PLANIT CONSULTING

Planning Proposal Request

Aureus Village, Skennars Head

Prepared for Intrapac Skennars Head Pty Ltd
By Planit Consulting Pty Ltd

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Overview	
This Planning Proposal request seeks to rezone part of Lot 346 DP 1271483 from the existing zoning of E1 Local Centre to a zoning of R3 Medium Density Residential. The rezoning request is a result of detailed economic assessment demonstrating that the existing extent of the E1 zoned land is in excess of the area that can sustain a viable commercial centre at the site. The analysis demonstrates that a range of local, national and internal factors have changed since the current E1 zoned area was implemented in 2019, notably the completion and success of the nearby Epiq Marketplace, changing trends in retail spending generally, and the growth of online food shopping with home delivery. The proposal to rezone the excess portion of Lot 346 will assist in the delivery of additional medium density housing that adds to the diverse offering at the site, in a manner that ensures viable commercial development. The proponent has provided a letter of offer to enter into a Voluntary Planning Agreement that ensures the timely delivery of the commercial development. The proposed rezoning is demonstrated to be consistent with the strategic intent for the area and the rezoned site can be developed for residential purposes in a manner that avoids significant environmental impact while delivering the social and economic benefits of additional housing diversity.	
Key Details	
Site:	21 Aureus Boulevard, Skennars Head Part Lot 346 DP 1271483
Current Zone:	E1 Local Centre
Requested Zone:	R3 Medium Density Residential
Strategic Merit:	
North Coast Regional Plan 2041	Site is mapped within the urban growth area boundary. Priority action – *Support the delivery of housing supply and greater diversity in strategic and local centres, including higher density housing within and close to Ballina CBD.*
Ballina Local Strategic Planning Statement 2020-2040	Theme: Prosperous Economy Planning Priority 6: *Incorporate diverse housing choice options, including infill development options, when preparing placed based strategic plans.*
Ballina Economic Development Strategy 2018	Council's long-term planning for commercial development is based upon a retail centre hierarchy for the Shire, with Ballina Town Centre and the Kerr Street precinct as the primary centres.

	Local centres are located at Lennox Head, Alstonville, Wollongbar and Wardell, with smaller neighbourhood-scale centres elsewhere. Strategy objective: *Facilitating adequate and appropriate development opportunities to meet the demand for residential, commercial and industrial activity in an efficient and sustainable manner.*
Ballina Shire Housing Strategy 2024	Principle 1: Available – The Strategy notes the importance of 'infill' development as an efficient way to deliver well serviced and diverse housing options, optimising the use of existing urban land. Principle 2: Diverse – The Strategy is particularly targeting an increase in the mix of housing options for the Shire, noting the importance of medium density housing types. Principle 3: Walkable – Locating this future townhouse development directly adjacent to the future village centre and existing open space will specifically contribute to this goal. Strategic Actions: *Investigate opportunities to consolidate well-located medium density sites to achieve improved integrated outcomes through land assembly approach known as 'greening the greyfields'.* *Enable more dwelling diversity within the existing lot pattern in medium density zoned areas.* *Encourage more dwelling diversity close to existing infrastructure and services.* *Use land efficiently by encouraging more medium density development in appropriate locations.*
Lennox Head Strategic Plan 2023-2043	Skennars Head locality objective: *Maintain and sensitively increase residential densities close to the local centre.* Actions: *Investigate planning controls to enable the delivery of medium density dwellings close to local centres (Lennox Head village, EPIQ supermarket and Aureus local centre).* *Investigate minimum dwelling number requirements for existing medium density sites proposed for redevelopment.*
Change in circumstance	The most notable change in circumstance is the completion of the Epiq Marketplace, located approx. 6kms to the north, and its success in attractive significant levels of local spending. Epiq Marketplace was approved at the time that the current area of E1 Local Centre was zoned at the Aureus site, but it had not yet been completed. It has since been fully developed with a full-line Woolworths supermarket, a range of specialty shops including a bottle shop, medial facilities, a gym and supporting retail including cafes, hairdressers etc. It is also located directly adjacent to a child care centre.

	Analysis outlined in the Retail Needs Assessment (**Appendix A**) demonstrates the success of this neighbourhood centre in attracting high levels of patronage from a wide catchment. The assessment also notes the significant change in consumer spending, notable a transition from traditional retail stores to online shopping, including online purchase and home delivery of food and grocery staples. These altered economic circumstances, together with a general increase in the cost of living, result in local consumer demand that is significantly less than was estimated in 2018.
Site Specific Merit:	
	• Adjacent to areas of medium density residential housing • Adjacent to Village site and coastal parkland • Serviced site with adequate capacity • Cleared site • Not bush fire prone • Not flood prone • Previous site assessment shows no site contamination and no cultural heritage values
Key Issues:	
	• Demand for commercial floorspace
Supporting information:	
	• Retail Needs Assessment — Think Economics • Site Contamination Validation Report — ENV Solutions • Transport Statement — Urbis • Servicing Technical Memo — OSKA Consulting Group

1 Introduction and Context

1.1 Overview

This Planning Proposal request seeks to amend *Ballina Local Environmental Plan 2012* (BLEP 2012) to enable the redevelopment of the southern part of 21 Aureus Boulevard, Skennars Head for medium density housing.

The Planning Proposal request proposes a zoning of R3 Medium Density Residential over the southern part of the site, as illustrated in **Figure 1-3**, covering an area of 6,650m^2.

The northern part of the site, with an area of 6,402m^2, will retain the existing E1 Local Centre zoning.

This rezoning supports the delivery of additional housing in Ballina Shire, particularly providing for an increase in housing diversity and choice, which is an identified key need in the Shire.

In maintaining over 6,000m^2 of E1 zoned land, the rezoning ensures that local commercial facilities can be delivered at a scale appropriate to local and neighbourhood demand.

1.2 The Site and its Context

The Site

The subject property is located at 21 Aureus Boulevard, Skennars Head and is known as Part Lot 346 DP 1271483.

Lot 346 has an area of 1.305ha and is located on the eastern side of the Aureus Estate, between Aureus Boulevard and the coastal parkland public open space dedicated to Council as part of the Aureus development.

It is a cleared site with a slight fall north to south.

The location of the property is shown at **Figure 1-1**, with a current aerial photo shown at **Figure 1-2**.

The Planning Proposal request relates to the southern part of the property, as shown in **Figure 1-3**.

As shown, the rezoning proposal relates to an area of 6,650m^2, bounded by Aureus Boulevard on the western boundary, Wave Break Circuit on the southern boundary and an area of public open space to the east. The remainder of Lot 346, to the north of the rezoning area, will retain the existing E1 Local Centre Zone.

Background

Aureus Estate was originally zoned for urban development under Amendment No 8 to the BLEP 2012 in April 2014. The amendment applied a zoning of R2 Low Density Residential, with a small area of land, located close to Headlands Drive in the north of the property, zoned B1 Neighbourhood Centre.

A subsequent LEP amendment, Amendment No 38, was approved in December 2019 to relocate the B1 zone to its current site, Lot 346 in the approved Aureus subdivision. The intent at that time was to develop a neighbourhood centre that would provide a range of small-scale retail, business and community uses that serve the needs of people who live or work in the surrounding neighbourhoods and to act as a focal point for the local community.

The relocation of the commercial zone to the eastern side of Aureus Boulevard, directly adjoining the extensive coastal parkland area, was a driver for Amendment 38, so that this local community focal point could encompass the open space and the commercial uses.

At the time, the intention was to accommodate a local supermarket and specialty retail uses, and to provide sufficient land area to accommodate future uses such as child care or gym.

The State Government finalised a reform to employment zones in December 2021, which changed the zoning of the subject site from B1 Neighbourhood Centre to its current zoning of E1 Local Centre.

Economic analysis undertaken in 2018, as part of LEP Amendment 38, indicated sufficient retail demand in the wider locality to support the scale of uses then proposed, including the local supermarket, speciality stores and supporting development such as gyms and/ or child care, based on Council's (then) retail hierarchy and the economic circumstances at that time.

A current Retail Needs Assessment (**Appendix A**) notes a number of changes since that time which significantly impact on local and neighbourhood retail demand.

The most notable change in circumstance is the completion of the neighbourhood centre Epiq Marketplace and its success in attractive significant levels of local spending.

While Epiq Marketplace was approved at the time of the 2018 analysis, it had not yet been completed. It has since been fully developed with a full-line Woolworths supermarket, a range of specialty shops including a bottle shop, medial facilities, a gym and supporting retail including cafes, hairdressers etc. It is also located directly adjacent to a child care centre.

Analysis outlined in the Retail Needs Assessment (**Appendix A**) demonstrates the success of this neighbourhood centre in attracting high levels of patronage from a wide catchment.

The assessment also notes the significant change in consumer spending, notable a transition from traditional retail stores to online shopping, including online purchase and home delivery of food and grocery staples.

These altered economic circumstances, together with a general increase in the cost of living, result in local consumer demand that is significantly less than was estimated in 2018.

Based on these findings, the Retail Needs Assessment determines there is insufficient demand for 1.305ha of commercial zoned land within the Aureus Estate and that pursuing this quantity of commercial floor space is not viable and would be detrimental and inconsistent to Ballina's retail strategy and hierarchy of centres.

Rather, the Economic Analysis concludes that approx. 6,000m^2 is the right quantum of commercially zoned land in the Aureus Estate. Together with the adjoining reserve, this amount of commercial zoned land will provide for a high-quality local meeting and activity node within the Estate.

While approx. 6,000m^2 of land at the site is not required or suitable for commercial purposes, it is able to be delivered for housing purposes, which is a recognised need for the LGA and broader area.

Detailed site planning over this portion has not yet commenced, though it is anticipated that a medium density residential development of the rezoned site could yield in the order of 20-30 townhouses, depending on unit mix.

This is consistent with the density of the existing medium density development on adjoining sites.

The residential development would include on-site parking in accordance with Council's Development Control Plan, with vehicle access available from Aureus Boulevard and Wave Break Circuit.

Figure 1-1 | Site Location

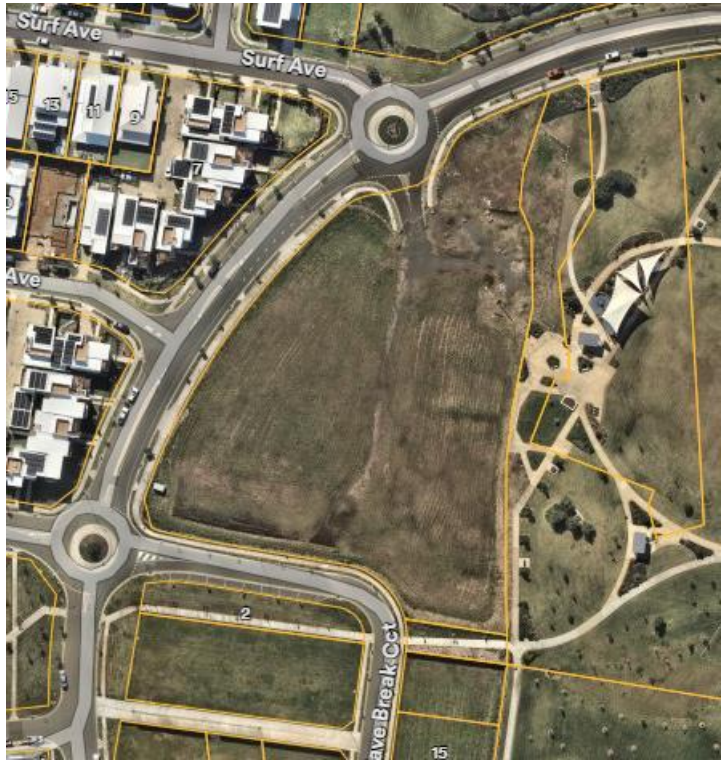


Figure 1-2 | The Property

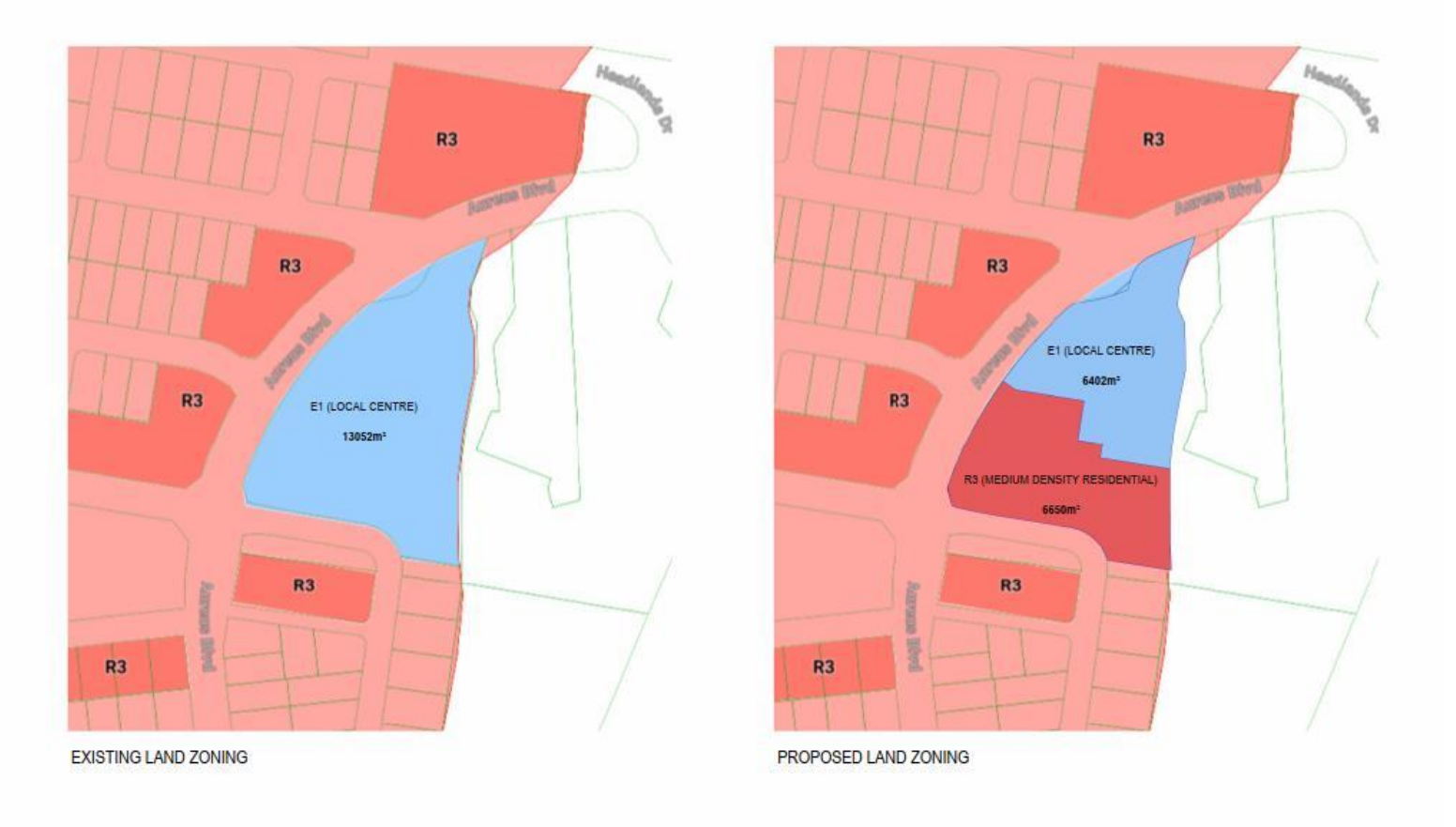


Figure 1-3 | Proposed Zoning Area

Figure 1-4 | Site Context

2 Planning Proposal

Part 1 – Objectives and Intended Outcomes

Objective

The objective of this Planning Proposal request is to amend the Ballina LEP 2012 to provide a fit for purpose urban structure.

Intended Outcome

To facilitate the development of the site for medium density residential purposes.

Part 2 – Explanation of Provisions

This Planning Proposal request suggests the following provisions:

1. Amend the Ballina LEP Land Zoning Map to apply a R3 Medium Density zone.
2. Amend the Ballina LEP Floor Space Ratio Map to remove FSR provisions under the BLEP 2012 from the rezoned area

Zoning

The Planning Proposal proposes to amend the BLEP 2012 Zoning Map to apply a zoning of R3 Medium Density Residential to 6,650m^2 of the site (See **Figure 1-3**). This is the same zone applied to the residential land which adjoins the site.

The remainder of the site will retain the existing E1 Local Centre zoning.

Lot Size

The Planning Proposal does not propose any amendment to the BLEP 2012 Minimum Lot Size Map, retaining a minimum lot size of 450m^2. This is consistent with the minimum lot size provision applied to the medium density residential zoned land which adjoins the site.

Floor Space Ratio

The Planning Proposal will amend the Floor Space Ratio Map by deleting the rezoned area from the map. In accordance with Council's Development Control Plan, an FSR of 0.5:1 will be applicable. This is the same approach applied the medium density zoned land which adjoins the site.

Part 3 - Justification

Section A – Need for the Planning Proposal

Q1 - Is the Planning Proposal a result of an endorsed LSPS, strategic study or report?

Not directly. However, the Planning Proposal is a result of a Retail Needs Assessment undertaken for the Aureus Site. That report is contained at **Appendix A** to this Planning Proposal request and demonstrates that there is insufficient commercial /retail demand to support the development of the whole of Lot 346 for neighbourhood shopping facilities.

The report concludes, based on the analysis of catchment demand, existing supply, and information on similar centres, that there is an opportunity for the establishment of a retail centre with a total floorspace ranging from 900m^2 to 1,200m^2.

Site coverage benchmarks would indicate that this quantum of floorspace would typically require a site area of between 3,000m^2 and 5,000m^2.

Based on this assessment, the retained area of E1 zone at just over 6,000m^2 is considered sufficient to facilitate the development of a viable and sustainable local centre.

While there has been no site-specific study undertaken specific to the land's need for housing purposes, its rezoning for residential purposes is consistent with the Ballina Housing Strategy as discussed below.

Q2 - Is the Planning Proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

Amending the Ballina LEP 2012 (zoning and floor space ratio maps) is considered the most effective means of facilitating medium density residential development envisioned for the site within the above strategies, as it provides land use permissibility.

There is no site-specific Development Control Plan (DCP) that applies to the Aureus Estate. The rezoning therefore does not cause any ambiguity or inconsistency with local development/ planning controls.

Section B – Relationship to strategic planning framework

Q3 - Will the Planning Proposal give effect to the objectives and actions of the applicable regional, or district plan or strategy (including any exhibited draft plans or strategies)?

Yes. The site is located within the "*urban growth area boundary*" as mapped in the North Coast Regional Plan 2041.

"*Support the delivery of housing supply and greater diversity in strategic and local centres, including higher density housing within and close to Ballina CBD*" is a specific action of the Plan.

This Planning Proposal request will directly deliver on this action, while also ensuring that an appropriate area of E1 Local Centre zoning remains on the site to facilitate a local mixed-use village scale commercial development to meet the needs of residents and visitors.

Q4 - Is the Planning Proposal consistent with a council LSPS that has been endorsed by the Planning Secretary or GSC, or another endorsed local strategy or strategic plan?

Yes.

Ballina Local Strategic Planning Statement 2020-204

Living in Paradise Our Vision Our Future

Theme: *Prosperous Economy*

Planning Priority 5: *Maintain a supply of suitably located employment land, close to population centres at Alstonville – Wollongbar and Ballina – Lennox Head, so as to foster local employment opportunities and reduce journey to work travel distances.*

The Retail Needs Assessment (**Appendix A**) demonstrates that the current area of E1 zoned land is well in excess of the area required to support a level of commercial / retail floor space that can be sustained at Aureus Estate. Rezoning the southern part of the site will therefore ensure that an economically viable and sustainable neighbourhood centre can be delivered at the site.

Planning Priority 6: *Incorporate diverse housing choice options, including infill development options, when preparing placed based strategic plans.*

The R3 Medium Density zoning will provide for a local increase in housing diversity, to add to the existing townhouse supply within Aureus, which is one of the only areas within the Shire to offer a significant component of housing diversity.

Ballina Shire Economic Development Strategy 2018

Council's long-term planning for commercial and industrial development is based on a retail centre hierarchy for the Shire, with the Ballina Town Centre and Kerr Street Retailing Precinct as the primary centre for the Shire, with neighbourhood/ local scale facilities planned elsewhere.

Strategy objective: *Facilitating adequate and appropriate development opportunities to meet the demand for residential, commercial and industrial activity in an efficient and sustainable manner.*

Rezoning the southern part of the site will ensure that an economically viable and sustainable neighbourhood centre can be delivered at the site in a manner that meets the local commercial / retail demand without impacting the ongoing commercial viability of existing commercial centres in nearby localities.

Ballina Shire Housing Strategy 2024

The Housing Strategy has been prepared to facilitate the timely delivery of housing in the Ballina Shire, within an urban structure that protects the environment and supports walkable, diverse and resilient housing that meets the needs of the local community.

Principle 1: Available – The Strategy notes the importance of 'infill' development as an efficient way to deliver well serviced and diverse housing options, optimising the use of existing urban land.

The additional area of R3 Medium Density zoned land will directly deliver on this principle by facilitating additional townhouse development that adds to local diversity in a location directly adjacent to the neighbourhood centre and coastal parkland.

Principle 2: Diverse – The Strategy is particularly targeting an increase in the mix of housing options for the Shire, noting the importance of medium density housing types.

Aureus Estate is one of the few urban areas in the Shire that contains a significant proportion of medium density housing options. The rezoning will directly deliver increased housing diversity.

Principle 3: Walkable – Locating this future townhouse development directly adjacent to the future village centre and existing open space will specifically contribute to this goal.

The rezoning is also directly consistent with the following Strategic Actions:

> *Investigate opportunities to consolidate well-located medium density sites to achieve improved integrated outcomes through land assembly approach known as 'greening the greyfields'.*
>
> *Enable more dwelling diversity within the existing lot pattern in medium density zoned areas.*
>
> *Encourage more dwelling diversity close to existing infrastructure and services.*
>
> *Use land efficiently by encouraging more medium density development in appropriate locations.*

The Strategy envisages diverse housing at this site through the permissibility of shop top housing within the E1 Local Centre zone. In that regard, the addition of 20-30 townhouses at the site is not inconsistent with the intended outcomes of the Housing Strategy.

Lennox Head Strategic Plan 2023-2043

The recently adopted Strategic Plan includes the Skennars Head locality. A key objective of the Strategic Plan in respect to Skennars Head locality is:

> *Maintain and sensitively increase residential densities close to the local centre.*

The rezoning directly delivers this objective.

It is also consistent with the following actions of the Strategic Plan:

> *Investigate planning controls to enable the delivery of medium density dwellings close to local centres (Lennox Head village, EPIQ supermarket and Aureus local centre).*
>
> *Investigate minimum dwelling number requirements for existing medium density sites proposed for redevelopment.*

Q5 - Is the Planning Proposal consistent with applicable state environmental planning policies?

Yes. The following table provides an assessment of the proposal against applicable State Environmental Planning Policies (SEPPs).

Table 2-1 | Consistency with SEPPs

SEPP	Comments	Consistency
SEPP (Biodiversity and Conservation) 2021	Chapter 3 Koala habitat protection 2021 This Chapter aims to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline.	The site is not located within the Koala Planning Area mapped with *Ballina Shire Koala Management Strategy, 2017*. The site does not contain any native vegetation that could be considered potential koala habitat.
SEPP (Housing) 2021		While the delivery of additional diverse housing options at the site is consistent with the principles of this Policy, there are no provisions directly relevant to the proposed rezoning.
SEPP (Planning Systems) 2021	Chapter 2 deals with State and regional development and is applicable at DA stage rather than rezoning.	There are no provisions directly applicable. Future residential development within the rezoned parcel could be regionally significant, depending on the estimated cost.
SEPP (Resilience and Hazards) 2021	Chapter 2 Coastal Management The aim of this Chapter is to promote an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the Coastal Management Act 2016.	The site is not mapped under the SEPP as containing any areas of coastal wetland or littoral rainforest, nor is it mapped within areas proximate to those attributes. An area of mapped wetland located approx. 350m to the west of the site. The site is not identified as a Coastal Vulnerability Area and is not within the Coastal Environment Area. It is mapped within the Coastal Use Area. Considerations for a future Development Application in this area relate to access to foreshore areas, protection of coastal amenity, and protection of cultural and built environmental heritage. The location of the site is such that its future development can be designed in a way that it will not impact on these coastal values.
	Chapter 4 Remediation of land This Chapter aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health	The potential for soil contamination was comprehensively addressed as part of the original subdivision application for Aureus Estate. A Remediation of Contaminated Soil – Validation Report (**Appendix B**) was

SEPP	Comments	Consistency
	or any other aspect of the environment: *(a) by specifying when consent is required, and when it is not required, for a remediation work, and* *(b) by specifying certain considerations that are relevant in rezoning land and in determining development applications in general and development applications for consent to carry out a remediation work in particular, and* *(c) by requiring that a remediation work meet certain standards and notification requirements.*	prepared in 2019 demonstrating how a minor area of contamination was remediated. That area of concern was located south of the Aureus Village site. The Validation Report demonstrates that the whole of the area is suitable for residential use.
SEPP (Sustainable Buildings) 2022	The Policy aims to encourage the design and delivery of sustainable buildings.	There are no provisions of this Policy directly applicable at rezoning stage. Future residential development at the site will be designed in accordance with the principles and requirements of this SEPP.
SEPP (Transport and Infrastructure) 2021		There are no provisions of this SEPP directly applicable at rezoning stage.

Q6 - Is the Planning Proposal consistent with applicable Ministerial Directions (s.9.1 Directions)?

Yes. **Table 2-2** provides a comprehensive assessment of consistency with the Minister's Directions.

Table 2-2 | Assessment Against Minsters Directions.

Direction	Compliance
Focus Area 1: Planning Systems	
1.1 Implementation of Regional Plans	Consistent The Planning Proposal is consistent with the North Coast Regional Plan 2041. The site is located within the Urban Growth Area Map for Ballina LGA.
1.2 Development of Aboriginal Land Council Land	Does not apply to this Planning Proposal.
1.3 Approval and Referral Requirements	Consistent

Direction	Compliance
	This Planning Proposal does not contain provisions requiring concurrence, consultation or referral of development applications.
1.4 Site Specific Provisions	Consistent The Planning Proposal will rezone the site to an existing zone in BLEP 2012, which allows the proposed land use without imposing any development standards or requirements in addition to those already contained in that zone.
1.4A Exclusion of Development Standards from Variation	Does not apply to this Planning Proposal.
Focus Area 1: Planning Systems – Place Based	
	None apply to this Planning Proposal.
Focus Area 2: Design and Place	
	There are no Directions.
Focus Area 3: Biodiversity and Conservation	
3.1 Conservation Zones	Consistent. The proposal does not relate to an environmentally sensitive area or land within a conservation zone.
3.2 Heritage Conservation	Consistent. The proposal does not relate to any areas of natural or environmental heritage.
3.3 Sydney Drinking Water Catchment	Does not apply to this Planning Proposal.
3.4 Application of C2 and C3 Zones and Environmental Overlays in Far North Coast LEPs	Not applicable. The proposal does not involve the introduction of an environmental zones.
3.5 Recreation Vehicle Areas	Consistent. The proposal does not enable land to be developed for the purposes of a recreational vehicle area.
3.6 Strategic Conservation Zoning	Does not apply to this Planning Proposal.
3.7 Public Bushland	The Direction does not apply to Ballina Shire.
3.8 Willandra Lakes Region	The Direction does not apply to Ballina Shire.

