions affected and the proposed amendments are discussed below.

3.2.2.3.1 Condition 12 – Engagement of a site auditor to verify the adequacy of asbestos soil sampling and asbestos contamination investigations

Condition 12 requests verification from a NSW EPA Site Auditor, accredited under the *Contaminated Land Management Act 1997*, as to the adequacy of the previous investigations undertaken to inform the Concept Approval in July 2010. Additionally, this condition requires the Site Auditor to provide a Site Audit Statement and Site Audit Report (SAS/SAR) confirming that the site is considered suitable for the proposed use. Further works, including assessment and remediation of land, may be required by the site auditor following approval of the concept plan approval modification. At this stage of the project, it is not possible to receive a site suitability statement from the appointed Site Auditor, based on the Concept Plan land uses. Additional

assessment and or remediation may be required in the future and these works will be subject to review and endorsement by the appointed Site Auditor.

It is proposed to amend this condition to require Site Auditor review and endorsement of site use suitability as part of any future development application for the actual subdivision of the land. The certification of land use suitability by the Site Auditor should be extended to allow an endorsement that the 1) land is suitable for the proposed use (Section A SAS/SAR) or 2) can be made suitable for the proposed use, subject to implementation of a RAP (Section B SAS/SAR), and completion of subsequent remediation and validation works to be undertaken in conjunction with subdivision works.

Condition 12, as it currently states, requires;

> *"The first future application to Council (refer to Condition A6) must include a verification from a Site Auditor accredited under the Contaminated Land Management Act 1997 to as to the adequacy of the investigations and asbestos soil sampling undertaken by Douglas Partners (July 2010) and certification of the suitability of the site for the proposed use."*

3.2.2.3.2 Condition 15 – Upgrade of the junction of the Princes Highway and Yallah Bay Road to a roundabout

Condition 15 is ambiguous in its current state as it refers to an application which includes works, conversely, it refers to Condition A6 (super lot subdivision), which does not include works. It is unclear whether this requirement is intended to apply to a development application for superlot subdivision that does not include any physical works or a subsequent application.

Given the uncertainty around the timing of the Albion Park Rail Bypass (APRB), it would be onerous to require design development at this stage of the process, with associated sign off by both Wollongong City Council and Roads and Maritime Services (RMS).

It is proposed to amend the timing of the design to be required in connection with the future subdivision of the Central Precinct.

Condition 15, as it currently states, requires;

> *"The first future application to Council (Refer to Condition A6) which includes works must be accompanied by an approved design for the upgrade of the junction of the Princes Highway and Yallah Bay Road.*
>
> *The intersection must be upgraded to a roundabout. The submitted design must be to the satisfaction of and have been approved by Roads and Maritime Services and Wollongong City Council."*

3.2.2.3.3 Condition 16 – Requirements for a Concept Design for the Closure of Cormack Avenue

Similar to Condition 15, this condition requires substantial design work. Creating the superlot subdivision will not allow construction of physical works and thus this condition requiring an approved concept be submitted at the time of superlot subdivision should not be required. Added to this is the uncertainty surrounding the actual works required to this intersection with the last public release of documentation for the ARPB showing this intersection as a left in/left out intersection rather than complete closure.

The condition should be amended to reflect when this work is actually required, which is proposed to be at the time the roundabout is required for the site access to the Central Precinct due to its proximity to the APRB interchange.

It is proposed to amend the timing of the design to be required in connection with the future subdivision of the Central Precinct.

Condition 16, as it currently states, requires;

> *"The first future application to Council (refer to Condition A6) for superlot subdivision must include a concept design for the physical closure of the existing junction of Cormack Avenue with the Princes Highway.*
>
> *The submitted design must be to the satisfaction of and have been approved by Roads and Maritime Services and Wollongong City Council.*

The road closure is to be implemented in conjunction with the development of the Central Precinct."

3.2.2.3.4 Condition 25 – Satisfactory Arrangements for the provision of designated State public infrastructure

Condition 25 imports the requirement for "satisfactory arrangements" as identified in clause 6.1 of the *Wollongong Local Environmental Plan 2009* (WLEP) for State infrastructure into the Concept Approval. The WLEP requires that "satisfactory arrangements" must be made "only if the land is developed intensively for urban purposes". Consequently, clause 6.1 of the WLEP would not apply to a superlot subdivision where a future development consent would be necessary before the land could be "developed intensively for urban purposes". Instead, satisfactory arrangements for State infrastructure would need to be made before the detailed subdivision could be approved

Condition 25 requires Clause 6.1 of the WLEP to be complied with as part of the superlot subdivision DA, requiring a Voluntary Planning Agreement (VPA) to be prepared. VPA preparation at the superlot subdivision phase would place the financial burdens of any agreement on Bridgehill, which would not be fair in circumstances where a contribution is required to be paid in relation to land that will remain in Energy Australia's ownership. Additionally, negotiation of the VPA would take time, particularly when the finer details of the ultimate subdivision are not yet known.

It is proposed to amend Condition 25 to be consistent with the intention of the WLEP, which is to require that satisfactory arrangements must be made only before the land is developed intensively for urban purposes. This would effectively require a VPA with the Minister for State contributions prior to the approval of each stage of the development (other than the creation of the superlots).

Condition 25, as it currently states, requires;

> *"The first development application to Council (refer to Condition A6) must demonstrate that satisfactory arrangements have been made for the provision of designated State public infrastructure, in accordance with Clause 6.1 of Wollongong Local Environmental Plan 2009."*

3.2.3 Staging of Works

The staging of works to be conducted throughout the Tallawarra Lands will be detailed within the First Future application, which will be an application made to Wollongong City Council for superlot subdivision.

4 Regulatory Framework

This section identifies relevant legislation and polices and provides as assessment of the proposed Concept Plan Modifications against these requirements.

4.1 Environmental Planning & Assessment Act 1979

The EP&A Act provides the legislative framework for the assessment and approval of the proposed Concept Plan Modification.

The Tallawarra Lands Concept Approval (MP09_131) was issued on 23 May, 2013, under Part 3A of the EP&A Act. While Part 3A of the EP&A Act has since been repealed, the approval continues to operate as a transitional Part 3A project under Schedule 6A of the EP&A Act. The current project is for a modification (MOD 1) of the Approval pursuant to section 75W of the EP&A Act.

The EP&A Act defines numerous objectives. The objectives applicable to the proposed modification include:

- *the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment*
- *the promotion and co-ordination of the orderly and economic use and development of land*
- *the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitat*
- *ecologically sustainable development*

The proposed modification will provide significant benefits to the Illawarra region by promoting the social and economic welfare of the community through the creation of additional housing, increased tourism and an increase in employment generating development.

Further, the modification is supported by a detailed Environmental Assessment to ensure that appropriate protection and conservation measures are identified and implemented to promote an ecologically sustainable development.

4.2 Planning Approach

A modification to the Tallawarra Lands Concept Approval (MP09_131) is being sought pursuant to section 75W of the EP&A Act 1979. The proposed modifications to the Concept Approval seek to increase the residential capacity of the Tallawarra Lands site through two adjustments to the zoning boundaries within the North Shore Precinct, and five adjustments to the zoning boundaries within the Central Precinct. The ability to modify the Concept Approval under section 75W is considered in the context of relevant legal precedents in **Section 3.1.3**. The legal precedents support the ability to consider the modification under section 75W of the EP&A Act.

The proposed changes include adjustments to the zone extents for the R2, E3 and RE1 zones within the North Shore Precinct, and the R2, R5, E3 and IN2 within the Central Precinct, a reduction in lot sizes and an increase in building heights and floor space ratios to facilitate a greater mix of housing types within the Tallawarra Lands site. The proposed changes will combine to enable an increase in dwelling yield from the approved 1,010 lots to a proposed 1,480 lots. The proposed modifications to the Concept Approval are discussed in more detail in **Section 3.2**.

4.3 Commonwealth Legislation

This section identifies relevant Commonwealth legislation and provides an assessment of the proposed Concept Plan Modifications against these requirements.

4.3.1 Environmental Protection & Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the relevant Commonwealth environment and heritage legislation applicable to matters of national environmental

significance (NES). The EPBC Act requires approval from the Department of Environment (DoE) for any action that has, will have or is likely to have a significant impact on the eight listed matters of national environmental significance, which are:

- World Heritage properties
- National Heritage places
- Wetlands of international importance
- Threatened species and ecological communities
- Migratory species
- Commonwealth marine or land areas
- The Great Barrier Reef Marine Park
- Nuclear actions (including uranium mining).

The location of the Tallawarra Lands site is not within a World Heritage site, a National Heritage place, a wetland of international importance, habitat for migratory species or a Commonwealth marine or land area.

The subject land contains an area of Coastal Grassy Red Gum Forest, which is a component of Illawarra Lowlands Grassy Woodland in the Sydney Basin Bioregion, which is a listed Critically Endangered Ecological Community (CEEC) under the EPBC Act. Three distinct condition classes of this community occur in the study area, including 'Lantana' (0.99ha), 'underscrubbed' (0.25ha) and 'Scattered Paddock Trees' (0.12ha). The ecological assessment summarised within **Section 5.5** identifies that the modification would not result in significant impacts on EPBC Act listed species, with a referral not required.

4.4 NSW Legislation

This section identifies relevant NSW legislation and provides an assessment of the proposed Concept Plan Modifications against these requirements.

4.4.1 Protection of Environment Operation Act 1997

The Protection of the Environment Operation Act 1997 (POEO Act) is the key piece of environment protection legislation administered by the EPA. Under Section 43(b) of the POEO Act, a licence is required to authorise the carrying out of scheduled activities at any premises. The proposed modification does not include works identified as 'scheduled activities' in Schedule 1 of the POEO Act and therefore, the provisions of the Act do not apply.

4.4.2 Roads Act 1993

The Roads Act 1993 (Roads Act) provides the regulatory framework for the use, operation, opening and closing of roads in New South Wales. The Roads Act also addresses the functions of Government road authorities such as RMS and regulates activities on public roads.

The proposed modification seeks to amend the planning provisions that relate to the subject land, and does not relate to the use, operation, opening or closing of any roads. Therefore, the Roads Act is not applicable to the proposed modification.

Future development of the site will create a number of public roads and will be subject to the provisions of the Roads Act 1993. The impacts of the future development proposal (subject to a future application) on the road network are discussed in the traffic assessment at **Section 5.2**.

4.4.3 National Parks & Wildlife Act 1974

The Office of Environment and Heritage (OEH) administers the National Parks & Wildlife Act 1974 (NP&W Act). This Act manages:

- *Conservation of nature*

> *Conservation of objects, places and features of cultural value*
> *Public appreciation, understanding and enjoyment of nature and cultural heritage*
> *Land reserved under this Act.*

When determining applications under this Act, the consent authority must consider the objectives listed above, the public interest and appropriate management of the subject land. This Act stringently controls activities in designated parks, reserves and Aboriginal areas.

The ecological related aspects of the NP&W Act are not applicable to the proposed subdivision as the land is not within a park, reserve or area designated under Part 4 of the Act. Further, a Biodiversity Assessment Report (BAR) has been carried out by Ecoplanning (2017) to support the modification in accordance with the requirements of the SEARs. Direct impacts to the ecological values of the development site are limited, as a majority of the development is associated with cleared land. However, direct impacts will occur to small areas of native vegetation. The total extent of impact to native vegetation within the subject site is 4.24 ha, with appropriate avoidance, mitigation and offset measure are identified in the BAR.

Biosis (2017b and 2017c) prepared an Aboriginal Cultural Heritage Archaeological Report for both the North Shore and Central precincts. The assessment comprised a desktop investigation and fieldwork on site to determine areas of high, moderate and low potential to contain areas of Aboriginal heritage significance. The central precinct was determined to contain areas of high, moderate and low potential and the North Shore Precinct contains areas of moderate and low archaeological potential.

The proposed modification does not include any physical works on site, and therefore, no additional assessment is required at this time. However, subsurface investigations (test excavations) will be required for areas identified as having high and moderate archaeological potential as part of future development applications over the site.

Should a future Development Application (DA) be approved, an Aboriginal Heritage Impact Permit application to OEH will be required to destroy the listed Aboriginal sites within the study area which are currently protected under the NP&W Act.

4.4.4 Heritage Act 1977

The *Heritage Act 1977* lists and protects items and areas of heritage significance to NSW. The NSW Heritage Council administers the Act and listings.

A Heritage Impact Assessment (**Appendix L**) was prepared by Biosis in accordance with the NSW Heritage Manual 1996 and subsequent revisions. The assessment has assessed impact to adjacent heritage items along with identified heritage values within the study area including landscape features, built items and areas of archaeological potential.

The heritage values identified within the study area include:

> Two locally significant heritage items are located adjacent to the site including the Mount Brown Reserve and Military Bunker
> The study area was identified as containing a potential heritage item, however, this was subsequently assessed as not possessing heritage significance
> The study area contains three areas of suspected archaeological potential. This Heritage Impact Assessment has identified that these areas have a low level of archaeological potential and do not require further management.

The Heritage Impact Assessment ultimately determined that the modification is acceptable under the provisions of the Heritage Act 1977.

4.4.5 Rural Fires Act 1997

The *Rural Fires Act 1997* (RF Act) includes provisions relating to the prevention, coordination and management of bush fires.

The RF Act at Section 100B identifies the requirements that need to be addressed to allow a bush fire safety authority to be issued to authorise development on bush fire prone land. Section 100B states:

(1) The Commissioner may issue a bush fire safety authority for:

a) A subdivision of bush fire prone land that could lawfully be used for residential or rural residential purposes, or

b) Development of bush fire prone land for a special fire protection purpose.

(2) A bush fire safety authority authorises development for a purpose referred to in subsection (1) to the extent that it complies with standards regarding setbacks, provision of water supply and other matters considered by the Commissioner to be necessary to protect persons, property or the environment from danger that may arise from a bush fire.

(3) A person must obtain such a bush fire safety authority before developing bush fire prone land for a purpose referred to in subsection (1).

(4) Application for a bush fire safety authority is to be made to the Commissioner in accordance with the regulations.

(5) Development to which subsection (1) applies:

a) does not include the carrying out of internal alterations to any building, and a1) does not include the carrying out of any development excluded from the operation of this section by the regulations, and

b) is not complying development for the purposes of the Environmental Planning and Assessment Act 1979, despite any environmental planning instrument.

The proposed modification does not relate to the subdivision and/or development of bush fire prone land, and therefore, Section 100B of the RF Act is not applicable to this application. However, a bush fire assessment (**Appendix H**) was prepared for the proposed modification which concludes that the proposal to increase the footprint and density of residential lots in the North Shore and Central Precincts complies with the provisions of Planning for Bush fire Protection 2006. The future development of the site (under a separate application) will be subject to the provisions of the RF Act.

4.4.6 Contaminated Land Management Act 1997

The Contaminated Land Management Act 1997 (CLM Act) establishes the process for investigating and remediating land areas where contamination presents a significant risk of harm to human health or the environment. The CLM Act also ensures the accountability for remediation of contamination and appropriate level and qualification of auditing of such works.

The Tallawarra Lands site has historically been subject to a number of environmental assessments relating to contamination that includes but is not limited to:

> Register of Hazardous Materials Report, Residences in North Shore Precinct, Tallawarra Lands, March 2011, Coffey Environments / Coffey Geotechnics

> Environmental Assessment Report, Tallawarra Lands Part 3A Concept Plan Application, August 2011, DFP Planning Consultants

> Geotechnical, Contamination and Groundwater Investigation, Tallawarra Lands, December 2010, Coffey Environments / Coffey Geotechnics

Intrusive sampling undertaken during the historical environmental assessments listed above did not include sampling and analysis of soil or groundwater within the footprint of the proposed North Shore Precinct and Central Precinct modification areas of the Tallawarra Lands development. Sampling within these areas was completed during an environmental assessment undertaken by Cardno (2017c). Remediation of land within the modification areas is unlikely to be required based on the Cardno (2017c) assessment, however the requirement for remediation will be determined by the site auditor (Marc Salmon of Easterly Point Environmental Pty Ltd) in accordance with the requirements of the CLM Act.

4.4.7 Threatened Species Conservation Act 1995

The *Threatened Species Conservation Act 1995* (TSC Act) protects threatened species, communities and critical habitat in New South Wales. This Act provides protection for species, populations and ecological communities considered endangered, vulnerable or extinct.

Any activity, which may have an impact on protected animals, plants or locations, is rigorously assessed to ensure the justification is strong enough to permit the impact to progress. The TSC Act links with the EP&A Act to ensure consideration of these matters during the determination of a development application.

Four native vegetation types were identified in the study area. These communities include:

> Sydney Blue Gum X Bangalay – Lilly Pilly moist forest in gullies and on sheltered slopes, southern Sydney Basin Bioregion (PCT1245).

> Forest Red Gum - Thin-leaved Stringybark grassy woodland on coastal lowlands, southern Sydney Basin Bioregion (PCT838)

> Whalebone Tree - Native Quince dry subtropical rainforest on dry fertile slopes, southern Sydney Basin Bioregion (PCT1300)

> Swamp Oak floodplain swamp forest, Sydney Basin Bioregion and South East Corner Bioregion (PCT1232)

Three of these communities are listed as Threatened Ecological Communities (TEC) under the TSC Act.

In accordance with the SEARs, Ecoplanning (2017) have prepared a Biodiversity Assessment Report (BAR) to assess the biodiversity impacts of the proposal in accordance with the 'avoid, minimise and offset hierarchy', the NSW Biodiversity Offsets Policy for Major Projects.

Direct impacts to the ecological values of the development site are limited, as a majority of the development is associated with cleared land. However, direct impacts will occur to small areas of native vegetation. The total impact to native vegetation within the subject site is 4.24 ha, and appropriate avoidance, mitigation and offset measure are identified in the BAR. The implementation of the environmental safeguards identified in the BAR should ensure that the proposal would not impact on matters relating to the TSC Act.

4.5 State Environmental Planning Policies

4.5.1 State Environmental Planning Policy (State & Regional Development) 2011

State Environmental Planning Policy (State & Regional Development) 2011 aims to identify development that is State Significant Development, State Significant Infrastructure and critical State Significant Infrastructure, and to confer functions on joint regional planning panels to determine development applications. SEPP (State & Regional Development) came into force following the repeal of Part 3A of the EP&A Act and applies to certain development declared to be State Significant Development.

The Tallawarra Lands Concept Approval was issued under Part 3A of the EP&A Act and continues to operate as a transitional Part 3A project under Schedule 6A of the Act. Therefore, the provisions of SEPP (State & Regional Development) do not apply to the modification application.

4.5.2 State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) is designed to regulate development and activities related to the provision and maintenance of infrastructure. Under Section 104 of ISEPP, development proposals may require referral to RMS due to its traffic generation and potential impacts on the road network.