Direction	Compliance
3.9 Sydney Harbour Foreshore and Waterways Area	The Direction does not apply to Ballina Shire.
3.10 Water Catchment Protection	The Direction does not apply to Ballina Shire.
Focus Area 4: Resilience and Hazards	
4.1 Flooding	Not applicable. The site is not mapped as flood prone land.
4.2 Coastal Management	Consistent. See detailed assessment below.
4.3 Planning for Bushfire Protection	Not applicable. The site is not mapped as bushfire prone land.
4.4 Remediation of Contaminated Land	Consistent. See detailed assessment below.
4.5 Acid Sulfate Soils	Not applicable. The site is not mapped as containing Acid Sulfate Soils.
4.6 Mine Subsidence and Unstable Land	Does not apply to this Planning Proposal.
Focus Area 5: Transport and Infrastructure	
5.1 Integrating Land Use and Transport	Consistent. See detailed assessment below.
5.2 Reserving Land for Public Purposes	Consistent. The Planning Proposal does not reserve land for a public purpose or effect any such land already reserved.
5.3 Development Near Regulated Airports and Defence Airfields	Does not apply to this Planning Proposal.
5.4 Shooting Ranges	Does not apply to this Planning Proposal.
5.5 High pressure dangerous goods pipelines	Does not apply to this Planning Proposal.
Focus Area 6: Housing	
6.1 Residential Zones	Consistent.

Direction	Compliance
	The Planning Proposal will provide for increased housing diversity / choice and make efficient use of existing services and infrastructure.
6.2 Caravan Parks and Manufactured Home Estates	Does not apply to this Planning Proposal.
Focus Area 7: Industry and Employment	
7.1 Employment Zones	Justifiably Inconsistent. See detailed assessment below.
7.2 Reduction in Non-hosted Short-term Rental Accommodation Period	Does not apply to this Planning Proposal.
7.3 Commercial and retail Development along the Pacific Highway, North Coast	Does not apply to this Planning Proposal.
Focus Area 8: Resources and Energy	
8.1 Mining, Petroleum Production and Extractive Industries	Does not apply to this Planning Proposal.
Focus Area 9: Primary Production	
9.1 Rural Zones	Does not apply to this Planning Proposal.
9.2 Rural Lands	Does not apply to this Planning Proposal.
9.3 Oyster Aquaculture	Does not apply to this Planning Proposal.
9.4 Farmland of State and Regional Significance on the NSW Far North Coast	Does not apply to this Planning Proposal.

Direction 4.2 – Coastal Management

Direction 4.2 applies when a Planning Proposal affects land within the coastal zone that is identified in the mapping associated with *State Environmental Planning Policy (Resilience and Hazards) 2021*.

The provisions of this direction are addressed below:

(1) A Planning Proposal must include provisions that give effect to and are consistent with:

(a) The objects of the Coastal Management Act 2016 and the objectives of the relevant coastal management areas

The objects of the Act are:

(a) *to protect and enhance natural coastal processes and coastal environmental values including natural character, scenic value, biological diversity and ecosystem integrity and resilience, and*

The subject site is located to the west of the Coast Road and west of the recently developed coastal parkland, provided as part of the Aureus Estate. It is located well outside of the active coastal zone.

Development of medium density residential development within the rezoned portion of the site will not detract from the scenic or coastal amenity and will be consistent in character with the existing development within the Estate.

(b) *to support the social and cultural values of the coastal zone and maintain public access, amenity, use and safety, and*

Not directly applicable to this Planning Proposal.

(c) *to acknowledge Aboriginal peoples' spiritual, social, customary and economic use of the coastal zone, and*

A detailed Cultural Heritage Assessment was undertaken as part of the original subdivision application and concluded that development of the Estate would not result in cultural heritage impacts.

(d) *to recognise the coastal zone as a vital economic zone and to support sustainable coastal economies, and*

Not directly applicable to this Planning Proposal.

(e) *to facilitate ecologically sustainable development in the coastal zone and promote sustainable land use planning decision-making, and*

The site does not contain any areas identified as having high biodiversity values.

(f) *to mitigate current and future risks from coastal hazards, taking into account the effects of climate change, and*

The location of the subject site, well west of the active coastal zone, will ensure that future development will not be subject to coastal hazards.

(g) *to recognise that the local and regional scale effects of coastal processes, and the inherently ambulatory and dynamic nature of the shoreline, may result in the loss of coastal land to the sea (including estuaries and other arms of the sea), and to manage coastal use and development accordingly, and*

Not directly applicable to this Planning Proposal request.

(h) *to promote integrated and co-ordinated coastal planning, management and reporting, and*

The Planning Proposal request and supporting studies demonstrate consistency with this objective.

(i) *to encourage and promote plans and strategies to improve the resilience of coastal assets to the impacts of an uncertain climate future including impacts of extreme storm events, and*

The location of the site provides an adequate buffer from coastal storms now and into the future.

(j) *to ensure co-ordination of the policies and activities of government and public authorities relating to the coastal zone and to facilitate the proper integration of their management activities, and*

Not directly applicable to this Planning Proposal request.

(k) *to support public participation in coastal management and planning and greater public awareness, education and understanding of coastal processes and management actions, and*

The Planning Proposal will be publicly exhibited to gain community feedback.

(l) to facilitate the identification of land in the coastal zone for acquisition by public or local authorities in order to promote the protection, enhancement, maintenance and restoration of the environment of the coastal zone, and

Not directly applicable to this Planning Proposal request.

(m) to support the objects of the Marine Estate Management Act 2014.

Not directly applicable to this Planning Proposal request.

(b) the NSW Coastal Management Manual and associated Toolkit

The Manual provides guidance to local councils in the preparation and implementation of coastal management programs. The Toolkit provides additional technical information to assist in this process.

Council is undertaking a coastal management program, but it is not likely that it would contain policies or actions directly applicable to the subject site.

(c) Section 3.2 of the NSW Coastal Design Guidelines 2023

Appendix C to this Planning Proposal request contains an assessment checklist against the provisions of Chapter 3 of the NSW Coastal Design Guidelines 2023.

(d) any relevant Coastal Management Program that has been certified by the Minister, or any Coastal Zone Management Plan under the Coastal Protection Act 1979 that continues to have effect under clause 4 of Schedule 3 to the Coastal Management Act 2016, that applies to the land

Council has not yet finalised a Coastal Management Program.

(2) A Planning Proposal must not rezone land which would enable increased development or more intensive land-use on land:

(a) within a coastal vulnerability area identified by chapter 2 of the State Environmental Planning Policy (Resilience and Hazards) 2021

The site is not identified as being within a coastal vulnerability area.

(b) that has been identified as land affected by a current or future coastal hazard in a local environmental plan or development control plan, or a study or assessment

The site is not identified as being affected by a current or future coastal hazard.

(3) A Planning Proposal must not rezone land which would enable increased development or more intensive land-use on land within a coastal wetlands and littoral rainforests area identified by chapter 2 of the State Environmental Planning Policy (Resilience and Hazards) 2021.

The site does not contain any areas identified within the SEPP as Coastal Wetland or Littoral Rainforest.

(4) A Planning Proposal for a local environmental plan may propose to amend the following maps, including increasing or decreasing the land within these maps, under chapter 2 of the State Environmental Planning Policy (Resilience and Hazards) 2021:

This Planning Proposal does not propose to amend any of the SEPP maps.

Direction 4.4 – Remediation of Contaminated Land

This direction applies when a Planning Proposal applies to land where specified land uses have been known to have been carried out.

(1) A Planning Proposal authority must not include in a particular zone (within the meaning of the local environmental plan) any land to which this direction applies if the inclusion of the land in that zone would permit a change of use of the land, unless:

(a) the Planning Proposal authority has considered whether the land is contaminated, and

(b) *if the land is contaminated, the Planning Proposal 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 Proposal authority is satisfied that the land will be so remediated before the land is used for that purpose.*

In order to satisfy itself as to paragraph 1(c), the Planning Proposal authority may need to include certain provisions in the local environmental plan.

(2) Before including any land to which this direction applies in a particular zone, the Planning Proposal authority is to obtain and have regard to a report specifying the findings of a preliminary investigation of the land carried out in accordance with the contaminated land planning guidelines

A detailed contamination assessment of the site was undertaken as part of the Aureus Estate subdivision application.

A Remediation of Contaminated Soil – Validation Report (**Appendix B**) was prepared in 2019 demonstrating how a minor area of contamination was remediated.

That area of concern was located south of the Aureus Village site.

The Validation Report demonstrates that the whole of the area is suitable for residential use.

Direction 5.1 – Integrating Land Use and Transport

This direction applies to a Planning Proposal that creates, alters or removes a zone relating to urban land, including for employment purposes.

(1) A Planning Proposal must locate zones for urban purposes and include provisions that give effect to and are consistent with the aims, objectives and principles of:

(a) Improving Transport Choice – Guidelines for planning and development (DUAP 2001), and

(b) The Right Place for Business and Services – Planning Policy (DUAP 2001).

Improving Transport Choice – Guidelines for planning and development includes the following design guidelines that are relevant to this Planning Proposal:

- *Street networks should allow permeability for buses and pedestrians*

  Permeability has been provided through the Estate, with main internal roads wide enough to allow a bus to circulate. Footpaths are provided on all internal roads, with connections out to the shared path constructed along the Coast Road.

  Future residential development of the site will provide appropriate connections to this existing network.

- *Pedestrian amenity, such as footpaths to bus stops and sandwich shops, should be given a higher priority in employment/industrial areas*

  As indicated above, footpaths and bus circulation are provided internally within the Estate, with connections to the external public infrastructure.

- *Intensification and a greater mix of uses, including residential development, should be encouraged along the public transport routes and corridors that serve these areas to support more frequent bus services*

  Medium density residential development in the site is consistent with this principle.

- *Minimum setbacks from the street and between adjoining buildings should be employed. Room to expand, and staff and visitor parking, can be accommodated at the rear of properties.*

  Council DCP controls will govern development of the lots that would be created at this site.

Direction 7.1 – Employment Zones

This direction applies where a Planning Proposal affects land within an existing or proposed employment zone.

(1) A Planning Proposal must:

(a) give effect to the objectives of this direction

The objectives are to protect employment land, encourage employment growth in suitable locations and support the viability of identified centres.

The Retail Needs Assessment (**Appendix A**) contains a detailed assessment of the existing retail/ commercial demand and the associated extent of commercial floor space that is considered to be viable at the subject site, supporting the reduced area of the existing E1 Local Centre zoning

The assessment also notes that the development of excess commercial floor at this site would result in detrimental impacts on existing local centres in the Lennox Head / Ballina area.

(b) retain the areas and locations of Employment zones

The Planning Proposal request will reduce the area current zoned E1 Local Centre. This is justified by a Retail Needs Assessment (**Appendix A**) which gives consideration to the objectives of this direction and demonstrates that the proposed rezoning is an appropriate response to local economic circumstances.

(c) not reduce the total potential floor space area for employment uses and related public services in Employment Zones

See above.

(d) not reduce the total potential floor space area for industrial uses in E4, E5 and W4 zones

Not directly relevant to this Planning Proposal.

(e) ensure that proposed employment areas are in accordance with a strategy that is approved by the Planning Secretary.

The proposal is consistent with Council's Economic Development Strategy 2018.

Section C – Environmental, social and economic impact

Q7 - Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?

The subject site is completely cleared and does not contain any areas of native vegetation or biodiversity value.

Q8 - Are there any other likely environmental effects as a result of the Planning Proposal and how are they proposed to be managed?

Traffic and transport

A Transport Statement is provided at **Appendix D**, demonstrating that the proposed rezoning and subsequent future residential development will not generate traffic volumes significantly greater than those that would be expected from commercial development under the current E1 zoning.

The Statement demonstrates that the existing road network has sufficient capacity for the anticipated future traffic volumes.

Contamination

A detailed contamination assessment of the site was undertaken as part of the Aureus Estate subdivision application.

A Remediation of Contaminated Soil – Validation Report (**Appendix B**) was prepared in 2019 demonstrating how a minor area of contamination was remediated.

That area of concern was located south of the Aureus Village site.

The Validation Report demonstrates that the whole of the area is suitable for residential use.

Q9 - How has the Planning Proposal adequately addressed any social and economic effects?

The Retail Needs Assessment (**Appendix A**) contains a detailed assessment of the existing retail/ commercial demand and the associated extent of commercial floor space that is considered to be viable at the subject site, supporting the reduced areas of the existing E1 Local Centre zoning

The assessment also notes that the development of excess commercial floor space at this site would result in detrimental impacts on existing local centres in the Lennox Head / Ballina area.

The provision of additional diverse housing at the site will result in social and economic benefits given the documented need for housing in the Shire, particularly medium density options other than single dwellings.

Retention of approx. 6,000m^2 land within the existing E1 Local Centre zone will result in local economic benefits, by meeting the needs of the local population. The landowners have offered to enter into a Voluntary Planning Agreement (VPA) that will ensure that the commercial floor space is delivered on the land in a timely manner.

Section D – Infrastructure (Local, State and Commonwealth)

Q10 - Is there adequate public infrastructure for the Planning Proposal?

Yes, the site is located within the Aureus Estate and all necessary urban services are available.

Section E – State and Commonwealth Interests

Q11 - What are the views of State and Commonwealth public authorities consulted in accordance with the gateway determination?

Agency consultation will occur following a Gateway Determination.

Part 4 – Mapping

The Planning Proposal seeks to amend the following LEP maps:

- Land Zoning Map – See zoning proposal in **Figure 1-3** above.
- Floor Space Ratio Map – it is proposed to remove the part of the site proposed to be rezoned to R3 Medium Density Residential from the Floor Space Ratio Map.

Part 5 – Community Consultation

Public exhibition of the Planning Proposal will be undertaken to inform the community and seek feedback. It is envisaged Council would undertake consultation in accordance with the Community Participation Plan, for a minimum of 28 days, or in accordance with any Gateway Determination requirements:

Part 6 – Project Timeline

The following timeline is provided to assist the Gateway in determining a timeframe for finalising the Plan. It will also provide as a mechanism for monitoring the progress of the Planning Proposal through the plan making process to more accurately manage resources to ensure there are no unexpected delays in the process.

Table 6-1 I Project Timeline

Stage	Timeframe
Consideration by Council	3 months
Council decision	1 month
Pre-exhibition	1 month
Public exhibition / consultation	1 month
Consideration of submissions	2 months
Council decision	1 month
Submit to finalise LEP	2 months
Local Plan Making Authority finalise	2 months

3 Summary and Conclusions

This Planning Proposal request seeks to rezone part of Lot 346 DP 1271483 from the existing zoning of E1 Local Centre to a zoning of R3 Medium Density Residential

The Planning Proposal request is a result of detailed economic assessment that demonstrates the existing extent of the E1 zoned land is in excess of that required to sustain a viable commercial centre at the site.

The analysis demonstrates that a range of local, national and internal factors have changed since the current E1 zoned area was implemented in 2019, notably the success of the nearby Epiq Marketplace, changing trends in retail spending generally, and the growth of online food purchase with home delivery.

The proposal to rezone the excess portion of Lot 346 will assist in the delivery of additional medium density housing that adds to the diverse offering at the site, in a manner that ensures viable commercial development will be provided.

The proponent has provided a letter of offer to enter into a Voluntary Planning Agreement that ensures the timely delivery of the commercial development.

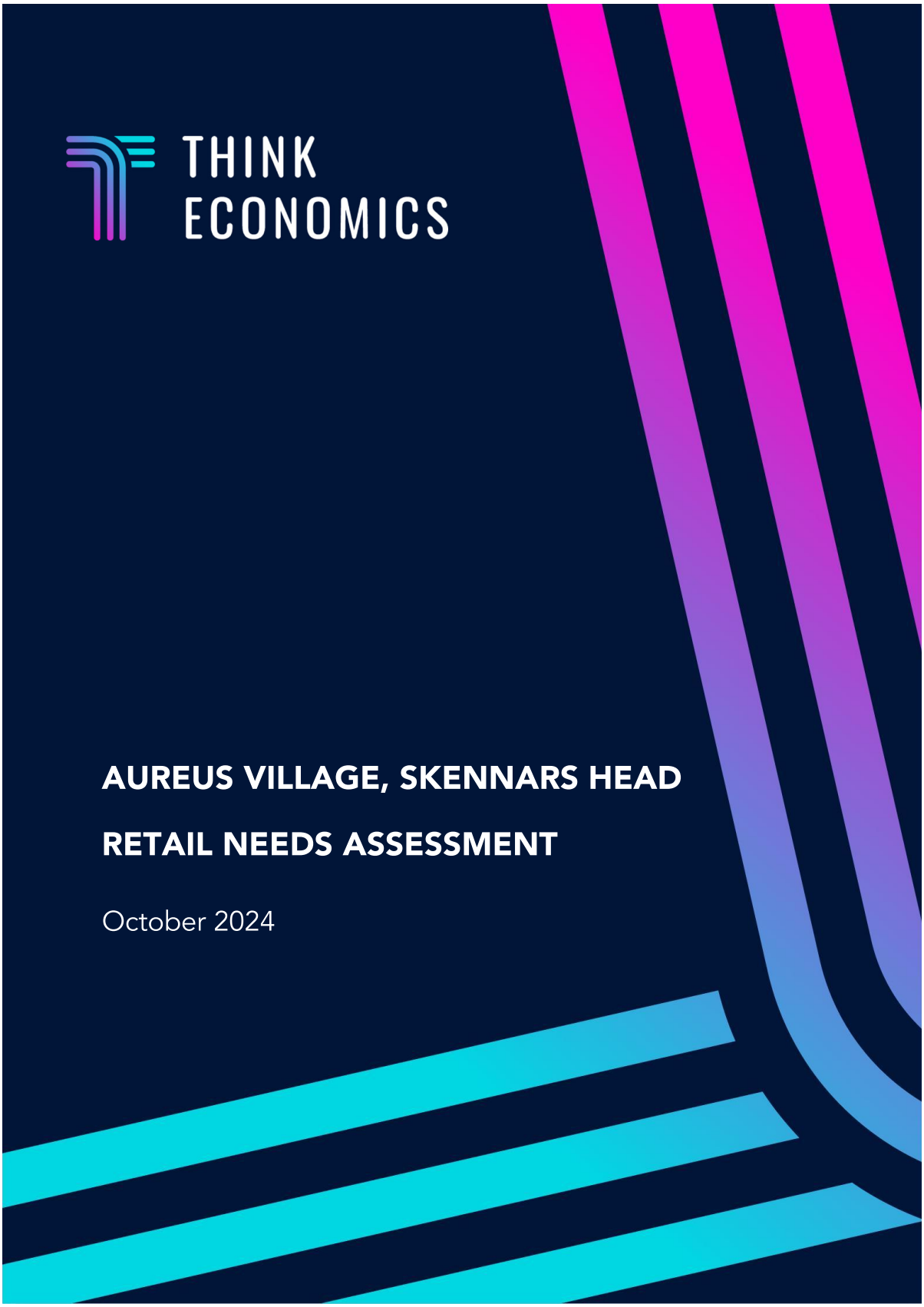
The proposed rezoning is demonstrated to be consistent with the strategic intent for the area and the rezoned site can be developed for residential purposes in a manner that avoids significant environmental impact while delivering the social and economic benefits of additional housing diversity.

Rob van Iersel

Principal Planner

PLANIT CONSULTING

Appendix A Retail Needs Assessment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AUREUS VILLAGE, SKENNARS HEAD
RETAIL NEEDS ASSESSMENT
October 2024

THINK ECONOMICS

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1.0	1 October 2024	MVDS / JM	JM

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Table of Contents

1.0 Introduction

1.1 Scope

Think Economics has been engaged to provide an independent retail needs assessment for the proposed Aureus Village at Skennars Head, NSW.

This report has been prepared on behalf of Intrapac Property, the owner of Aureus Village ("subject site") and relates to the proposed development of 1,184sqm of retail commercial floorspace.

Key report formulation elements include:

Section 2 review the local and regional context of the centre, providing an overview of the existing centres and the proposed expansions. This sections also reviews the strategic planning framework within which the proposed centre operates.

Section 3 delineates the main trade area the proposed redevelopment will likely serve. This section provides estimates of current and future population levels within the trade area; analysis of the socio-demographic profile of the area; and assesses the current and future estimated retail expenditure generated by residents in main trade area.

Section 4 provides a review of the existing and proposed retail centres and the likely competitive framework of the proposed centre.

Section 5 provides an assessment of the market potential of the centre, including an assessment of retail floorspace demand and market gap within the trade area.

Section 6 presents an assessment of economic need and examines the net community benefits associated with the proposed expansion, including employment generation and other economic and social benefits.

2.0 Site Context

2.1 Location

The report relates to the development of a village centre within the Aureus residential estate at the corner of The Coast Road and Seaside Avenue in Skennars Head, otherwise referred to as the 'subject site' (refer Figure 2.1)

Skennars Head is a small town located between Ballina and Lennox Head in the Northern Rivers region of New South Wales. The region is a popular destination for tourists and has been attracting residents seeking a well-connected coastal living location. The subject site is about 6km north of Ballina, 25km south of Byron Bay, and 10km from the Ballina Byron Gateway Airport.

Ballina is the largest town in the region with an estimated residential population (ERP) of 18,578 people in 2021. The town serves as a regional commercial and cultural hub with significant retail provision including restaurants and cafes in addition to shopping centres with major supermarkets and department stores.

2.2 Development Overview

The Aureus Village residential development will comprise around 400 dwellings in total, with the first stage of the land subdivision completed and a large proportion of the townhouses under construction. The masterplan also includes parks and open areas, a playground, and a neighbourhood centre.

The subject site is approximately 13,500sqm and currently zoned E1 Local Centre. We understand this was designated as part of a 2018 approval, which at the time envisaged the inclusion of at-grade carparking, retail, commercial, public realm space and other local services. We also understand that from a role and function perspective, the initial concept plans for the subject site were for a neighbourhood centre catering for the day-to-day shopping needs of the surrounding community.

The current proposed development is for 1,184sqm of retail commercial floorspace, 65 car at-grade car parking, public realm space and shop-top residential (refer Figure 2.2)

Figure 2.1 Locational Context

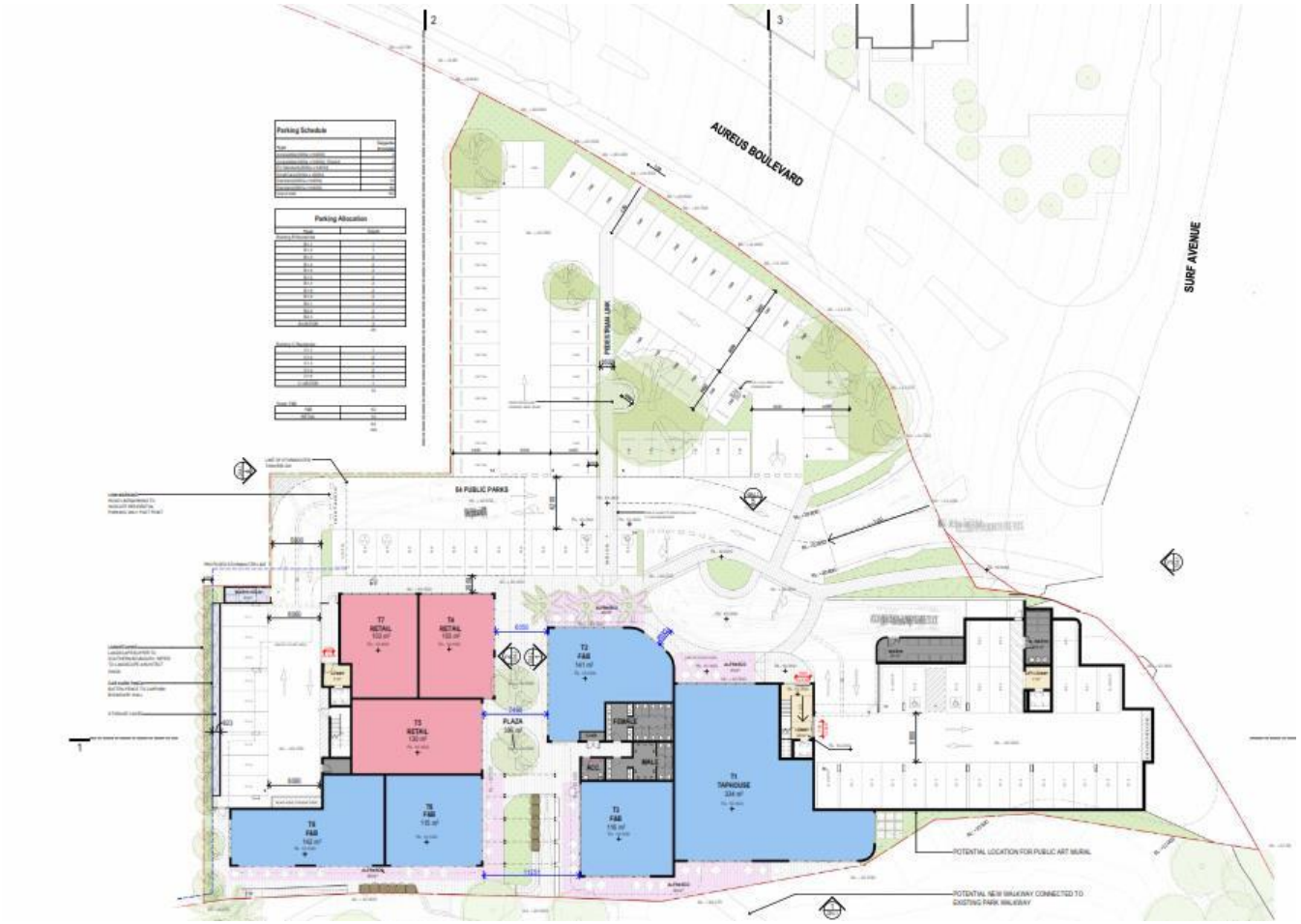

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Figure 2.2 Aureus Village – Ground Floor Plan

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3.0 Retail Context Update

This section of the report will discuss the current retail context and activity centres hierarchy within which the proposed commercial centre now operates since the centre was designated as part of a 2018 approval.

Factors such as COVID, inflationary pressures and the opening of the Epiq Shopping Centre at Lennox Head have had a significant impact on the potential commercial opportunity at Skennars Head and the role and function it can play in the activity centres hierarchy. New data from the 2021 Census of Population and Housing is also available to underpin updated analysis.

A more comprehensive exploration of each of these factors and their resultant implications to be discussed in more detail following.

3.1.1 Strategic Planning Context - Centres Hierarchy

The council's strategic plan for commercial and industrial growth relies on a retail centre structure designed for the Shire. This structure designates the Ballina Town Centre and the Kerr Street Retailing Precinct as the main retail hubs within the Shire. It suggests that these establishments should be safeguarded and strengthened as the highest-ranking components of the retail hierarchy. The present structure is visually represented in the Commercial and Industrial Hierarchy diagram in Figure 3.1 over the page.

Additional retail facilities of a neighbourhood/local scale are planned for the Cumbalum urban release area and Skennars Head expansion area in the future (the subject site). There is also a light industrial estate planned on the northern side of Lennox Head and a neighbourhood shopping centre (being a second retail area) now built in the Epiq development at Lennox Head.

The commercial hierarchy is also supplemented by a range of quasi-retail activities and bulky goods outlets located within the Southern Cross, Clark Street and Russellton Industrial Estate (Alstonville) areas, as well as dispersed bulky goods activity along the former Pacific Highway, Kerr Street (e.g. Super A-Mart and Good Guys).

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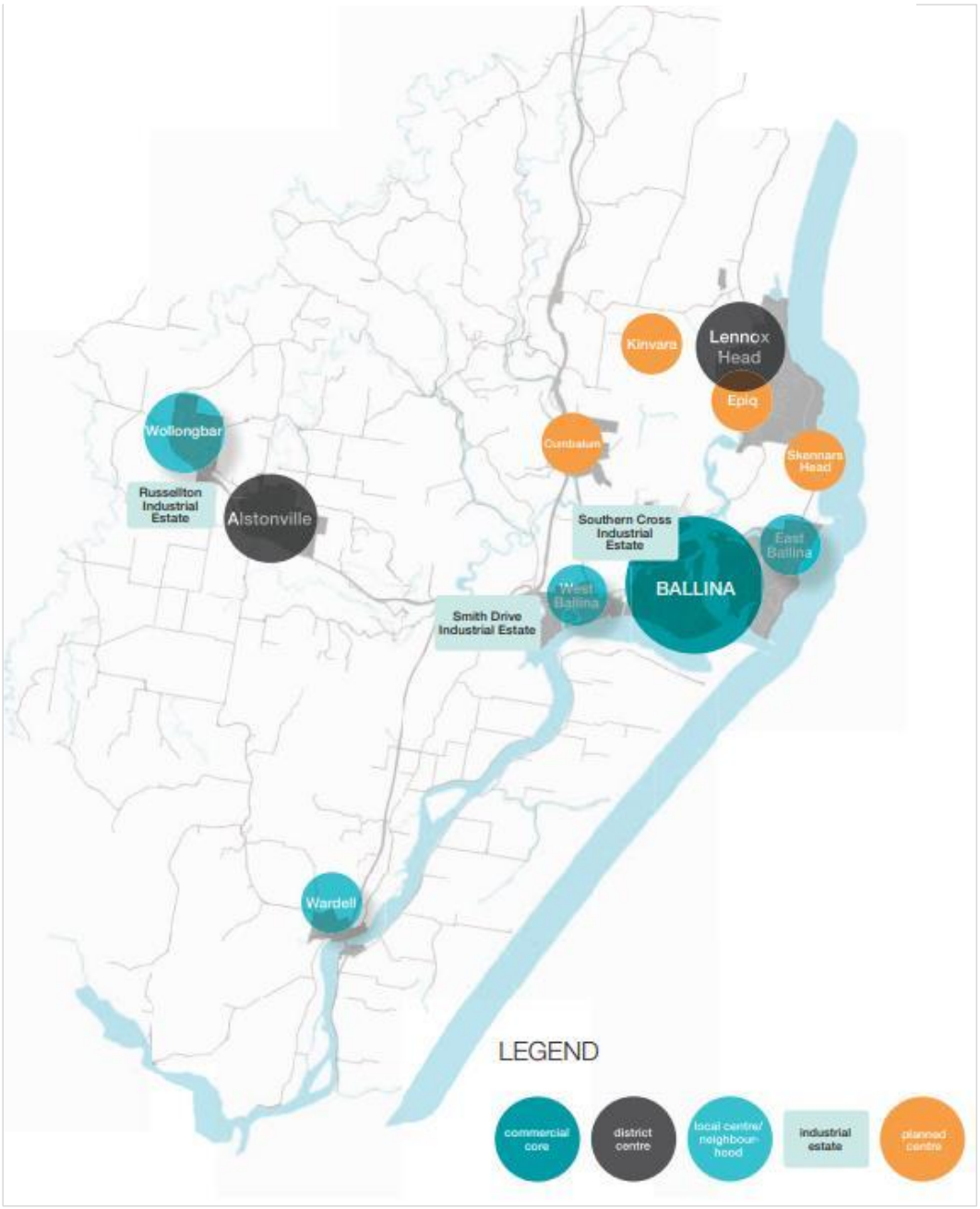
Figure 3.1 Commercial and Industrial Hierarchy Ballina Shire (2019)



Source: Ballina Shire Local Strategic Planning Statement 2020 – 2040

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In addition to the central facilities located in Ballina, surrounding localities also include a variety of smaller scale commercial areas, in East Ballina, West Ballina, Lennox Head and Alstonville, with a smaller neighbourhood shopping centre in Wollongbar. Modest levels of retail services are also provided in the Shire's rural villages such as Wardell, Newrybar and Tintenbar.

3.1.1 Epiq Market Place

While the subject site remains undeveloped since approval, significant changes to the surrounding retail hierarchy have occurred. Most significantly has been the delivery of Epiq Marketplace in Lennox Head in 2020, located just 3.4km from the subject site.

The Epiq marketplace is a 5,500sqm shopping centre located at the corner of Hutley Drive and Snapper Drive. The centre is part of the Epiq masterplan community which foresees approximately 500 dwellings upon completion and a retirement community with around 100 units. So far, the development has been successful with stage 7 now released.

During planning, the commercial precinct concept plans envisaged a neighbourhood centre to cater for the day-to-day shopping needs of the surrounding community providing increased accessibility and convenience to residents.

Since its opening in 2020, the Epiq Marketplace has become a vital component of the entire Lennox Head area serving not only as a location for food and grocery shop but also for medical consultations, fitness, leisure and social gathering.

The current role and function of Epiq Marketplace including its actual catchment, rather than being assumed can be visualised and determined using mobile geolocation data for devices that have been recorded within the existing shopping centre. This data is represented in Figure 3.2 over the page for the period September 2023 to September 2024 (to reflect visitation patterns that are unaffected by COVID impacts on travel) and covers approximately 37,823 visits made by around 15,036 devices.

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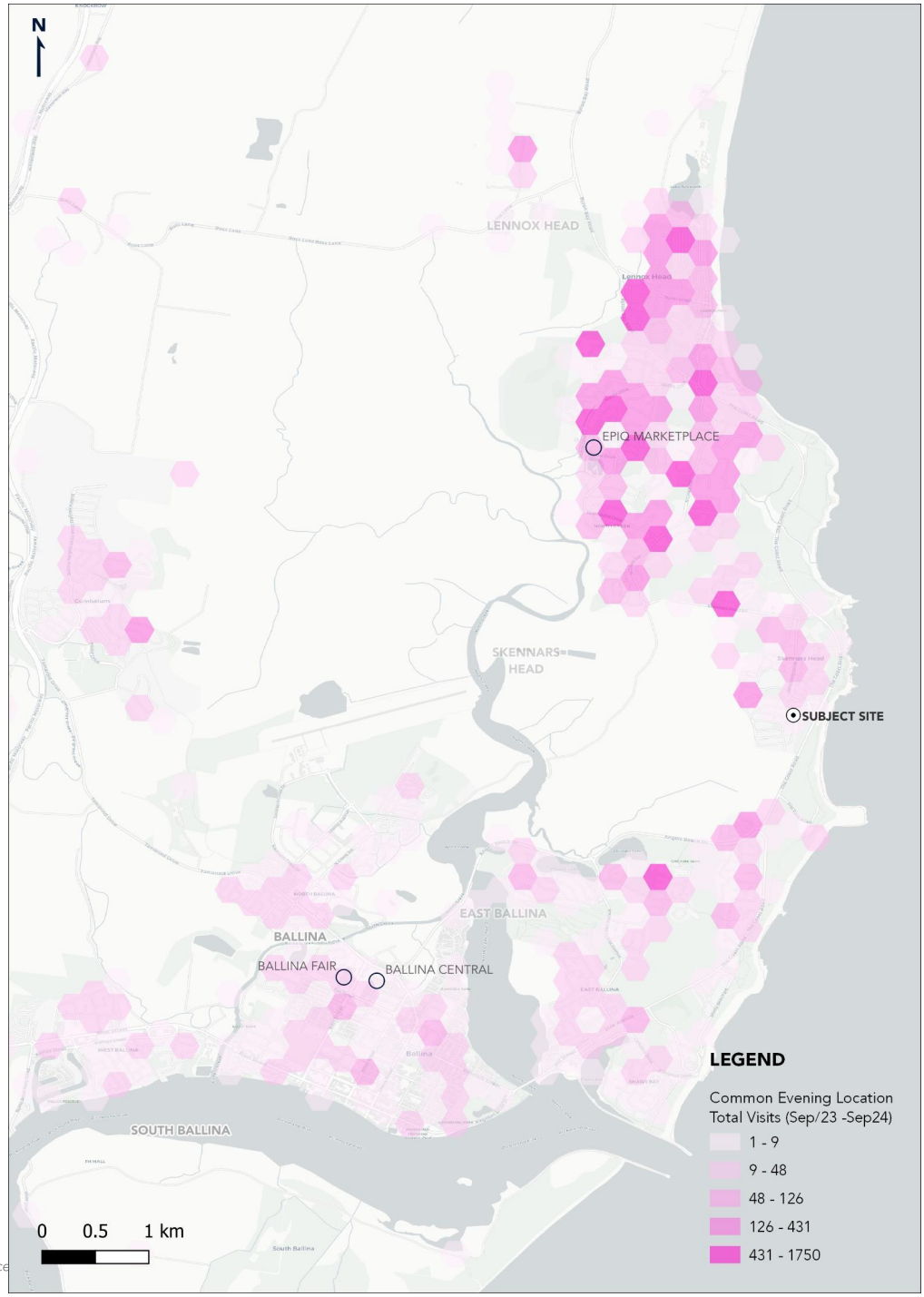
Figure 3.2 Epic Marketplace Visitation (Sep 23 – Sep 24)



Source: Near & Think Economics 2024 - Common Evening Location (CEL) - where a mobile device rests during "non work" hours, defined as evenings (6 pm to 8 am) and weekends.

The mobile geolocation data has been purchased through the VISTA platform operated by Azira and provides details of the geolocation of smartphone devices where owners have location services turned on. The data shows both the origin and frequency of visitation and illustrates the broad attraction the centre achieves across a wide area[1], especially Lennox Head north of Skennars Head Road.

Observed visitation patterns reflect a higher role and function of the Epiq centre than what was likely originally considered, with very strong penetration into the local suburbs extending down to East Ballina.

This effect has been considered in subsequent analysis and specifically in the delineation of an appropriate trade area for the Skennars Head commercial centre.

3.1.1 Ecommerce Platforms

The COVID-19 pandemic-induced lockdowns brought about a transformative impact on the retail sector, triggering a notable transition from traditional physical stores to online shopping. Despite the conclusion of lockdowns and pandemic-related limitations, consumer inclination towards online shopping remains strong and remains above pre-pandemic levels. Current online retail expenditure represents 16.8% of total retail expenditure ($63.6bn), up from 11.3% ($32bn) in 2019.[2]

The recent shift to online operations has seen many retailers rethinking their physical footprint and network location strategies. Delivery of additional retail floorspace nationally is at the lowest levels observed over the last 15 years as the impact of online-sales, construction delays and a slow-down in discretionary spending as a result of heightened cost-of-living pressures impact retail development.

This effect has been considered in subsequent analysis and informed by latest available 2021 Census of Population and Housing and Consumer Spend Potential (CSP) data sourced

[1] *Note that areas on the map with a darker shading represent those areas with higher visitation over the preceding 12-month period.*
[2] *Aus Post: Inside Australian Online Shopping Report 2024*

from Precisely which assesses both physical and online retail expenditure by trade area residents.

3.1.2 Food and Grocery Home Delivery Trends

While non-food purchases dominate online expenditure, the growth of online food sales has also risen significantly, increasing by 167% from $459.8 mil in August 2019 to $1.23 bn in August 2024.[3]

Woolworths achieved e-commerce sales of $4.08bn through their online platform, Woolies X for the financial year 2024 which is up 27.5% on the previous 12 month and now represents 11.4% of total sales. Meanwhile, its biggest competitor, Coles had its online sales increase 29.2% of the same period to $1.8bn.

Research indicates that almost half – 48% – of Australians buy at least some of their groceries online, with 10% now ordering most or all of their groceries via the internet[4]

The shift to online and food and grocery delivery has fundamentally changed the retail competitive landscape, with the concept of convenience shifting and large online ready operators' ability to service both larger trade areas and achieve greater market shares.

Smaller operators and those which do not offer home delivery services are increasingly at a significant disadvantage.

[3] *ABS, Retail Trade, June 2023*
[4] *Spryker - 'Australian Online Grocery Report 2022*

4.0 Aureus Village Trade Area

4.1 Trade Area Definition

A trade area is defined as the geographic area for which a centre generates the majority of its turnover and visitation. The extent of a trade area is driven by a range of accessibility and convenience factors including:

- Centre attraction relative to the competition, including tenancy mix, car parking and co-location with higher order facilities and/or services. The key factors that determine the strength and attraction of any convenience centre are primarily the scale and composition of the centre, in particular anchors, car parking, including access and ease of use and ambience and presentation of the centre.
- The surrounding competitive framework and existing supply. While the strength and appeal of a centre directly impacts its ability to extract market share, the proximity and attraction of competitive uses impact the extent of a centre's trade area. In essence, all being equal, consumers naturally gravitate to the most convenient option.
- Road networks and traffic flows. The available road network, public transport service and journey to work patterns all affect centre access and impact a centre's convenience and relative attractiveness.
- Natural and man-made physical boundaries such as rivers, rail, freeways etc. Significant physical barriers often act to delineate a trade area boundary. Evidence indicates that the more difficult a barrier to negotiate, the larger the decrease in customer patronage and market share experienced.

In regard to the subject site, the primary determinant impacting delineation of a retail catchment is the location and spatial distribution of existing centres and proximity to population critical mass.

In the context of the subject site, this primarily includes Epiq Marketplace (3.4km northwest of the subject site), the Lennox Local Centre (4.2km north) and the East Ballina neighbourhood centre (2.6km south).

On the basis of the previously outlined considerations, Figure 4.1 over the page illustrates the defined main trade area for the subject site, which consists of a primary sector and two secondary sectors that are described as follows:

- The Primary Trade Area consists of the entire Skennars Head area and a small southern part of Lennox Head which has easy access to the subject site via Skennars Head Road. The proposed Village Centre will be the most proximate and convenient retail development for residents of this area and therefore this area is expected to generate the majority of demand for retail uses onsite.

- The Secondary South Trade Area includes the entire East Ballina region. Residents of this area have relatively easy access to the subject site via Angels Beach Drive and The Coast Road with the proposed retail uses onsite providing increased choice. It is noted that this area is serviced by the East Ballina local centre and overlaps with the Ballina Fair and Ballina Central shopping centre catchments.

- The Secondary North Trade Area comprises a large part of Lennox Head's urban area. Residents of this area will also benefit from reasonable easy access to the subject site and increased retail options. As illustrated in Figure 3.2, the Epiq Marketplace dominates visitation from the Lennox Head region, and as such the potential retention rates which are considered achievable at the subject site are substantially impacted in the secondary north area due to the observed role and function of the Epiq Marketplace centre. It is expected that the proposed centre at the subject site would capture only a small proportion of demand from this area.

The Primary, Secondary South and Secondary North trade areas combined are referred to as the main trade area in the remainder of this report.

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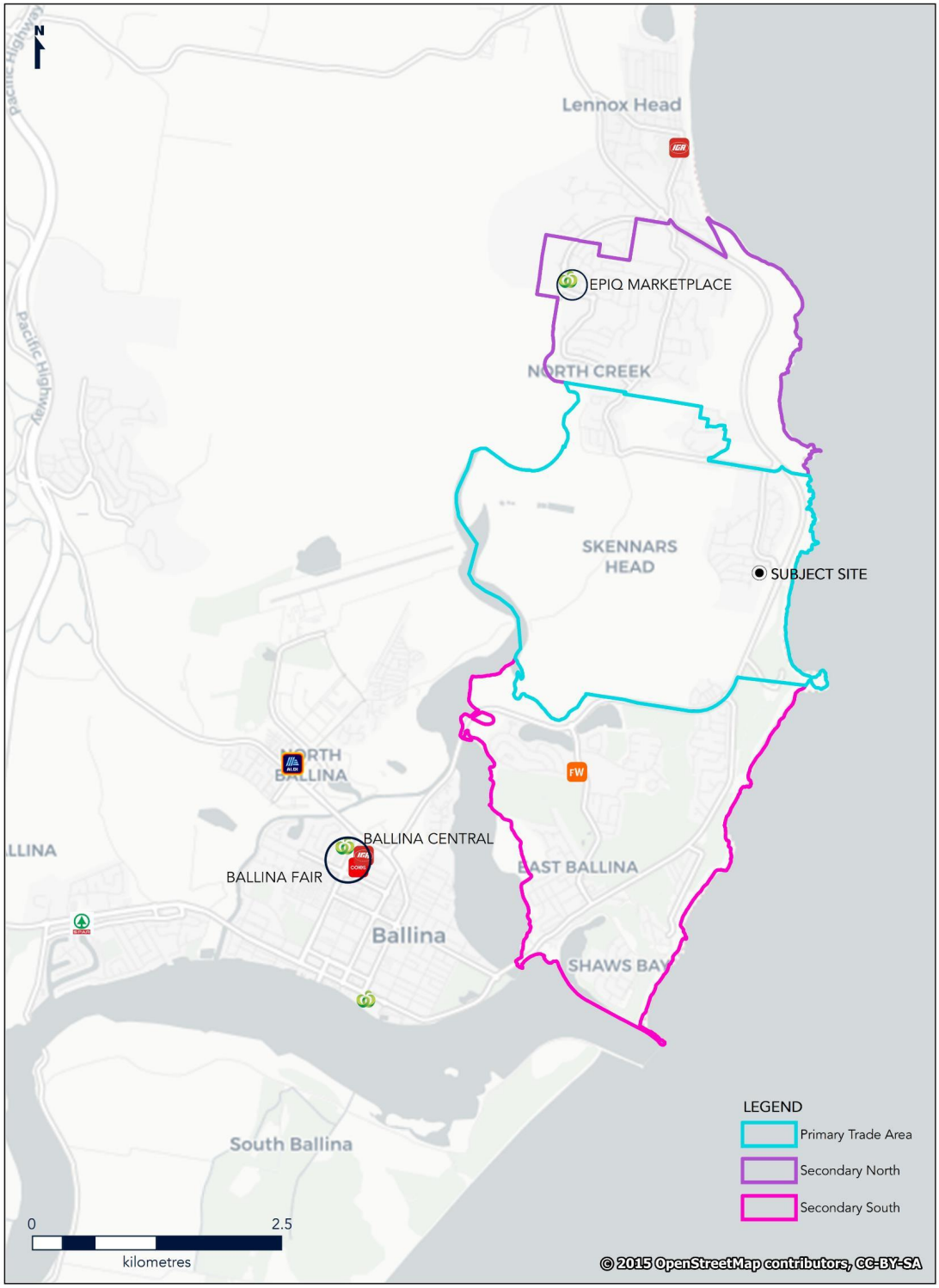
Figure 4.1 Aureus Commercial Centre Trade Areas



4.2 Competitive Framework

4.2.1 Existing supply

There is no existing retail supply within Skennars Head, with the closest commercial precincts being the East Ballina neighbourhood centre, about 2.6km southwest of the site, and the Epiq Marketplace, approximately 3.4km northwest of the subject site.

The East Ballina neighbourhood centre is a small commercial precinct located at Links Avenue, adjacent to the Southern Cross public school and the Goodstart Early Learning Ballina childcare centre. The commercial facility features approximately 2,000sqm and includes a FoodWorks supermarket, a pharmacy, bottle shop, butchery, medical and dental clinics, hair salon, and some cafes and restaurants.

The Epiq marketplace is a 5,500sqm neighbourhood shopping centre located at the corner of Hutley Drive and Snapper Drive. The centre is part of the Epiq masterplan community. The centre is anchored by a full-line Woolworths supermarket (3,500sqm) which includes designated parking bays for drive-through pickup services from online orders. Other retail tenants include a BWS, deli shop, Chempro, bulk foods store, and nail and hair salon. The centre also includes a range of non-retail commercial uses including a 24/7 gym, a dental clinic, a physiotherapy centre, and a medical centre with 12 general practitioners.

Further, there are two small retail precinct areas within the secondary south sector, one at Shaws Bay comprising the Shaws Bay Hotel tavern, a café, and a takeaway restaurant, and one at Lighthouse Beach comprising a restaurant at the Ballina surf club.

A summary of existing retail supply relevant to the subject site is presented on Table 4.1 following.

Table 4.1 Local Area Existing Retail Supply

Centre	Retail floorspace (sqm)	Main tenants	Distance from subject site (km)
Within trade area			
East Ballina neighbourhood centre	2,000	FoodWorks, Bottlemart, Amcal Pharmacy	2.6
Epiq marketplace	5,500	Woolworths, Chempro chemist, BWS	3.4
Shaws Bay	500	Shaws Bay Hotel tavern	4.3
Ballina Surf Club	400	Capiche restaurant	4.0
Beyond trade area			
Lennox Head Local Centre (Ballina St.)	8,500	IGA, Cellarbrations liquor, Pharmacy	4.2
Ballina Central	14,130	Big W, IGA, Priceline pharmacy	4.8
Ballina Fair	14,850	Woolworths, BWS, Best&Less	5.0
Ballina Bayside	10,500	Coles, Kmart, First Choice Liquor	4.9
Ballina Town Centre	42,000	Woolworths	5.8

Source: Think Economics 2024, HillPDA 2019.

Outside the main trade area to the north, the Lennox Head local centre along Ballina Street includes a range of retail facilities, predominantly food and beverage stores and an IGA supermarket.

Meanwhile, the largest concentration of retail floorspace within the region is located in Ballina, within the Town Centre and Kerr Street precinct. The Kerr Street precinct includes the collocated centres of Ballina Fair, Ballina Central, and Ballina Bayside comprise a total of nearly 40,000sqm of retail floorspace and include major supermarket brands, department stores, food and beverage shops, and numerous retail specialties.

Ballina Town Centre is the original retail and commercial centre in the LGA and comprises an elongated commercial core area focused upon River Street. It is estimated to comprise approximately 42,000sqm of retail and about the same of non-retail commercial floorspace.

4.2.2 Future supply

As outlined in Section 3, the Ballina Shire Council Strategic Planning Context foresees the development of future centres at Kinvara and Cumbalum which are located about 10km northwest and 12km west of the site respectively. We note however that there are currently no current active developments in these precincts.

In terms of current proposed major retail additions, a review of Ballina Shire Council development applications has identified four (4) major and/or relevant projects of interest:-

- **"EPIQ Lennox", Lennox Head (DA 2023/339.1) -** located approximately 3.4km form the subject site at the existing Epiq centre, the approval for development of a two (2) storey commercial building on the Pad Site at EPIQ Lennox Marketplace, incorporating Retail Shops, Café, Commercial Offices and associated Carparking.

  The development will have a total gross leasable floor area of 696sqm. External to the GLFA will be an alfresco dining area of 75sqm and an associated 6sqm amenities building. The proposal will increase the Epiq centre to a total GFA of approximately 6,200sqm, which is within the maximum commercial gross leasable floor area of 6,300sqm, as prescribed under the Concept Plan approval.

  The approval represents a 13% increase on the existing retail GFA at the Epiq centre and will have direct impact on the quantum and timing of potential uses at the subject site.

- **Harvey Norman, 32 Boeing Avenue Ballina (DA 2023/107.1)** - approval for the construction of specialised retail premises including approximately 10,500sqm of floorspace including:

  - Harvey Norman (Tenancy 3): comprising 7,696sqm of combined floor area, consisting of 5,533sqm of retail floor area, 1,968sqm of warehouse, 194sqm of offices, reception and administration floor areas space.

  - Tenancies 1 – 4: comprising 2,692sqm of floor area.

  - Ancillary take away food and drink premises: comprising 76sqm of floor area.

The approval is for predominately high-order destination bulky good uses and is considered to be of limited competitive relevance to the subject proposal.

- **Mixed-Use Retail 72 Ballina Street, Lennox Head (DA 2023/287.1)** – pending development application for the construction of a three-storey mixed use development including one food and drink premises and two retail premises at ground level and shop top housing comprising two dwellings above, and associated car parking (13 spaces), infrastructure works and signage.

  Total retail additions proposed equate to 200sqm of retail floorspace, however largely represent a replacement of existing ground floors tenancies within the Lennox local centre and are considered to be of limited impact to the subject proposal.

- **319 River Street (DA 2023/111.1)** – Approval for development of a specialised retail premises with a gross leasable floor area (GLFA) of 1,520sqm at 319 River Street in Ballina, approximately 8km from the subject site.

  The approval is for predominately high-order destination bulky good uses and is considered to be of limited competitive relevance to the subject proposal.

4.2.3 Socio-demographic Profile

Table 4.2 following details the socio-demographic profile of the identified trade areas. The profiles have been compared with the respective benchmarks for non-metro NSW and the Australian average.

The data is sourced from the 2021 Census of Population and Housing. Key points to note about the socio-demographic profile are as follows:

- The average household size within the main trade area is calculated at 2.46, slightly below the regional and national averages of 2.64 and 2.74 persons per household respectively. However, the household size varies significantly across the trade areas with 2.98 for the Secondary North, 2.42 for the Secondary South, and 2.60 for the Primary trade area.

- The main trade area attributes a higher proportion of 55+ residents with 36.1% of the population within this age cohort compared to 35.6% across Non-metro NSW and 29.1% across Australia. This is driven by the Secondary South trade area with 42.2% of residents aged 55+, while the proportion for the Secondary North sector is estimated at only 25.1%.

- The main trade area comprises a higher proportion of couple families with no children at 33.8%. This compares to 29.7% across Non-metro NSW and 26.9% across Australia. The main trade area also attributes a high proportion of couple families with children at 29.3%, driven by the Secondary North sector at 38.7% and lower in the Secondary South area at 23.6%.