The modification does not seek approval for any infrastructure works and/or traffic generating development as outlined in Schedule 3 of the ISEPP, and therefore the State Environmental Planning Policy (SEPP) is not applicable. The provisions of ISEPP will be a consideration for future stages of the project.

Notwithstanding, in relation to Section 104 – Traffic Generating Developments, the Traffic Impact Assessment prepared by Cardno (2017e) (**Appendix D**) provides commentary on the RTA's "Guide to Traffic Generating Development".

4.5.3 State Environmental Planning Policy No. 14 – Coastal Wetlands

State Environmental Planning Policy No 14 - Coastal Wetlands (SEPP 14) aims to ensure that coastal wetlands are preserved and protected in the environmental and economic interests of the State. Works including clearing, construction of a levee, draining and filling cannot be undertaken except with the consent of the Council and the concurrence of the Director.

Two SEPP 14 wetlands are located on the subject site. One is located on the southern side of Duck Creek and the other in the south-eastern part of the site on the northern foreshore area to Haywards Bay.

The proposed modification relates only to land north of Yallah Bay Road and will not impact on either of the SEPP 14 Wetlands. Accordingly, the Modification is considered to be consistent with the SEPP.

4.5.4 State Environmental Planning Policy No. 55 – Remediation of Land

State Environmental Planning Policy No 55 – Remediation of Land (SEPP 55) provides a State-wide approach to the remediation of contaminated land, with the aim of promoting the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment. Clause 6 of SEPP 55 provides guidelines to be considered by the planning authority when determining rezoning proposals.

> *(1) In preparing an environmental planning instrument, a planning authority is not to include in a particular zone (within the meaning of the instrument) any land specified in subclause (4) if the inclusion of the land in that zone would permit a change of use of the land, unless:*
>
> *(a) the planning authority has considered whether the land is contaminated, and*
>
> *(b) if the land is contaminated, the planning authority is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for all the purposes for which land in the zone concerned is permitted to be used, and*
>
> (c) *if the land requires remediation to be made suitable for any purpose for which land in that zone is permitted to be used, the planning authority is satisfied that the land will be so remediated before the land is used for that purpose*

The site has historically been subject to a number of environmental assessments relating to contamination that includes but is not limited to:

> Register of Hazardous Materials Report, Residences in North Shore Precinct, Tallawarra Lands, March 2011, Coffey Environments / Coffey Geotechnics

> Environmental Assessment Report, Tallawarra Lands Part 3A Concept Plan Application, August 2011, DFP Planning Consultants

> Geotechnical, Contamination and Groundwater Investigation, Tallawarra Lands, December 2010, Coffey Environments / Coffey Geotechnics

Intrusive sampling undertaken during the historical environmental assessments listed above did not include sampling and analysis of soil or groundwater within the footprint of the proposed North Shore Precinct and Central Precinct modification areas of the Tallawarra Lands development. Sampling within these areas was completed during an environmental assessment undertaken by Cardno (2017c). Remediation of land within the modification areas is unlikely to be required based on the Cardno (2017c) assessment, however the requirement for remediation will be determined by the site auditor accredited under the Contaminated Land Management Act 1997, Marc Salmon of Easterly Point Environmental Pty Ltd.

4.5.5 State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development

State Environmental Planning Policy No 65 – Design Quality of Residential Apartment Development (SEPP65) applies to development proposals for residential flat buildings, shop top housing and/or mixed use development with a residential accommodation component. The Modification does not seek approval for any residential flat buildings and therefore SEPP 65 does now apply.

The Modification may facilitate residential flat buildings, shop top housing and/or mixed use developments as future land uses, however, these will be subject to future applications that will be subject to SEPP 65. The Apartment Design Guide however requires that site specific planning should occur at the master planning stage to ensure that appropriate outcomes can be achieved. This process has been undertaken in respect to the lots proposed for future development of apartment style buildings.

4.5.5.1 Apartment Design Guide

The Apartment Design Guide provides consistent planning and design standards for apartments across NSW. It provides design criteria and general guidance about how development proposals can achieve the nine design quality principles identified in SEPP 65.

Part 1 of the Apartment Design Guide seeks to inform appropriate site, block and building design responses for apartment buildings at a strategic level. It outlines the importance of understanding the context, setting, local character, size and configuration of a development site.

The Modification identifies a number of sites for residential apartment buildings and seeks to increase building heights and floor space ratios to facilitate an appropriate built form. The siting and scale of the proposed apartment buildings were informed by a detailed analysis of the context, setting and character of the site and surrounding areas.

The apartment buildings are proposed to be located in high amenity, foreshore areas. The maximum building height of 15m (4 storeys) and FSR of 1.5:1 will facilitate a built form that is appropriate in this foreshore location and consistent with the desired future character of the North Shore Precinct.

4.5.6 State Environmental Planning Policy No. 71 – Coastal Protection

State Environmental Planning Policy 71 – Coastal Protection (SEPP 71) is aimed at protecting the NSW coast, ensuring the public have access to the waterfront, maintaining amenity and protecting environmentally and culturally significant aspects.

The site is located within the 'coastal zone' as defined by SEPP 71. Clause 8 details the matters for consideration when determining a draft LEP or DA, with a review of the matters for consideration undertaken in **Table 4-1** below.

Table 4-1 SEPP 71 – Matters for Consideration

Matters for Consideration (Clause 8 of SEPP 71)	Comment
a) *the aims of this Policy set out in clause 2 [of SEPP 71]*	The proposed modification is not contrary to any of SEPP 71 aims as there are no impacts on coastal access or the coastal environment. The future development of the site (subject to separate application) will be consistent with the aims of SEPP 71 in that the overall Concept Approval seeks to: ▪ protect and manage natural areas within the site ▪ improve public access to the foreshore ▪ incorporate Aboriginal Cultural Heritage interpretative measures ▪ protect the visual amenity of the coast ▪ implement water quality measures to protect the coastal environment ▪ protect and enhance coastal vegetation.
b) *existing public access to and along the coastal foreshore for pedestrians or persons with a disability should be retained and, where possible, public access to and along the coastal foreshore for pedestrians or persons with a disability should be improved*	The proposed modification will not impact on existing access along the foreshore. However, future development of the site (subject to future applications) will provide significantly improved access along the foreshore for pedestrians and persons with a disability.
c) *opportunities to provide new public access to and along the coastal foreshore for pedestrians or persons with a disability*	The proposed modification will not impact on existing access along the foreshore. However, future development of the site (subject to future applications) will provide significantly improved

Matters for Consideration (Clause 8 of SEPP 71)	Comment
	access along the foreshore for pedestrians and persons with a disability.
d) *the suitability of development given its type, location and design and its relationship with the surrounding area*	The proposed modification seeks only minor amendments to an already approved concept plan for the site. The proposed changes seek to facilitate a greater mix of densities and housing types to meet the changing housing needs of the community, and is considered appropriate for this location.
e) *any detrimental impact that development may have on the amenity of the coastal foreshore, including any significant overshadowing of the coastal foreshore and any significant loss of views from a public place to the coastal foreshore*	The proposed development is set well back from the Lake Illawarra foreshore minimising visual impacts and avoiding overshadowing impacts. The proposed modification seeks to increase building heights in certain areas up to 4 storeys, however, this is unlikely to create overshadowing of the foreshore given the significant setbacks from the water and the foreshore being predominately north facing. The provision of significant foreshore areas in the Concept Plan ensures that views to the foreshore and the Lake from future public places will be available.
f) *the scenic qualities of the New South Wales coast, and means to protect and improve these qualities*	The majority of the proposed development area is substantially set back from the foreshore and the provision of significant foreshore areas in the Concept Plan protects and enhances the scenic qualities of the coastal areas of the lake. A Visual Impact Assessment has been prepared by Cardno (2017d) to support the modification (**Appendix K**). The assessment examined the visual aspects of future development on the slopes of Mt Brown that will be visible from the Lake and other foreshore areas. The impacts were found to be acceptable and similar to the surrounding built form context. The Cardno (2017d) assessment recommended a number of built form and landscape controls be implemented to minimise the visual impact of the proposed development.
g) *measures to conserve animals (within the meaning of the Threatened Species Conservation Act 1995) and plants (within the meaning of that Act), and their habitats*	Ecoplanning prepared BAR in accordance with the SEARs. Direct impacts to the ecological values of the development site are limited, as a majority of the development is associated with cleared land. However, direct impacts will occur to small areas of native vegetation. The total impact to native vegetation within the subject site is 4.24 ha, and appropriate avoidance, mitigation and offset measures are identified in the BAR. The implementation of the environmental safeguards identified in the BAR will ensure that the proposal is consistent with the objectives of the TSC Act.
h) *measures to conserve fish (within the meaning of Part 7A of the Fisheries Management Act 1994) and marine vegetation (within the meaning of that Part), and their habitats*	The stormwater system has been designed to ensure that the water quality leaving the development site is appropriately treated to ensure no impact to fisheries habitat located adjacent to the site. The Flood Risk Assessment contained at **Appendix E** contains details relating to the Water Quality and Water Sensitive Urban Design measures that will be employed throughout the development site.
i) *existing wildlife corridors and the impact of development on these corridors*	Wildlife corridors were considered and addressed by Ecoplanning as part of the BAR (**Appendix G**). The subject site is generally poorly connected, and the

Matters for Consideration (Clause 8 of SEPP 71)	Comment
	site is at the end of a corridor, rather than providing connectivity itself. Only a small area of native vegetation is to be impacted and no impacts to connectivity are expected. This includes no changes to either the minimum width, or the overall condition of the corridor.
j) the likely impact of coastal processes and coastal hazards on development and any likely impacts of development on coastal processes and coastal hazards	The proposal site and associated modifications will not impact on the coastal environment. All works will take place above the high water mark, with all discharges from the site being appropriately treated before leaving the site boundaries.
k) measures to reduce the potential for conflict between land-based and water-based coastal activities	The proposed modification maintains the separation between the land based (developable areas) and potential water based activities so as to avoid conflicts between these land uses.
l) measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals	Biosis (2017b and 2017c) prepared an Aboriginal Cultural Heritage Archaeological Report for both the North Shore and Central precincts (**Appendix M** and **Appendix N**). The proposed modification does not include any physical works on site, and therefore, no additional assessment is required at this time. However, subsurface investigations (test excavations) will be required for areas identified as having high and moderate archaeological potential as part of future development applications over the site. Measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals will be considered as part of future application over the site.
m) likely impacts of development on the water quality of coastal waterbodies	All rain water runoff from the development site will be appropriately treated by the proposed stormwater management system to effectively treat any pollutants that might be contained within this run off. The measures proposed are detailed within the Flood Risk Assessment (**Appendix E**) and the Water Cycle Management Study undertaken for the Approved Concept Plan.
n) the conservation and preservation of items of heritage, archaeological or historic significance	Biosis (2017a) prepared a Heritage Impact Assessment (HIA) (**Appendix L**) to assess the impact to adjacent heritage items along with identified heritage values within the study area including landscape features, built items and areas of archaeological potential. The site was identified as containing a potential heritage item and three areas of suspected archaeological potential. However, the HIA determined that there was no heritage significance and a low level of archaeological potential; and that no further assessment / management was required.
o) only in cases in which a council prepares a draft local environmental plan that applies to land to which this Policy applies, the means to encourage compact towns and cities	The proposed modification seeks to slightly increase the residential zoned land in an area that is contiguous with the existing residential zoned land. The proposal also seeks to increase residential densities throughout the site, to increase the residential yield and encourage a compact urban area.
p) only in cases in which a development application in relation to proposed development is determined: *i. the cumulative impacts of the proposed development on the environment, and*	The Tallawarra Lands site has an existing Concept Approval which has identified areas of the site suitable for future development and those areas which are to be protected as environmental management or conservation areas.

Matters for Consideration (Clause 8 of SEPP 71)	Comment
ii. measures to ensure that water and energy usage by the proposed development is efficient.	The proposed modification seeks to slightly amend the zone boundaries into the redundant areas of the former Coal Fired Power Station buffer. The modification retains significant environmental areas and will minimise potential cumulative impacts. Improvements to the natural environments are also proposed particularly to the riparian corridors and the future installation of Water Sensitive Urban Design (WSUD) measures will improve water quality. These measures are discussed in the specialist reports supporting the modification application.

The review of the SEPP 71 matters for consideration illustrates that the modification would not have any impact on the coast of NSW.

4.5.6.2 Coastal Design Guidelines for NSW

The Coastal Design Guidelines for NSW provide design guidance on coastal developments and redevelopments to ensure they are sensitive to the unique natural and urban settings of coastal areas. Part 2 of the Guidelines sets out design principles for coastal settlements which are addressed in **Table 4-2** below.

Table 4-2 Coastal Design Guidelines for NSW Design Principles

Design Principe	Comment
Defining the Footprint and Boundary	The Guidelines discourage coastal settlements from expanding into foreshore and bushland areas in an ad hoc way. The proposed modification seeks to take a more strategic approach to defining the urban footprint, prior to the site being developed. The proposed expansion of the urban area is informed by a detailed assessment of the environmental impacts and appropriate mitigation measures to minimise effects on bushland and foreshore areas.
Connecting Open Space	The overall Concept Approval will facilitate a significantly improved foreshore open space that connects the North Shore and Central precincts with existing and proposed regional open space adjoining the site. Open space areas have been identified to protect the natural attributes of the site and designed to create a connected open space network for the entire community.
Protecting the Natural Edges	The Guidelines seek to provide improved access to the NSW coast, and retail foreshore areas in public ownership for public recreational use. The overall Concept Approval achieves this by maintaining the existing ownership arrangements for all foreshore areas in public ownership and significantly enhancing foreshore open space for public recreational use.
Reinforcing the Street Pattern	Yallah Bay Road is nominated as a collector road and provides the main spine road through the Concept Plan area. Each precinct contains a local street network that establishes a legible grid pattern and promotes views and access to the foreshore.
Appropriate Buildings for a Coastal Context	The proposed modification does not provide for any specific built form and this will be a consideration of future applications over the site. The modification does propose to increase building heights in certain locations to 15m (4 storeys) with a FSR of 1.5:1. These development standards will

Design Principe	Comment
	facilitate a built form that is of an appropriate bulk and scale for a coastal location.

The review of the Design Principles illustrates that the proposal is consistent with the Coastal Design Guidelines for NSW.

4.5.7 Draft State Environmental Planning Policy (Coastal Management) 2016

The draft *State Environmental Planning Policy (Coastal Management) 2016* (Coastal Management SEPP) will consolidate and improve current coastal-related SEPPs. It will replace SEPP 14 (Coastal Wetlands), SEPP 26 (Littoral Rainforests) and SEPP 71 (Coastal Protection) and ensure that future coastal development is appropriate and sensitive to our coastal environment, and that we maintain public access to beaches and foreshore areas.

Consistency with SEPP 14 and SEPP 71 is discussed above. The proposed modification is consistent with the draft Coastal Management SEPP in that it maintains and improves public access to the foreshore while protecting the environmental assets of the coast.

4.6 Local Planning Context

4.6.1 Wollongong Local Environmental Plan 2009

The Wollongong Local Environmental Plan 2009 (WLEP) applies to land within the Wollongong LGA and regulates development through a set of land use zones and development standards. The subject site is zoned for a mix of industrial, business, residential and environmental protection uses, and WLEP establishes a set of key development standards over the site including:

> A maximum height of building of 9m for residential and business zoned land

> A maximum height of building of 16m for land zoned IN2 Light Industrial and 20m for land zone IN1 General Industrial

> A maximum floor space ratio of 0.5:1 for all residential and industrial zoned land

> A maximum floor space ration of 0.75:1 for business zoned land.

The site is also mapped as an Urban Release Area and is therefore subject to Part 6 of WLEP. Part 6 of WLEP establishes satisfactory arrangements provisions for the provision of State and regional infrastructure, as well as the requirement for a Development Control Plan (DCP) to be prepared prior to the site being developed.

While the proposal is generally consistent with aims, objectives and provisions of WLEP, the modification seeks to make a number of amendments to the WLEP to facilitate the proposed development scheme. The proposed amendments include:

> Realigning the residential zone boundaries in both the North Shore and Central precincts (see **Figure 4-3** and **Figure 4-4**)

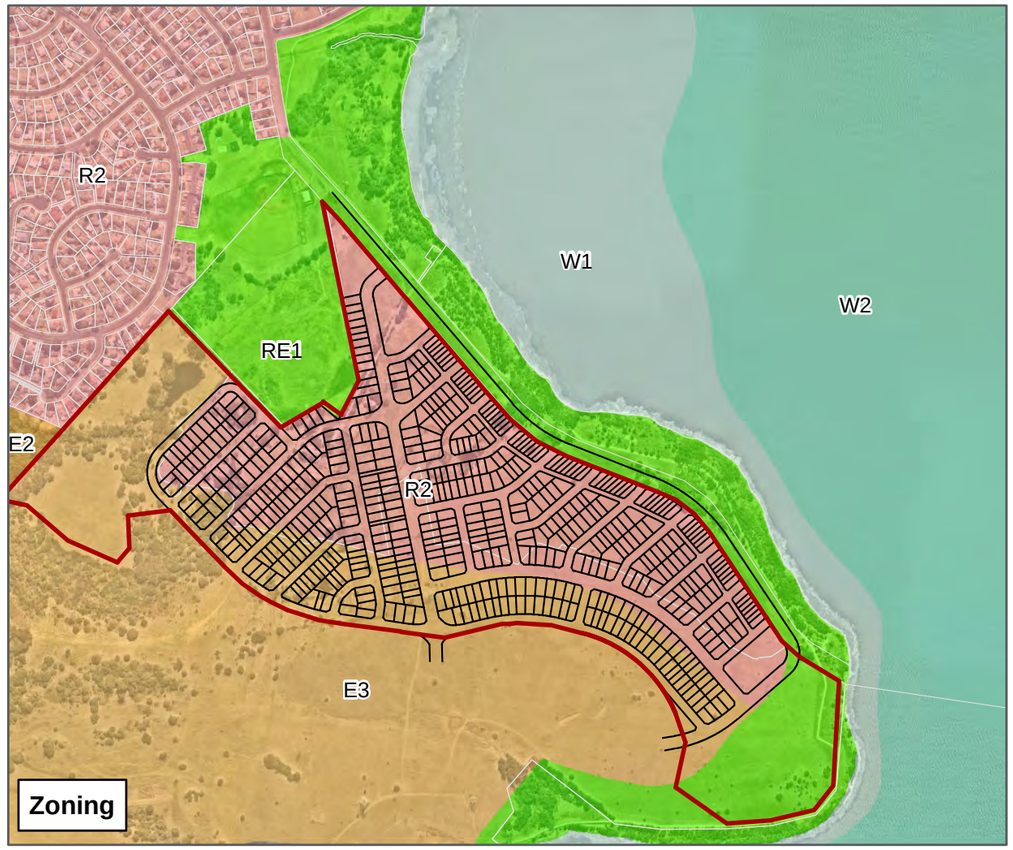
> Realigning the IN2 Light Industrial zone boundary to increase employment lands (see **Figure 4-3** and **Figure 4-4**)

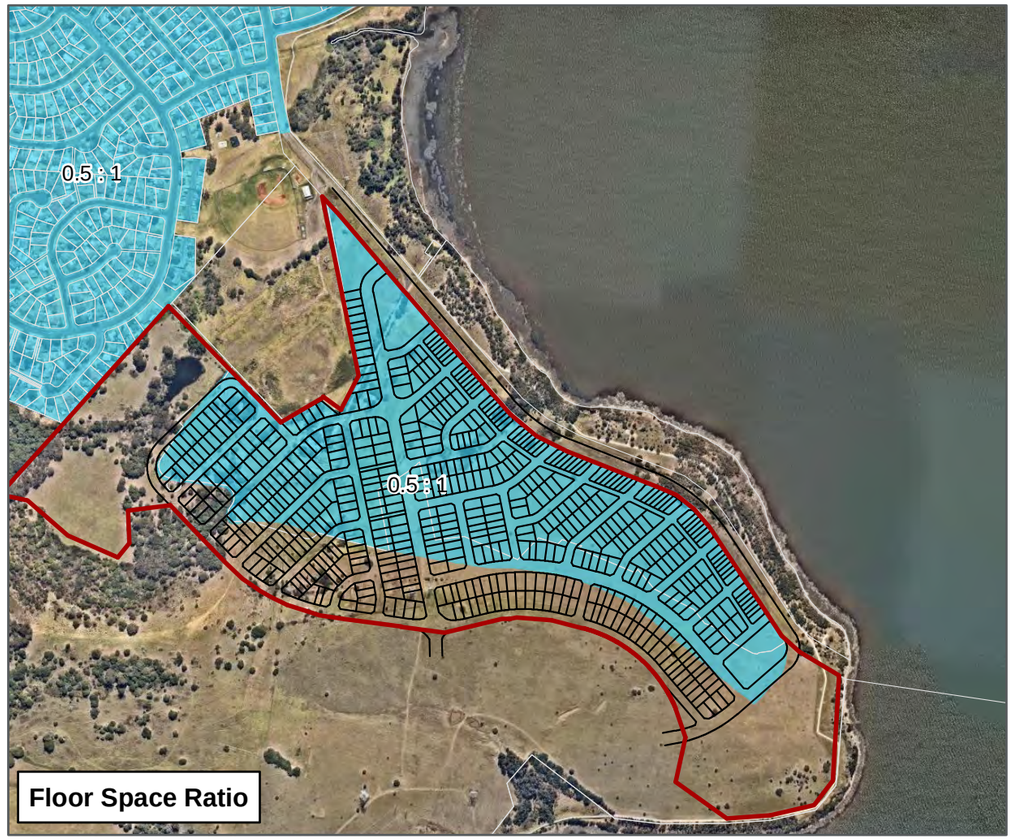
> A reduction in the minimum lot size within the R2 zoned land to facilitate a diversity in lot sizes and housing types (see **Figure 4-3** and **Figure 4-4**)

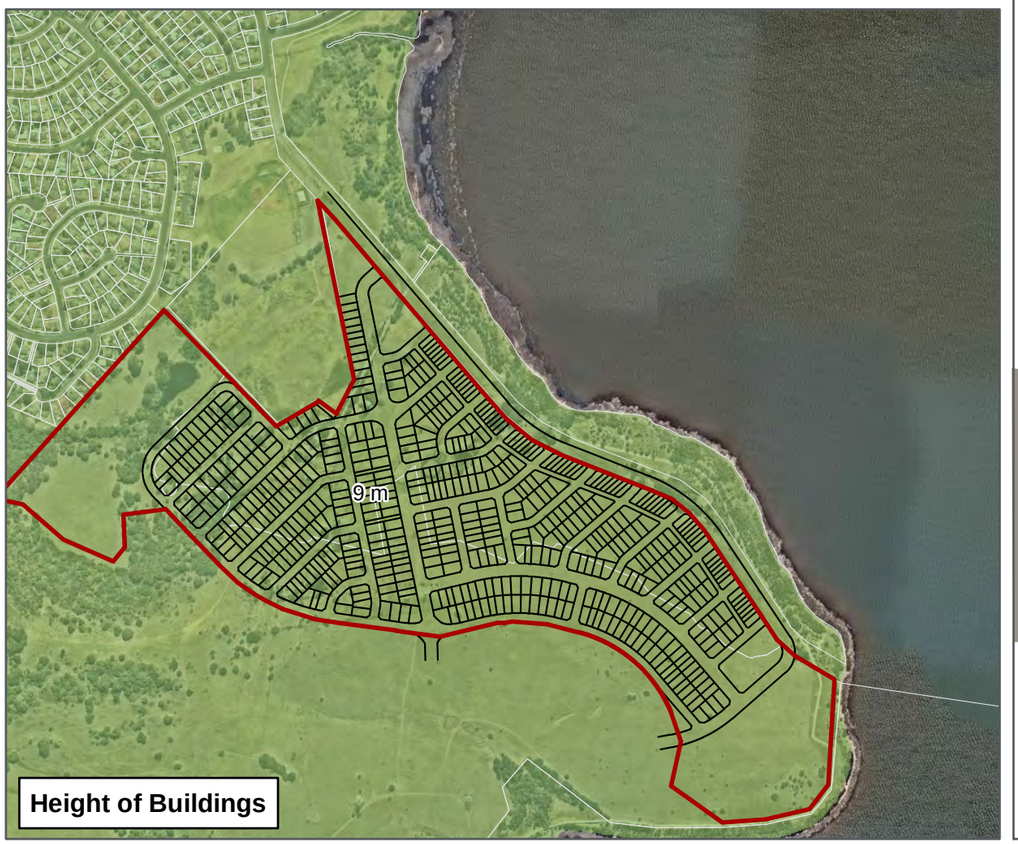
> An increase in the maximum height of building in certain areas to allow for residential apartment buildings and provide a greater mix of housing types (see **Figure 4-3** and **Figure 4-4**)

> An increase in the FSR in certain areas (see **Figure 4-3** and **Figure 4-4**)

The proposed amendments to WLEP primarily seek to increase the density of development across the site by amending zone boundaries and minimum lot sizes to meet the changing housing needs of the community. The proposed changes are discussed in more detail in **Section 3.2**.







BRIDGEHILL

Existing LEP Planning Controls

NORTH SHORE PRECINCT
TALLAWARRA LANDS

Legend

- Proposed Superlot Boundary
- Proposed Lot Layout
- Cadastre (DFSI-SS, 2017)

Wollongong LEP 2009 (DPE, December 2016)

Zoning

- E2 Environmental Conservation
- E3 Environmental Management
- R2 Low Density Residential
- RE1 Public Recreation
- W1 Natural Waterways
- W2 Recreational Waterways

Maximum Floor Space Ratio (n:1)

- 0.5

Maximum Building Height (m)

- 9m

Minimum Lot Size

- 449 m^2
- 39.99 ha

FIGURE 4-1

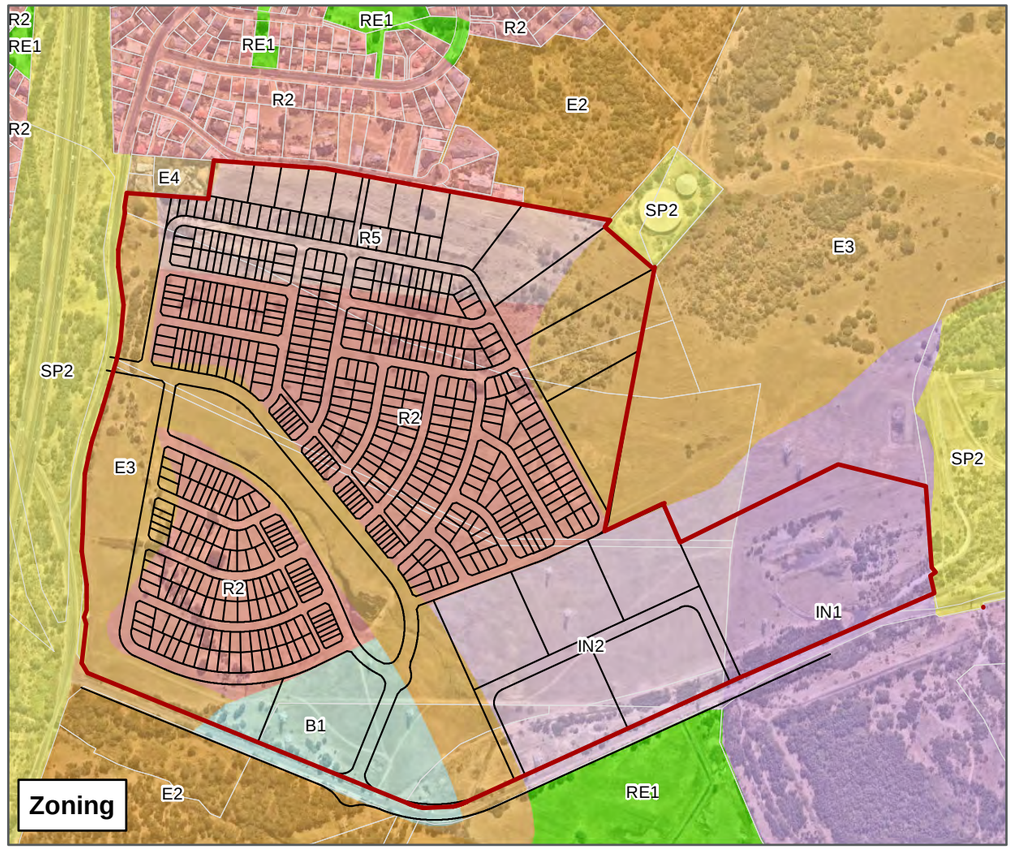
1:10,000 Scale at A3

Metres
0 100 200 300 400

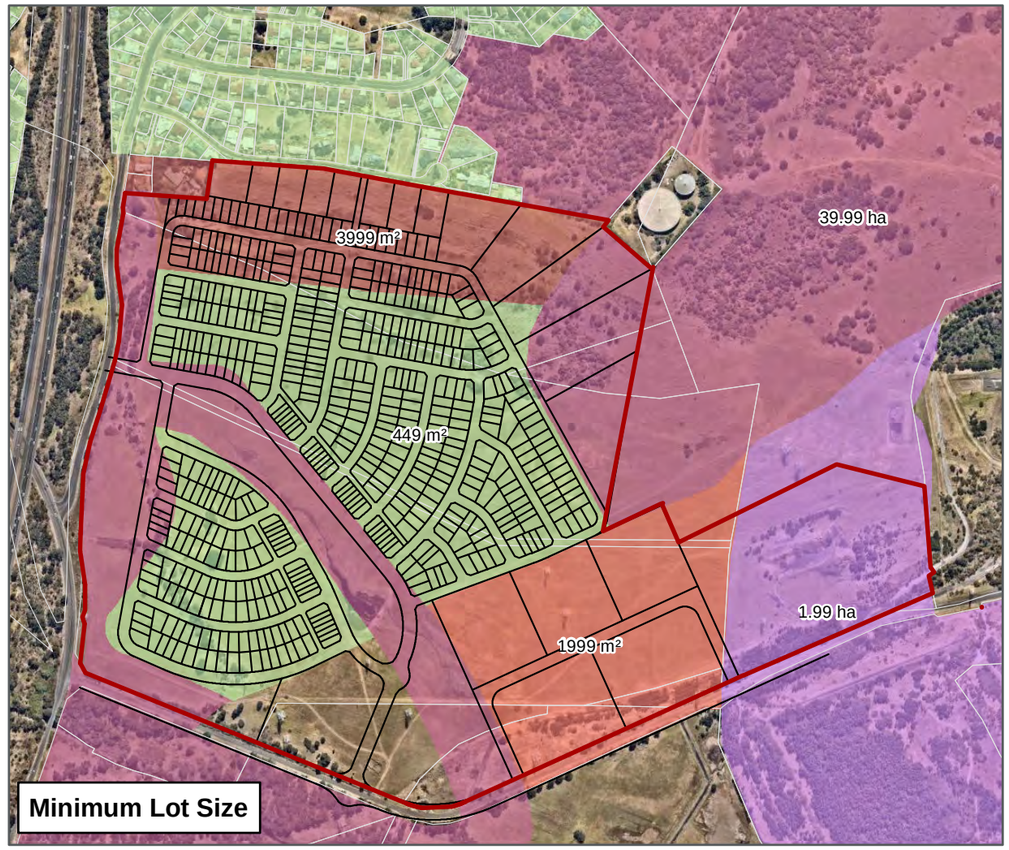
N

Cardno

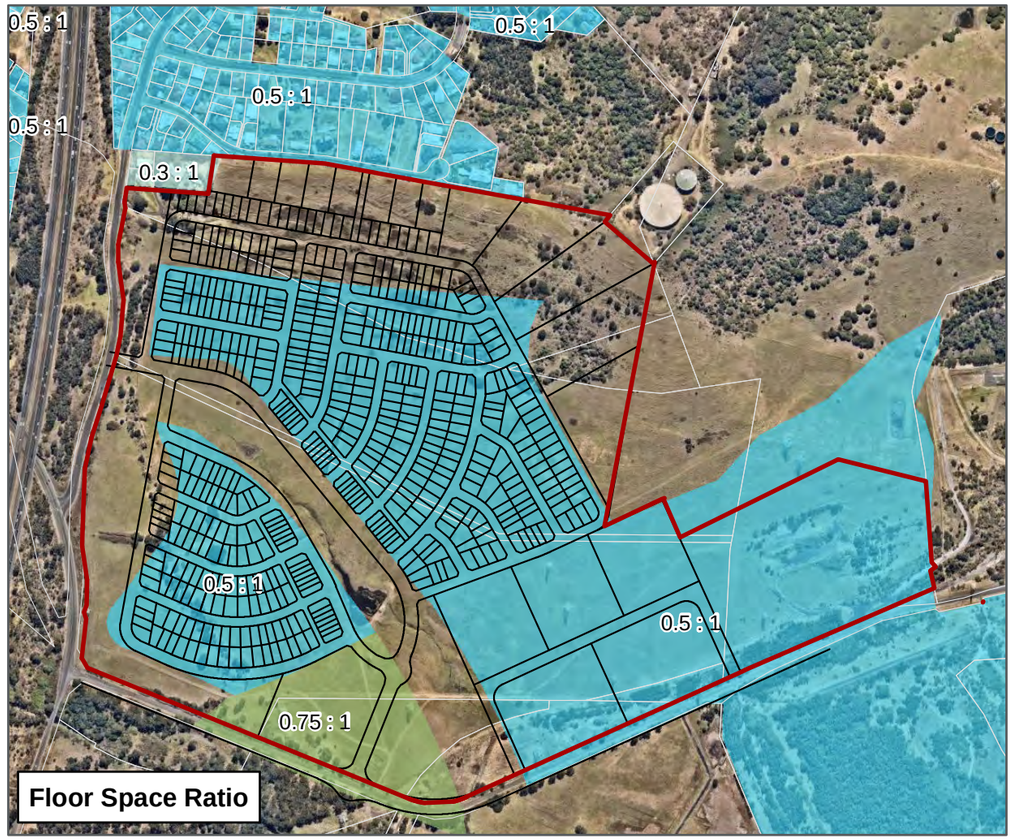
Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2017-10-27 | Project: 82017142
Coordinate System: GDA 1994 MGA Zone 56
Map: 82017142-01-GS-033-ExistingLEPControlNorth.mxd 01
Aerial imagery supplied by nearmap (October 2017)



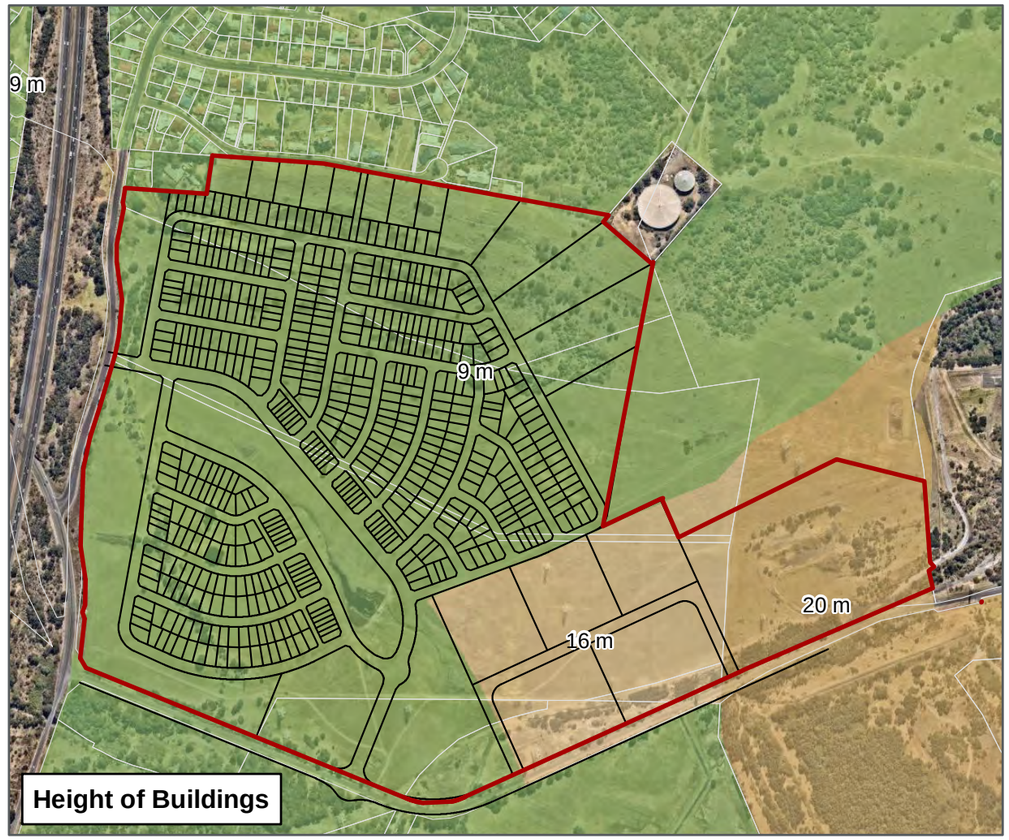
Zoning



Minimum Lot Size



Floor Space Ratio



Height of Buildings

BRIDGEHILL

Existing LEP Planning Controls

CENTRAL PRECINCT TALLAWARRA LANDS

Legend

- Proposed Superlot Boundary
- Proposed Lot Layout
- Cadastre (DFSI-SS, 2017)

Wollongong LEP 2009 (DPE, March 2017)