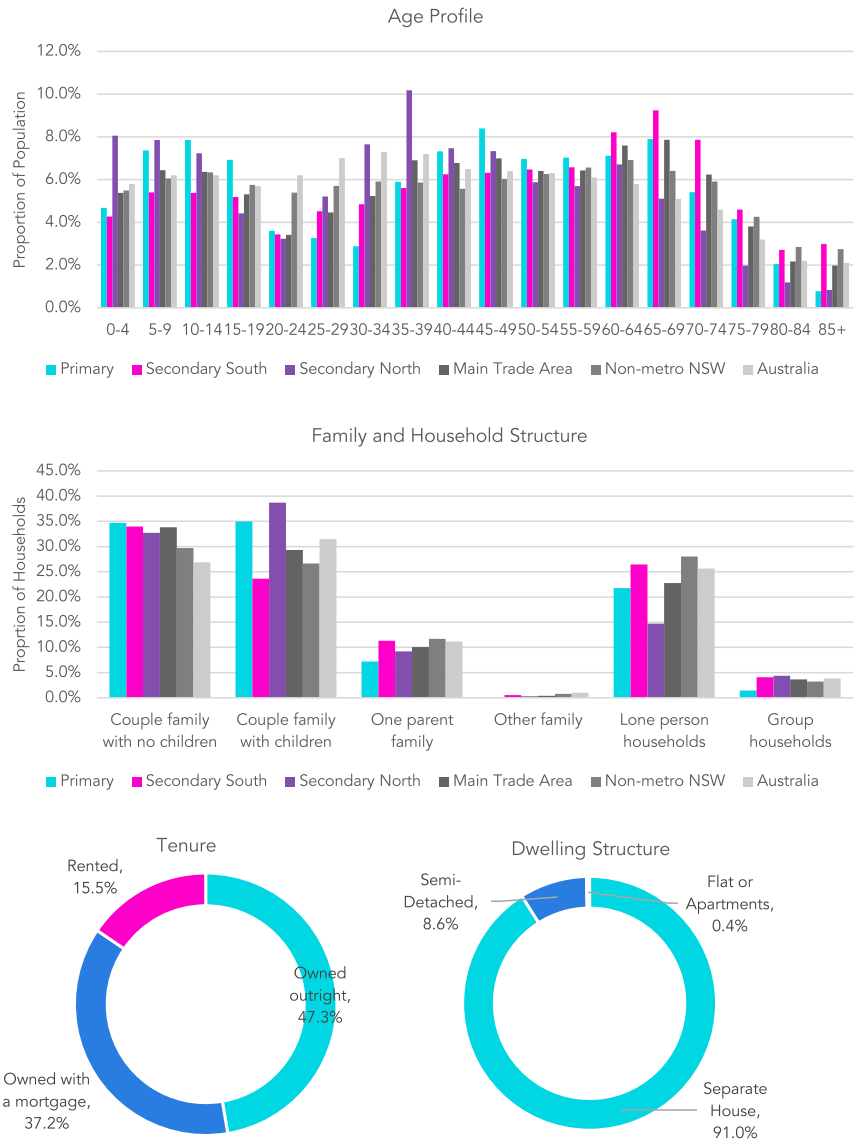
- The average total personal income of the main trade area is lower at than the regional and national benchmarks at $58,342, compared to $62,064 for Non-metro NSW and $70,522 for Australia.

- The residential product mix in the main trade area predominantly comprises separate houses (73.4%) with few townhouses (22.2%) and apartments (4.4%). Notably, across the

main trade area, 75.8% of homes are owned outright or with a mortgage, driven especially by the Primary sector (84.5%).

To summarise, the catchment is reflective of a developing community composed of a mix of young families with children predominately in the Lennox and Skennars Head area to the north and older couples with no children and lone person households in the Ballina East / secondary sector in the south.

Figure 4.1 Aureus Centre Trade Area – Socio-demographic Profile



Source: Census of Population and Housing 2021, Think Economics 2024

Table 4.2 Aureus Centre Trade Area – Socio-demographic Profile

	Primary	Secondary South	Secondary North	Main Trade Area	Non-metro NSW	Australia
Population (ERP):						
2016	1,852	5,587	1,896	9,335	2,707,935	24,190,907
2021	2,045	5,653	2,872	10,570	2,834,051	25,688,079
2022	2,068	5,653	2,918	10,639	2,862,910	26,014,540
2023	2,144	5,662	2,989	10,795	2,891,789	26,649,020
Average Annual Growth 2016 - 21 (%)	2.00%	0.24%	8.66%	2.52%	0.91%	1.21%
Average Annual Growth 2021 - 23 (%)	2.39%	0.08%	2.02%	1.06%	1.01%	1.85%
Population Density (persons/sqkm)	247.3	884.8	674.1	558.8	3.6	3.3
Household Size:	2.60	2.42	2.98	2.46	2.64	2.74
Age Profile:						
Median Age	45	49	39	45	43	38
0-4	4.7%	4.3%	8.1%	5.4%	5.5%	5.8%
5-9	7.4%	5.4%	7.9%	6.4%	6.1%	6.2%
10-14	7.9%	5.4%	7.2%	6.4%	6.3%	6.2%
15-19	6.9%	5.2%	4.4%	5.3%	5.8%	5.7%
20-24	3.6%	3.4%	3.2%	3.4%	5.4%	6.2%
25-29	3.3%	4.5%	5.2%	4.5%	5.7%	7.0%
30-34	2.9%	4.9%	7.6%	5.2%	5.9%	7.3%
35-39	5.9%	5.6%	10.2%	6.9%	5.9%	7.2%
40-44	7.3%	6.2%	7.5%	6.8%	5.6%	6.5%
45-49	8.4%	6.3%	7.3%	7.0%	6.0%	6.4%
50-54	7.0%	6.5%	5.9%	6.4%	6.3%	6.3%
55-59	7.0%	6.6%	5.7%	6.4%	6.6%	6.1%
60-64	7.1%	8.2%	6.7%	7.6%	6.9%	5.8%
65+	20.3%	27.4%	12.7%	22.0%	22.2%	17.2%
Family and Household Composition:						
Couple family with no children	34.7%	34.0%	32.7%	33.8%	29.7%	26.9%
Couple family with children	34.9%	23.6%	38.7%	29.3%	26.6%	31.5%
One parent family	7.2%	11.3%	9.2%	10.0%	11.7%	11.2%
Other family	0.0%	0.6%	0.3%	0.4%	0.8%	1.0%
Lone person households	21.7%	26.4%	14.7%	22.8%	28.0%	25.6%
Group households	1.4%	4.1%	4.3%	3.7%	3.2%	3.8%
Income:						
Average total personal income	$72,302	$53,613	$72,302	$58,342	$62,064	$70,522
Tenure:						
Owned outright	47.3%	45.9%	34.4%	43.5%	39.6%	32.1%
Owned with a mortgage	37.2%	25.2%	46.1%	32.4%	32.5%	36.2%
Rented	15.5%	28.9%	19.5%	24.2%	27.9%	31.7%
Dwelling Structure:						
Separate House	91.0%	61.0%	89.4%	73.4%	83.6%	73.0%
Semi-Detached	8.6%	32.1%	9.0%	22.2%	10.0%	12.7%
Flat or Apartments	0.4%	6.9%	1.6%	4.4%	6.4%	14.3%

Source: ABS Census of Population and Housing 2021, Think Economics 2024

4.2.4 Population Projections

In order to inform estimates of projected population growth, analysis of a range of data and information sources has been undertaken, including:

- Dwelling Approvals Data
- Estimated Residential Population (ERP) Data (2016-2023).
- Forecast ID Population Projections
- ABS Estimated Residential Population (ERP) 2023, NSW Dept. of Planning and Environment (2022)

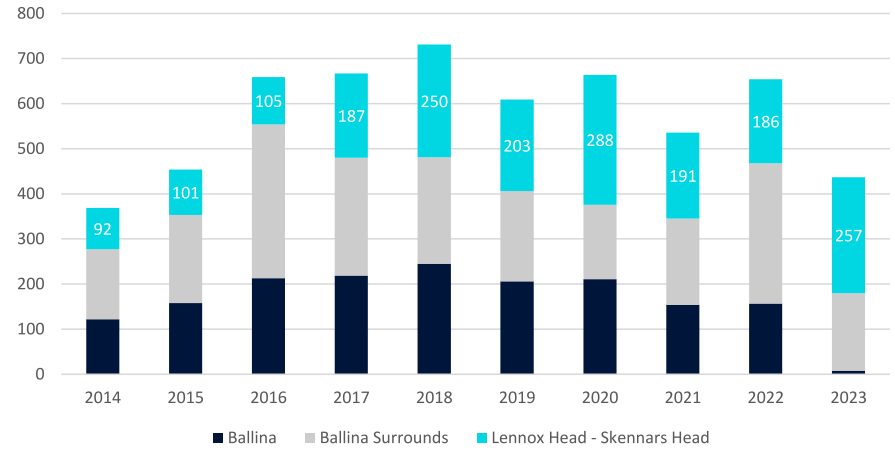
The rate of growth has continued to decline across the Ballina Region post-pandemic, with the latest ERP for 2023 showing an increase of +430 persons from 2022, below the long-term (10 year) average of +578 persons (refer Figure 4.2).

The rate of growth remains strongest within the Lennox Head-Skennars Head[8] area, which accounted for almost 60% of Ballina Shire population growth over the most recent period. Over the last 5 years, the Lennox Head-Skennars Head population has on average increased by 230 persons per annum.

Analysis of development approvals (refer Figure 4.3) across the Shire largely reflect the trend in ERP. Over the 12mth period to July 2024, the Lennox Head-Skennars Head area accounted for 138 dwelling approvals or 46% of total Ballina Shire activity. From July 2020, the average total dwelling approvals across these Lennox Head- Skennars Head SA2 has been 151 per year.

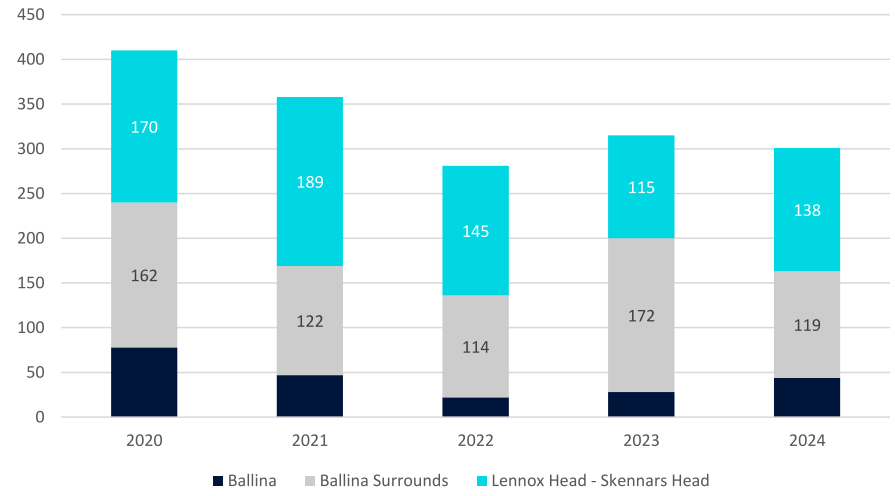
[8] *Australian Bureau of Statistics - Statistical Area 2. It is important to note that from a concordance perspective, the defined catchment does not align with the ABS defined SA2 boundaries, with the Primary and Secondary North sectors forming part of the Lennox Head-Skennars Head SA2 and the Secondary South sector a component of the Ballina SA2.*

Figure 4.2 Ballina Shire - Estimated Resident Population (ERP) – Annual Change



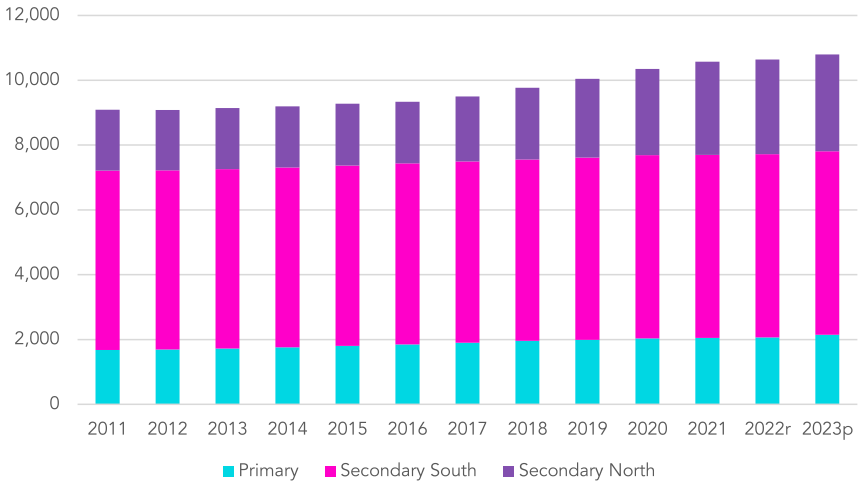
Source: Australian Bureau of Statistics, ERP by SA2 and above (ASGS Edition 3), 2001 onwards. Think Economics 2024

Figure 4.3 Ballina Shire - Total Dwelling Approvals (2020 – 2024)



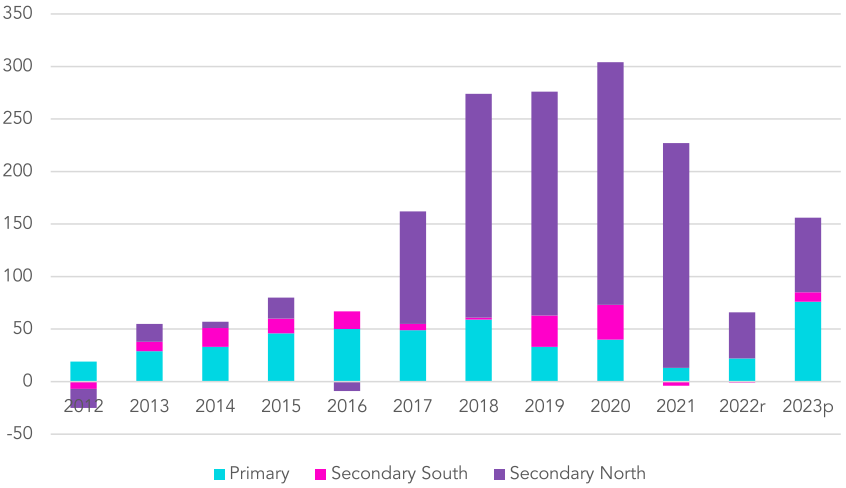
Source: Australian Bureau of Statistics, Building Approvals (July respective years), Australia. Think Economics 2024

Figure 4.4 Main Trade Area - Estimated Resident Population (ERP) (2016 – 2023)



Source: ABS Estimated Residential Population (ERP) 2023, Think Economics 2024

Figure 4.5 Main Trade Area - Annual Change in Population (2012-2023)



Source: ABS Estimated Residential Population (ERP) 2023, Think Economics 2024

At a catchment sector level, the secondary south represents the largest established population with a current estimated resident population of 5,662 persons, followed by the Secondary north at 2,989 persons and the primary with a population of 2,144.

Growth over the last few years between 2016-2023 has been driven largely by the secondary north trade area, mostly driven by the Epiq community development. During that period, the population increased by 156 people per year on average through the secondary north sector or an average annual growth rate of 6.7%. This rate of growth is expected to slow down in the coming years as the Epiq masterplan gets closer to completion.

Over the most recent 12month period, the primary trade area saw the largest growth in ERP, largely driven by development of the Aureus Estate. We have been advised by the developer that they have completed approximately 140 dwellings, with another 100 dwellings and 50 townhouses/apartments under construction. An additional 110 dwellings are still to be developed and assumed to be completed by 2031.

Over the medium to long term, ongoing population growth will be supported by remaining development capacity throughout the main trade area, in particular across the primary area.

In this instance analysis of population estimates and projections have been based on the latest ABS Estimated Residential Population (ERP) from April 2023 together with data from the 2022 Population, Housing and Implied Dwelling Projections from the New South Wales Department of Planning and Environment and small area projections completed by Forecastid for Ballina Shire Council.

Based on these considerations, the population of the primary trade area is projected to grow from 2,144 in 2023 to 3,019 in 2031 and to 3,419 people by 2036.

Going forward, the main trade area population is estimated to reach 12,570 by 2036, reflecting an average annual growth of 1.2%, or an average of 136 additional residents per year. Table 4.2 below presents the estimated population projections for the trade areas over the period to 2036.

Table 4.3 Population Projections

	Estimated Residential Population					Forecast Population		
	2006	2011	2016	2021	2023	2026	2031	2036
	Population (Persons)							
Primary	1,449	1,675	1,852	2,046	2,144	2,519	3,019	3,419
Secondary	7,391	7,464	7,483	8,528	8,651	8,801	8,976	9,151
Secondary South	*5,632*	*5,536*	*5,587*	*5,654*	*5,662*	*5,692*	*5,692*	*5,692*
Secondary North	*1,759*	*1,928*	*1,896*	*2,874*	*2,989*	*3,109*	*3,284*	*3,459*
Main Trade Area	8,840	9,139	9,335	10,574	10,795	11,320	11,995	12,570
	2006-11	**2011-16**	**2016-21**	**2021-23**	**2023-26**	**2026-31**	**2031-36**	
	Average Annual Growth (Persons)							
Primary	45	35	39	49	125	100	80	
Secondary	15	4	209	62	50	35	35	
Secondary South	-19	10	13	4	10	0	0	
Secondary North	34	-6	196	58	40	35	35	
Main Trade Area	60	39	248	111	175	135	115	
	2006-11	**2011-16**	**2016-21**	**2021-23**	**2023-26**	**2026-31**	**2031-36**	
	Average Annual Growth (%)							
Primary	2.9%	2.0%	2.0%	2.4%	4.2%	3.7%	2.5%	
Secondary	0.2%	0.1%	2.6%	0.7%	0.6%	0.4%	0.4%	
Secondary South	-0.3%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	
Secondary North	1.9%	-0.3%	8.7%	2.0%	1.6%	1.1%	1.0%	
Main Trade Area	0.7%	0.4%	2.5%	1.0%	1.4%	1.2%	0.9%	

Source: ABS Estimated Residential Population (ERP) 2023, NSW Dept. of Planning and Environment 2022, Forecastid Ballina Shire Council, Aureus Development

5.0 Market Demand Assessment

This section assesses existing and forecast retail expenditure and retail floorspace demand within the main trade area as well as specific analysis of demand and market gap in order to determine underlying need conditions for the proposed retail development.

5.1 Retail Expenditure Analysis

The retail demand profile for the trade area will be dependent on the retail expenditure characteristics of residents within the area. Think Economics estimates retail expenditure capacity generated by trade area residents based on the latest available 2021 Consumer Spend Potential (CSP) data sourced from Precisely.

Unlike other products on the market, CSP was designed using a top-down method which overcomes several biases in base data for household expenditure. The size of the market for each CSP category is calculated from a variety of sources, the primary one being Household Final Consumption Expenditure (HFCE) tables from the National Accounts (Australia's gross domestic product figures). Because this dataset is an integral part of GDP statistics, it is the final arbiter of the size of the household market in Australia. In addition, Precisely uses other data sources to augment HFCE data. These include other National Accounts tables from the Australian Bureau of Statistics, as well as Retail Trade, Apparent Consumption of Alcohol, International Trade in Services, and Socio Economic Indexes for Areas (SEIFA). They also incorporate data from other Commonwealth sources – the Australian Prudential Regulation Authority, the Productivity Commission, and Tourism Research Australia – as well as other publicly available sources.

The CSP data is considered to be an accurate and detailed measure of retail expenditure capacity and behaviour and is widely relied on in the retail industry. Total retail expenditure is detailed in a number of categories, as follows:

- Food and groceries – goods typically sold in supermarkets and specialty fresh food stores.

- Off Premise liquor – packaged beer, wine and spirits such as those purchased at bottle shops and liquor outlets. The combination of take-home food and groceries and packaged liquor is referred to as FLG expenditure.

- Meals out and Fast Food – cafes, takeaway outlets and restaurants, including liquor consumed on such premises.

- Apparel – clothing, footwear, fashion and accessories.

- Household goods – giftware, electrical, computers, furniture and homewares.

- Leisure – sporting goods, music, DVDs, games, books, magazines and newspapers.

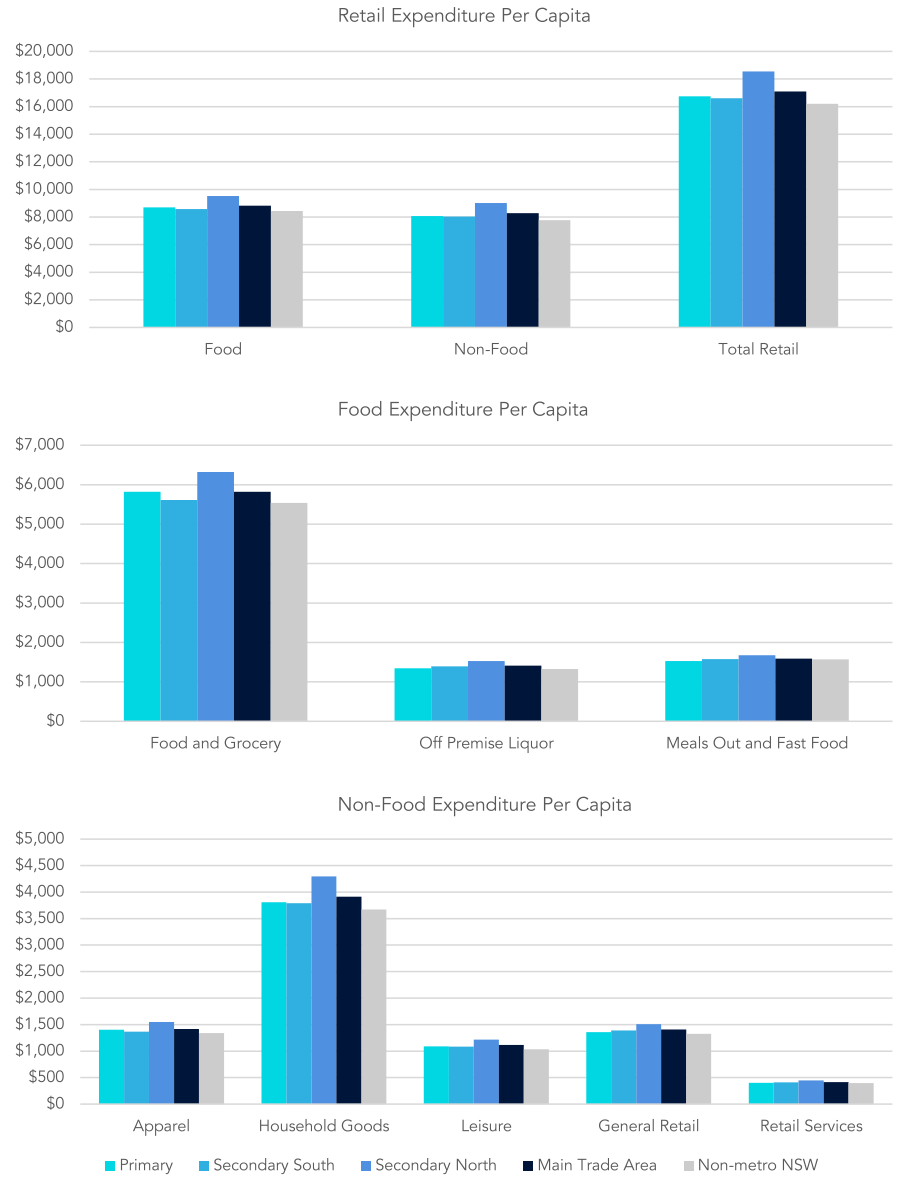
- General retail space –pharmaceutical goods, cosmetics, toys, florists and mobile phones.

- Retail Services – retail services such as key cutting, shoe repairs, hair and beauty.

Figure 5.1 presents a comparison of the retail spending behaviour of the trade area residents with Non-metro NSW averages. The total level of annual retail expenditure per person for the main trade area is estimated at $17,091, which is above the regional average of $16,198. Around 51.6% of this expenditure, or $8,821 per annum, is food expenditure. Per capita expenditure levels fluctuate across retail categories and are above the regional benchmark for most retail categories such as leisure (+7.9%), household goods (+6.6%), and off-premises liquor (6.6%).

Expenditure levels also vary among trade areas influenced by different socio demographic characteristics as well as the retail supply provision within each region. Annual retail expenditure per person is higher across the secondary north sector at $18,546 and 14.5% above the Non-metro NSW average.

Figure 5.1 Aureus Village Main Trade Area - Retail Expenditure Per Capita



Source: Precisely Consumer Spend Potential 2021, Think Economics 2024

5.2 Retail Market Size

Table 5.1 presents estimates of total retail expenditure generated by the resident population within the primary, secondaries and combined main trade area over the forecast period to 2036. All spending forecasts are inclusive of GST and presented in constant 2021 dollars. Forecasts include estimated real growth in retail expenditure, which is assumed to average approximately 0.7% per annum.

Total available retail expenditure within the trade area is forecast to grow moderately, from $181.5 million in 2021 to $238.7 million in 2036, reflecting an average annual growth rate of around 1.84% per annum over the forecast period. The primary sector expenditure is expected to grow from $34.3 million in 2021, to around $63.3 million in 2036, reflecting an average annual rate of 4.17%. On average the retail expenditure pool in the main trade area is forecast to increase by $3.8 million per annum.

Table 5.1 Aureus Village Main Trade Area – Retail Expenditure by Sector

Aureus Village - Retail Expenditure ($M), 2021 - 2036				
Year	Primary	Secondary South	Secondary North	Main Trade Area
2021	34.3	93.9	53.3	181.5
2022	34.9	94.5	54.5	183.9
2023	36.4	95.3	56.2	187.9
2024	38.8	96.1	57.3	192.2
2025	41.2	96.9	58.4	196.5
2026	43.6	97.7	59.6	201.0
2027	45.7	98.4	60.7	204.7
2028	47.7	99.1	61.8	208.5
2029	49.8	99.7	62.9	212.4
2030	51.9	100.4	64.0	216.3
2031	54.0	101.1	65.1	220.2
2032	55.8	101.7	66.2	223.8
2033	57.7	102.4	67.4	227.4
2034	59.5	103.1	68.5	231.1
2035	61.4	103.8	69.7	234.9
2036	63.3	104.5	70.9	238.7
Average annual growth ($M)				
2021 - 2036	1.9	0.7	1.2	3.8
Average annual growth (%)				
2021 - 2036	4.17%	0.71%	1.92%	1.84%

**Constant 2021 dollars & including GST*

Source: Precisely 2021 Consumer Spend Potential, Think Economics (2024)

Table 5.2 details the projected retail spending of the Aureus Village main trade area population by retail category. Food and groceries are the main expenditure category for supermarkets. Spending on food and groceries currently represents 34% of the total retail expenditure in the main trade area and is forecast to grow from $61.8 million in 2021 to $83.4 million by 2036, reflecting an average annual growth rate of 2.0% or an average annual increase of $1.4 million.

Meals out and fast food is projected to see the strongest rate of growth at 2.3% per annum over the projection period.

Table 5.2 Aureus Village Main Trade Area – Retail Expenditure by Category

Aureus Village - Main Trade Area Retail Expenditure ($M), 2021 - 2036

Year	Food and Grocery	Off Premise Liquor	Meals Out and Fast Food	Apparel	Household Goods	Leisure	General Retail	Retail Services	Total Retail
2021	61.8	15.0	16.9	15.0	41.6	11.9	15.0	4.4	181.5
2022	62.7	15.2	17.1	15.2	42.1	12.0	15.1	4.5	183.9
2023	64.2	15.6	17.6	15.5	42.9	12.2	15.4	4.6	187.9
2024	65.7	15.9	18.1	15.8	43.8	12.5	15.8	4.7	192.2
2025	67.3	16.3	18.6	16.1	44.7	12.7	16.1	4.8	196.5
2026	68.9	16.7	19.0	16.4	45.7	13.0	16.4	4.9	201.0
2027	70.3	17.0	19.5	16.6	46.4	13.2	16.7	5.0	204.7
2028	71.7	17.4	19.9	16.9	47.2	13.4	17.0	5.1	208.5
2029	73.2	17.7	20.4	17.1	48.0	13.6	17.2	5.2	212.4
2030	74.6	18.0	20.8	17.4	48.8	13.8	17.5	5.3	216.3
2031	76.1	18.4	21.3	17.6	49.6	14.0	17.8	5.4	220.2
2032	77.5	18.7	21.7	17.8	50.3	14.2	18.1	5.5	223.8
2033	78.8	19.0	22.2	18.1	51.1	14.4	18.3	5.5	227.4
2034	80.2	19.4	22.6	18.3	51.8	14.6	18.6	5.6	231.1
2035	81.6	19.7	23.1	18.5	52.6	14.8	18.9	5.7	234.9
2036	83.1	20.0	23.6	18.7	53.3	15.0	19.1	5.8	238.7
Average annual growth ($M)									
2021 - 2036	1.4	0.3	0.4	0.2	0.8	0.2	0.3	0.1	3.8
Average annual growth (%)									
2021 - 2036	2.0%	2.0%	2.3%	1.5%	1.7%	1.6%	1.7%	1.9%	1.8%

**Constant 2021 dollars & including GST*

Source: Precisely 2021 Consumer Spend Potential, Think Economics (2024)

5.3 Retail Demand Analysis

The amount of floorspace which can be supported at the proposed Aureus Village centre, and which will be appropriate to meet the needs of the trade area population, will be driven primarily by the level of retail sales which the centre can reasonably expect to retain from the pool of available expenditure generated by the trade area population.

Table 5.3 presents estimates of total retail expenditure by category which the Aureus Village could reasonably expect to retain from the trade area population over the forecast period to 2036. These indicative estimates take into account the competitive framework in which the centre will operate, having regard to the surrounding alternative offers discussed in Section 4 earlier.

The respective retention rates which are considered achievable by the proposed centre at the subject site are substantially impacted in the secondary north area due to the observed role and function of the Epiq Marketplace centre, and in the secondary south sector based on the existing Ballina East local centre and overlapping trade area with the Ballina Fair and Ballina Central shopping centres.

The demand assessment takes all of these factors into account in providing indicative estimates of the sales potential for the subject centre by retail category for the defined trade area, based on estimated market shares of available retail expenditure, by category and by trade area sectors, which the centre can attract. All spending forecasts include estimated real growth in retail expenditure, which is assumed to average 0.7% per annum.

Across the total retail spectrum, the proportion of available retail expenditure which the centre is forecast to retain from the defined trade area is in the order of around 4.6%. This proportion increases to around 12.3% across the primary sector, which is the key sector for the Aureus Village centre.

This means that approximately 95.4% of all expenditure generated by residents in the main trade area would be directed to other retail facilities including the Epiq Marketplace, the East Ballina neighbourhood centre, and the Ballina Fair and Ballina Central shopping centres.

Total retained retail expenditure within the primary trade area is forecast to grow from $7.7 million in 2021 to $11.8 million in 2036, reflecting an average annual growth rate of around 2.8% per annum over the forecast period.

This growth in expenditure will be dispersed across all retail categories, though the highest rates of growth are anticipated within the Meals Out and Fast Food category, followed by the Retail Services and Leisure categories.

Table 5.3 Aureus Village - Retained Retail Expenditure ($M), 2021 - 2036

Year	Food and Grocery	Off-Premise Liquor	Meals Out and Fast Food	Apparel	Household Goods	Leisure	General Retail	Retail Services	Total Retail
2021	4.3	1.0	1.3	0.1	0.4	0.2	0.3	0.1	7.7
2022	4.3	1.0	1.3	0.1	0.4	0.2	0.3	0.1	7.8
2023	4.5	1.1	1.4	0.1	0.4	0.2	0.3	0.1	8.1
2024	4.6	1.1	1.4	0.1	0.4	0.2	0.4	0.1	8.4
2025	4.8	1.1	1.5	0.1	0.4	0.2	0.4	0.1	8.7
2026	5.0	1.2	1.6	0.2	0.4	0.2	0.4	0.1	9.0
2027	5.1	1.2	1.6	0.2	0.4	0.2	0.4	0.1	9.3
2028	5.3	1.3	1.7	0.2	0.5	0.2	0.4	0.1	9.5
2029	5.4	1.3	1.7	0.2	0.5	0.2	0.4	0.1	9.8
2030	5.6	1.3	1.8	0.2	0.5	0.2	0.4	0.1	10.1
2031	5.7	1.4	1.8	0.2	0.5	0.2	0.5	0.1	10.4
2032	5.8	1.4	1.9	0.2	0.5	0.2	0.5	0.1	10.6
2033	6.0	1.4	1.9	0.2	0.5	0.2	0.5	0.1	10.9
2034	6.1	1.5	2.0	0.2	0.5	0.2	0.5	0.1	11.2
2035	6.3	1.5	2.0	0.2	0.5	0.2	0.5	0.2	11.4
2036	6.4	1.5	2.1	0.2	0.5	0.3	0.5	0.2	11.7
Average annual growth ($M)									
2021 - 2036	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3
Average annual growth (%)									
2021 - 2036	2.7%	2.7%	3.2%	2.6%	2.8%	3.1%	3.0%	3.2%	2.8%
% Retail Expenditure Retained									
Primary	15.0%	20.0%	20.0%	5.0%	5.0%	7.5%	15.0%	15.0%	12.3%
Secondary South	5.0%	5.0%	5.0%	0.5%	0.5%	0.5%	1.0%	1.0%	2.9%
Secondary North	5.0%	5.0%	5.0%	0.5%	0.5%	0.5%	1.0%	1.0%	2.9%
Main Trade Area	6.9%	7.7%	7.8%	1.4%	1.3%	1.8%	3.6%	3.6%	4.6%

Source: Precisely Consumer Spend Potential 2021, Think Economics 2024

5.4 Retail Gap

Having addressed the market capture which the proposed Aureus Village centre is considered able to achieve, Table 5.4 provides indicative estimates of the amounts of supportable retail floorspace for the subject centre on a year-on-year basis, taking into account the estimated levels of expenditure which the centre is considered likely to retain.

The following retail demand forecasts utilise average retail turnover densities (RTDs) by retail category to estimate floorspace demand. The RTDs provide an estimation of the sustainable turnover per sqm for each category, with these RTDs applied to the retail expenditure forecasts presented in Table 5.3 to determine the existing and forecast floorspace demand by category.

The RTD assumed for 2024 is approximately $8,221/sqm for total retail. The estimation allows for real growth in this RTD, averaging around 0.7% per annum from 2021 onwards, as well as additional demand from beyond trade area which varies across retail categories with an average of 12%.

Table 5.4 details the estimated quantum of retail floorspace demand expected to be retained by the proposed centre at the subject site. The analysis indicates that, as of 2024, the estimated amount of supportable retail floorspace for the centre would be in the order of around 1,165sqm, with the majority of that floorspace being allocated across the food categories (904sqm or 78%). Total retail floorspace demand is expected to grow to approximately 1,395sqm by 2031 and 1,522 by 2036.

Total growth in food and liquor sustainable floorspace is estimated to increase from 904sqm in 2024 to 1,167sqm in 2036.

Table 5.4 Skennars Head - Retained Floorspace (sqm), 2021 - 2036

Year	Food and Grocery	Off-Premise Liquor	Meals Out and Fast Food	Apparel	Household Goods	Leisure	General Retail	Retail Services	Total Retail
2021	515	106	228	30	97	30	62	22	1,091
2022	519	107	231	31	98	30	63	22	1,100
2023	531	110	237	31	100	31	65	23	1,127
2024	546	113	245	33	104	32	68	24	1,165
2025	562	117	254	34	109	34	70	25	1,204
2026	577	120	262	35	113	35	73	26	1,242
2027	590	123	269	36	116	36	75	27	1,272
2028	602	126	276	37	119	37	78	28	1,303
2029	615	129	283	38	122	38	80	29	1,334
2030	627	132	291	39	125	39	82	30	1,364
2031	640	134	298	40	128	40	84	30	1,395
2032	650	137	304	40	131	41	86	31	1,420
2033	661	139	310	41	133	42	88	32	1,446
2034	671	142	316	42	136	43	90	33	1,471
2035	682	144	323	42	138	43	91	33	1,497
2036	692	146	329	43	141	44	93	34	1,522

Source: Precisely Consumer Spend Potential 2021, Think Economics 2024

6.0 Need Implications

Any retail development at the Skennars Head site will cater primarily to a limited trade area, encompassing Skennars Head and a small southern portion of Lennox Head accessible via Skennars Head Road. This area is expected to generate the majority of demand for retail uses at the site.

With a primary trade area of only 2,150 persons growing to 3,420 by 2036 and limited opportunities to attract market share from the north, a supermarket is unlikely to be sustainable at the subject site, both now and into the future. Full-line supermarkets typically require a minimum primary trade area of at least 8,000 people to be viable. It is also important to note that without a large supermarket anchor at the subject site the amount of supportable specialty retail also becomes limited by overall reduced foot traffic and customer flows to the centre.

Based on the analysis of catchment demand, existing supply and information on similar centres, we consider there is an opportunity for the establishment of a small retail centre within a total retail floorspace ranging from 1,000sqm to 1,500sqm.

Small neighbourhood centres of this size tend to be anchored by a food related tenant, supported by a small selection of specialties, again predominantly food, liquor and takeaway related. Non-food tenancies such as apparel, household goods and leisure are generally limited. Depending on the surrounding provision, the centre may include a small amount of non-retail commercial floorspace such as medical, allied health, or local professional office (i.e. real estate)

In this instance, we consider that most of the larger non-retail commercial opportunities have been realized at Epiq Marketplace which includes a 24/7 gym, a medical centre, and adjacent childcare centre.

Based on site coverage benchmarks, a centre of around 1,000 – 1,500sqm would typically necessitate a site area of between 3,000sqm – 5,000sqm. On this basis, we would consider the current designated E1 zoned area of 13,500sqm excessive. An area of this size area is more suitable to large neighbourhood centres supported and anchored by large full-line supermarkets (GFA 3,000sqm+) which is considered un-sustainable at the subject site.

6.1 Social, community and employment impacts

The development of the proposed Aureus Village centre will result in additional on-going employment on site, as well as further jobs throughout the supply chain, including those in industries servicing the retail tenants at the site, such as transport workers, wholesalers and the like.

Furthermore, the construction phase of the project will support temporary construction related employment, and additional temporary jobs through the broader economic supply chain (i.e. multiplier impacts).

In estimating the various employment benefits, we have relied upon various data sources including information from retail operators, the ABS, state and local government agencies, as well as past experience in preparing assessments of this nature.

The following table illustrates the estimated net increase in direct on-site retail employment that could potentially be created if the proposed development at the subject site were to proceed. An estimated 35 jobs could be created on site once the development is fully operational. Making an allowance of around 5% for employment being redirected from other centres, the proposed development could result in a net addition of 33 jobs.

Table 6.1 Aureus Village – Estimated employment impacts

Scenario	Estimated sq.m per worker	GLA (sq.m)	Employment (persons)
Food & Beverage	30	848	28
Specialty retail	50	336	7
Total Centre			35
Net employment increase*			**33**

Source: Think Economics 2024

The proposed development at the subject site would generate a range of other economic benefits, in particular the following:

- Increased choice and amenity for the population of the main trade area as well as likely increased competition for the benefit of consumers.
- More convenient access to new retail shopping facilities, to serve both the current residents of the main trade area and future residents.
- Reduced travels distances, leading to savings on time and fuel for main trade area residents, due to a much better provision of shopping facilities at the local level.
- Providing additional convenience retail to service a growing residential growth area, without reducing the level of service provision anywhere else.
- Opportunities for small businesses to open premises within the local centre.
- Providing jobs near people's homes and consequent economic multiplier impacts, which will boost the local economy.

6.2 Conclusion

This report provides evidence indicating that there is a market gap for the proposed Aureus Village at the subject site which would result in a net community benefit to residents within the main trade area and surrounds.

Overall, we consider the proposed development concept will provide a positive net community benefit given the following:

- There is currently no retail floorspace within Skennars Head and analysis indicates a sustainable market gap of between 1,000 – 1,500sqm.

- Overall, the proposed development concept and associated scale and mix will result in negligible impacts on surrounding centres, with any potential impact offset by ongoing population and retail expenditure growth throughout the local area.

- Our analysis demonstrates that the proposed development concept is of an appropriate scale and composition based on both current and projected demand conditions within the main trade area and taking into consideration the context of the existing and planned centres hierarchy in the surrounding area.

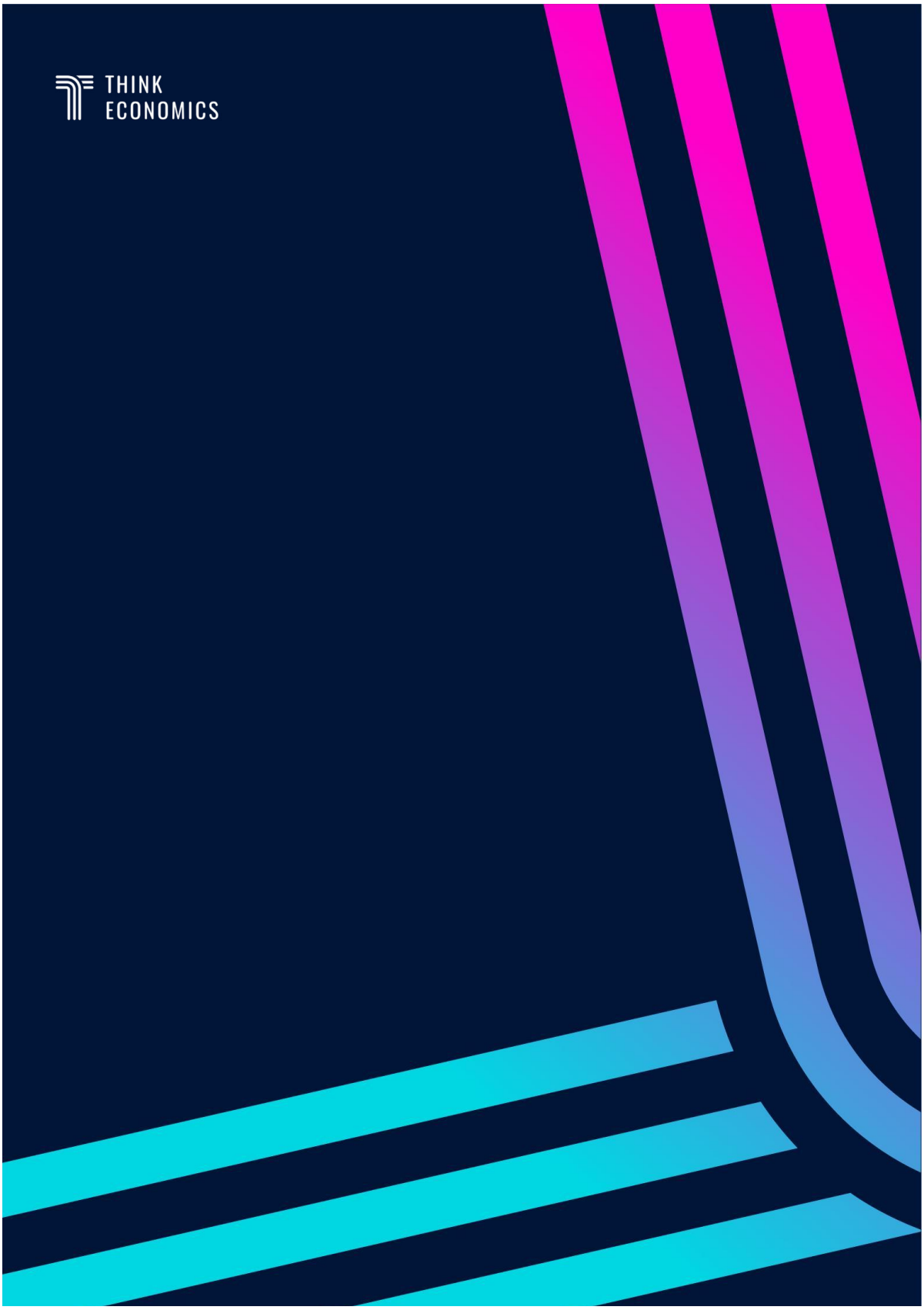
- Based on site coverage benchmarks, a centre of around 1,000 – 1,500sqm would typically necessitate a site area of between 3,000sqm – 5,000sqm. We consider the current designated E1 zoned area of 13,500sqm excessive. The proposal supports opportunities to deliver more appropriate land uses on the residual land parcel that will multiply net benefits for the community.

- The proposed centre will provide a supporting retail function and will not impact the role or function of higher order centres (such as the Ballina Town Centre) within the surrounding area.

- The proposal will create an employment generating use which will provide 33 net additional on-going jobs.

- The proposed development is likely to result in additional consumer choice, convenience and amenity for local shoppers, and is also likely to reduce vehicle kilometres travelled by residents and workers. It will thus result in a net community benefit.

On the basis of the findings presented above, there is considered strong economic, planning and community need conditions supporting the current proposed Aureus Village centre concept and a reduction in the designated E1 zoned area.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Appendix B Site Remediation Validation Report

ENV Solutions
Environmental Engineering Solutions

Engineering the Future

REMEDIATION OF CONTAMINATED SOIL (AEC 1) - VALIDATION REPORT

Proposed Residential Subdivision

505 North Creek Road, Skennars Head, NSW 2478

Part of Lot 265
Deposited Plan (D.P.) 1212348
Part of Lot 4 D.P. 1184436

For:
Intrapac Skennars Head Pty Ltd

June 2019

Environmental Engineering Solutions
ENV Solutions Pty Ltd ABN 58 600 788 814
PO Box 248
Ballina NSW 2478
0421519354

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Executive Summary

ENV Solutions Pty Ltd (ENV) has prepared this validation report at the request of Intrapac Skennars Head Pty Ltd for an area of land at 505 North Creek Road, Skennars Head, NSW (the 'site'). The assessment was conducted as part of the proposed residential subdivision at the site (Figure 1, **Attachment 1**).

It is understood that three previous environmental investigations had been conducted at the site, undertaken by Douglas Partners (Douglas Partners 2017a, 2017b and 2019). This current investigation specifically addresses the requirements of the Remedial Action Plan (Douglas Partners 2019) which address the contamination at a discrete area identified as Area of Environmental Concern 1 (AEC 1). Contaminants of concern identified by Douglas Partners comprise dumped material (i.e. refuse) and soil supporting elevated concentrations of arsenic, cadmium, lead and zinc. Additionally, asbestos (non-friable) was detected during the initial stages of the remediation process.

ENV undertook the remediation work in accordance with that prescribed in Table 9 of the RAP. The stockpiling of excavated material was undertaken to allow the validation of the site to be expedited, this being a necessary step due to the effect the remediation work was having on the greater project time line for Stage 1 of the subdivision. In this regard, ENV sought compliance with Ballina Shire Council via liaison with relevant staff to ensure compliance. Remediation activities comprised the following:

- Inception meeting;
- Additional investigations via excavated pits;
- A detailed site investigation to establish the extent of arsenic, cadmium, lead and zinc contamination with the use of an X-ray Fluorescence (XRF) meter;
- Establishment of a temporary stockpile area including the use of geofabric separation layer;
- Management of the soil removal program including soil excavations and off-site disposal of contaminated soil to a licenced landfill;
- Soil validation sampling of the resulting excavations;
- Characterisation of the ingress pit water;
- Dispersion of the pit water as dust suppression;
- Disposal of the ingress pit water via tanker to licenced landfill; and
- Asbestos clearance of resulting excavations.

The objective of the environmental works which are the subject of this report was to assess the quality of soils in the vicinity of AEC 1 with reference to future use of the site as low-density residential.

Soil validation samples were collected from within and directly adjacent to the area supporting refuse to assess the quality of the *in situ* soils remaining in this area after the works. A final 'emu-pick' for pieces of asbestos sheet was also undertaken at this time.

Soil samples were laboratory analysed for the identified contaminants of potential concern (COPC). Concentrations of arsenic, cadmium, lead and zinc in all soil samples representing *in situ* soils remaining on site, following the soil removal works, met the adopted assessment criteria for a residential land use.

A single opportunistic water sample was collected from the pit water and analysed for a comprehensive suite of contaminants (metals, organochlorine chemicals, hydrocarbons). Concentrations met the adopted assessment criteria for 'Irrigation' Short Term Trigger Values (ANZECC 2000), and the pit water was subsequently used for dust suppression purposes on the broader site.

Based on field observations made during the site investigations and the results of the soil validation program conducted by ENV, soils remaining *in situ* in the areas of the investigation are considered suitable for low-density residential use.

1 Introduction and Scope of Work

ENV Solutions Pty Ltd (ENV) was engaged by Intrapac Skennars Head Pty Ltd to undertake a validation assessment for an area of land at 505 North Creek Road, Skennars Head, NSW (the 'site') (Figure 1, **Attachment 1**). The assessment was conducted as part of the proposed residential subdivision at site.

This current investigation specifically addresses the requirements of the Remedial Action Plan (Douglas Partners 2019) which pertains to contamination at a discrete area identified as Area of Environmental Concern 1 (AEC 1). The source of the contamination at AEC 1 was identified by Douglas Partners (2019) as the result of the decomposition of refuse material within the pit. The Contaminants of Potential Concern (CoPC) identified by Douglas Partners comprise soil supporting elevated concentrations of arsenic, cadmium, lead and zinc. Additionally, asbestos (non-friable) was detected during the initial stages of the remediation process (refer s. 4.3).

The scope of work conducted by ENV comprised the following activities:

- A review of the relevant sections of the Douglas Partners *Detailed Site Investigation* (Douglas Partners 2017b) and *Remedial Action Plan* (Douglas Partners 2019) conducted at the site;
- Inception meeting;
- Additional investigations via excavated pits and X-ray Fluorescence (XRF) meter;
- A detailed site investigation to establish the extent of arsenic, cadmium, lead and zinc contamination with the use of an X-ray Fluorescence (XRF) meter;
- Establishment of a temporary stockpile area including use of geofabric separation layer;
- Management of the soil removal program including soil excavations and off-site disposal of contaminated soil to a licenced landfill;
- Soil validation sampling of the resulting excavations;
- Characterisation of the ingress pit water;
- Dispersion of the pit water as dust suppression; and
- Asbestos clearance of resulting excavations.

The works were conducted in consideration of the following guidance documents:

- AS4482.1–2005: Guide to the investigation and sampling of sites with potentially contaminated soil – Non-volatile and semi-volatile compounds
- Contaminated Land Management Act (1997)
- National Environment Protection (Assessment of Site Contamination) Measure

1999 (as amended 2013) ('NEPM'; NEPC, 2013)

- NSW EPA Contaminated Site Sampling Design Guidelines (1995)
- NSW EPA (2014) Waste Classification Guidelines
- OEH (2011) Guidelines for Consultants Reporting on Contaminated Sites
- Protection of the Environment Operations (Waste) Regulation (2014)
- State Environment Protection Policy 55 – Remediation of Land (SEPP 55) under the Environmental Planning and Assessment Act (1997).

2 Site Details and Characteristics

Table 1 provides identification details of the subject land relevant to the assessment.

Table 1: Site Identification Details

Site Address	505 North Creek Road, Skennars Head, NSW
Site Area	Total site – 34.05 ha
Real Property Description	Part of Lot 265 Deposited Plan (D.P.) 1212348; and Part of Lot 4 D.P. 1184436
Local Government Area	Ballina Shire Council
Zoning	Ballina Local Environmental Plan (BLEP) 2012 - B1 Neighbourhood Centre BLEP 2012 - R2 Low Density Residential BLEP 2012 - RU1 Primary Production BLEP 2012 - RU2 Rural Landscape BLEP 1987 - 1(b) Rural (Secondary Agricultural Land) Zone BLEP 1987 - 1(d) Rural (Urban Investigation) Zone BLEP 1987 - 7(a) Environmental Protection (Wetlands) Zone BLEP 1987 - 7(d) Environmental Protection (Scenic/Escarpment) Zone BLEP 1987 - 7(f) Environmental Protection (Coastal Lands) Zone
Site Features	The greater area of the 34.05 ha site comprises cleared open grassland. The discrete area comprising AEC 1 consists of a low-lying portion of land supporting a mix of native and introduced grasses, herbs, shrubs and trees. The area of AEC was defined as approximately 1500 m^2 in the RAP (Douglas Partners 2019). The main area of impact was refined during the additional investigations undertaken for this assessment and is approximately 350m^2 in area.
Surrounding Environment	North: existing residential subdivision South: rural land - grazing East: The Coast Road followed by Sharpes Beach West: forested wetland and rural land – grazing
Existing Land Use	Rural land - grazing
Proposed Land Use	Low-density residential
Topography	<10m AHD (Sixmaps 2019)
Soils	Soils across the site were described previously by Douglas Partners (2017b). In summary, soils across the greater site comprise the following: ▪ Red brown or brown silty clay; overlying ▪ Red brown, dark brown or dark silty clay; overlying ▪ Dark grey sandy silty clay Soils at AEC 1 were described previously by Douglas Partners (2019) and comprised a mix of fill material and natural silty clay varying in colour from brown, grey, red-brown. Fill material also included various coarse material including concrete and bricks. A wide range of refuse overlaid the fill material.
Groundwater Resources	Four groundwater monitoring bores have been installed at the Site, three shallow (maximum depth 3.2mBGL) and one deep bore (15.1 mBGL). No

	groundwater was encountered during field work undertaken for the DSI, however groundwater was detected during the installation of a bore near AEC 1 during the ASS assessment (Douglas Partners 2017b).
Surface Water	The nearest surface water to AEC 1 would occur in association with the forested wetland that occurs approximately 65 m west of AEC 1. The extent and proximity of the open water would vary depending on hydrological conditions at any given time.
Flooding	The boundary of the mapped area of the Flood Hazard DCP (high level) coincides with the location of AEC 1 (Ballina Shire Council 2019).
Acid Sulfate Soils	AEC 1 occurs within an area mapped as Acid Sulfate Soil – Planning Class 2 (Ballina Shire Council 2019).

3 Previous Investigations

ENV understands that three previous environmental investigations had been conducted at the site by Douglas Partners (Douglas Partners 2017a, 2017b and 2019). As part of the validation program which is the subject of this report, ENV reviewed the most recent two of the previous reports.

3.1 Report on Detailed Site Investigation for Contamination Stage 1 Development Application, 505 North creek Road, Skennars Head, NSW (90363.03.R.002.REV0 Stage 1 DSI)

The report is summarised in the following:
Douglas Partners Pty Ltd (Douglas Partners) was commissioned by Intrapac Skennars Head Pty Ltd to undertake a Detailed Site Investigation (DSI) for the proposed residential subdivision. The DSI followed recommendations provided in Douglas Partners Pty Ltd *Report on Stage 1 Contamination Investigation, Proposed Residential Subdivision, 505 North Creek Road, Skennars Head, NSW* (Douglas Partners 2017a).

The PSI identified two areas of potential environmental concern (PAEC) that required further investigation. The DSI included targeted soil sampling of the two PAEC (and reduced density sampling within background areas of the site) and assessment of the analytical results in relation to adopted site assessment criteria.