- B1 Neighbourhood Centre
- E2 Environmental Conservation
- E3 Environmental Management
- E4 Environmental Living
- IN1 General Industrial
- IN2 Light Industrial
- R2 Low Density Residential
- R5 Large Lot Residential
- RE1 Public Recreation
- SP2 Infrastructure

Maximum Floor Space Ratio (n:1)

- 0.5
- 0.75

Maximum Building Height (m)

- 9m

Minimum Lot Size - Wollongong LEP 2009 (DPE, May 2017)

- 449 m²
- 1,999 m²
- 4,999 m²
- 1 - 1.9 ha
- 49.9 ha

FIGURE 4-3

1:9,000 Scale at A3

Metres
0 100 200 300 400

Cardno

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Coordinate System: GDA 1994 MGA Zone 56
Map: 82017142-01-GS-032-ExistingLEPControlCentral.mxd 01
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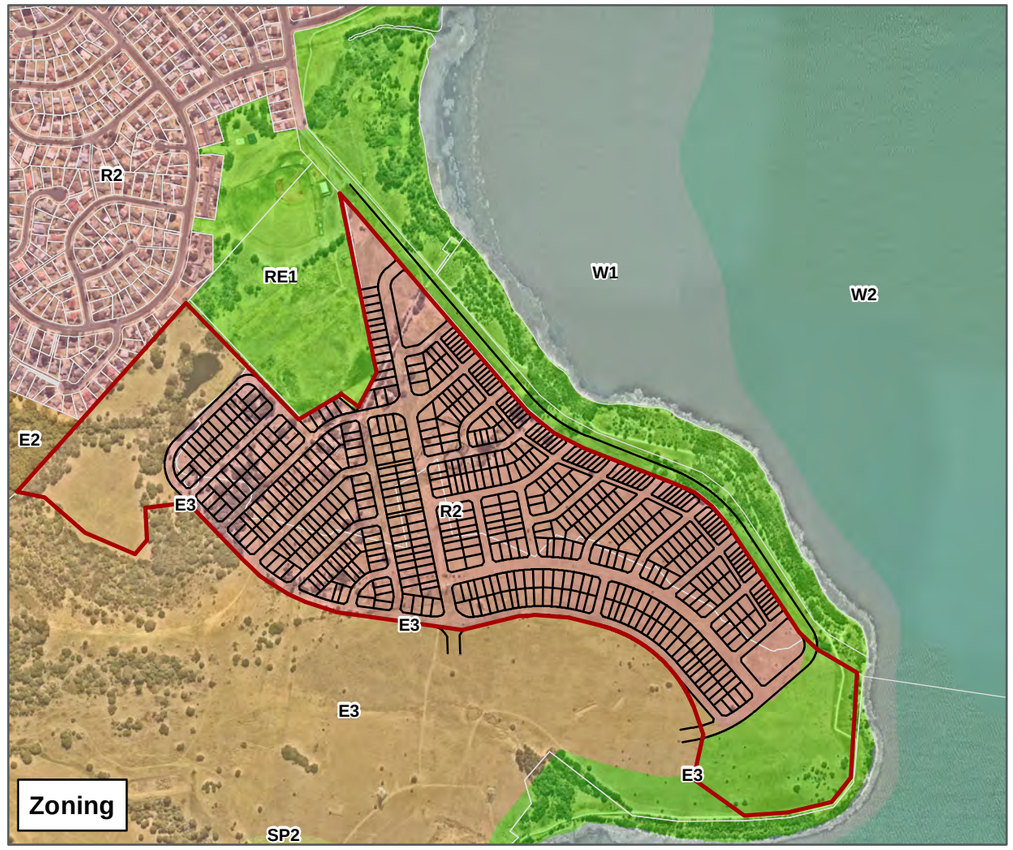

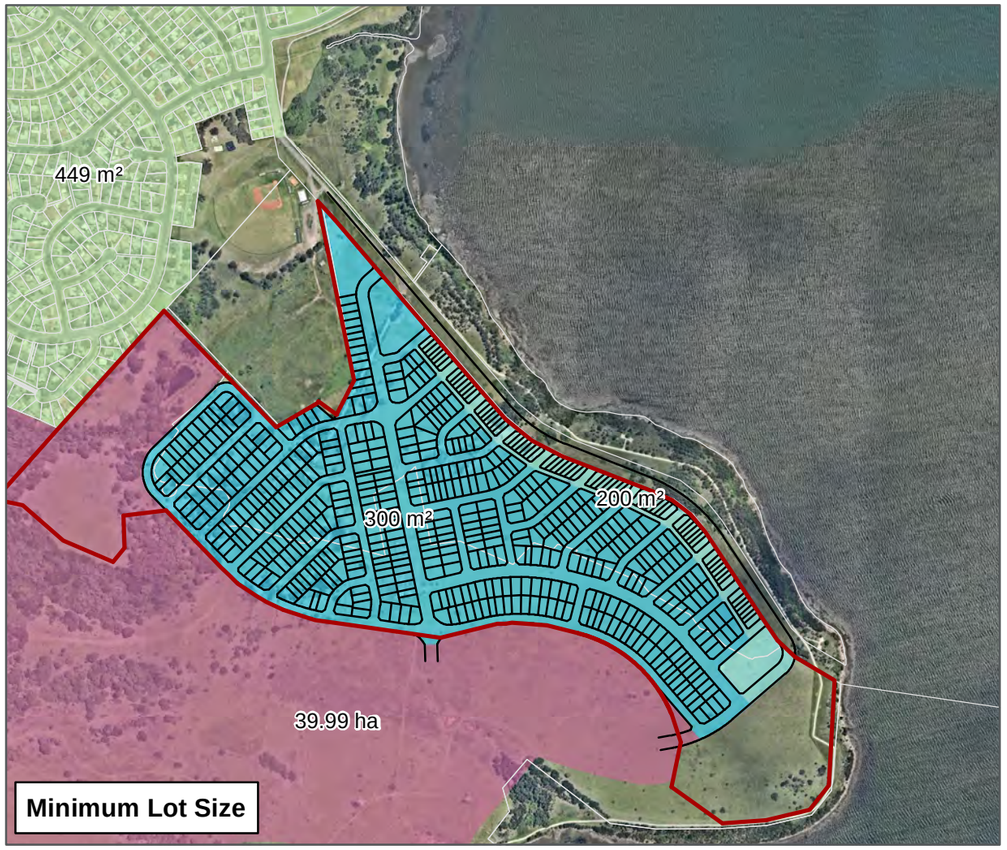

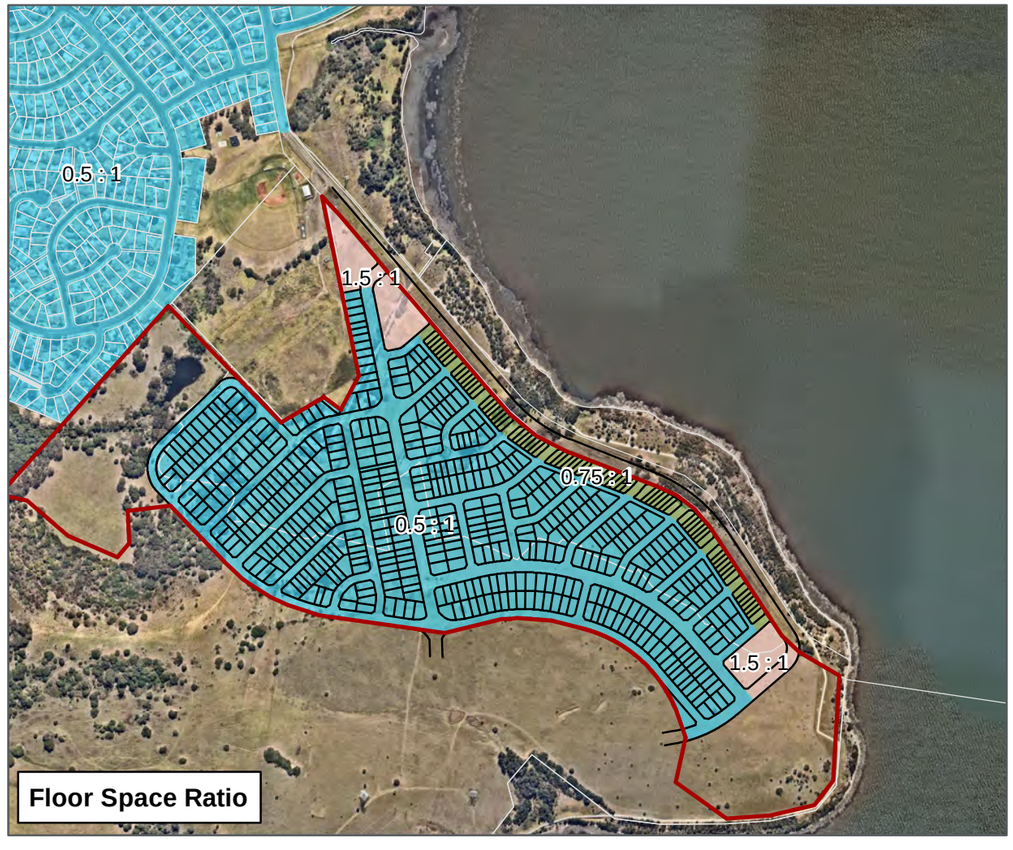

Proposed LEP Planning Controls

NORTH SHORE PRECINCT
TALLAWARRA LANDS

Legend

- Proposed Superlot Boundary
- Proposed Lot Layout
- Cadastre (DFSI-SS, 2017)

Proposed Zoning

- E2 Environmental Conservation
- E3 Environmental Management
- R2 Low Density Residential
- RE1 Public Recreation
- SP2 Infrastructure
- W1 Natural Waterways
- W2 Recreational Waterways

Proposed Maximum Floor Space Ratio (n:1)

- 0.5
- 0.75
- 1.5

Proposed Maximum Building Height (m)

- 9m
- 15m

Proposed Minimum Lot Size

- 200 m²
- 300 m²
- 449 m²
- 39.99 ha

FIGURE 4-2

1:10,000 Scale at A3

Metres
0 100 200 300 400

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Coordinate System: GDA 1994 MGA Zone 56
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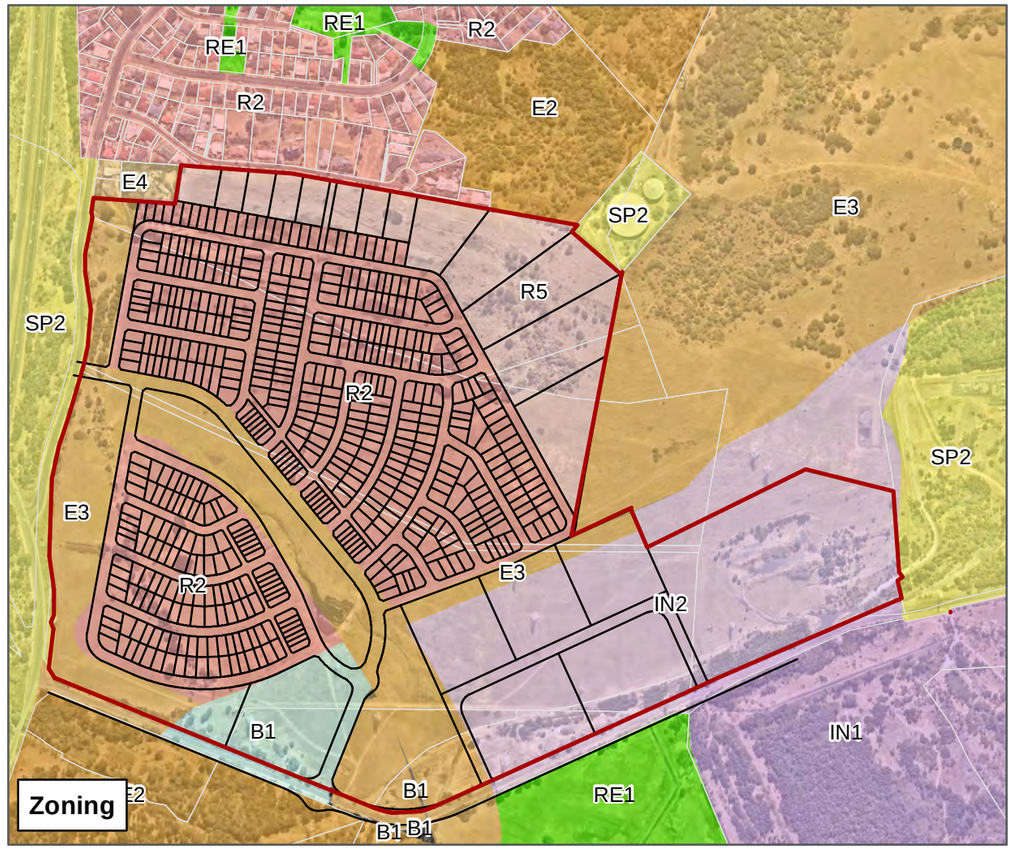
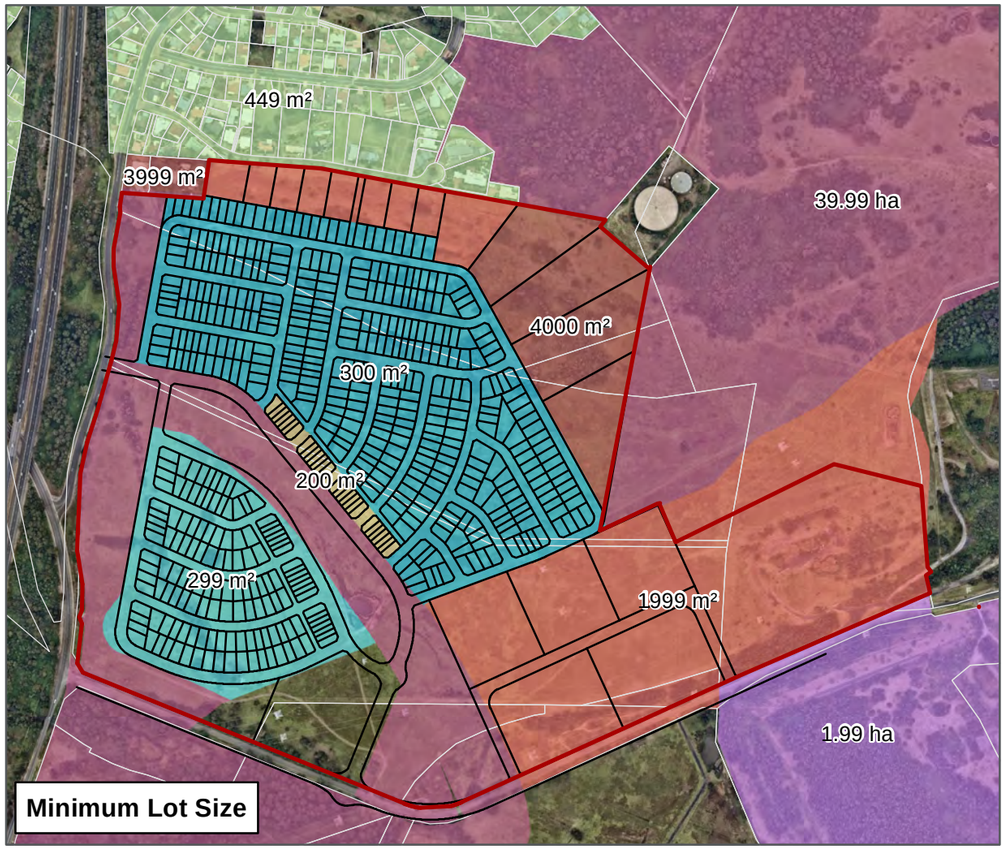
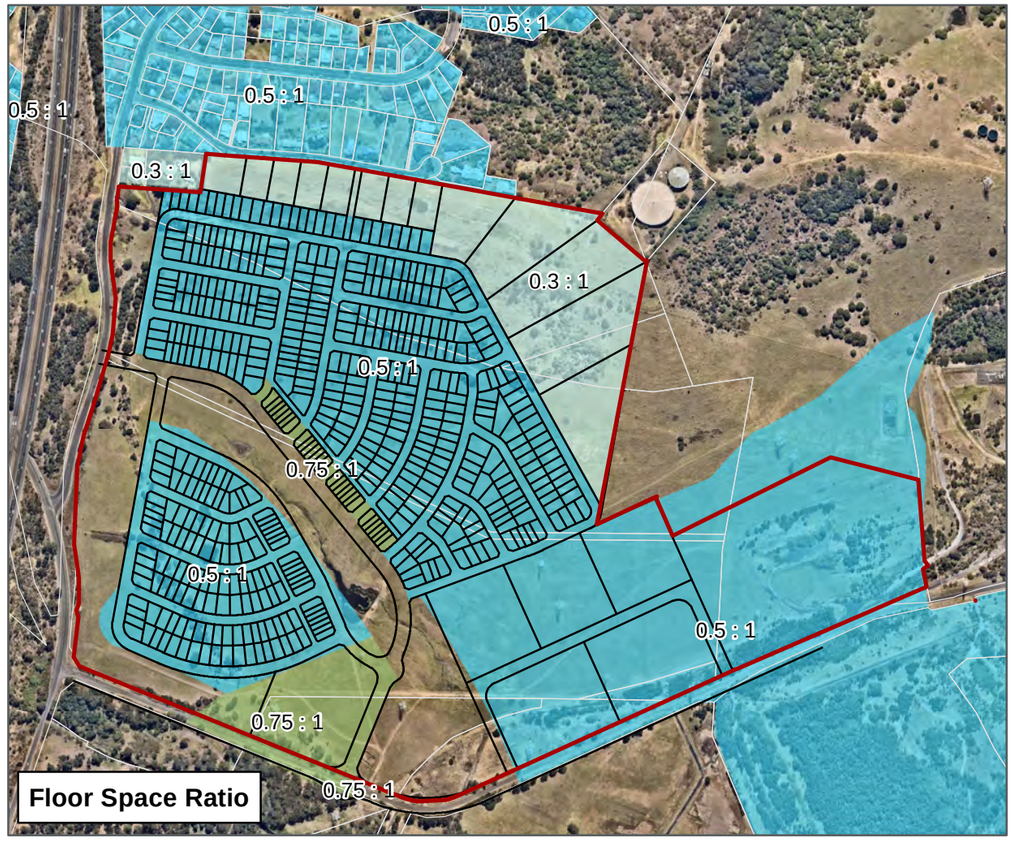
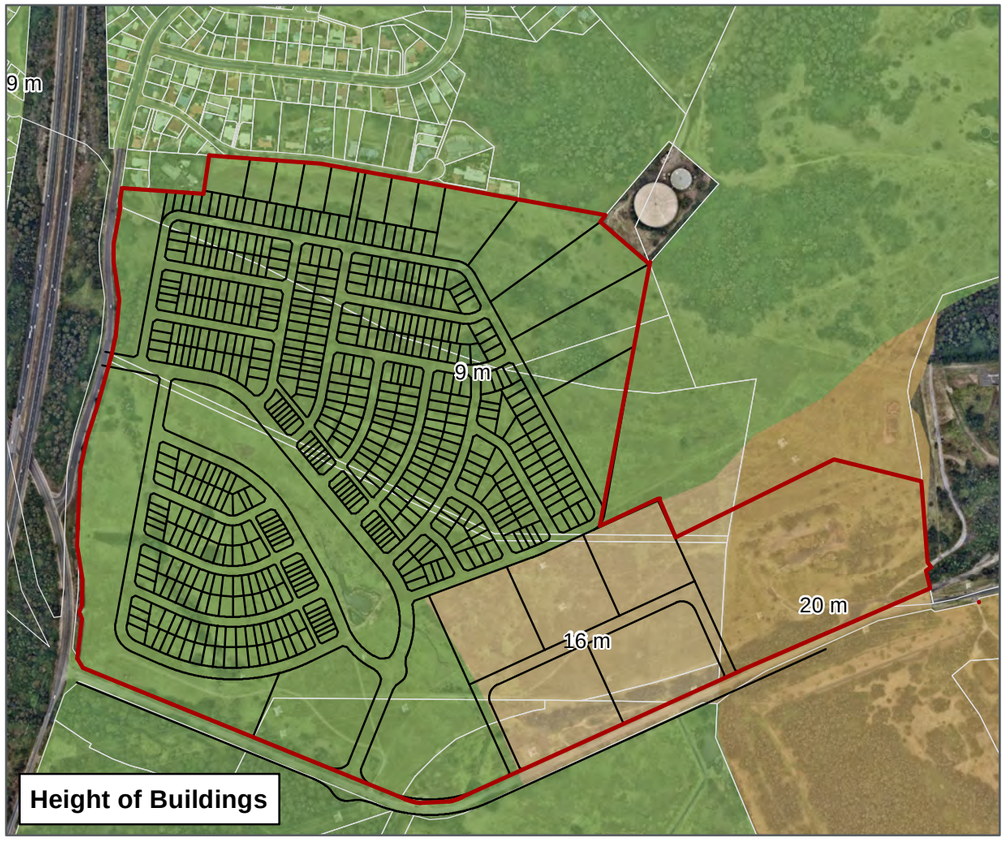
Aerial imagery supplied by nearmap (October 2017)