The results of the soil analysis at Area of Environmental Concern 1 (AEC 1) indicated the following exceedances of the relevant site assessment criteria:

- Arsenic: 250mg/kg (HIL A 100mg/kg)
- Cadmium: 48 mg/kg (HIL A 20mg/kg)
- Lead: 390-1,300mg/kg (HIL A 300mg/kg)
- Zinc: 4,400-17,000mg/kg (HIL A 7,400mg/kg)

Additionally, minor levels of heavy fraction TRH and PAHs, well below the adopted site assessment criteria, were detected in surface soils. Some exceedances of ecological based site assessment criteria were found also (copper, nickel, zinc, mercury), however the individual results were not considered to be significant based on the result of the 95% upper confidence limit (UCL) statistical assessment.

A summary of the findings, as presented by Douglas Partners (2017b), is provided as follows:

- The majority of the site is considered suitable, from a contamination perspective, for the proposed residential land use (with accessible soil) with exception of AEC 1;

- AEC 1 could be made suitable, from a contamination perspective, for proposed residential land use (with accessible soil) subject to removal of dumped material (i.e. refuse) and the remediation of the area impacted by arsenic, cadmium, lead and zinc;
- Preparation of a RAP for the dump area (AEC 1) is required;
- An acid sulfate soil investigation will be required for the proposed development;
- Any soil material removed off site will require further waste classification prior to off site disposal; and
- Notwithstanding the above, the potential remains for isolated pockets of contamination to be present in other areas of the site especially in locations not accessible as part of this investigation. To appropriately manage unexpected potential contamination issues encountered during development works, DP recommends the development and implementation of an Unexpected Finds Protocol. The Unexpected Finds Protocol should be included in early works/demolition/bulk earthworks environmental plans for the development.

3.2 Remedial Action Plan Proposed Residential Subdivision 505 North creek Road, Skennars Head, NSW (90363.10.R.001.Rev0 Stage 1 RAP)

The report is summarised in the following:
Douglas Partners Pty Ltd (Douglas Partners) was commissioned by Intrapac Skennars Head Pty Ltd to prepare a Remedial Action Plan (RAP) for the proposed residential subdivision. The RAP was prepared on the basis of the results of the previous assessments undertaken by Douglas Partners (2017a, 2017b) and outlines the methods and procedures that are to be utilised to remediate the localised dump area (AEC 1).

The objectives of the RAP were to remediate impacted soils and materials identified within AEC 1 in an acceptable manner, with minimal environmental impact, to a condition suitable for the proposed residential development. The RAP provides the following information:

- Clean-up objectives;
- Remediation acceptance criteria (RAC);
- Principles, methods and procedures by which the validation of the site will be achieved; and
- An outline of the working plan for the excavation, stockpiling, remediation and management of soil, water and sediment.

The conceptual site model (CSM) identified the following potential receptors (R):

- R1 – construction and maintenance workers
- R2 – final end users (residential)
- R3 – land users in adjacent areas (residential)
- R4 – groundwater;
- R5 – surface water;
- R6 – terrestrial ecology.

Potential pathways (P) were also identified:

- P1 – Ingestion and dermal contact;
- P2 – Inhalation of dust and/or vapours;
- P3 – Leaching of contaminants and vertical migration into groundwater;
- P4 – Surface water run-off;
- P5 – Lateral migration of groundwater; and
- P6 – Direct contact with terrestrial ecology.

Landfill gas was not considered a source of contamination due to the occurrence of the waste material on the surface, as opposed to being buried.

The extent of the remediation was not completely delineated, however it was not expected to extend more than 10m beyond the footprint of the dumped material.

Various remediation options were considered as follows:

- No action;
- On-site management of contaminated soils;
- On-site treatment and re-use; and
- Off-site disposal of contaminated material to a licensed landfill (preferred option).

The sequence of remediation for the preferred remediation method (off-site disposal to licensed landfill) was presented as follows:

- Inception meeting with the project manager and remediation contractor to discuss remediation requirements;
- Additional investigation via test pits to better assess the extent of impacted soils/materials and confirm waste classification prior to excavation and disposal;
- Full time inspection during excavation of filling containing anthropogenic inclusions and impacted soils (where present) to assist with segregation and to minimise the volume of soils requiring disposal;

- Excavation/segregation and off-site disposal of impacted materials by an appropriately licensed contractor;
- Collection and testing of validation samples from the stripped surface to confirm the removal of contaminated materials;
- Classification of imported materials for on-site use (if required);
- Placement of approved/validated filling within excavations; and
- Inclusion of the results of remediation in the validation report for the site.

The remediation acceptance criteria are based on those provided in Schedule B1 of the National Environmental Protection Council (NEPC) National Environmental Protection (Assessment of Site Contamination) Measure 1999 (amended 2013), and comprise the following:

- Health-based and ecological investigation levels (heavy metals) for residential landuse setting; and
- Health screening levels for asbestos in soil (if encountered).

Additional to the analytical criteria, the soil should be assessed on the basis of aesthetic considerations (i.e. free of odours and deleterious materials).

Conformance with the remediation assessment criteria will be attained when the following is achieved:

- All validation samples meet the specified remediation assessment criteria; or
- As a minimum for chemical contamination, the 95% UCL mean concentration value of each contaminant in the materials remaining on-site (validation samples) are below the respective remediation assessment criteria, and no individual exceedance is greater than 2.5 times the remediation acceptance criteria.

Additionally, the following also applies:

- imported fill used to reinstate site excavations or raise site levels (if required) should be classified as virgin excavated natural material (VENM) or Excavated Natural material (ENM), or conform with a relevant NSW EPA resource recovery exemption, and should be accompanied by a certificate from the supplier, otherwise detailed assessment (including analysis of representative samples) will be required prior to use on-site; and
- asbestos contaminated materials (if encountered) will require disposal to a licensed landfill and be declared to contain asbestos for appropriate disposal.

4 Data Quality Objectives (DQOs)

4.1 Issues Identification

Contamination at a discrete area of a proposed residential subdivision was identified as Area of Environmental Concern 1 (AEC 1) during land contamination assessments for the project (Douglas Partners 2017a, 2017b). Contaminants of concern identified comprise dumped material (i.e. refuse) and soil supporting elevated concentrations of arsenic, cadmium, lead and zinc. Additionally, asbestos (non-friable) was detected during the initial stages of the remediation process.

The objective of the assessment program conducted was to verify the suitability of soils remaining at the property for ongoing residential use at the site.

4.2 Project Resources

The remediation and validation was supervised and completed by an Environmental Engineer from ENV, Mr. Ollie Fick.

4.3 Data Gaps and Sampling Objectives

The sampling objectives for the soil removal and validation program were to collect soil quality data from soils remaining at AEC 1, to ensure that soils remaining *in situ* in the area of investigation following the program were suitable for the proposed use of the site as low-density residential land.

4.4 Required Information

To achieve the sampling objectives, soil quality information from the surface soils of the newly excavated surfaces was required.

4.5 Study Boundaries

AEC 1 was identified in the RAP as an approximately rectangular area of 1500m^2 (i.e. approximately 65 x 23m) in size and extending along a length of an ephemeral drainage line.

The additional investigations undertaken during the early remediation stages identified that the extent of the contamination (i.e. refuse and soil contamination) was substantially less than this and occupied an area approximately 350m^2 in size (i.e. 35 x 10m).

The final area of remediation is shown on Figure 2, **Attachment 1**. No works were conducted beyond the study boundaries as part of the investigation.

4.6 Analytical Approach (including QA samples)

Data from the soil sampling program have been compared with the investigation levels presented in Section 4.7.

The quality assurance of precision (reproducibility), accuracy, representativeness and overall reliability of the data has been assessed using the performance criteria presented in Table 2. This included internal quality assurance (QA) testing conducted by the analytical laboratories (where reported).

The QA sampling regime was adopted from the NEPM and from AS4482.1 Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil – Part 1: Non-volatile and semi-volatile compounds (2005).

Table 2: Summary of Performance Criteria

QA Sample Type	Media	Frequency	Acceptable Range of Results
Precision (Reproducibility)			
Field Sampling			
Intra-laboratory duplicate	Soil Pit ingress water	1 per 20 primary samples	Relative percent difference (RPD) ≤50%
Inter-laboratory duplicate	Soil	1 per 20 primary samples	RPD ≤50%
Laboratory Analysis			
Internal duplicate	Soil Pit ingress water	1 per 10 primary samples	Laboratory specified, concentration dependent; Envirolab example: (RPD of any % for concentrations < 5 x LOR; RPD of 0-50% for concentrations > 5 x LOR)
Accuracy			
Laboratory Analysis			
Matrix Spikes	Soil Pit ingress water	1 per sampling batch (20 samples per batch)	Laboratory specified; Envirolab example: 70-130% (inorganics); 60-140% (organics)

QA Sample Type	Media	Frequency	Acceptable Range of Results
Surrogate Spikes	Soil Pit ingress water	1 per sampling batch (20 samples per batch)	Laboratory specified; Envirolab example: 70-130% (inorganics); 60-140% (organics)
Laboratory Control Samples	Soil Pit ingress water	1 per sampling batch (20 samples per batch)	Laboratory specified; Envirolab example: 70-130% (inorganics); 60-140% (organics)
Representativeness			
Laboratory Analysis			
Laboratory Blank	Soil Pit ingress water	1 per sampling batch (20 samples per batch)	Results <LOR

Where QA data does not meet the specified performance criteria, the potential influence of the QA results has been discussed with respect to the precision, accuracy and representativeness of the primary data set.

4.7 Investigation Levels

The investigation levels applicable to the remediation of the soil have been prescribed in s. 8 of the RAP (Douglas Partners 2019).

The remediation acceptance criteria are based on those provided in Schedule B1 of the National Environment Protection Council (NEPC) National Environment Protection (Assessment of Site Contamination) Measure 1999 (amended 2013), and comprise the following:

- Health-based and ecological investigation levels (heavy metals) for a low density residential landuse setting; and
- Health screening levels for asbestos in soil (if encountered).

The investigation levels applicable to the pit ingress water are dependent on the results of the water analysis undertaken during the remediation works. The following assessment criteria was applied to the ingress water on review of the results:

- ANZECC 2000 Irrigation Short Term Trigger Values

4.8 Investigation Design Optimisation

The sampling program was undertaken generally in accordance that prescribed in the RAP. Additional investigations to determine the lateral extent of the contamination were undertaken using test pits and an XRF to measure metals concentrations within the soil. The extent of the contamination was then marked in the field and on a field-based plan.

The bulk of the refuse was then removed followed by the removal of the contaminated soil. The XRF was used throughout this process to ensure that that all the contaminated soil was removed prior to the collection of the validation samples.

Sampling locations are presented on Figure 2, **Attachment 1.**

5 Additional Site Investigation & Soil Removal Program

5.1 Contractor Information

Details and responsibilities of the project team are provided in Table 3 below.

Table 3: Contractor and Environmental Consultant Details

Environmental Consultant	
Additional investigation, supervision of soil removal works/disposal and soil, validation sampling/asbestos clearance:	ENV Solutions
Address:	45-65 Smith Dr, West Ballina NSW 2478
Phone:	0423 124 923
Earthmoving Contractor	
Undertaking soil excavations:	CCA Windslow
Address:	1587 Ipswich Road, Rocklea, QLD, 4106
Phone:	(07) 3426 4000
Waste Transport	
Waste loading and haulage:	Holmes Extractive Resources (HXR)
Address:	90 Clovass Rd, Clovass NSW 2480
Phone:	(02) 6663 1441

5.2 Council Liaison

The issuing of the construction certificate (CC) for Stage 1 of the residential subdivision is reliant on the completion of the validation of AEC 1. As a means of expediting the remediation and validation process, ENV liaised with Ballina Shire Council to seek permission to establish a temporary stockpile area near to AEC 1. This was undertaken to allow immediate effort to be concentrated on the remediation and validation process and avoid any delays that may have otherwise occurred from the waste disposal process. Refer to **Attachment 2** for photos of the stockpile area.

5.3 Additional Investigation

Additional investigation works were undertaken during the period 30 May – 4 June 2019.

The project commenced with additional test pits being excavated, predominantly to determine the lateral extent of the refuse. Subsequent to the test pits, a square 5 x 5 metre grid was established across the area, as shown in Figure 2, **Attachment 1.** An XRF meter was utilised to establish arsenic, cadmium, lead and zinc concentrations in

the surface soils (0-0.1m) at 26 grid locations. Remediation acceptance criteria was exceeded at two locations only (Pt.81 and Pt.82).

At Pt.81, lead was the only contaminant detected at concentrations above the remediation acceptance criteria (HIL A 300mg/kg) (lead: 571.19 mg/kg). At Pt.82 the following contaminants and relative concentrations were detected above the respective HIL A: arsenic (HIL A 100mg/kg) 448.84 mg/kg; lead (2,549.9mg/kg), zinc (HIL A 7,400mg/kg) 39,045.05mg/kg.

Pt.81 and Pt.82 were within 5m of each other and occurred generally in the main portion of the area supporting the larger debris. Elevated concentrations of lead, below the remediation assessment criteria, were detected at several other sampling points also.

Asbestos sheeting was detected scattered amongst the bulk refuse during the additional investigation works. The asbestos was deemed 'non-friable' on the basis that it comprised pieces of intact fibre cement sheet. At least two different asbestos sheet types were detected, including larger pieces of roofing material (ridgecap) and smaller pieces (i.e. ~30-60mm dia.) of wall sheet.

Once the areas of contamination were mapped and marked, the volume of soil/refuse to be removed was approximated to allow a temporary stockpile area to be established.

AEC 1 was identified in the RAP as an approximately rectangular area 1500m^2 (i.e. approximately 65 x 23m) in size. The additional investigations identified that the extent of the contamination (i.e. refuse and soil contamination) was substantially less than this and occupied an area approximately 350m^2 in size (i.e. 35 x 10m).

A figure showing the results and locations of the XRF search is provided in Figure 2, **Attachment 1** and tabulated in Table 1, **Attachment 4**.

5.4 Soil Removal Works

Soil removal works were undertaken during the period 4 – 5 June 2019.

The soil removal program was conducted and supervised by an ENV Environmental Engineer in accordance with Safe Work Australia Code of Practice (2011), to ensure industry best practice throughout the program.

The process of soil removal initially involved the excavation of all bulk refuse material, some of which was buried to a depth of approximately 1.2mBGL. The variety of bulk material included bricks, concrete, corrugated sheets, wire, hard plastic refuse, toilet bowls and myriad other materials. A number of car batteries were also detected, which were potentially the source of the arsenic, cadmium, lead and zinc in the soil.

A 30 tonne excavator was utilised to remove the contaminated soil, which were generally moist to saturated. Contaminated soils were excavated from a generally rectangular area that was approximately 35 x 10 m in size. It appears a pit had been excavated previously in a location that generally coincided with an ephemeral drainage line, which had then been filled with the various refuse.

The process of excavation involved removing a layer of soil, then checking the remaining in-situ portion with the XRF, if exceedances remained, further soil was removed. This process was undertaken across the remediation area. During the excavation process it became evident that lead contamination occurred as a black stain in the soil, which allowed the contaminated material to be more easily identified during the excavation process.

5.5 Validation Sampling

Seven surface soil validation samples (V1-V7) (and one intra- and one inter-lab QA sample) were collected from generally equally spaced locations across the larger remediation area identified in the RAP (i.e. the 1500m^2) and submitted for laboratory analysis.

During the excavation process, water ingressed into the pit, predominantly from the upstream end of the excavation. A single opportunistic water sample (and one QA sample) was collected from the pit water and analysed for a comprehensive suite of contaminants (metals, organochlorine chemicals, hydrocarbons). Reported concentrations met the adopted assessment criteria for 'Irrigation Short Term Trigger Values' (ANZECC 2000) and the water was removed from the excavation via a tanker and utilised on-site for dust suppression.

Validation samples were sent in an iced cool box to the laboratory with accompanying COC documentation and analysed for the COPC (refer s5.2). Laboratory certificates and COC documentation are presented in **Attachment 5**.

After the water was removed from the pit, a final check of the base of the pit was undertaken to ensure that all waste and asbestos pieces had been removed. After review of the soil validation results the pit was backfilled with sand sourced from Ballina Sands. The sand used for backfilling is classified as ENM in accordance with the *Waste Classification Guidelines 2014* (NSW EPA 2014).

The precise volume of soil/refuse material excavated is not currently known as the material is yet to be disposed of to landfill, however it is estimated to be approximately 200-300m^3. Arrangements are currently being undertaken to have the excavated waste transported off-site to Cleanaway's New Chum Waste Facility in Queensland. Further details regarding the soil disposal are provided in Section 5.8.

Figure 2, **Attachment 1** details the excavation extent and validation sample locations. Photographs taken during the soil removal program are included in **Attachment 2**.

5.6 Sampling Methodology and Field Quality Assurance/Quality Control (QA/QC)

Soil samples were collected in the field by an appropriately qualified Environmental Engineer from ENV Solutions.

Using disposable nitrile gloves, the soil samples were collected by hand directly from the disturbed ground. Samples were sealed in glass sample jars (supplied by the laboratory) and chilled prior to dispatch to the laboratory.

Water samples were collected directly from the pit using laboratory supplied 1L water bottles.

All samples were stored in an iced cool box and transported to Envirolab laboratories in Sydney using Chain of Custody (COC) documentation for the specified testing (refer **Attachment 5**).

5.7 Asbestos Clearance Inspection

Following the soil removal program, an asbestos clearance inspection was undertaken by a Licenced Asbestos Assessor (Jake Rozyn LAA001246). It is however acknowledged that visual clearance and certificate are not required for works comprising <10m^2 of asbestos (SafeWork NSW 2016). The Asbestos Clearance Certificates (ENV, 2019) detailing the procedures and results are provided in **Attachment 3**.

5.8 Waste Management

All spoil excavated as part of the soil removal program will be transported off-site to Cleanaway's New Chum Waste Facility in New Chum, QLD. The waste will be transported by HXR, under a soil disposal permit (No. 20879) obtained via Queensland Department of Environment and Science, formally known as Department of Environment and Heritage Protection.

ENV can provide the details of the final weight of contaminated material removed from site at the completion of that component of the work, as well as the waste disposal documentation and soil disposal permit used as part of that process.

6 Investigation Results

6.1 XRF Grid Search Results

The tabulated results from the XRF search during the additional investigations are presented in Table 1, **Attachment 4**.

6.2 Quality Assurance/Quality Control and Data Usability

The precision (reproducibility) of the results was assessed by determining the relative percentage difference (RPD) between duplicate samples. RPDs were only calculated where results of both the sample and the duplicate were above laboratory reporting limits. There is an acceptable variance limit of 50% for soil.

For the chemicals analysed in the intra-laboratory and inter-laboratory duplicate soil sample pairs during the validation sampling ('V2' for 'QA', 'QA1'), RPDs were calculated to be less than the acceptable threshold of 50%.

The results of the internal laboratory QA testing conducted by the analytical laboratories were also reviewed to assess the integrity of the laboratory results. A review of the internal QA data reported by the primary laboratory for internal duplicates, method blanks and surrogate recoveries indicates that the results were within acceptable thresholds for the soil analyses.

In summary, based on the calculated RPDs and internal QA data reported by the laboratory, the reproducibility, accuracy and representativeness of the analytical results are considered suitable to meet the objectives of the assessment, and to provide sufficient confidence in the primary dataset for interpretative purposes.

The duplicate results for soil are presented in Table 2, **Attachment 4**.

6.3 Laboratory Results

Tabulated laboratory analytical soil results are presented in Table 2 of **Attachment 4**. A copy of the laboratory certificates and COCs are provided in **Attachment 5**.

Soil Validation Samples

Concentrations of all CoPC, in particular, arsenic, cadmium, lead and zinc, analysed in the validation samples collected from the excavations, were less than the investigation levels adopted for the investigation. The results are presented in Table 2 and in **Attachment 4**.

Asbestos Samples

Asbestos fragment samples (Sample No. 1, 2 and 3) were collected for laboratory analysis at Australian Safer Environment & Technology (ASET), which confirmed that

one of the samples (Sample No. 3) contained Chrysotile and Amosite asbestos. A copy of the laboratory certificates and COCs are provided in **Attachment 5**.

7 Conceptual Site Model

7.1 Contamination Sources

The source of the contamination at AEC 1 was identified by Douglas Partners (2019) as the result of the decomposition of the refuse material within the pit. The variety of bulk material detected during the soil removal program included bricks, concrete, corrugated sheets, wire, hard plastic refuse, toilet bowls and myriad other materials. A number of car batteries were also detected, which were potentially the source of the arsenic, cadmium, lead and zinc in the soil.

All contamination sources were removed during the remediation works.

7.2 Contaminants of Potential Concern

Contaminants of potential concern (CoPC) identified by Douglas Partners (2019) comprise soil supporting elevated concentrations of arsenic, cadmium, lead and zinc. Additionally, asbestos (non-friable) was detected during the initial stages of the remediation process. Minor levels of hydrocarbons (TRH and PAHs) were detected in surface soils during the PSI (Douglas Partners 2017b).

All validation samples from the remaining in-situ soil meet the specified remediation assessment criteria, and no visible asbestos remains in the remediation area. In this regard, the CoPC have been removed from the remediation area.

7.3 Potentially Affected Media

Potentially affected media includes the fill material within the pit as well as the native soils in and adjacent to the pit area. As identified in the conceptual site model (CSM) in the RAP (Douglas Partners 2019), potential exists for groundwater and surface water to be affected if soil contamination is identified. The additional investigations undertaken during the remediation process did identify soil contamination, however the contamination was limited, in extent and concentration, to the degree that groundwater and surface water were not considered at risk of contamination.

Ingress water into the pit during the remediation process was however considered a potentially affected medium.

The affected media identified during the remediation works comprised soil contaminated with arsenic, cadmium, lead and zinc. All soil with concentrations of CoPC exceeding the remediation assessment criteria has been removed from the remediation area.

7.4 Potential Exposure Pathways and Receptors of Contamination

The CSM provided in the RAP is reproduced below as Table 4, and has been updated to reflect the conditions post-remediation.

Table 4: Summary of Potential Receptors and Exposure Pathways post-Remediation

Source	Exposure Pathway	Receptor	Recommended Risk Management Action (Pre-Remediation)	Risk Post-Remediation
Dump Area (AEC 1)	P1 – Direct contact with soil (ingestion and dermal) P2 – Inhalation of dust and/or vapours	R1 – Construction and maintenance workers R2 – End users (residential)	An intrusive investigation is required to assess possible contamination including chemical testing of soil	Extent of soil contamination was determined. Soil contamination was then removed. Risk during remediation was mitigated using appropriate PPE. **Remaining risk to all receptors is nil.**
	P2 – Inhalation of dust and/or vapours	R3 – Land users in adjacent areas (residential)		
	P3 – Leaching of contaminants and vertical migration into groundwater	R4 - Groundwater	If soil contamination is identified, investigation for contamination of groundwater and surface waters may be required.	Soil contamination was limited, in extent and concentration, to the degree that groundwater and surface water were not considered at risk of contamination. **Remaining risk to all receptors is nil.**
	P4 – Surface water run-off P5 – Lateral migration of groundwater	R5 – Surface water		
	P6 – Direct contact with terrestrial ecology	R6 – Terrestrial ecology	An intrusive investigation is required to assess possible contamination including chemical testing of soil	Extent of soil contamination was determined. Soil contamination was then removed. **Remaining risk to all receptors is nil.**

8 Conclusions and Recommendations

8.1 Summary of Findings

The objective of the environmental works which are the subject of this report was to remediate a discrete area supporting soils contaminated with arsenic, cadmium, lead, zinc and asbestos (non-friable). The presence of asbestos was not identified in the RAP, however was identified during the additional investigation works undertaken during this investigation. On the basis that the asbestos was not able to be separated from other material to be excavated, all of the excavated refuse and soil was classified as 'asbestos waste'.

The lateral extent of the contamination was refined, from that prescribed in the RAP, during additional investigations undertaken via test pits and application of the XRF. Bulk refuse and contaminated soil was excavated, with the extent of the soil removed being guided via the use of an XRF to check *in-situ* metal concentrations. At the completion of the soil removal program, seven validation samples were collected and laboratory analysed for the CoPC.

Concentrations of all CoPC in all soil samples representing *in situ* soils which will remain within the area of investigation met the adopted assessment criteria. A visual inspection of the excavation area also confirmed that the soils contained no visible ACM.

Sampling of the ingress water in the pit was also undertaken for CoPC. The results indicated that all contaminants were well below the adopted assessment criteria (ANZECC 2000 Irrigation Short Term Trigger Values). The water was pumped out of the pit and utilised on site for dust suppression.

8.2 Suitability of Site

The objectives of the RAP were to remediate impacted soils and materials identified within AEC 1 in an acceptable manner, with minimal environmental impact, to a condition suitable for the proposed residential development.

Furthermore, conformance with the remediation assessment criteria will be considered to have been attained when the following is achieved:

- all validation samples meet the specified remediation assessment criteria; or
- as a minimum for chemical contamination, the 95% UCL mean concentration value of each contaminant in the materials remaining on-site (validation samples) are below the respective remediation assessment criteria, and no individual exceedance is greater than 2.5 times the remediation acceptance criteria.

The RAP also prescribed the following:

- imported fill used to reinstate site excavations or raise site levels (if required) should be classified as virgin excavated natural material (VENM) or Excavated Natural material (ENM), or conform with a relevant NSW EPA resource recovery exemption, and should be accompanied by a certificate from the supplier, otherwise detailed

assessment (including analysis of representative samples) will be required prior to use on-site; and

- asbestos contaminated materials (if encountered) will require disposal to a licensed landfill and be declared to contain asbestos for appropriate disposal.

The objectives of the RAP have been met via the following:

- All validation samples from the remaining in-situ soil meet the specified remediation assessment criteria;
- Imported fill used to backfill the remediation area was ENM;
- All excavated fill material removed from the remediation area will be classified as 'asbestos waste' on the basis that the asbestos pieces could not be separated out from the other materials, hence this material will be disposed of to an appropriately licensed landfill.

With consideration of the above, and based on field observations made during the site investigations and the results of the soil validation program conducted by ENV, soils remaining *in situ* in the areas of the investigation are considered suitable for the proposed residential use of the site.

9 References

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NEPC (2013). National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013). Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater.

NSW DPI (2019). Office of Water Online Groundwater Database. Accessed on 20 February 2019. Available at: http://allwaterdata.water.nsw.gov.au/water.stm

NSW EPA (1995). Sampling Design Guidelines. Available at: http://www.epa.nsw.gov.au/resources/clm/95059sampgdlne.pdf

NSW Environmental Protection Agency (2014). Waste Classification Guidelines Part 1: Classifying waste. NSW Environmental Protection Agency, Sydney, Australia.