Proposed LEP Planning Controls

CENTRAL PRECINCT TALLAWARRA LANDS

Legend

- Proposed Superlot Boundary
- Proposed Lot Layout
- Cadastre (DFSI-SS, 2017)

Proposed Zoning

- B1 Neighbourhood Centre
- E2 Environmental Conservation
- E3 Environmental Management
- E4 Environmental Living
- IN1 General Industrial
- IN2 Light Industrial
- R2 Low Density Residential
- R5 Large Lot Residential
- RE1 Public Recreation
- SP2 Infrastructure

Proposed Maximum Floor Space Ratio (n:1)

- 0.5

Proposed Maximum Building Height (m)

- 9 m
- 16 m
- 20 m

Proposed Minimum Lot Size

- 299 m²
- 300 m²
- 449 m²
- 1,999 m²
- 3,999 m²
- 1.99 ha
- 39.99 ha

FIGURE 4-4

1:9,000 Scale at A3

Metres: 0 100 200 300 400

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
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Coordinate System: GDA 1994 MGA Zone 56
Map: 82017142-01-GS-035-ProposedLEPControlCentral.mxd 01
Aerial imagery supplied by nearmap (October 2017)

4.6.2 Wollongong Development Control Plan 2009

Wollongong DCP provides detailed planning guidelines for developments within the Wollongong LGA. The DCP contains a number of chapters that apply to a range of land uses, types of developments and specific sites.

As the proposed modification only seeks to amend the planning provisions that relate to the subject land, and does not relate to the development of the site, the provisions of Wollongong DCP do not apply to the modification. However, future development of the site (under a separate application) will be subject to the provisions of Wollongong DCP.

The SEARs require a set of design guidelines to be prepared for the site, and incorporated as a chapter into Wollongong DCP. The site specific DCP will need to be completed prior to the First Future Development Application for the subdivision of the various precincts being determined. The DCP would be prepared in conjunction and subsequently assessed by Council to guide the future development of the site.

4.7 Strategic Planning Considerations

4.7.1 NSW 2021 – A Plan to Make NSW Number One

NSW 2021 – A Plan to Make NSW Number One is the State Governments strategic business plan, setting priorities for action and guiding resource allocation across NSW. The Plan sets a number of key objectives and goals to drive the economy, improve services and infrastructure and strengthen local environments and communities. The key goals that relate to the site are:

> *Drive economic growth in regional NSW*
>
> *Protect our natural environment*

The Tallawarra Lands site is an important site for the long term economic growth of the Illawarra region. The proposed modification maintains all employment lands and seeks to increase the total area of industrial and residential zoned land across the site. Appropriate mitigation measures have been identified to minimise any impact on the natural environment.

4.7.2 Illawarra-Shoalhaven Regional Plan

The Illawarra-Shoalhaven Regional Plan applies to the local government areas of Wollongong, Shellharbour, Kiama and Shoalhaven and provides the strategic policy, planning and decision-making framework to guide the region to sustainable growth over the next 20 years. The Regional Plan is underpinned by a number of key principles that seek to integrate economic, social and environmental considerations to achieve ecologically sustainable growth for the region.

The principles most relevant to this Modification include:

> *Identify and protect land with high environmental value and recognise cultural heritage values*
>
> *support a strong, resilient and diversified economy that will enable the community to respond to environmental, economic and social challenges*
>
> *take a balanced approach to housing that provides choice, affordability, and supports the orderly supply of land for development*

The subject land is an identified growth area in the Regional Plan and the Modification seeks to implement the principles and directions of the Plan by protecting lands with high environmental values, maintaining employment generating lands and providing a greater diversity in housing types to meet the changing needs of the community. Specifically, the Modification seeks to increase residential densities in appropriate locations to facilitate a mix of housing types including traditional houses on individual blocks, smaller and low maintenance houses, terraces and residential flat buildings to better meet the future housing demands of the community.

4.8 Guidelines

4.8.1 National Airports Safeguarding Framework

The National Airports Safeguarding Framework is a national land use planning framework that aims to improve community amenity by minimising aircraft noise-sensitive developments near airports; and improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions.

The proposed modification does not include any physical works on site, it seeks to refine zone boundaries in an area already zoned for residential development. The National Airports Safeguarding Framework will be considered in future development applications over the site.

4.8.2 Lake Illawarra Floodplain Risk Management Study 2012

The Lake Illawarra Floodplain Risk Management Study 2012 identifies and assesses options and actions that could be implemented to manage the flood risk for the Lake Illawarra foreshore. The proposed modification relates only to land north of Yallah Bay Road which is primarily not flood affected. The proposed modification will not impact on any of the floodplain risk management measures outlined in the study.

4.8.3 Riparian Corridor Management Study 2004

The Riparian Corridor Management Study seeks to map and assign environmental objectives to watercourses within the Wollongong LGA and Calderwood Valley. The study identifies three categories of riparian land to reflect the relative importance of a watercourse.

Duck Creek is mapped as a Category 1 watercourse and the study seeks to provide a continuous corridor width for flora and fauna movement, provide extensive habitat, maintain the viability of native vegetation and manage edge effects associated with urban development. The proposal relates to land wholly outside of the Duck Creek riparian corridor (zoned E2 Environmental Management) and will not impact on the terrestrial and aquatic habitat of Duck Creek.

There are a number of Category 2 and 3 riparian corridors that traverse the site, and appropriate buffers and water quality measures are in place to achieve the objectives of the Riparian Corridor Management Study.

4.8.4 NSW Wetland Management Policy 2010

The NSW Wetland Management Policy 2010 promotes the management of the wetlands of NSW to protect wetland vegetation, water quality, natural productivity and biological diversity and natural flood mitigation. The Policy sets out a range of principles to guide the decision-making by Government agencies in activities affecting wetlands.

There are two SEPP 14 wetlands located on the subject site on the southern side of Duck Creek and the south-eastern part of the site on the northern foreshore area towards Haywards Bay. The proposed modification relates only to land north of Yallah Bay Road and will not impact on either of the SEPP 14 wetlands. Accordingly, the NSW Wetland Policy 2010 in not considered relevant to the proposed modification. Future development to the south of Yallah Bay Road will need to consider the principles of the NSW Wetland Policy 2010.

4.8.5 RMS Guide to Traffic Generating Developments

The RTA Guide to Traffic Generating Development outlines all aspects of traffic generation considerations relating to developments. The Guide provides information regarding traffic issues for the preparation and assessment of Development Applications.

The Traffic Impact Assessment prepared by Cardno (2017e) (**Appendix D**) provides commentary on the RTA Guide to Traffic Generating Development.

4.8.6 AUSTROADS Guidelines

Austroads publishes a range of guidelines that cover the design, construction, maintenance and operation of the road network in Australia and New Zealand.

The Traffic Impact Assessment prepared by Cardno (2017e) (**Appendix D**) was prepared in accordance with the Austroads Guidelines.

4.8.7 NSW Bicycling Guidelines

The NSW Bicycling Guidelines assist road designers, planners and engineers to design and construct high-quality bicycle transport facilities and provide technical guidance on a range of conditions. The proposed modification does not propose any physical works and the NSW Bicycling Guidelines will be a consideration for future development applications over the site.

4.8.8 NSW Planning Guidelines for Walking and Cycling

The NSW Planning Guidelines for Walking and Cycling seek to improve the consideration of walking and cycling in the planning and design of places. The Guidelines identify a number of principles to create more pedestrian and cycle friendly neighbourhoods, including connected street patterns, public transport stops, and open space corridors to reinforce local walking and cycling networks and create a safe and comfortable walking and cycling environment.

The modification to the concept plan includes a legible, permeable and connected street layout and open space network that will encourage walking and cycling; and is consistent with the NSW Planning Guidelines for Walking and Cycling.

4.8.9 Crime Prevention through Environmental Design (CPTED) Principles

The Crime Prevention through Environmental Design (CPTED) Principles identify opportunities to minimise crime through appropriate environmental design. The revised concept plans for the site incorporates CPTED principles by encouraging passive surveillance of public spaces through appropriate sight lines and street layouts as well as encouraging community ownership of public spaces through the provision of attractive, well maintained and well used spaces.

4.8.10 Healthy Urban Development Checklist

The Healthy Urban Development Checklist provides advice on urban development policies, plans and proposals to encourage a built environment that contributes positively to the health of the community. The checklist identifies key characteristics and considerations for health focused design and these are discussed in **Table 4-3** below.

Table 4-3 Health Urban Development Checklist

Quick Guide Checklist	Y/N	Comment
Are there likely to be significant issues related to:		
Access to fresh, nutritious and affordable food?	*N*	Fresh and nutritious food is readily available in the local area.
Preservation of agricultural lands?	*N*	The proposal does not affect / remove any productive agricultural lands.
Support for local food production?	*N*	The proposal does not impact local food production.
Are there likely to be significant issues related to:		
Encouragement of incidental physical activity?	*N*	The permeable and connected street and open space networks will encourage incidental physical activity.
Opportunities for walking, cycling and other forms of active transport?	*N*	The legible, permeable and connected street layout and open space network that will encourage walking and cycling
Access to usable and quality outdoor spaces and recreational facilities?	*N*	The proposal includes significant useable and quality open space that will be easily accessible to the community.
Are there likely to be significant issues related to:		
Provision of housing that supports human and environmental health?	*N*	The proposal will increase the supply of housing to support human and environmental health.

Quick Guide Checklist	Y/N	Comment
Dwelling diversity?	*N*	The proposal specifically seeks to increase housing diversity to meet the changing housing needs of the community.
Affordable housing?	*N*	The proposal seeks provide for a mix of densities, lot sizes and housing types to increase the supply of more affordable housing.
Adaptability and accessibility of housing?	*N*	The proposal seeks to provide a mix of housing types including adaptable and accessible housing to meet the needs of the community.
Are there likely to be significant issues related to:		
Availability of public transport services?	*N*	The proposal includes bus routes to ensure that all future residents have access to public transport.
Reduction of car dependency and encouragement of active transport?	*N*	The proposal includes a future neighbourhood centre to service the local community and reduce car dependency.
Encouragement of infill development and/or integration of new development with existing development?	*N*	The proposal seeks to increase the residential densities of the existing Concept Approval.
Telephone and internet connectivity?	*N*	Utilities and services will be made available at the site.
Are there likely to be significant issues related to:		
Location of jobs to housing and commuting options?	*N*	The site is within close proximity to the existing employment centres of Wollongong and Shellharbour and the proposal incorporates a substantial amount of future employment lands.
Access to a range of quality employment opportunities?	*N*	The site is within close proximity to the existing employment centres of Wollongong and Shellharbour and the proposal incorporates a substantial amount of future employment lands.
Access to appropriate job training?	*N*	The site is within close proximity of a number of higher education and training institutions.
Are there likely to be significant issues related to:		
Crime prevention and sense of security?	*N*	The revised concept plans for the site incorporates CPTED principles.
Are there likely to be significant issues related to:		
Access to green space and natural areas?	*N*	The proposal includes substantial open space and natural areas.
Public spaces that are safe, healthy, accessible, attractive and easy to maintain?	*N*	The proposal identifies areas for safe, attractive and accessible public spaces.
Quality streetscapes that encourage activity?	*N*	Streetscape design will be subject to future applications over the site.
Sense of cultural identity, sense of place and public art?	*N*	The proposal promotes a strong sense of place through physical and visual connections to the water and mountains.
Preservation and enhancement of places of natural, historic and cultural significance?	*N*	The proposed modification does not include any physical works on site. However, the preservation and enhancement of places of historic, natural and cultural significance will be a consideration of future development applications over the site.
Are there likely to be significant issues related to:		
Access to a range of facilities to attract and support a diverse population?	*N*	The site is within close proximity to existing services and facilities, and a range of facilities are proposed under the existing Concept Approval.

Quick Guide Checklist	Y/N	Comment
Responding to existing (as well as projected) community needs and current gaps in facilities and/or services?	*N*	The site is within close proximity to existing services and facilities, and a range of facilities are proposed under the existing Concept Approval.
Early delivery of social infrastructure?	*N*	The site is subject to Part 6 of WLEP 2009 which requires satisfactory arrangements to be made for state and local infrastructure (including social infrastructure) prior to the site being developed).
An integrated approach to social infrastructure planning?	*N*	The site is subject to Part 6 of WLEP 2009 which requires satisfactory arrangements to be made for state and local infrastructure (including social infrastructure) prior to the site being developed).
Efficiencies in social infrastructure planning and provision?	*N*	N/A
Are there likely to be significant issues related to:		
Environments that will encourage social interaction and connection among people?	*N*	The proposal includes an accessible and connected oped space network to encourage social interaction.
Promotion of a sense of community and attachment to place?	*N*	The proposal promotes a strong sense of place through physical and visual connections to the water and mountains.
Local involvement in planning and community life?	*N*	N/A
Social disadvantage and equitable access to resources?	*N*	The proposal promotes equitable access to resources.
Community severance, division or dislocation?	*N*	The proposal promotes a connected community through the provision of a walkable centre and open space network.
Are there likely to be significant issues related to:		
Air quality?	*N*	The proposal maintains appropriate buffers to the Tallawarra Power Station.
Water quality and safety?	*N*	The proposal includes water quality measures.
Disturbance and health effects associated with noise, odour and light pollution?	*N*	The proposal maintains appropriate buffers to the Tallawarra Power Station.
Potential for hazards (both natural and man made)?	*N*	A detailed land capability assessment has been undertaken, and where required, mitigation measures will minimise any potential for hazards.
Vector catchments and the potential for pest borne disease?	*N*	N/A

5 Environmental Assessment

This section assesses environmental impacts

5.1 Key Environmental Aspects

Provide table that summarises the various Environmental aspects, assessed importance and issues, a priority ranking of assessment, what studies have been conducted and how these issues have been addressed

5.2 Traffic & Transport

A Traffic Impact Assessment has been prepared by Cardno (2017e) to address the SEARs, with the full assessment contained at **Appendix D**. The SEARs addressed in this section are identified in **Table 5-1**.

Table 5-1 Secretary's Environmental Assessment Requirements (Flooding)

Secretary's Environmental Assessment Requirements	Where Addressed
6. Transport and Accessibility	
The modification request shall include a Traffic Impact Study prepared in accordance with the RTA's Guide to Traffic Generating Developments which also addresses: ▪ The impact of the additional lots on the road network, including connections to the Princes Highway and the Princes Motorway; ▪ Staging and funding of infrastructure, including the provision of connections to Cormack Avenue and Haywards Bay; ▪ Mitigation of road traffic noise; ▪ Traffic and road safety impacts; ▪ Any impacts of the proposed bypass of Albion Park Rail; and ▪ The retention of foreshore access links.	**Section 5.2.2 and Appendix E**

5.2.1 Tallawarra Lands Concept Approval

Gabites Porter completed a Traffic Impact Assessment (2011) (TIA) to inform the Tallawarra Lands Concept Plan Approval, with an addendum to the initial TIA provided following comments from Roads and Maritime Services (RMS and Council) (Gabites Porter, 2012). These reports were summarised within the Environmental Assessment completed by DFP (2011) to inform the Concept Approval. The Gabities Porter Assessment investigated the traffic generation rates that would result as part of the development of the Tallawarra Lands, investigating the associated impacts of the surrounding road network. This process identified the road /intersection upgrades that would be required as well as the impacts associated with car parking and public transport provision throughout the site.

The TIA found that 2200 (vehicles per hour) vph would be generated by the development in the morning peak, with 1850 vph generated in the evening. The increase in traffic would not result in any requirements for network upgrades outside of those already identified to respond to natural growth in demand. Four access points will be provided for the site, two from the Princes Highway and one from Cormack Avenue on the western side of the development and the last from Gilba Road to the north. Public Transport would be required, especially connections through to Albion Park Rail and Dapto Train stations and through to the commercial precincts within the site. Walk and cycle paths would need to be provided throughout the site, with connections provided to the Princes Motorway over pass to the north of the site and connections through to Haywards Bay in the south.

5.2.2 Concept Plan Modification Impact Assessment

The modification to the precinct boundaries included within this Concept Plan Modification has the potential to alter the TIA undertaken for the Tallawarra Lands. To assess the impact a TIA was conducted by Cardno (2017e), with the full report contained at **Appendix D**. This TIA is supplementary to the initial Tallawarra Lands Concept Plan study completed by Gabities Porter (2011), which remains the primary technical assessment for the overall development.