OEH (2011). Guidelines for Consultants Reporting on Contaminated Sites. Available at: http://www.epa.nsw.gov.au/resources/clm/20110650consultantsglines.pdf

Protection of the Environment Operations Act (1997). Available at: http://www.austlii.edu.au/au/legis/nsw/consol_act/poteoa1997455/

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10 Document Control

Filename:	19199_Remediation Validation Report_20190417
Job No.:	19199
Author:	Tony Coyle
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Revision No:	Date:	Name	Signed
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Scope of Engagement:

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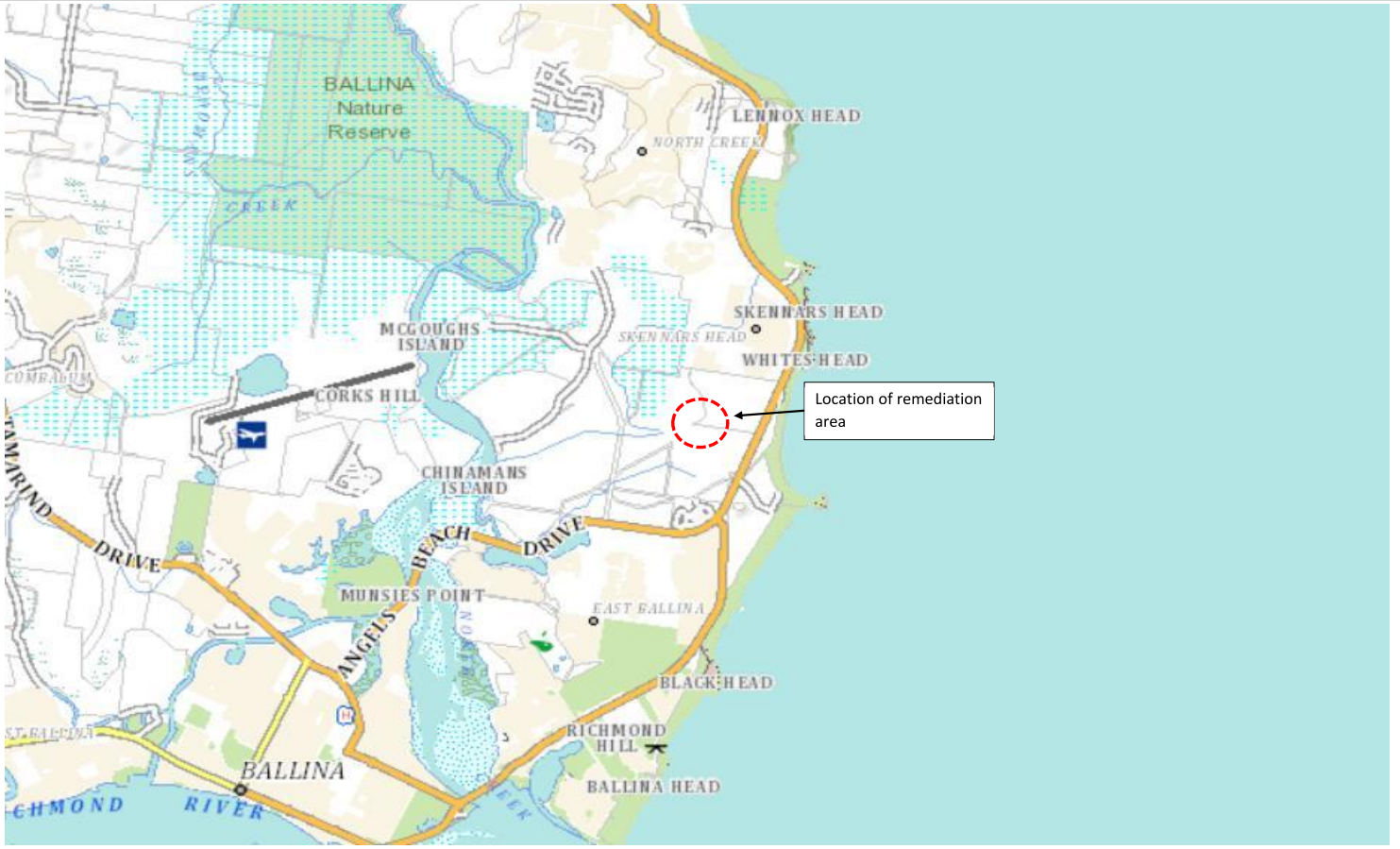
11 Attachments

Attachment 1	Figures
Attachment 2	Photographs
Attachment 3	Asbestos Clearance Certificate (ENV, 2019)
Attachment 4	XRF Search and Laboratory Results
Attachment 5	Laboratory Documentation

ATTACHMENT 1

Figures



ENV Solutions Environmental Engineering Solutions	Ph: 0427 483 099 Email: tony@envsolutions.com.au Mail: PO Box 248 Ballina, NSW 2478	**Figure 1 – Regional Location Plan**	Client: Intrapac Skennars Head Pty Ltd Site: 505 North Creek Road, Skennars Head, NSW	Not to scale. Illustration only. Background aerial imagery from Sixmaps 2015
	Job No.: 19199		Date: 07/06/2019	
	Project: Aureus - AEC 1 Remedation		By: Tony Coyle	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LEGEND
Extent of AEC 1 in RAP - 1500m2
Final Extent of Remediation Area - 350m2
XRF Sampling Points >HIL A
XRF Sampling Points <HIL A
0
10
20 m
ENV Solutions
Environmental Engineering Solutions
Ph: 0427 483 099
Email: tony@envsolutions.com.au
Mail: PO Box 248 Ballina, NSW 2478
Job No.: 19199
Project: Aureus - AEC 1 Remedation
Figure 2 – XRF Sampling Points, Extent of AEC 1 in RAP and Final Extent of Remediation Area
Client: Intrapac Skennars Head Pty Ltd
Site: 505 North Creek Road, Skennars Head, NSW
Date: 07/06/2019
By: Tony Coyle
Not to scale. Illustration only.
Background aerial imagery from Sixmaps 2015

ATTACHMENT 2

Photographs

Photograph 1: Image looking north-west at the temporary stockpile area with earth bund

Photograph 2: Image looking south-east at the temporary stockpile area with earth bund

Photograph 3: View looking south-west at excavated refuse and soil

Photograph 4: View looking south at the main part of the remediation area

Photograph 5: Water ingressed into the pit, mostly from the upslope end, occurred in the pit as excavated progressed

Photograph 6: View looking west during the soil excavation

Photograph 7: View looking west-north-west across the main part of the remediation area. The pipe in the middle was used to pump out some of the water in the excavation to allow validation of the soils in the base of the pit.

Photograph 8: Debris and soil in temporary stockpile area

Photograph 9: Debris temporary stockpile area

Photograph 10: Remediation Area post excavation

Photograph 11: Pit wall

Photograph 12: Final clean excavation adjacent to the pit

ATTACHMENT 3

Asbestos Clearance Certificate (ENV, 2019)

PO BOX 248
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Ph: 0421519354
Email: James@envsolutions.com.au

SECTION A - CLEARANCE INSPECTION DETAILS

Note: Where asbestos removal work requires a Class A licence an independent licenced asbestos assessor must carry out the clearance inspection and complete an asbestos removal clerance certificate if satisfied that the area is safe to reoccupy.

Client Details			
Client Name:	Intrapac Property Pty Ltd		
Phone:	+617 5535 0414	Mobile:	-
Other contact details:	info@intrapac.com.au		
Removal work details			
Date removal work carried out:	4 - 5/06/19		
Site address for removal work:	Aureus, The Coast Road, Skennars Head NSW		
Details of the specific asbestos removal work area(s):	Removal of approximately 350m3 of asbestos impacted materials (bulk refuse). ACM considered non-friable and <10m2. Safework notification form not required		
Licencenced asbestos removalist			
Name:	NA	Contact:	NA
Licencenced asbestos removalist supervisor (if different from above)			
Name:	NA	Contact:	NA
Inspection details			
Date of clearance inspection:	6/06/19		
Time of clearance inspection:	1500		

SECTION B - ASBESTOS REMOVAL WORK PAPER WORK

NA

	Yes	No
Do you have a copy of the asbestos removal control plan?	☐	☐
Do you have a copy of the notification form?	☐	☐
Is the removal work consistent with the control plan and the notification form? (e.g. use	☐	☐

SECTION C - ASBESTOS REMOVAL WORK AREA

1. VISUAL INSPECTION

	Yes	No
Inspection of the specific area detailed in Section A found no visible asbestos remaining as a result of the asbestos removal work carried out.	✔	☐
Is air monitoring required? (If no, proceed to Section E)	☐	✔
Can the area be reoccupied?	✔	☐
Has additional information been attached? (e.g. photos, drawings, plans)	✔	☐

2. AIR MONITORING

NA

	Yes	No
Air monitoring was carried out as part of the clearance inspection and result was below 0.01 f/ml.	☐	☐
Has the air monitoring sample been analysed by a NATA accredited laboratory?	☐	☐
Is the air monitoring report attached?	☐	☐
Can the area be reoccupied?	☐	☐

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SECTION D - ENCLOSURES

1. Prior to dismanteling the enclosure

	Yes	No
The area within the enclosure and the area immediately surrounding the enclosure was inspected and no visible asbestos was found.	☐	☐
Air monitoring was carried out as part of the clearance inspection. The result was below 0.01 f/ml.	☐	☐
Is the air monitoring report attached?	☐	☐
can the enclosure be dismanteled?	☐	☐

NA

Number of samples collected: _____

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
RESULTS					

2. AFTER THE ENCLOSURE WAS DISMANTELED AND REMOVED

	Yes	No
An inspection of the area in which the enclosure was erected and the area immediately surrounding the area where the enclosure was errected was inspected and no visible asbestos was found.	☐	☐
Air monitoring was carried out as part of the clearance inspection. The result was below 0.01 f/ml.	☐	☐
Is the air monitoring report attached?	☐	☐
Can the area be reoccupied?	☐	☐

NA

number of samples collected:

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
RESULTS					

SECTION E - CLEARANCE DECLARATION

I declare that:
- the former enclosure, asbestos removal work area and the surrounding area are free from any visible asbestos.
- the transit route and waste routes are free from any asbestos,
- all asbestos in the scope of the removal work has been removed and any known asbestos is intact.

Signature of licenced asbestos assessor/competent person

LAA001246
Assessor licence number (if applicable)

Jake Rozyn
Name of licenced asbestos assessor/competent person

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Ballina NSW 2478
Ph: 0421519354
Email: James@envsolutions.com.au

SECTION F - PICTORIAL

Plate1: Asbestos impacted material (bulk refuse) removed and stockpiled on geofabric until disposal permit granted.

Plate2: All asbestos impacted bulk refuse and soil removed back to natural. No visible ACM remains.

Plate3: Soil removed back to natural ground, no visible ACM or bulk refuse remain. Location of removal area.

ATTACHMENT 4

XRF Search and Laboratory Results

19199 - Aureus Remedial Works

TABULATED X-RAY FLOURESCENCE (XRF) METER READINGS

Reading No	Date	Type	Duration	Units	Sequence	Pb	Pb Error	As	As Error	Zn	Zn Error	Mo	Mo Error	Zr	Zr Error
5	31-05-19	Soil	30.19	ppm	Final	<LOD	7.25	6.05	3.73	94.91	11.39	7.7	3.06	448.97	7.5
7	31-05-19	Soil	30.24	ppm	Final	127.67	8.04	10.12	5.93	148.11	9.87	5	2.18	278.75	4.75
9	31-05-19	Soil	30.23	ppm	Final	**286.78**	15.24	20.96	11.15	292.12	17.65	11.61	3.34	519.25	8.4
12	31-05-19	Soil	30.19	ppm	Final	84.65	9.5	16.05	7.17	2664.74	48.33	6.58	3.16	414.68	7.59
15	31-05-19	Soil	30.22	ppm	Final	6.06	3.95	<LOD	4.35	240.08	11.83	6.47	2.27	364.35	5.28
16	31-05-19	Soil	30.29	ppm	Final	19.93	4.87	<LOD	5.53	220.79	12.19	<LOD	3.33	218.13	5.56
18	31-05-19	Soil	30.34	ppm	Final	182.75	10.93	19.17	8.12	4231.78	52.87	5.79	2.77	458.21	6.99
19	31-05-19	Soil	30.09	ppm	Final	50.83	7.04	10.73	5.3	417.61	17.74	5.41	2.82	509.05	7.32
20	31-05-19	Soil	30.05	ppm	Final	<LOD	5.52	<LOD	4.17	120.03	8.75	<LOD	3.01	244.12	4.29
22	31-05-19	Soil	30.34	ppm	Final	52.19	5.79	<LOD	6.48	85.53	8.19	12.9	2.76	854.4	7.9
23	31-05-19	Soil	30.31	ppm	Final	**267.98**	10.49	<LOD	11.38	204.07	10.67	<LOD	2.94	186.56	3.82
24	31-05-19	Soil	30.35	ppm	Final	6.59	3.34	<LOD	3.69	47.41	5.85	<LOD	2.61	176.46	3.35
26	31-05-19	Soil	30.08	ppm	Final	<LOD	5.8	<LOD	4.4	82.01	8.45	5.42	2.32	337.43	5.32
28	31-05-19	Soil	30.3	ppm	Final	8.77	5.57	<LOD	6.26	252.17	15.25	9.87	3.01	473.1	7.43
29	31-05-19	Soil	30.11	ppm	Final	<LOD	6.63	8.13	3.53	140.12	11.47	<LOD	3.87	319.18	5.87
30	31-05-19	Soil	30.33	ppm	Final	<LOD	4.96	<LOD	3.86	77.88	8.1	7.05	2.25	307.55	4.96
31	31-05-19	Soil	30.14	ppm	Final	53.55	4.84	<LOD	5.36	246.26	10.01	<LOD	2.4	74.65	2.28
33	31-05-19	Soil	30.11	ppm	Final	<LOD	5.28	<LOD	4	140.08	8.78	3.05	1.85	158.79	3.37
36	31-05-19	Soil	30.33	ppm	Final	101.28	8.27	<LOD	9.05	224.88	13.12	6.68	2.49	300.64	5.51
78	03-06-19	Soil	30.31	ppm	Final	<LOD	4.7	<LOD	3.55	43.39	6.09	3.93	1.89	217.41	3.83
79	03-06-19	Soil	30.24	ppm	Final	<LOD	6.32	8.6	3.42	78.79	10.13	5.96	2.54	151.85	4.43
80	03-06-19	Soil	30.19	ppm	Final	<LOD	5.24	5.08	2.83	42.95	7.51	6.36	2.35	270	4.99
81	03-06-19	Soil	30.22	ppm	Final	**571.19**	21.22	44.58	15.58	4630.24	64.37	6.61	3.05	292.21	6.62
82	03-06-19	Soil	30.1	ppm	Final	**2549.9**	77.35	**448.84**	59.22	**39045.05**	325.35	<LOD	7.83	31.57	6.81
83	03-06-19	Soil	30.06	ppm	Final	139.01	9.82	19.3	7.37	3913.5	51.03	9.21	2.59	250.29	5.29
94	03-06-19	Soil	30.11	ppm	Final	<LOD	5.4	<LOD	4.12	70.12	8.45	5.18	2.39	305.44	5.3

19199 - Aureus Remedial Works

TABULATED X-RAY FLOURESCENCE (XRF) METER READINGS

Reading No	Date	Type	Duration	Units	Sequence	Sr	Sr Error	U	U Error	Rb	Rb Error	Th	Th Error	Au	Au Error
5	31-05-19	Soil	30.19	ppm	Final	40.59	2.63	<LOD	5.74	8.03	2.01	<LOD	5.1	<LOD	7.87
7	31-05-19	Soil	30.24	ppm	Final	43.54	2.11	<LOD	4.15	7.66	1.48	<LOD	4.19	<LOD	5.34
9	31-05-19	Soil	30.23	ppm	Final	48.28	2.96	<LOD	6.21	12.13	2.33	<LOD	7.11	<LOD	9.67
12	31-05-19	Soil	30.19	ppm	Final	42.48	2.81	<LOD	6.1	10.04	2.2	<LOD	5.46	<LOD	8.43
15	31-05-19	Soil	30.22	ppm	Final	19.03	1.57	<LOD	3.99	5.5	1.37	<LOD	3.33	<LOD	5.28
16	31-05-19	Soil	30.29	ppm	Final	834.36	8.6	<LOD	6.24	5.91	1.77	<LOD	3.69	<LOD	6.3
18	31-05-19	Soil	30.34	ppm	Final	92.46	3.37	<LOD	5.34	10.22	1.92	<LOD	5.51	<LOD	7.07
19	31-05-19	Soil	30.09	ppm	Final	76.07	3.1	<LOD	5.22	13.28	2	<LOD	4.76	<LOD	7.05
20	31-05-19	Soil	30.05	ppm	Final	29.6	1.75	<LOD	3.67	5.46	1.3	<LOD	3.02	<LOD	5.23
22	31-05-19	Soil	30.34	ppm	Final	60.19	2.39	<LOD	4.23	10.18	1.56	<LOD	3.77	<LOD	5.74
23	31-05-19	Soil	30.31	ppm	Final	34.24	1.85	<LOD	3.77	7.22	1.39	<LOD	4.75	<LOD	5.72
24	31-05-19	Soil	30.35	ppm	Final	43.09	1.8	<LOD	3.57	7.96	1.27	<LOD	2.85	<LOD	4.43
26	31-05-19	Soil	30.08	ppm	Final	34.75	2	<LOD	4.18	5.2	1.43	<LOD	3.58	<LOD	5.8
28	31-05-19	Soil	30.3	ppm	Final	47.01	2.69	<LOD	5.44	10.9	2.03	<LOD	4.96	<LOD	7.85
29	31-05-19	Soil	30.11	ppm	Final	38.08	2.34	<LOD	4.95	8.83	1.8	<LOD	4.14	<LOD	7.13
30	31-05-19	Soil	30.33	ppm	Final	29.28	1.83	<LOD	4.19	7.86	1.49	<LOD	3.3	<LOD	5.48
31	31-05-19	Soil	30.14	ppm	Final	5.38	0.98	<LOD	2.98	<LOD	1.42	<LOD	2.81	<LOD	4.24
33	31-05-19	Soil	30.11	ppm	Final	17.73	1.4	<LOD	3.51	4.51	1.2	<LOD	2.75	<LOD	4.91
36	31-05-19	Soil	30.33	ppm	Final	55.14	2.59	<LOD	4.61	5.7	1.6	<LOD	4.67	<LOD	6.7
78	03-06-19	Soil	30.31	ppm	Final	47.16	1.95	<LOD	3.57	4.46	1.2	<LOD	2.66	<LOD	4.92
79	03-06-19	Soil	30.24	ppm	Final	18.85	1.93	<LOD	5.27	3.89	1.73	<LOD	4.58	<LOD	7.59
80	03-06-19	Soil	30.19	ppm	Final	41.47	2.2	<LOD	4.59	8.74	1.64	<LOD	3.77	<LOD	6.43
81	03-06-19	Soil	30.22	ppm	Final	40.43	2.82	<LOD	6.09	8.49	2.26	<LOD	8.94	<LOD	9.76
82	03-06-19	Soil	30.1	ppm	Final	18.74	4.45	<LOD	17.12	15.63	6.19	<LOD	32.95	<LOD	26
83	03-06-19	Soil	30.06	ppm	Final	38.22	2.36	<LOD	4.54	6.1	1.65	<LOD	5.09	<LOD	7.36
94	03-06-19	Soil	30.11	ppm	Final	24.78	1.86	<LOD	4.66	7.76	1.63	<LOD	3.88	<LOD	6.14

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TABULATED X-RAY FLOURESCENCE (XRF) METER READINGS

Reading No	Date	Type	Duration	Units	Sequence	Se	Se Error	Hg	Hg Error	W	W Error	Cu	Cu Error	Ni	Ni Error	Co
5	31-05-19	Soil	30.19	ppm	Final	<LOD	4.69	<LOD	11.96	<LOD	48.42	41.07	15.96	58.53	30.26	903.18
7	31-05-19	Soil	30.24	ppm	Final	<LOD	3.24	<LOD	7.88	<LOD	30.05	19.82	10.22	<LOD	27.68	<LOD
9	31-05-19	Soil	30.23	ppm	Final	<LOD	5.72	<LOD	13.1	<LOD	52.87	67.36	17.8	72.26	31.7	<LOD
12	31-05-19	Soil	30.19	ppm	Final	<LOD	5.24	<LOD	13.77	<LOD	61.42	<LOD	24.29	68.63	31.84	<LOD
15	31-05-19	Soil	30.22	ppm	Final	<LOD	3.14	<LOD	7.58	<LOD	30.88	<LOD	14.22	<LOD	26.76	<LOD
16	31-05-19	Soil	30.29	ppm	Final	<LOD	3.53	<LOD	8.73	<LOD	34.37	55.81	12.31	<LOD	29.93	<LOD
18	31-05-19	Soil	30.34	ppm	Final	<LOD	4.06	<LOD	11.67	<LOD	53.86	39.9	13.95	40.3	25.24	<LOD
19	31-05-19	Soil	30.09	ppm	Final	<LOD	4.18	<LOD	10.1	<LOD	41.3	27.89	13.32	<LOD	37.65	508.88
20	31-05-19	Soil	30.05	ppm	Final	<LOD	3.06	<LOD	7.03	<LOD	27.6	<LOD	13.6	<LOD	25.56	<LOD
22	31-05-19	Soil	30.34	ppm	Final	<LOD	3.34	<LOD	7.83	<LOD	30.82	<LOD	14.84	<LOD	26.09	<LOD
23	31-05-19	Soil	30.31	ppm	Final	<LOD	3.08	<LOD	7.41	<LOD	28.79	26.05	9.81	<LOD	25.72	<LOD
24	31-05-19	Soil	30.35	ppm	Final	<LOD	2.59	<LOD	5.81	<LOD	22.89	<LOD	11.78	<LOD	20.33	<LOD
26	31-05-19	Soil	30.08	ppm	Final	<LOD	3.39	<LOD	8.17	<LOD	32.51	<LOD	16.13	<LOD	29.58	<LOD
28	31-05-19	Soil	30.3	ppm	Final	<LOD	4.62	<LOD	11.02	<LOD	44.73	42.99	15	<LOD	41.18	360.89
29	31-05-19	Soil	30.11	ppm	Final	<LOD	4.1	<LOD	9.96	<LOD	38.74	<LOD	19.59	<LOD	36.29	<LOD
30	31-05-19	Soil	30.33	ppm	Final	<LOD	3.3	<LOD	8.2	<LOD	31.95	<LOD	15.28	<LOD	28.37	<LOD
31	31-05-19	Soil	30.14	ppm	Final	<LOD	2.4	<LOD	5.7	<LOD	22.56	52.43	8.81	<LOD	19.29	<LOD
33	31-05-19	Soil	30.11	ppm	Final	<LOD	2.78	<LOD	6.47	<LOD	25.71	<LOD	11.97	<LOD	22.19	<LOD
36	31-05-19	Soil	30.33	ppm	Final	<LOD	3.76	<LOD	9.56	<LOD	37.87	30.62	12.71	<LOD	33.74	297.51
78	03-06-19	Soil	30.31	ppm	Final	<LOD	2.84	<LOD	6.57	<LOD	25.98	<LOD	12.19	<LOD	22.23	<LOD
79	03-06-19	Soil	30.24	ppm	Final	<LOD	4.43	<LOD	10.75	<LOD	42.92	27.2	14.22	66.09	27.62	339
80	03-06-19	Soil	30.19	ppm	Final	<LOD	3.72	<LOD	8.77	<LOD	35.72	<LOD	16.76	<LOD	31.23	156.3
81	03-06-19	Soil	30.22	ppm	Final	<LOD	5.76	<LOD	14.58	<LOD	69.66	210.29	22.5	79.17	33.68	<LOD
82	03-06-19	Soil	30.1	ppm	Final	<LOD	15.56	<LOD	48.15	<LOD	256.5	451.22	60.42	<LOD	144.64	3889.07
83	03-06-19	Soil	30.06	ppm	Final	<LOD	4.3	<LOD	11.62	<LOD	52.63	40.94	14.3	<LOD	37.19	490.26
94	03-06-19	Soil	30.11	ppm	Final	<LOD	3.71	<LOD	8.86	<LOD	34.59	<LOD	17.43	47.82	22.2	200.79

19199 - Aureus Remedial Works

TABULATED X-RAY FLOURESCENCE (XRF) METER READINGS

Reading No	Date	Type	Duration	Units	Sequence	Co Error	Fe	Fe Error	Mn	Mn Error
5	31-05-19	Soil	30.19	ppm	Final	215.29	125316	567.15	322.47	78.34
7	31-05-19	Soil	30.24	ppm	Final	150.64	44890.8	267.99	579.99	56.19
9	31-05-19	Soil	30.23	ppm	Final	352.04	142251	630.29	1143.01	102.37
12	31-05-19	Soil	30.19	ppm	Final	338.4	130041	605.49	1185.82	102.06
15	31-05-19	Soil	30.22	ppm	Final	131.97	35012.5	235.42	271.65	47.82
16	31-05-19	Soil	30.29	ppm	Final	98.06	16786.6	174.11	1468.17	73.69
18	31-05-19	Soil	30.34	ppm	Final	257.96	97998.7	459.3	1099.99	83.83
19	31-05-19	Soil	30.09	ppm	Final	182.32	108474	484	967.21	82.11
20	31-05-19	Soil	30.05	ppm	Final	130.3	36002.6	231.55	356.9	48
22	31-05-19	Soil	30.34	ppm	Final	84.51	13981.4	149.5	329.58	46
23	31-05-19	Soil	30.31	ppm	Final	130.66	36605.6	231.88	315.84	46.58
24	31-05-19	Soil	30.35	ppm	Final	67.43	11481.8	118.11	58.06	32.12
26	31-05-19	Soil	30.08	ppm	Final	164.81	50118.5	292.21	157.53	48.93
28	31-05-19	Soil	30.3	ppm	Final	207.4	128045	554.07	628.27	82.06
29	31-05-19	Soil	30.11	ppm	Final	254.14	94985.5	452.39	556.43	72.11
30	31-05-19	Soil	30.33	ppm	Final	153.18	45626	271.33	188.49	47.35
31	31-05-19	Soil	30.14	ppm	Final	53.81	6982.47	90.43	<LOD	38.28
33	31-05-19	Soil	30.11	ppm	Final	106.8	26009.1	187.48	<LOD	53.91
36	31-05-19	Soil	30.33	ppm	Final	139.09	68393.9	368.7	527.45	64.77
78	03-06-19	Soil	30.31	ppm	Final	73.46	11980.1	126.05	<LOD	50.05
79	03-06-19	Soil	30.24	ppm	Final	200.83	121911	536.44	165.9	69.97
80	03-06-19	Soil	30.19	ppm	Final	97.81	36470	257.81	149.37	48.75
81	03-06-19	Soil	30.22	ppm	Final	422.11	196719	756.12	3193.4	144.73
82	03-06-19	Soil	30.1	ppm	Final	1196.09	1150400	3199.65	5867.06	413.75
83	03-06-19	Soil	30.06	ppm	Final	171.8	95647.2	455.02	471.24	69.85
94	03-06-19	Soil	30.11	ppm	Final	121.22	55803.5	321.53	114.92	51.19