Cardno (2017e) re-evaluated the items addressed in the approved TIA against the proposed modifications to the Tallawarra Lands. The following summarises the findings of this assessment;

> The proposed increase in development yield does not result in any critical network operational concerns or significant differences when compared with the approved yield (as tested by RMS as part of the APRB design development);

> The intersection performance at Dapto off-ramp/Princes Hwy in the PM peak shows potential capacity issues by 2041, which can be addressed by converting it to traffic signal or roundabout control;

> The development of the Lakeside Precinct and consequential delivery of the Haywards Bay Link are dependent on Energy Australia plans for the site. It is understood that the development of this precinct is not likely to take place in the near future but should this go ahead, the network operation would be identical to that without this development (and it does not require any upgrades to the external road network);

> No substantial issues at the operation/performance of the remaining intersections along all scenarios compared to the original Albion Park Rail Bypass models. LoS was calculated at D or better, which is deemed satisfactory.

5.2.3 Mitigation Measures

5.2.3.1 Conditions of Approval

The Concept Plan Approval included a number of additional requirements for all future approvals with regards to Traffic and Transport as detailed in **Table 5-2**. These requirements are considered sufficient for assessment of the Proposed Modification.

Table 5-2 Tallawarra Lands Concept Plan Conditions of Approval – Stormwater and Flooding

Tallawarra Lands Concept Plan Conditions of Approval		
Schedule 3 – Future Environmental Assessment Requirements		***Response***
Roads and Maritime Services Requirements	**14 Only one direct access from the development to the Princes Highway is permitted** Future applications for road works must demonstrate that only one direct access from the development to the Princes Highway is proposed. The access shall be at the existing junction of the Princes Highway and Yallah Bay Road.	
	15 Upgrade of the junction of the Princes Highway and Yallah Bay Road to a roundabout The first future application to Council which includes works must be accompanied by an approved design for the upgrade of the junction of the Princes Highway and Yallah Bay Road. The intersection must be upgraded to a roundabout. The submitted design must be to the satisfaction of and have been approved by Roads and Maritime Services and Wollongong City Council.	
	16 Requirement for a Concept Design for the Closure of Cormack Avenue The first future application to Council for superlot subdivision must include a concept design for the physical closure of the existing junction of Cormack Avenue with the Princes Highway. The submitted design must be to the satisfaction of and have been approved by Roads and Maritime Services and Wollongong City Council. The road closure is to be implemented in conjunction with the development of the Central Precinct.	
	17 Requirement for a Concept Design for Traffic Calming of Gilba Road	

	The first future application for subdivision of the northern residential precinct must include a concept design for the traffic calming of Gilba Road, where is provides access to the northern residential precinct. The proponent shall obtain design criteria from Wollongong City Council
	18 Requirement for a Concept Design for Road works and lighting on the Princes Highway The first future application which involves works on the Princes Highway must be accompanied by a concept design for all required road works on the Princes Highway. The concept design shall comply with Austroads Guide to Road Design. Any required lighting on the Princes Highway shall be upgraded/provided in accordance with AS/NZS1158. The plan must be to the satisfaction of and approved by Roads and Maritime Services.
	19 Road Network – Design of roads, footpath crossings, footpaths and cycleways All future application that include roads, footpath crossings, footpaths and cycleways, must demonstrate that these elements have been designed to satisfy or exceed the requirements of Wollongong City Council.
	20 Road link with Haywards Bay required to be traffic calmed and to accommodate two-way movement of buses The future application which includes the Haywards Bay road link, shall demonstrate that the link can accommodate the two-way movements of buses and that it is traffic calmed to the satisfaction of Wollongong City Council.

5.2.3.2 Statement of Commitments

Mitigation measures identified by the SoCs that are applicable to Traffic and Transport, and which would apply to the Modification Proposal, are listed in **Table 5-3** below.

Table 5-3 Tallawarra Lands Concept Plan Statement of Commitments – Traffic and Transport

Tallawarra Lands Concept Plan Statement of Commitments		*Response*
Roads / Bridge in E2 Zone	1. TRUenergy commits to offering to enter into an agreement with Wollongong City Council whereby approval under Part 5 of the EP&A Act would be sought for the proposed roads and bridge in the E2 zone in accordance with Clause 94(1) of SEPP Infrastructure 2007. This process would put in place arrangements for the provision of the proposed roads and bridge in the E2 zone by or on behalf of Council. This includes the bridge across duck creek and the length of road either side of the bridge as well as the road that leads into the B6 enterprise Corridor zoned land from the Princes Highway.	
Traffic Management	TRUenergy commits to consulting with Wollongong City Council in place satisfactory arrangements to deliver the following road improvements: ▪ The conversion of the intersection of Cormack Avenue and the Princes Highway into a two lane circulating roundabout; ▪ Two lane circulating roundabouts at each of the two access points to the site from the Princes Highway; ▪ The provision of a roundabout at the site access point off Cormack Avenue; ▪ Upgrade Yallah Bay Road to a collector road; ▪ Construction of the north-south connector road; and ▪ Consequential works to facilitate the site access points.	

Traffic and Transport issues associated with the development of the Tallawarra Lands would be managed in accordance with the Concept Plan Approval and associated SoCs referred to above. These are considered adequate to address the potential impacts of the Modification Proposal, with no additional significant impact on traffic and transport as a result of the modification.

5.3 Stormwater and flooding

A Flood Risk Assessment has been prepared by Cardno (2017a) to address the SEARs, with the full assessment contained at **Appendix E**. The SEARs addressed in this section are identified in **Table 5-4**.

Table 5-4 Secretary's Environmental Assessment Requirements (Flooding)

Secretary's Environmental Assessment Requirements	Where Addressed
11. Flooding	
The modification request shall: • Provide an assessment of any additional flood risks associated with the proposal in accordance with the NSW floodplain Development Manual (2005), including the impact of flooding on the development, the impact of the development on flood behaviour and the potential impacts of climate change, coastal processes, sea level rise and an increase in rainfall intensity; and • Address changes in hydrology from the proposed modification (runoff, tidal movement. Flood flows and groundwater regime) and impacts on environmental lands within and surrounding the site.	**Section 5.3.2 and Appendix E**

5.3.1 Tallawarra Lands Concept Approval

Bewsher Consulting completed a Flood Risk Assessment (2010) to inform the Tallawarra Lands Concept Plan Approval. This report was summarised within the Environmental Assessment completed by DFP (2011) to inform the Concept Approval. The Bewsher Assessment investigated the existing flooding characteristics of the site and then determined how this would be altered by the Concept Plan.

The flooding on site principally relates to Duck Creek which runs through the Tallawarra Lands between the Central and Lakeside Precincts. The flooding within the site is generally caused due to the extensive size of the Duck Creek catchment upstream of the site, with some minor flooding experienced within the gullies that drain into Duck Creek from the north.

The assessment undertaken identified that there is a small area that is affected by flooding within the North Shore Precinct that is attributed to drainage gullies that flow directly into Lake Illawarra. The Central Precinct was modelled to have flood affectation through the gully that runs through the middle of the precinct and with minor impacts within the Employment Area fronting Yallah Road. The Southern Precinct will also see some minor flooding impacts. The majority of flooding impacts will be contained within the Duck Creek riparian corridor and the associated wetlands to the south of Yallah Bay Road.

5.3.2 Concept Plan Modification Impact Assessment

The modification to the precinct boundaries included within this Concept Plan Modification have the potential to alter the flooding characteristics of the Tallawarra Lands. To assess the impact a Flood Risk Assessment was conducted by Cardno (2017a), with the full report contained at **Appendix E**. This Flood Risk Assessment is supplementary to the initial Tallawarra Lands Concept Plan study completed by Bewsher (2010), which remains the primary technical assessment for the overall development.

Cardno (2017a) re-evaluated the items addressed in the approved flood study against the proposed modifications to the Tallawarra Lands. The following summarises the findings of this assessment;

> Potential Encroachment into Flood Prone Areas – The proposed boundary extensions in both the North Shore and Central Precincts are not within the flood extent. The proposed modification will therefore not cause the project to be subject to any additional flood risk. The modifications will not have any additional impacts on the flooding extent, behaviour or storage within the floodplain.

> Flood-Time Access – The proposed modifications to the North Shore and Central Precincts do not propose any change to the access arrangements to either precinct. As such, there are no changes to the Flood-Time Access assessments undertaken in the Bewsher (2010) study.

> Implications of Potential Climate Change – The areas proposed for development as part of this modification will occur at the same levels or higher than the areas of approved development and, therefore, are not expected to be impacted by the increased lake flood levels as a result of sea level rise or the increase in Rainfall intensity.

Additionally, the Cardno (2017a) assessment reviewed the impact of Hydrologic changes on the Tallawarra Lands site. This assessment encompassed a review of the following assessment covered in the Bewsher (2010) study;

> Changes in Runoff and Associated Impacts – Bewsher (2010) referred to a Drainage Assessment report completed by BMT WBM (2010) to detail the issues associated with site development runoff quality and quantities. These issues were identified as being able to be addressed by adopting a series of mitigation measures in the design phase. The modification does not cover a substantial increase in size compared to the approved development land, meaning that any increase of runoff can be accommodated by the proposed measures for achieving the stormwater quality and quantity objectives for the remainder of the development.

> Changes to Tidal Movements and Associated Impacts – The approved flood study indicates that the proposed development will have no impact on the local tidal regime. The proposed modifications are located in elevations higher than the lowest level within the approved plans, ensuring no impacts to the existing tidal regime.

> Changes to Flood Flows and Associated Impacts – Both the increase in development footprints associated with the North Shore and Central Precincts are assessed as being insignificant when compared against the peak discharges generated from the greater Duck Creek and Lake Illawarra catchments. As such, these increases in developed area are not expected to result in changes in the flood behaviour within Duck Creek or Lake Illawarra.

> Changes to Groundwater Regime and Associated Impacts – The Bewsher (2010) study indicated that proposed work in the North Shore and Central Precinct is not proposed in the low-lying areas where groundwater and saltwater interface occurs. Further to this, development of some of the hilly portions of the site will not change the slow vertical seepage regimes associates with substantially impervious clay-bedrock conditions. Based on these factors, the proposed modifications are not expected to result in any changes to the groundwater regime.

5.3.3 Mitigation Measures

5.3.3.1 Conditions of Approval

The Concept Plan Approval included a number of additional requirements for all future approvals under the Concept Plan Approval with regards to Flooding and Stormwater management as detailed in **Table 5-5**. These requirements are considered sufficient for assessment of the Proposed Modification.

Table 5-5 Tallawarra Lands Concept Plan Conditions of Approval – Stormwater and Flooding

Tallawarra Lands Concept Plan Conditions of Approval		
Schedule 3 – Future Environmental Assessment Requirements		***Response***
Future Environmental Assessment Requirements	**2 Stormwater management** Future applications shall be accompanied by a detailed stormwater management plan prepared by a qualified practicing Civil Engineer and in accordance with the requirements of Council which addresses the following: a) Details on how a reduction of rubbish or hydrocarbon pollutants will be achieved prior to discharge to Lake Illawarra; and b) Any structural works, including works for stormwater capture and treatment are required to be located outside riparian areas.	
	3 Stormwater Management Masterplan The first future application to Council for superlot subdivision must include a stormwater management	

	masterplan consistent with the requirements of Wollongong City Council's LEP, DCP and relevant Australian standards for stormwater management.	
	4 Floodplain Risk Assessment and Management The first future application to Council for superlot subdivision must include a floodplain risk assessment and management plan consistent with the requirements of Wollongong City Council's LEP, DCP, Duck Creek Flood Study (2012) and the NSW Floodplain Development Manual (2005).	

5.3.3.2 Statement of Commitments

Mitigation measures identified by the SoCs that are applicable to Stormwater and Flooding, and which would apply to the Modification Proposal, are listed in **Table 5-6** below.

Table 5-6 Tallawarra Lands Concept Plan Statement of Commitments – Stormwater and Flooding

Tallawarra Lands Concept Plan Statement of Commitments		*Response*
	28. Future DAs will adopt the following flood risk management principles. It is noted that these principles exceed, or are equal to, those currently applied by Wollongong City Council in respect of the West Dapto Release Area: • All access roads to development precincts to be at or above 100 year flood level after allowing for year 2100 climate change impacts. • Filling for development areas to be at a minimum level of the 100 year flood level allowing for year 2100 climate change impacts. • Development floors levels for each land use to be at the flood planning levels set by Wollongong City Council's DCP (Chapter E13)	
Flood Risk Management	29. Future DAs will adopt the following flood risk management principles: a) All future development decisions will be based on the most up-to-date flood model available at the time of the future DA and include all components of the project which may influence flood behaviour (e.g. changes to riparian vegetation, filling adjacent to the floodplain, new bridges, etc.). It is recognised that flood models need revision over time as new data becomes available or Government polices alter. This includes the imminent revisions to the rainfall intensity-frequency-duration data published by the Bureau of Meteorology, and changes in Government policy and/or accepted practice concerning the impacts of climate change on sea levels and rainfall intensities. Further, flood levels within development areas remote from the main waterways will be modelled having regard to the capacity of the drainage system of the development area and its overland flow routes. b) Land to be filled will be at sufficient height and grade to allow free-drainage of the filled area into the surrounding waterway. c) When stormwater concept designs are developed for proposed fill areas, potential flood hazard areas will be analysed and managed in accordance with best practice and the requirements of the Floodplain Development Manual and Council's DCP (Chapters E13 and E14).	

d) No filling of floodplain land will occur which produces off-site impacts in accordance with the "flood affectation" requirements of Chapter E13 of Council's DCP.

e) All future housing will be serviced by at least one road route providing egress off-site and at a height for the entire route which is no lower than the 100 year ARI flood level allowing for year 2100 climate change impacts. Where future housing areas are isolated in a PMF, facilities (e.g. high ground or elevated building floors) will be provided for safe refuge above the PMF level, within the isolated area.

f) The existing old railway bridge across Duck Creek provides significant constriction to flood flows, raising flood levels upstream in major flood events. The proponent commits to the following measures to mitigate flooding impacts:

- Designing the new bridge to provide less constriction to achieve lower upstream flood levels for the 100 year ARI and larger events; and
- Setting the levels of new roads, landfill and habitable floor levels of proposed buildings based on flood modelling consistent with Council's Blockage Policy.

Stormwater and Flooding issues associated with the development of the Tallawarra Lands would be managed in accordance with the Concept Plan Approval and associated SoCs referred to above. These are considered adequate to address the potential impacts of the Modification Proposal, with no additional significant impact on flooding and stormwater as a result of the modification.

5.4 Noise

A Noise Assessment has been prepared by Pacific Environment (2017) to address the SEARs, with the full assessment contained at **Appendix F**. The SEARs addressed in this section are identified in **Table 5-7**.

Table 5-7 Secretary's Environmental Assessment Requirements (Noise)

Secretary's Environmental Assessment Requirements	Where Addressed
5. Noise Assessment	
The modification request shall include an acoustic assessment prepared by an appropriately qualified acoustic expert, which: • Includes an assessment of acoustic impacts from all surrounding noise sources, including the Tallawarra Power Station and any required buffer zones;	**Section 4 of Appendix F**
• Includes an assessment of the cumulative impacts of noise sources (road, rail, aviation, power station, industrial and commercial areas) on the proposed modification;	**Section 4 Appendix F**
• Demonstrates that future dwellings on the proposed lots would comply with the noise levels standards specified in the *State Environmental Planning Policy (Infrastructure) 2007*, and the requirements of the *Development of New Rail Corridors and Busy Roads – Interim Guideline, 2008*;	**Section 3.3.3 and Section 3.3.4 of Appendix F**
• Demonstrates compliance with the NSW Industrial Noise Policy at the boundary of nearby residential lots;	**Section 3.2 of Appendix F**
• Includes a plan clearly illustrating noise contour lines in relation to the proposed expansion of residential uses on the site;	**Figure 7-1 of Appendix F**
• Includes an assessment of, and advice on the status of, the matters specified in Schedule 3 Future Environmental Assessment Requirements 5, 6 and 7 of the Concept Approval, and if any of those requirements have been triggered, information on their progression, and	**Section 6 of Appendix F**

• Includes details of ongoing noise management and mitigation measures, including design responses to minimise noise impacts	**Section 8 of Appendix F**

5.4.1 Tallawarra Lands Concept Plan

To inform the Concept Plan, Sinclair Knight Merz (SKM 2011) prepared a Noise Assessment for the Tallawarra Lands. The assessment was reviewed as part of the investigations undertaken and remains the technical noise assessment for the overall approved Concept Plan, with the Pacific Environment (2017) assessment providing the additional technical assessment for the areas of proposed modification consistent with the SKM (2011) assessment.

The assessment comprised:

- An overview of noise issues to identify potential land use conflicts that may arise within the development;
- Development of noise criteria that considers existing and future land uses; and
- A Compatibility Analysis to identify noise control measures that may need to be incorporated into the development to minimise noise conflict in the future.

5.4.1.1 Tallawarra Power Station Noise Impacts

Noise impacts from the Tallawarra Power Station were assessed to inform the study. Key results show that the power station L_{Aeq} noise impacts within the Central and Southern residential precincts are less than 40 dB(A), and therefore comply with the criteria set out in the *Industrial Noise Policy* (INP) (EPA 2000). Within the North Shore Precinct, L_{Aeq} noise impacts along the southern ridge varied between 35 and 45 dB(A), and it was noted that '*noise attenuation in this area is very steep as a consequence of the screening effect of the ridge*' (SKM 2011).

5.4.1.2 Potential Noise Impacts to Residential Precincts

Potential noise impacts at the proposed residential precincts in the Tallawarra Lands were assessed and the following conclusions were made in the assessment:

- **North Shore Precinct**: Potential L_{Aeq} and L_{Amax} noise impacts have been predicted for the southern most parts of the precinct as a result of power station noise, however, predicted noise levels rapidly decrease further north due to screening from the ridge. Maximum exceedances of L_{Aeq} noise criteria are expected to occur at properties adjacent to the southern boundary, and to be in the order of 5 dB(A).
- **Central Precinct**: Road noise impacts from the M1 Princes Motorway (formally Southern Freeway) are predicted to exceed night time noise guidelines by approximately 5 dB(A) at properties along the western boundary, whilst minor impacts may occur for properties in the central north area. In addition, rail noise was predicted to potentially exceed noise guidelines by approximately 5 dB(A) across the area, with the exception of the south western corner where exceedances of up to 9 dB(A) have been predicted.

5.4.1.3 Tallawarra Lands Noise Management

The assessment determined that noise generated by road traffic on the Princes Motorway and rail traffic on the Illawarra Rail Line is expected to result in exceedances of noise guidelines of up to 5 dB(A) in the North Shore and Central Precincts.

As a result, the assessment recommended both passive and active mitigation measures as part of the site development. Passive mitigation refers to noise reductions obtained through the consideration of noise in site planning and building design, while active mitigation sets out methods to reduce noise through the inclusion of noise reducing materials or specific construction techniques.

5.4.1.3.1 Passive Noise Mitigation

The following passive noise mitigation measures were recommended:

- **Building Row Screening**: Where residential properties are constructed, successive rows of buildings will create a substantial shield for subsequent properties.
- **Internal Building Layout**: Where sleeping areas in residential buildings can be positioned at the furthest point from the noise source, substantial screening and distance attenuation benefits can be obtained and as such reduce the impacts of noise for these sensitive building uses.

5.4.1.3.2 Active Noise Mitigation

The following active noise mitigation measures were recommended:

- **Noise Barriers**: A wall or mound constructed along the top of the ridge within the Central Precinct may provide an effective option for mitigating noise from the power station for North Shore Precinct receivers.
- **Building Design**: Where considered necessary, building facades facing the dominant noise source should be constructed of substantial materials such as brick or masonry, or include sound insulation materials in their design.

5.4.2 Concept Plan Modification Impact Assessment

A Noise Assessment was prepared by Pacific Environment (2017) to assess the potential noise related issues associated with the proposed modifications to the Tallawarra Lands development. The objective of the assessment was to identify noise issues to allow for the effective management of existing infrastructure combined with maintaining acceptable socio-acoustic standards for proposed land redevelopment.

5.4.2.1 Noise Setting

The assessment determined that industrial noise emissions from the operations of the Tallawarra Power Station have the greatest potential to influence surrounding ambient noise environs. Secondary noise issues are associated with noise from existing transportation, including road traffic (Princes Motorway), rail (Illawarra Rail Line), and aircraft (Illawarra Regional Airport). Potentially affected receivers located adjacent to or within line of sight of these sources may be subject to potential impacts.

General noise issues are influenced by local industry and the M1 Princes Motorway. Tertiary noise levels include ingress and egress of local traffic flows and general urban noise sources consistent with the proposed land use for the area.

5.4.2.2 Existing Noise Environment

Unattended noise monitoring was undertaken using Ngara noise loggers and a RION-31. All noise loggers were set to record A-Weighted noise levels every 15 minutes and set to ‘fast’ response time. Short term (attended) noise measurements were also carried out.

Two locations were selected for the North Shore Precinct (E1 and E2) and two for the Central Precinct (W1 and W2). The locations were established to obtain current ambient profiles in the areas representative of the proposed Tallawarra Lands development (refer to Figure 5-1 of the Noise Assessment at **Appendix F**).

Within the North Shore Precinct, noise monitoring results indicate that Location E1 is generally consistent with a low noise environmental, typical of a rural setting. Noise monitoring at E2 was similar, with some influence from the operations of the Tallawarra Power Station.

Noise monitoring within the Central Precinct (Location W1 and Location W2) was consistent with a typical ‘suburban’ noise environment. Night time noise levels were low. Road traffic noise was recorded as being a key contributor (particularly during daytime periods).

5.4.2.3 Noise Design Goals

Measurements of current conditions from 2017 noise profiles have been referenced in the assessment, with reasonable and feasible noise design goals recommended. Table 5-8**Table 5-8** outlines the recommended noise design goals for the proposed development. The recommended goals maintain consistency with historical data, and reflect current noise environs. Compliance with the night time noise goals will drive the land use compatibility.

Table 5-8 Recommended Noise Design Goals (Pacific Environment 2017)

Location	Measured Level (night)				Amenity Goal (ANL with NSW INP modification)	Intrusive Goal (L_{A90} + 5)
	L_{Aeq}	L_{A90}	Ind Infl	ANL		
North Shore Precinct						
E1	37	27	Nil	40	40	35
E2	39	31	37	40	37	36
Central Precinct						
W1	47	30	Nil	45	45	35
W2	44	34	37	45	45	39

5.4.2.4 Industrial Noise Impacts

Modelled noise levels for the Tallawarra Lands indicate that received noise levels within the North Shore Precinct would be expected between 35 – 45 dB(A). Within the Central Precinct modelled noise levels were predicted below 40 dB(A).

Predictions were made using noise enhancing meteorological conditions with both temperature inversion (3ºC/100 metre) and source to receiver wind speeds (2 metres per second) adopted. This provides a worst-case scenario and it is not known if these conditions are a feature for the area.

5.4.2.5 Transportation Noise Impacts

- **Road -** Noise modelling was undertaken for the Albion Park Rail Bypass by Renzo Tonnin and Associates (2015). Day time $L_{Aeq\ 15\ hr}$ and night time $L_{Aeq.\ 9\ hr}$ predictions have been referenced for 2030 design year (build scenario). Noise levels that have the potential to be at or above the adopted traffic noise goals extend into the western boundary of the Central Precinct.
- **Rail -** Modelled train pass-by events for the Illawarra Rail Line were recorded in the range 45 – 54 dB(A). Maximum noise levels were predicted between 69 – 79 dB(A). Compliance with current rail goals was predicted and no land use planning issues from existing rail noise are anticipated for the North Shore or Central precincts.
- **Aircraft -** The Tallawarra Lands is located outside the Illawarra Regional Airport indicated 20 ANEC contour. The site is considered acceptable for residential purposes in accordance with AS2021-2000 *Acoustics – Aircraft Noise Intrusion – Building Siting and Construction*. No land use planning issues from existing aircraft noise are anticipated for the North Shore or Central Precincts.

5.4.2.6 Urban Noise Impacts

The dwellings within the Central Precinct are the closest potentially affected receivers, located approximately 400 metres from an area that has been flagged for future industrial and commercial development. At 400 metres, industrial noise (assuming an industrial boundary level of 70 dB(A) to meet compliance with NSW INP requirements), would be expected to result in incremental received noise levels of less than 15 dB(A) and would not contribute to existing industrial noise levels.

It is not anticipated that noise impacts resulting from the development will be any greater than noise impacts on the previously approved lots. Therefore, no land use planning issues from cumulative industrial operations are expected for the North Shore or Central precincts.

5.4.2.7 Recommendations

The assessment identified several planning measures to mitigate or reduce potential land use conflicts including:

> Noise levels and associated attenuation should be re-evaluated as the development progresses southwards towards the Power Station(s), with the development that has occurred potentially helping to attenuate noise impacts and therefore minimising the need for noise mitigation.

> Include a covenant on the title for properties with potential external noise levels above 40 dB(A) – this will make it clear to prospective purchasers that the land may be subject to noise impacts from the existing Tallawarra Power Station.

> Include provisions on the 88B Instrument for the design and construction of properties where internal noise levels have the potential to be above the recommendations of Australian Standard (2000), *AS2107 Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors.*

At property mitigation can include measures to increase the acoustic performance of residences, with the focus to protect the internal amenity of the property. Upgrades to facades should be implemented on a case by case basis and would depend on proposed building layout and proposed design.

5.4.3 Mitigation Measures

5.4.3.1 Conditions of Approval

The Concept Plan Approval included a number of additional requirements for all future approvals under the Concept Plan Approval with regards to noise as detailed in **Table 5-9**.

Table 5-9 Tallawarra Lands Concept Plan Conditions of Approval – Noise

Tallawarra Lands Concept Plan Conditions of Approval		
Schedule 3 – Future Environmental Assessment Requirements		
Future Environmental Assessment Requirements	**5 Acoustic Impacts - Residential** Future applications that propose to create residential allotments must be accompanied by an acoustic assessment which demonstrates that it will be possible for future dwellings on the proposed allotments to comply with the noise level standards specified in *State Environmental Planning Policy (Infrastructure) 2007* and with the requirements of the *Development near Rail Corridors and Busy Roads – Interim Guideline, 2008*.	The Noise Assessment prepared by Pacific Environment demonstrates that it will be possible for future dwellings on the proposed allotments to comply with the relevant noise level standards.
	6. Acoustic Impacts – Industrial uses Future application for industrial developments shall be accompanied by an acoustic assessment which provides: a) Details on on-going noise management during operation of the site for the life of the development to ensure adequate amenity levels for all users of the site; b) Mitigation measures to minimise noise disturbance to residential buildings on the site and to adjoining or adjacent properties; and c) Compliance with the NSW Industrial Noise Policy is achieved at the boundary of nearby residential lots.	A Noise Assessment has been prepared that details on-going noise management, mitigation measures to minimise noise disturbance and compliance with the NSW Industrial Noise Policy,
	7. Per lot industrial noise contribution calculations The future application for subdivision of the industrial zoned lands shall be accompanied by a noise management plan that includes industrial noise contribution calculations and allocates a sound power levels to each lot within the industrial zoned areas of the site, such that acceptable noise levels are not exceeded within residential areas, the Central Precinct Neighbourhood Centre, and other sensitive receptors. The industrial noise contribution calculations shall be prepared by an appropriately qualified acoustic expert.	A Noise Assessment has been prepared that includes an industrial noise calculation at Section 5 of **Appendix F.**

5.5 Biodiversity

A Biodiversity Assessment Report (BAR) was prepared by Ecoplanning (2017) to address the SEARs, with the full assessment contained at **Appendix G**. The SEARs addressed in this section are identified in **Table 5-10**.

Table 5-10 Secretary's Environmental Assessment Requirements (Flora and Fauna)

Secretary's Environmental Assessment Requirements	Where Addressed
7. Flora and Fauna	
The modification request shall:	
• Include an assessment of biodiversity impacts in accordance with the "avoid, minimise and offset hierarchy", the *NSW Biodiversity Offset Policy for Major Projects,* using an appropriate biodiversity assessment methodology such as the *Framework for Biodiversity Assessment* 2014, and the *Environment Protection and Biodiversity Conservation Act 1999* (Cth);	A Framework for Biodiversity Assessment (2014) has been completed for the proposed development.
• Provide a field survey of the site in accordance with the *Threatened Species Assessment Guideline,* including: a) An assessment and evaluation of the likely impacts on threatened species and their habitat; and b) A description of the proposed actions to avoid or mitigate impacts or compensate for unavoidable impacts on threatened species and their habitat;	A field survey has been conducted, and assessment made on the likely impacts on threatened species and their habitat in Section 5 and Section 6 of **Appendix G**. Where impacts were not avoidable, mitigation measures and offsets are provided **Appendix G**.
• Outline the measures for conservation/management of high environmental value and biodiversity corridor lands identified in the *Illawarra Shoalhaven Regional Plan 2015*, any vegetation with connective importance, and to protect and manage the riparian corridor and adjacent aquatic habitat;	The study area is not identified as a biodiversity corridor under the Illawarra Shoalhaven Regional Plan 2015. The proposal will not result in the fragmentation or isolation of other remnants, as it does not act as an intermediary patch between two (or more) areas of habitat. The vegetation in the subject site mostly consists of fragmented patches of disturbed vegetation and edges of larger patches of bushland. Therefore, the vegetation in the subject site is not of connective importance. No riparian corridors are located within the subject site.
• Provide an updated Environmental Management Strategy (EMS) which addresses potential impacts (during all phases of development) on aquatic and terrestrial flora and fauna and their habitats (within the meaning of the *Threatened Species Conservation Act 1995* and the *Fisheries Management Act 1994*), in accordance with the OEH *Threatened Species Survey and Assessment Guidelines*, and DPI Fisheries' *Policy and Guidelines for Fish Habitat Conservation and Management 2013*. Provide details on monitoring programs designed to assess impacts on water quality, water flow and aquatic and riparian environments downstream of the proposal area;	Consideration of potential indirect impacts that may be incurred during all phases of development will be managed through the CEMP (see **Section 5.2.2 of Appendix G**). An EMS may form a component of the CEMP and will be more appropriately prepared at DA or detailed design stage when potential indirect impacts are more readily defined. It is noted that survey for terrestrial flora and fauna and their habitats has been completed in accordance with the TSSA Guidelines. No fisheries considerations have been identified.
• Address the potential impacts of the proposed modification on wetlands, including hydrologic regime/groundwater recharge, water quality and loss/degradation of habitat, and measures to minimise impacts;	Field assessment determined there to be no wetlands within the subject site. Several constructed farm dams were identified within the subject site, however have been mapped by NPWS (2002), as artificial wetlands, and have since been field validated as constructed waterbodies.

• Provide an updated survey of wetlands, including an inventory of wetland vegetation and mapped boundaries of wetland by vegetation type, using GIS;	Field assessment determined there to be no wetlands within the subject site
• Provide updated details of the presence and distribution of Groundwater Dependent Ecosystems (GDEs) and identify any potential impacts of GDEs; and	The Groundwater Dependent Ecosystems (GDE) Atlas identifies Terrestrial GDEs within the study area (see Appendix E of **Appendix G**). These areas are specific to vegetated areas of the site, including areas consisting predominantly of woody weed species. High and moderate potential GDEs have been identified in the study area based on regional studies. A small amount of impacts will be incurred to terrestrial GDEs within the study area, with all unavoidable impacts offset in accordance with the Framework for Biodiversity Assessment (2014).
• Provide updated investigations and mapping of Endangered Ecological Communities and justify/detail any impacts on the approved widths of riparian buffers, including to Lake Illawarra in the North Shore Precinct, any other proposed conservation methods on the site, and mitigation measures.	Endangered Ecological Communities in the study area were mapped and all unavoidable impacts to these communities were calculated (see **Section 3**). The proposal is situated outside of the riparian buffers associated with Lake Illawarra (Section 2.2 of **Appendix G**).

5.5.1 Tallawarra Lands Concept Plan

An Ecological Assessment (EA) prepared by Eco Logical Australia (ELA, 2011a) informed the Tallawarra Lands Concept Plan Approval. The EA report was reviewed as part of the investigations undertaken and remains the technical ecological assessment for the overall approved Concept Plan, with the Ecoplanning (2017) assessment providing the additional technical assessment for the areas of proposed modification consistent with the ELA (2011a) assessment.

The assessment involved a review of readily available literature and database records pertaining to the ecology of the site, and a review of aerial photography and contour information to broadly verify the previous vegetation mapping prior to the site inspection.

A general site inspection was conducted by two ecologists over a four-day period. The following tasks were undertaken throughout the surveys:

> Verify the vegetation mapping previously undertaken across the study area and in particular the presence of Endangered Ecological Communities (EECs) listed under the TSC Act and EPBC Act;

> Conduct targeted surveys for threatened flora species;

> Assess and map fauna habitat values across the study area;

> Assess and map the condition of the vegetation type present; and

> Assess the likelihood of the study area to provide potential habitat for threatened and migratory species listed under the TSC Act and EPBC Act.

A target survey was completed in addition to the general site inspection to cover the remaining threatened flora species.

5.5.1.1 Site Analysis

The study area has undergone extensive past disturbance, particularly in the south and east where a number of former ash ponds used by the original coal fired Tallawarra Power Station now remain. Extensive vegetation clearance has occurred across the remainder of the site, mostly for grazing purposes. This has resulted in large areas of exotic grassland.

Despite the history of disturbance, the site retains ecological values in the form of remnant native vegetation, habitat for threatened species, riparian wetland features and a regional corridor linkage.

5.5.1.2 Vegetation Communities

A number of vegetation types were identified throughout the study area including natural remnants, EECs and areas that have been planted as part of past revegetation works. The six EECs recorded within the study are included:

> Swamp Sclerophyll Forest on Coastal Floodplains on the NSW North Coast, Sydney Basin and South East Corner Bioregions (SSF)

> Illawarra Lowlands Grassy Woodland of the Sydney Basin Bioregion (ILGW)

> Swamp Oak Floodplain Forest on the NSW North Coast, Sydney Basin and South East Corner Bioregions (SOFF)

> Coastal Saltmarsh of the Sydney Basin Bioregion (CS)

> Freshwater Wetlands on Coastal Floodplains (FW)

> Illawarra Subtropical Rainforest in Sydney Basin Bioregion (ISR)

None of the communities listed within the study area are listed under the EPBC Act.

5.5.1.3 Retention of EEC Vegetation

The Concept Plan requires the clearance of 51.63 ha of vegetation, of which 4.37 ha are EECs. The remaining 117.23 ha of EEC vegetation is to be preserved. The EA identified the following measures to retain EEC vegetation (and threatened species habitat) in the Concept Plan:

> Dedication of a number of environmental reserves including:
  - Duck Creek corridor;
  - A large wetlands reserve in the south east;
  - A reserve on the western boundary of the site near Yallah Creek;
  - Foreshore reserve between the power station and Duck Creek;

> Retention of vegetation in other areas of the site including:
  - Mount Brown;
  - Around a number of artificial wetlands;
  - In areas of open space.

5.5.1.4 Threatened Flora and Fauna

A number of threatened species listed on the TSC Act and/or EPBC Act were observed during the site inspections. The threatened species identified, however, were restricted to more mobile species such as bats and birds. There were no threatened amphibians, reptiles or mammals (excluding bats) recorded on the site. In addition, no Green and Golden Bell Frogs were observed at the site despite extensive targeted surveying.

5.5.1.5 Potential Habitat

Natural and artificial wetlands are present across the subject site, including two that are protected under NSW State Environmental Planning Policy 14 – Coastal Wetlands (SEPP 14). These wetlands occur in the south eastern portion of the site and are retained in the Concept Plan.

The numerous wetlands located throughout the study area provide potential habitat for a variety of species including birds, reptiles, mammals and amphibians. The largest wetland is located in the south west of the site and provides the greatest habitat value as it contains a variety of habitat features. This area is particularly important for a number of threatened and migratory species, including twelve threatened bird species and eighteen migratory bird species recorded during the site inspection.

The assessment also found that potential habitat is present within the subject site for eleven threatened flora species. Only one species, *Chorizema parviflorum* listed as an Endangered Population in Wollongong LGA, was found on the site during the targeted threatened flora searches.

5.5.1.6 Assessment against Part 3A of the EP&A Act

The proposal will result in EEC and wetland clearance and retention across the study area. As such, the EA assessed the proposal against Part 3A of the EP&A Act.

The proposal was considered to meet the 'maintain and improve' test under Part 3A as it:

> Will conserve all key habitat areas across the site through zoning for environmental protection;

> Will conserve the largest and most consolidated stand of vegetation in the south-east of the site;

> Will conserve the largest and most valuable artificial wetlands which provide habitat for threatened and migratory birds in the south east of the site and mitigation measures will be implemented to prevent indirect impacts;

> Implement a Vegetation Management Plan that will reduce the weed invasion in remnant vegetation across the study area and include substantial revegetation of Duck Creek and other riparian zones;

> Improve connectivity of the Duck Creek and regional corridors and will not fragment any current corridors;

> Result in approximately 187.63 ha of vegetation being protected across the study area which includes a number of EECs and two SEPP 14 wetlands; and

> Is unlikely to have a significant impact on any EPBC listed species.

The EA concluded that provided the recommended mitigation measures are implemented and environmental conservation areas are managed, it is unlikely that the proposal would result in a significant impact on any matters of National Environmental Significance (NES) listed under the EPBC Act.

5.5.2 Concept Plan Modification Impact Assessment

A BAR (Ecoplanning 2017) was prepared by an Accredited BioBanking Assessor (No. 76) from Ecoplanning under Part 7A of the TSC Act. The report has been undertaken to accompany the modification to the Concept Plan, approved under Part 3A of the EP&A Act, relating to the proposed mixed-use development over 3 precincts on the Tallawarra Lands. The aim of the report was to assess the direct impacts to the ecological values of the development site.

A large majority of the study area consists of 'cleared land' and 'weeds and exotics' with vegetation in a highly modified condition. The native vegetation communities identified in the assessment occurred in a modified – highly modified condition due to weed invasion, underscrubbing and grazing of livestock. As such, the majority of the vegetation in the study area was allocated a condition class of 'underscrubbed' or 'Lantana'.

Plot based vegetation survey data was captured and used for the assessment, and a targeted threatened species survey was also conducted (refer to **Appendix G**).

5.5.2.1 Native Vegetation

Four native vegetation types were identified in the study area. These communities include:

> Sydney Blue Gum X Bangalay – Lilly Pilly moist forest in gullies and on sheltered slopes, southern Sydney Basin Bioregion (PCT1245)

> Forest Red Gum - Thin-leaved Stringybark grassy woodland on coastal lowlands, southern Sydney Basin Bioregion (PCT838)

> Whalebone Tree – Native Quince dry subtropical rainforest on dry fertile slopes, southern Sydney Basin Bioregion (PCT1300)

> Swamp Oak floodplain swamp forest, Sydney Basin Bioregion and South East Corner Bioregion (PCT1232)

The total area of each vegetation type identified in the study area is displayed in **Table 5-11** below.

Table 5-11 Vegetation Types and Zones and the Total Area within the Study Area and Subject Site

Vegetation type (NPWS 2002)	Plant community type (OEH 2017)	Threatened ecological communities		Condition (Ancillary code)	Area within study area (ha)	Area within subject site (development lands) (ha)
		EPBC Act	TSC Act			
Moist Box-Red Gum Foothills Forest (MU13)	PCT 1245 - Sydney Blue Gum x Bangalay - Lilly Pilly moist forest in gullies and on sheltered slopes, southern Sydney Basin Bioregion (SR652)	N	N	Under-scrubbed	0.89	0.00
				Lantana	22.20	2.55
Coastal Grassy Red Gum Forest (MU23)	PCT 838 - Forest Red Gum - Thin-leaved Stringybark grassy woodland on coastal lowlands, southern Sydney Basin Bioregion (SR545)	CEEC	EEC	Under-scrubbed	0.71	0.25
				Lantana	2.22	0.99
				Scattered Paddock Trees	0.30	0.12
Lowland Dry-Subtropical Rainforest (MU4)	PCT 1300 - Whalebone Tree - Native Quince dry subtropical rainforest on dry fertile slopes, southern Sydney Basin Bioregion (SR662)	N	EEC	Lantana	1.10	0.00
Coastal Swamp Oak Forest (MU36)	PCT 1232 - Swamp Oak floodplain swamp forest, Sydney Basin Bioregion and South East Corner Bioregion (SR649)	N	EEC	Under-scrubbed	0.57	0.33
-	-	N/A	N/A	Cleared Land	178.84	93.67
	-	N/A	N/A	Weeds and Exotics	11.11	2.81
	-	N/A	N/A	Artificial wetland	1.08	0.59
Total					**219.02**	**101.31**

A majority of the vegetation type has a moderate – high cover of woody weeds in the midstorey and has been mapped under the condition class ‘Lantana’. A small strip of vegetation along the western boundary of the study area has been mapped ‘underscrubbed’. This vegetation contains minimal *Lantana camara**, which has likely been removed in the past adjacent to the access road, allowing cattle to access and graze in the vegetation zone. This has prevented the establishment of native midstorey species.

The vast majority of the Central and North Shore Precincts are mapped as cleared land or weeds and exotics, with 97.07 ha (95.8%) of the 101.2 ha development footprint mapped as non-native vegetation. The most significant patches of native vegetation within the study area, on the northern boundary of the site, have been avoided and will not be impacted by the proposal. This retained vegetation is contiguous with a substantial remnant of native vegetation, zoned E2 – *Environmental Conservation*

5.5.2.2 Other Vegetation

Three other distinct vegetation assemblages were recorded within the development site; however, none are remnant vegetation types. These vegetation assemblages included:

- *Cleared land* – includes all cleared land on the site and is dominated by grasses and herbaceous weeds.
- *Weeds and exotics* – this vegetation consists predominately of woody weeds, which comprises 95-100% of the vegetation cover in the zone.
- *Artificial wetlands* – includes all permanent waterbodies within the study area.

5.5.2.3 Threatened Species

Ecosystem threatened species were predicted based on habitat surrogates, and a number of ecosystem credit species were predicted on the site. The ecosystem credit species predicted are provided in Table 4.1 of the BAR at **Appendix G**.

In accordance with Section 6.5.1.3(a) of the Framework for Biodiversity Assessment (FBA), each species was assessed to determine whether the species is likely to occupy the site based on habitat features and quality. To do this, threatened species, populations and migratory species recorded within 5 km of the development site were obtained from a search of the *Atlas of NSW Wildlife* (OEH 2017) and their likelihood of occurrence was assessed. The potential for each threatened species, population or migratory species to occur was then considered following review of available habitat within the development site.

The likelihood of occurrence assessment determined some of the candidate species as “not present” within the development site. The remaining candidates were assessed under Step 3 of the FBA, which involved a survey effort within and surrounding the development site, including a threatened flora survey in accordance with *NSW Guide to Surveying Threatened Plants* (OEH 2016). The survey found that the remaining candidates were either not present within the subject site or had low potential of being present within the subject site. The results of the survey are displayed in Figure 4.3 of the BAR at **Appendix G**.

5.5.2.4 Direct Impacts

Direct impacts to the ecological values of the development site are limited, as the majority of the development is associated with cleared land. However, direct impacts will occur to small areas of native vegetation. The proposed development will result in the clearing of 4.24 ha of native vegetation, which represents just 4.2% of the development site and 15.5% of the total native vegetation mapped within the study area. The assessment determined that completely avoiding the impacts to native vegetation is not considered feasible.

The proposal will also remove potential foraging and roosting/sheltering/breeding habitat for fauna. The assessment determined that the likelihood of the majority of threatened fauna utilising the subject site is considered low.

5.5.2.5 Indirect Impacts

Indirect impacts from the proposed development may include noise and/or erosion associated with the construction phase of the project. These impacts will be managed through the development of a CEMP.

5.5.2.6 Onsite Measures to Avoid and Minimise Direct and Indirect Impacts

As described above, the complete avoidance of impacts is not possible, despite the largest patches of on-site vegetation being avoided. Small, less viable patches of native vegetation are proposed to be impacted and as such, several measures were recommended in the assessment to reduce impacts where possible. These include:

> **Loss of Fauna Habitat** – A number of non-threatened species such as birds, arboreal mammals and amphibians are likely to be present at the development site. Appropriate pre-clearance protocols will be put in place at the time of construction to avoid and mitigate any potential harm or injury to these individuals. These protocols should be included as a component of the CEMP.

> **Construction Environmental Management Plan** – To avoid potential indirect offsite impact during construction, an appropriate erosion and sedimentation control plan should be in place following best practice protocols such as Landcom (2004). It is recommended that this is included in a site specific Construction Environmental Management Plan (CEMP), prior to any construction works taking place. The CEMP will be required to span the pre, during and post-construction period, and will include the above pre-clearance and fauna management protocols.

> **Landscape Planting** – A landscaping scheme using native species suitable for the site would be developed to accompany development applications for the Lands. The landscaping would help to reintroduce vegetation in areas of the site currently comprising cleared grass.

5.5.3 Mitigation Measures

5.5.3.1 Conditions of Approval

The Concept Plan Approval included a number of additional requirements for all future approvals under the Concept Plan Approval with regards to biodiversity as detailed in **Table 5-12**. These requirements are considered sufficient for assessment of the proposed modification.

Table 5-12 Tallawarra Lands Concept Plan Conditions of Approval – Biodiversity

Tallawarra Lands Concept Plan Conditions of Approval		
Schedule 3 – Future Environmental Assessment Requirements		***Response***
Future Environmental Assessment Requirements	**10 Amended Vegetation Management Plan** The first future application to Council shall be accompanied by an amended Vegetation Management Plan, which includes the following requirements: a) Inspection of revegetated and weed managed areas by an appropriately qualified environmental expert to ascertain whether the works are self-sustaining. If they are self-sustaining, develop an ongoing management regime for these areas in perpetuity; and/or b) The provision of a vegetation condition report prepared by an appropriately qualified environmental expert at the end of the initial five-year establishment period. The condition report shall outline additional management measures to be undertaken if after five years it is determined that the revegetated areas are not self-sustaining. The condition report shall also outline recommendations for the management in perpetuity of the areas covered by the VMP.	A VMP would be prepared to accompany the first future application. This would remain unchanged by this proposed modification.

5.5.3.2 Statement of Commitments

Mitigation measures identified by the SoCs that are applicable to Biodiversity, and which would apply to the Modification proposal, are listed in **Table 5-13** below.

Table 5-13 Tallawarra Lands Concept Plan Statement of Commitments – Biodiversity

Tallawarra Lands Concept Plan Statement of Commitments		*Response*
Ecologically Sustainable Development	12. Precinct scale and other major development applications consistent with the Concept Plan will demonstrate how they address the relevant desired sustainability outcomes contained in the Sustainability Report prepared by Urbis and dated October 2010.	Sustainability outcomes will be addressed within the individual Development Applications for any Precinct Scale and other major development applications submitted.

Ecology	18. TRUenergy commits to implementing the mitigation measures detailed in Table 12 of the Ecological Assessment report dated 4 March 2011.	BridgeHill commits to implementing the measures detailed with the Ecologocal report that accompanied the Concept Approval in addition to the requirements detailed within **Appendix G**
In perpetuity security of biodiversity outcomes	18a. TRUenergy commits to entering into discussions with relevant authorities, or recognised private conservation land managers such as Bush Heritage Australia, to arrange for transfer of ownership of the areas of retained vegetation; and/ore Dedicating the conservation lands to Wollongong City Council as reserves to be administered under the Local Government Act; and/ore Establishing an in-perpetuity Property Vegetation Plan under the *Native Vegetation Act 2003*; and/or Applying for Conservation Agreement under the *National Parks and Wildlife Act 1974*; and/or Establishing a conservation covenant under *Nature Conservation Trust Act*; and/or Securing in perpetuity the biodiversity outcomes of the retained vegetation of the E2 lands through other appropriate legal mechanism(s).	BridgeHill continues to commit to this commitment made by TRUenergy.
	18b. TRUenergy commits to holding discussions with the relevant authorities (such as Lake Illawarra Authority and Wollongong City Council) about entering into possible Voluntary Planning Agreements (VPAs) involving future land ownership transfers, infrastructure provision, site remediation and implementation of the Vegetation Management Plan. Any VPAs entered into will specify the works to be undertaken, the party responsible for carrying out the works and the timeframe within which works will be undertaken.	BridgeHill commits to holding discussions with relevant authorities about entering into possible Voluntary Planning Agreements (VPAs) as discussed in the Statement of Commitments that accompanied the Concept Approval.
Ecology	19. TRUenergy commits to implementing the Vegetation Management Plan prepared by Eco Logical dated 4 February 2011, unless other arrangements are made arising out of VPA discussions referred to in Commitment 18b.	
	20. TRUenergy commits to implementing the Environmental Management Strategy prepared by Eco Logical dated 4 February 2011.	
	21. TRUenergy commits to the recommendations detailed in Section 5.1 of the GDE Risk Assessment prepared by Eco Logical Australia dated 19 April 2012.	

Biodiversity issues associated with the development of the Tallawarra Lands would be managed in accordance with the Concept Plan Approval and associated SoCs referred to above. These are considered adequate to address the potential impacts of the Modification Proposal.

5.6 Bush fire

A Bush fire Assessment has been prepared by Peterson Bush fire (2017) to address the SEARs, with the full assessment contained at **Appendix H**. The SEARs addressed in this section are identified in **Table 5-14**.

Table 5-14 Secretary's Environmental Assessment Requirements (Bush fire)

Secretary's Environmental Assessment Requirements	Where Addressed
14. Bush fire	
▪ The modification request shall demonstrate compliance with the relevant provisions of *Planning for Bush fire Protection 2006*.	**Section 5.6.2.3 and Appendix H**

5.6.1 Tallawarra Lands Concept Approval

A Bush fire Assessment completed by Eco Logical Australia (ELA, 2011b) informed the Tallawarra Lands Concept Plan Approval. The Environmental Assessment (DFP, 2011) that informed the Concept Approval summarised this report, detailing the bush fire protection measures that would be required by the Approved Concept Plan. These measures specifically related to the location of Asset Protection Zones (APZs), APZ management, building construction standards and public road design.

This assessment required a detailed assessment of the vegetation types and coverage that occurs throughout the Tallawarra Lands site. The site has a diverse make up, with areas of forest, woodland, freshwater and saline wetlands. These zones are spread across the site with the wetlands occurring to the south of the Tallawarra Power Station and the forest/woodlands occurring around Mount Brown and the former storage areas associated with the Power Station. An assessment of slope was conducted in conjunction with the assessment of vegetation types, to enable the determination of APZ requirements. This investigation found slopes to be most prominent around Mount Brown, affecting the North Shore and Central Precincts.

Figure 5-1 details the locations and dimensions of the APZs proposed for the Concept Plan Approval.

Figure 5-1 Concept Plan Approval APZ Locations and Dimensions

In addition to the APZ requirements detailed in the ELA (2011b) assessment, the report addressed the following measures that remain applicable to the proposed modification;

> APZ Fuel Management

> APZ Management Responsibility

> Perimeter access

> Building Construction

> Access, and

> Services

5.6.2 Concept Plan Modification Impact Assessment

The increase to the approved zone boundaries within the Concept Plan Approval has the potential to affect the assessment for bush fire risk discussed above. Peterson Bush fire has prepared a Bush fire Assessment (Peterson Bush fire, 2017) to achieve this requirement, with the full assessment contained at **Appendix H**. The following summarises the key findings of this Assessment and details any modifications that are required for bush fire protection throughout the North Shore and Central Precincts of the Tallawarra Lands.

5.6.2.1 Background

The bush fire assessment conducted by Peterson Bush fire investigated the impacts that the modification to the zone boundaries would have on the previous outcomes of the Bush fire Assessment conducted by Eco Logical Australia (ELA, 2011b). This specifically focused on the following;

> Identify the bush fire hazard affecting the proposal;

> Identify the bush fire protection measures required for the proposed modifications; and

> Inform the preparation of the EIS

These investigations were conducted to ensure compliance with the NSW Rural Fire Service (RFS) document *Planning for Bush fire Protection 2006* (PBP). The ELA (2011b) report was reviewed as part of the investigations undertaken and remains the technical bush fire assessment for the overall approved Concept Plan, with the Peterson Bush fire (2017) assessment providing the additional technical assessment for the areas of proposed modification consistent with the ELA (2011b) assessment.

5.6.2.2 Assessment of Bush fire hazard

5.6.2.2.1 North Shore Precinct

The proposed modification will see the extension of residential lots upslope to the south towards the ridgeline. The modification does not alter the assessment provided within the ELA (2011b) report. The primary hazard for this Precinct lies at the western end of the Precinct in the vicinity of Mount Brown. Mount Brown is characterised by a forest covering, surrounded by cleared pasture that will remain cleared as open space. The pasture grass does not contain enough representation of native species for it to be classified as a grassland hazard.

A secondary bush fire hazard extends along the foreshore of Lake Illawarra at the northern boundary of the precinct. This vegetation consists of remnant patches of lake-side *Casuarina glauca* (She Oak) which are connected by extensive, advanced vegetation of open forest. This area was classified as ‘Low hazard’ by the ELA (2011b) report due to the constrained width of the corridor and the fact it does not connect to the other areas of bush fire hazard within the Tallawarra Lands. Whilst there is no proposed modification to the boundaries within this area, the classification of the hazard will be dependent on the final use of this corridor. Should the extensive vegetation remain it would produce a corridor greater than 50m wide and therefore constitute a forest hazard. A perimeter road has been included in the revised Concept Design that provides an appropriately sized APZ and access for firefighting. It is noted that the Concept Approved boundary is not proposed to change in this area.

5.6.2.2.2 Central Precinct

The Central Precinct is exposed to bush fire hazards from the north-east, south and west, as well as a potential introduced hazard along a narrow riparian corridor within the centre of the Precinct. The proposed modifications to the Precinct occur along the eastern side where low density lots and large lot residential areas will push eastwards into cleared pasture areas. It is only the proposed large lots at the north-eastern corner of the Precinct that will be exposed to a bush fire hazard. These lots are large in size with adequate space for APZ's within lots and adequate access for firefighting purposes.

Other minor boundary alterations that are proposed to occur along the riparian corridor within the centre of the Precinct and adjoining open space in the south-western corner do not alter the hazard assessment presented within ELA (2011b).

5.6.2.3 Bush fire Protection measures

The proposed modifications have been assessed against the provisions within PBP to ensure compliance can be achieved. These provisions require APZs and access to be assessed at the Concept Plan stage, with a range of further measures to be implemented at the various follow on stages of development. The following sections discuss the implications of the proposed modifications on these two requirements.

5.6.2.3.1 Asset Protection Zones

Following an assessment of the site constraints associated with the proposed boundary modifications for each of the precincts the following APZ adjustments are required.

North Shore Precinct

> Only the southern boundary of the Precinct will be modified, consisting of an extension southwards towards the ridge. The western portion of the southern boundary will be adjacent to forest on an upslope requiring a minimum 20m APZ. The remainder of the southern boundary will be adjacent to cleared open space and therefore an APZ is not required. This APZ requirement is consistent with the ELA (2011b) assessment

> The increased density of lots along the northern boundary via a reduction of the lot size does not alter the APZ requirements of PBP.

Central Precinct

> The extension of the boundary to the east will primarily be into cleared open space where an APZ is not required. The exception is the north-east corner where large lots may adjoin vegetation in steep-downslopes. An APZ dimension has not been specified for the interface lots due to their large size and ability to accommodate an APZ at maximum dimension (i.e. 60 m). The final APZ dimension will depend on the location of a dwelling within the lot.

> The minor modification to the boundary in the south-western corner do not alter the APZ assessment within ELA (2011b). The minimum 10m APZ along the low hazard corridor remains valid and the southern and western interfaces so not require an APZ due to open space adjacent.

> The increased density of lots via reduction in lot size and enlargement of the R2 zone does not alter the APZ requirements of PBP.

All required APZs can be accommodated within the proposed modified Concept Plan extents. As such, the proposed modification complies with PBP. **Figure 5-2** and **Figure 5-3** show the locations and dimensions of the APZs that are required to be altered by the Modifications to the Approved Concept Plan.