19199 - Aureus Remedial Works

TABULATED SOIL LABORATORY RESULTS

		TRH													BTEX							
		C6-C10		C6-C10 (F1 minus BTEX)		C10-C16		C10-C16 (F2 minus Naphthalene)		C16-C34		C34-C40		C10-C40 (Sum of total)	Benzene		Toluene		Ethylbenzene		Xylene (m & p)	
		µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg
EQL		10	25	10	25	50	50	50	50	100	100	100	100	50	1	0.2	1	0.5	1	1	2	2
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil			800				1,000				3,500		10,000									
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt																						
0-1m					40				230							0.6		390				
1-2m					65											0.7						
2-4m					100											1						
>=4m					190											2						
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space																						
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil					180				120		1,300		5,600			65		105		125		
0-2m																				125		
NEPM 2013 Table 1C GILs, Drinking Water															1		800		300			
NEPM 2013 Table 1C GILs, Marine Waters															500							
NEPM 2013 Table 1A(1) HILs Res A Soil																						
NEPM 2013 Table 1A(4) Res HSL A & B GW for Vapour Intrusion, Silt																						
2-4m				6,000											4,000							
4-8m				6,000											5,000							
>=8m				6,000											5,000							
Field ID	**Date**																					
GW1	**03-06-19**	13		<10		<50		<50		<100		<100			<1		<1		1		5	
QA	**03-06-19**		<25		<25		<50		<50		<100		<100	<50		<0.2		<0.5		<1		<2
QA1	**03-06-19**	<10		<10		<50		<50		<100		<100			<1		<1		<1		3	
V1	**03-06-19**		<25		<25		<50		<50		<100		<100	<50		<0.2		<0.5		<1		<2
V2	**03-06-19**		<25		<25		<50		<50		<100		<100	<50		<0.2		<0.5		<1		<2
V3	**03-06-19**		<25		<25		<50		<50		180		<100	180		<0.2		<0.5		<1		<2
V4	**03-06-19**		<25		<25		<50		<50		<100		<100	<50		<0.2		<0.5		<1		<2
V5	**03-06-19**		<25		<25		<50		<50		<100		<100	<50		<0.2		<0.5		<1		<2
V6	**03-06-19**		<25		<25		<50		<50		<100		<100	<50		<0.2		<0.5		<1		<2
V7	**03-06-19**		<25		<25		<50		<50		<100		<100	<50		<0.2		<0.5		<1		<2

Environmental Standards
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil

19199 - Aureus Remedial Works

TABULATED SOIL LABORATORY RESULTS

		BTEX			Inorganics	Metals																	PAH
		Xylene (o)		Xylene Total	Moisture	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium (III+VI)	Chromium (III+VI) (filtered)	Copper	Copper (filtered)	Lead	Lead (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Zinc	Zinc (filtered)	Benzo(b+j+k)fluoranthene
		µg/L	mg/kg	mg/kg	%	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/L
EQL		1	1	1	0.1	4	0.001	0.4	0.0001	1	0.001	1	0.001	1	0.001	0.1	0.00005	1	0.001	1	0.001	0.002
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																						
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt																						
0-1m				95																		
1-2m				210																		
2-4m																						
>=4m																						
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space						100																
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil				45																		
0-2m				45																		
NEPM 2013 Table 1C GILs, Drinking Water							0.01		0.002				2		0.01		0.001		0.02			
NEPM 2013 Table 1C GILs, Marine Waters									0.0007				0.0013		0.0044		0.0001		0.007		0.015	
NEPM 2013 Table 1A(1) HILs Res A Soil						100		20				6,000		300		40		400		7,400		
NEPM 2013 Table 1A(4) Res HSL A & B GW for Vapour Intrusion, Silt																						
2-4m																						
4-8m																						
>=8m																						
Field ID	**Date**																					
GW1	**03-06-19**	1					<0.001		0.0032		<0.001		0.008		<0.001		<0.00005		0.031		2.9	<0.002
QA	**03-06-19**		<1	<1	17	<4		<0.4		20		5		8		<0.1		7		75		
QA1	**03-06-19**	<1					<0.001		0.0033		<0.001		0.009		<0.001		<0.00005		0.032		3	<0.002
V1	**03-06-19**		<1	<1	16	<4		<0.4		17		8		7		<0.1		17		86		
V2	**03-06-19**		<1	<1	17	<4		<0.4		20		5		6		<0.1		7		110		
V3	**03-06-19**		<1	<1	49	<4		<0.4		19		52		180		0.1		18		320		
V4	**03-06-19**		<1	<1	45	<4		<0.4		20		19		56		<0.1		11		160		
V5	**03-06-19**		<1	<1	40	<4		<0.4		28		12		7		0.1		16		130		
V6	**03-06-19**		<1	<1	27	<4		<0.4		20		7		8		<0.1		17		37		
V7	**03-06-19**		<1	<1	40	<4		<0.4		22		22		54		<0.1		19		380		

Environmental Standards
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil

19199 - Aureus Remedial Works

TABULATED SOIL LABORATORY RESULTS

		PAH																					
		Benzo(b+j+k)fluoranthene		Acenaphthene		Acenaphthylene		Anthracene		Benz(a)anthracene		Benzo(a) pyrene		Benzo(g,h,i)perylene		Chrysene		Dibenz(a,h)anthracene		Fluoranthene		Fluorene	
		mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg
EQL		0.2	1	0.1	1	0.1	1	0.1	1	0.1	1	0.05	1	0.1	1	0.1	1	0.1	1	0.1	1	0.1	1	0.1
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																								
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt																								
0-1m																								
1-2m																								
2-4m																								
>=4m																								
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space																								
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil												0.7												
0-2m												0.7												
NEPM 2013 Table 1C GILs, Drinking Water											0.01													
NEPM 2013 Table 1C GILs, Marine Waters																								
NEPM 2013 Table 1A(1) HILs Res A Soil																								
NEPM 2013 Table 1A(4) Res HSL A & B GW for Vapour Intrusion, Silt																								
2-4m																								
4-8m																								
>=8m																								
Field ID	**Date**																							
GW1	**03-06-19**		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1	
QA	**03-06-19**	<0.2		<0.1		<0.1		<0.1		<0.1		<0.05		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1
QA1	**03-06-19**		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1	
V1	**03-06-19**	<0.2		<0.1		<0.1		<0.1		<0.1		<0.05		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1
V2	**03-06-19**	<0.2		<0.1		<0.1		<0.1		<0.1		<0.05		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1
V3	**03-06-19**	<0.2		<0.1		<0.1		<0.1		<0.1		<0.05		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1
V4	**03-06-19**	<0.2		<0.1		<0.1		<0.1		<0.1		<0.05		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1
V5	**03-06-19**	<0.2		<0.1		<0.1		<0.1		<0.1		<0.05		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1
V6	**03-06-19**	<0.2		<0.1		<0.1		<0.1		<0.1		<0.05		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1
V7	**03-06-19**	<0.2		<0.1		<0.1		<0.1		<0.1		<0.05		<0.1		<0.1		<0.1		0.1		<0.1		<0.1

Environmental Standards
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil

19199 - Aureus Remedial Works

TABULATED SOIL LABORATORY RESULTS

		PAH											TPH							
		Indeno(1,2,3-c,d)pyrene		Naphthalene		Phenanthrene		Pyrene		Benzo(a)pyrene TEQ	PAHs (Sum of positives)		C6-C9		C10-C14		C15-C28		C29-C36	
		µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	mg/L	mg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg
EQL		1	0.1	1	0.1	1	0.1	1	0.1	0.005	0.001	0.05	10	25	50	50	100	100	100	100
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																				
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt																				
0-1m					4															
1-2m																				
2-4m																				
>=4m																				
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space					170															
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil																				
0-2m																				
NEPM 2013 Table 1C GILs, Drinking Water																				
NEPM 2013 Table 1C GILs, Marine Waters				50																
NEPM 2013 Table 1A(1) HILs Res A Soil																				
NEPM 2013 Table 1A(4) Res HSL A & B GW for Vapour Intrusion, Silt																				
2-4m																				
4-8m																				
>=8m																				
Field ID	**Date**																			
GW1	**03-06-19**	<1		<1		<1		<1		<0.005	0		11		<50		<100		<100	
QA	**03-06-19**		<0.1		<0.1		<0.1		<0.1			<0.05		<25		<50		<100		<100
QA1	**03-06-19**	<1		<1		<1		<1		<0.005	0		<10		<50		<100		<100	
V1	**03-06-19**		<0.1		<0.1		<0.1		<0.1			<0.05		<25		<50		<100		<100
V2	**03-06-19**		<0.1		<0.1		<0.1		<0.1			<0.05		<25		<50		<100		<100
V3	**03-06-19**		<0.1		<0.1		<0.1		<0.1			<0.05		<25		<50		<100		150
V4	**03-06-19**		<0.1		<0.1		<0.1		<0.1			<0.05		<25		<50		<100		<100
V5	**03-06-19**		<0.1		<0.1		<0.1		<0.1			<0.05		<25		<50		<100		<100
V6	**03-06-19**		<0.1		<0.1		<0.1		<0.1			<0.05		<25		<50		<100		<100
V7	**03-06-19**		<0.1		<0.1		0.1		0.1			0.3		<25		<50		<100		<100

Environmental Standards
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil

Aureus Remedial Works

TABULATED GROUNDWATER LABORATORY RESULTS

		TRH						BTEX					Metals								PAH			
		C6–C10	C6–C10 (F1 minus BTEX)	C10-C16	C10-C16 (F2 minus Naphthalene)	C16-C34	C34-C40	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Arsenic (filtered)	Cadmium (filtered)	Chromium (III+VI) (filtered)	Copper (filtered)	Lead (filtered)	Mercury (filtered)	Nickel (filtered)	Zinc (filtered)	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L
EQL		10	10	50	50	100	100	1	1	1	2	1	0.001	0.0001	0.001	0.001	0.001	0.00005	0.001	0.001	0.002	1	1	1
ANZECC 2000 Irrigation Short Term Trigger Values													2	0.05	1	5	5	0.002	2	5				
NEPM 2013 Table 1C GILs, Drinking Water								1	800	300			0.01	0.002		2	0.01	0.001	0.02					
NEPM 2013 Table 1C GILs, Marine Waters								500						0.0007		0.0013	0.0044	0.0001	0.007	0.015				
Field ID	**Date**																							
GW1	**03-06-19**	**13**	<10	<50	<50	<100	<100	<1	<1	**1**	**5**	**1**	<0.001	**0.0032**	<0.001	**0.008**	<0.001	<0.00005	**0.031**	**2.9**	<0.002	<1	<1	<1
QA1	**03-06-19**	<10	<10	<50	<50	<100	<100	<1	<1	<1	**3**	<1	<0.001	**0.0033**	<0.001	**0.009**	<0.001	<0.00005	**0.032**	**3**	<0.002	<1	<1	<1
Statistics																								
Number of Results		**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Maximum Concentration		**13**	**<10**	**<50**	**<50**	**<100**	**<100**	**<1**	**<1**	**1**	**5**	**1**	**<0.001**	**0.0033**	**<0.001**	**0.009**	**<0.001**	**<0.00005**	**0.032**	**3**	**<0.002**	**<1**	**<1**	**<1**
Average Concentration *		**9**	**5**	**25**	**25**	**50**	**50**	**0.5**	**0.5**	**0.75**	**4**	**0.75**	**0.0005**	**0.0032**	**0.0005**	**0.0085**	**0.0005**	**0.000025**	**0.032**	**3**	**0.001**	**0.5**	**0.5**	**0.5**
Standard Deviation *		**5.7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.35**	**1.4**	**0.35**	**0**	**0.000071**	**0**	**0.00071**	**0**	**0**	**0.00071**	**0.071**	**0**	**0**	**0**	**0**
95% UCL (Student's-t) *		**34.26**	**5**	**25**	**25**	**50**	**50**	**0.5**	**0.5**	**2.328**	**10.31**	**2.328**	**0.0005**	**0.00357**	**0.0005**	**0.0117**	**0.0005**	**0.000025**	**0.0347**	**3.266**	**0.001**	**0.5**	**0.5**	**0.5**

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
DoE, 2000, ANZECC 2000 Irrigation Short Term Trigger Values

Aureus Remedial Works

TABULATED GROUNDWATER LABORATORY RESULTS

		PAH													TPH			
		Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ	PAHs (Sum of positives)	C6-C9	C10-C14	C15-C28	C29-C36
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L
EQL		1	1	1	1	1	1	1	1	1	1	1	0.005	0.001	10	50	100	100
ANZECC 2000 Irrigation Short Term Trigger Values																		
NEPM 2013 Table 1C GILs, Drinking Water			0.01															
NEPM 2013 Table 1C GILs, Marine Waters										50								
Field ID	**Date**																	
GW1	**03-06-19**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.005	**0**	**11**	<50	<100	<100
QA1	**03-06-19**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.005	**0**	<10	<50	<100	<100
Statistics																		
Number of Results		**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Maximum Concentration		**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<0.005**	**0**	**11**	**<50**	**<100**	**<100**
Average Concentration *		**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.0025**	**0**	**8**	**25**	**50**	**50**
Standard Deviation *		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4.2**	**0**	**0**	**0**
95% UCL (Student's-t) *		**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.0025**	**0**	**26.94**	**25**	**50**	**50**

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
DoE, 2000, ANZECC 2000 Irrigation Short Term Trigger \

Aureus Remediation - 19199

TABULATED RELATIVE PERCENT DIFFERENCE (RPD) RESULTS

				TRH							BTEX						Inorganics
				C6-C10	F1 (C6-C10 minus BTEX)	C10-C16	F2 (C10-C16 minus Naphthalene)	C16-C34	C34-C40	C10-C40 (Sum of total)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Moisture
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
EQL				25	25	50	50	100	100	50	0.2	0.5	1	2	1	1	0.1
Lab Report Number	**Field ID**	**Matrix Type**	**Date**														
218890	**V2**	**soil**	**03-06-19**	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.5	<1	<2	<1	<1	17
218890	**QA**	**soil**	**03-06-19**	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.5	<1	<2	<1	<1	17
RPD				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0
218890	**V2**	**soil**	**03-06-19**	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.5	<1	<2	<1	<1	17
Inter-lab	**QA1**	**soil**	**03-06-19**														
RPD				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	200

Notes/Abbreviations:
RPD - Relative Percent Difference
NA - RPD not calculated (one or both concentrations <LOR)
RPDs > acceptable threshold of 50% are shaded in grey and bolded
mg/kg - milligrams per kilogram

Groundwater

				TRH						BTEX							
				C6-C10	F1 (C6-C10 minus BTEX)	C10-C16	F2 (C10-C16 minus Naphthalene)	C16-C34	C34-C40	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Arsenic (filtered)	Cadmium (filtered)	Chromium (III+VI) (filtered)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L
EQL				10	10	50	50	100	100	1	1	1	2	1	0.001	0.0001	0.001
Lab Report Number	**Field ID**	**Matrix Type**	**Date**														
218890	**GW1**	**water**	**03-06-19**	13	<10	<50	<50	<100	<100	<1	<1	1	5	1	<0.001	0.0032	<0.001
218890	**QA1**	**water**	**03-06-19**	<10	<10	<50	<50	<100	<100	<1	<1	<1	3	<1	<0.001	0.0033	<0.001
RPD				NA	NA	NA	NA	NA	NA	NA	NA	NA	50	NA	NA	3	NA

Notes/Abbreviations:
RPD - Relative Percent Difference
NA - RPD not calculated (one or both concentrations <LOR)
RPDs > acceptable threshold of 50% are shaded in grey and bolded
mg/kg - milligrams per kilogram

Aureus Remediation - 19199

TABULATED RELATIVE PERCENT DIFFERENCE (RPD) RESULTS

				Metals														
				Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				4	0.4	1	1	1	0.1	1	1	0.2	0.1	0.1	0.1	0.1	0.05
Lab Report Number	**Field ID**	**Matrix Type**	**Date**														
218890	**V2**	**soil**	**03-06-19**	<4	<0.4	20	5	6	<0.1	7	110	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05
218890	**QA**	**soil**	**03-06-19**	<4	<0.4	20	5	8	<0.1	7	75	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05
RPD				NA	NA	0	0	29	NA	0	38	NA	NA	NA	NA	NA	NA
218890	**V2**	**soil**	**03-06-19**	<4	<0.4	20	5	6	<0.1	7	110	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05
Inter-lab	**QA1**	**soil**	**03-06-19**														
RPD				NA	NA	200	200	200	NA	200	200	NA	NA	NA	NA	NA	NA

Notes/Abbreviations:
RPD - Relative Percent Difference
NA - RPD not calculated (one or both concentrations <LOR)
RPDs > acceptable threshold of 50% are shaded in grey and bolded
mg/kg - milligrams per kilogram

Groundwater

				Metals					PAH								
				Copper (filtered)	Lead (filtered)	Mercury (filtered)	Nickel (filtered)	Zinc (filtered)	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.001	0.001	0.00005	0.001	0.001	0.002	1	1	1	1	1	1	1	1
Lab Report Number	**Field ID**	**Matrix Type**	**Date**														
218890	**GW1**	**water**	**03-06-19**	0.008	<0.001	<0.00005	0.031	2.9	<0.002	<1	<1	<1	<1	<1	<1	<1	<1
218890	**QA1**	**water**	**03-06-19**	0.009	<0.001	<0.00005	0.032	3	<0.002	<1	<1	<1	<1	<1	<1	<1	<1
RPD				12	NA	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes/Abbreviations:
RPD - Relative Percent Difference
NA - RPD not calculated (one or both concentrations <LOR)
RPDs > acceptable threshold of 50% are shaded in grey and bolded
mg/kg - milligrams per kilogram

Aureus Remediation - 19199

TABULATED RELATIVE PERCENT DIFFERENCE (RPD) RESULTS

				PAH										TPH			
				Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of positives)	C6-C9	C10-C14	C15-C28	C29-C36
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05	25	50	100	100
Lab Report Number	**Field ID**	**Matrix Type**	**Date**														
218890	**V2**	**soil**	**03-06-19**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<25	<50	<100	<100
218890	**QA**	**soil**	**03-06-19**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<25	<50	<100	<100
RPD				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
218890	**V2**	**soil**	**03-06-19**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<25	<50	<100	<100
Inter-lab	**QA1**	**soil**	**03-06-19**														
RPD				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes/Abbreviations:
RPD - Relative Percent Difference
NA - RPD not calculated (one or both concentrations <LOR)
RPDs > acceptable threshold of 50% are shaded in grey and bolded
mg/kg - milligrams per kilogram

Groundwater

											TPH			
				Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ	PAHs (Sum of positives)	C6-C9	C10-C14	C15-C28	C29-C36
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L
EQL				1	1	1	1	1	1	0.005	0.001	10	50	100	100
Lab Report Number	**Field ID**	**Matrix Type**	**Date**												
218890	**GW1**	**water**	**03-06-19**	<1	<1	<1	<1	<1	<1	<0.005	0	11	<50	<100	<100
218890	**QA1**	**water**	**03-06-19**	<1	<1	<1	<1	<1	<1	<0.005	0	<10	<50	<100	<100
RPD				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes/Abbreviations:
RPD - Relative Percent Difference
NA - RPD not calculated (one or both concentrations <LOR)
RPDs > acceptable threshold of 50% are shaded in grey and bolded
mg/kg - milligrams per kilogram

ATTACHMENT 5

Laboratory Documentation

ENVIROLAB GROUP

CHAIN OF CUSTODY - Client

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Email: ollie@envsolutions.com.au JAMES@ENVSOLUTIONS.COM.AU

Client Project Name / Number / Site (ie report title): ~~18780~~ 19199 - AUREUS

PO No.: NA

Envirolab Quote No. :

Date results required: ___/___/___

Or choose: standard (same day) / 1 day / 2 day / 3 day
Note: Inform lab in advance if urgent turnaround is required - surcharges apply

Report format: esdat / equis /

Lab Comments:

Sample Information

Envirolab Sample ID	Client Sample ID or information	Depth	Date Sampled	Type of Sample	Combo M
1	V1		3.6.19	SOIL	✓
2	V2		↑	↑	✓
3	V3				✓
4	V4				✓
5	V5				✓
6	V6				✓
7	V7				✓
8	QA			↓	✓
~~-~~	QA1			SOIL	✓
9	GW1			WATER	✓
10	QA1		3.6.19	WATER	✓

Tests Required

— PLEASE SEND TO ~~BROFINS~~ FOR ANALYSIS

Comments:
Provide as much information about the sample as you can

ENVIROLAB 12 Ashley St Chatswood NSW 2067 Ph: (02) 9910 6200

Job No: 218890

Date Received: 4/6/2019

Time Received: 10 20

Received by: RL

Temp: Cool/Ambient

Cooling: Ice/Icepack 4.2

Security: Intact/Broken/None

Relinquished by (Company): ENV SOLUTIONS

Print Name: O. FICK

Date & Time: 3.6.19

Signature:

Received by (Company): EA

Print Name: Ray

Date & Time: 4/6/2019 10.20

Signature:

Lab use only:

Samples Received: Cool / Ambient (circle one)

Temperature Received at: 4.2 (if applicable)

Transported by: Hand delivered / Courier (circle one)

WHITE - LAB COPY / BLUE - CLIENT COPY / PINK - RETAIN IN BOOK

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details	
Client	ENV Solutions Pty Ltd
Attention	Ollie Fick

Sample Login Details	
Your reference	19199 - Aureus
Envirolab Reference	218890
Date Sample Received	04/06/2019
Date Instructions Received	04/06/2019
Date Results Expected to be Reported	04/06/2019

Sample Condition	
Samples received in appropriate condition for analysis	Incorrect Container
No. of Samples Provided	8 SOIL, 2 WATER
Turnaround Time Requested	Same day
Temperature on Receipt (°C)	4.2
Cooling Method	Ice
Sampling Date Provided	YES

Comments
Please contact the laboratory within 24 hours if you wish to cancel the aformentioned testing. Otherwise testing will proceed as per the COC and hence invoice accordingly.

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
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12 Ashley St Chatswood NSW 2067
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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Acid Extractable metalsin soil	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHsin Water	HM in water - dissolved
V1	✓	✓	✓	✓				
V2	✓	✓	✓	✓				
V3	✓	✓	✓	✓				
V4	✓	✓	✓	✓				
V5	✓	✓	✓	✓				
V6	✓	✓	✓	✓				
V7	✓	✓	✓	✓				
QA	✓	✓	✓	✓				
GW1					✓	✓	✓	✓
QA1					✓	✓	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.

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CERTIFICATE OF ANALYSIS 218689

Client Details	
Client	ENV Solutions Pty Ltd
Attention	Ollie Fick
Address	45-65 Smith Drive, Ballina, NSW, 2478

Sample Details	
Your Reference	**19199 - Aureus**
Number of Samples	5 soil
Date samples received	31/05/2019
Date completed instructions received	31/05/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details	
Date results requested by	04/06/2019
Date of Issue	04/06/2019

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Giovanni Agosti, Group Technical Manager
Steven Luong, Organics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

Envirolab Reference: 218689
Revision No: R00

Client Reference: 19199 - Aureus

vTRH(C6-C10)/BTEXN in Soil						
Our Reference	UNITS	218689-1	218689-2	218689-3	218689-4	218689-5
Your Reference		S1	S2	S3	S4	S5
Date Sampled		30/05/2019	30/05/2019	30/05/2019	30/05/2019	30/05/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	03/06/2019	03/06/2019	03/06/2019	03/06/2019	03/06/2019
Date analysed	-	04/06/2019	04/06/2019	04/06/2019	04/06/2019	04/06/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	81	79	72	78	83

Client Reference: 19199 - Aureus

svTRH (C10-C40) in Soil						
Our Reference		218689-1	218689-2	218689-3	218689-4	218689-5
Your Reference	UNITS	S1	S2	S3	S4	S5
Date Sampled		30/05/2019	30/05/2019	30/05/2019	30/05/2019	30/05/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	03/06/2019	03/06/2019	03/06/2019	03/06/2019	03/06/2019
Date analysed	-	03/06/2019	04/06/2019	04/06/2019	04/06/2019	04/06/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	92	89	91	89	88

Client Reference: 19199 - Aureus

PAHs in Soil						
Our Reference		218689-1	218689-2	218689-3	218689-4	218689-5
Your Reference	UNITS	S1	S2	S3	S4	S5
Date Sampled		30/05/2019	30/05/2019	30/05/2019	30/05/2019	30/05/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	03/06/2019	03/06/2019	03/06/2019	03/06/2019	03/06/2019
Date analysed	-	04/06/2019	04/06/2019	04/06/2019	04/06/2019	04/06/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.2	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	92	97	94	94	95

Client Reference: 19199 - Aureus

Organochlorine Pesticides in soil						
Our Reference		218689-1	218689-2	218689-3	218689-4	218689-5
Your Reference	UNITS	S1	S2	S3	S4	S5
Date Sampled		30/05/2019	30/05/2019	30/05/2019	30/05/2019	30/05/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	03/06/2019	03/06/2019	03/06/2019	03/06/2019	03/06/2019
Date analysed	-	04/06/2019	04/06/2019	04/06/2019	04/06/2019	04/06/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	112	108	112	109	109

Client Reference: 19199 - Aureus

Organophosphorus Pesticides						
Our Reference		218689-1	218689-2	218689-3	218689-4	218689-5
Your Reference	UNITS	S1	S2	S3	S4	S5
Date Sampled		30/05/2019	30/05/2019	30/05/2019	30/05/2019	30/05/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	03/06/2019	03/06/2019	03/06/2019	03/06/2019	03/06/2019
Date analysed	-	04/06/2019	04/06/2019	04/06/2019	04/06/2019	04/06/2019
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	112	108	112	109	109

Client Reference: 19199 - Aureus

PCBs in Soil						
Our Reference		218689-1	218689-2	218689-3	218689-4	218689-5
Your Reference	UNITS	S1	S2	S3	S4	S5
Date Sampled		30/05/2019	30/05/2019	30/05/2019	30/05/2019	30/05/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	03/06/2019	03/06/2019	03/06/2019	03/06/2019	03/06/2019
Date analysed	-	04/06/2019	04/06/2019	04/06/2019	04/06/2019	04/06/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	112	108	112	109	109

Client Reference: 19199 - Aureus

Acid Extractable metals in soil						
Our Reference		218689-1	218689-2	218689-3	218689-4	218689-5
Your Reference	UNITS	S1	S2	S3	S4	S5
Date Sampled		30/05/2019	30/05/2019	30/05/2019	30/05/2019	30/05/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	03/06/2019	03/06/2019	03/06/2019	03/06/2019	03/06/2019
Date analysed	-	03/06/2019	03/06/2019	03/06/2019	03/06/2019	03/06/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	0.4	<0.4	<0.4	0.7	2
Chromium	mg/kg	25	23	19	19	26
Copper	mg/kg	33	28	13	15	59
Lead	mg/kg	100	190	32	110	350
Mercury	mg/kg	0.1	0.6	0.1	<0.1	0.1
Nickel	mg/kg	13	11	13	18	15
Zinc	mg/kg	680	140	500	850	1,100

Client Reference: 19199 - Aureus

Moisture						
Our Reference		218689-1	218689-2	218689-3	218689-4	218689-5
Your Reference	UNITS	S1	S2	S3	S4	S5
Date Sampled		30/05/2019	30/05/2019	30/05/2019	30/05/2019	30/05/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	03/06/2019	03/06/2019	03/06/2019	03/06/2019	03/06/2019
Date analysed	-	04/06/2019	04/06/2019	04/06/2019	04/06/2019	04/06/2019
Moisture	%	28	24	27	23	24

Client Reference: 19199 - Aureus

Metals in TCLP USEPA1311						
Our Reference		218689-1	218689-2	218689-3	218689-4	218689-5
Your Reference	UNITS	S1	S2	S3	S4	S5
Date Sampled		30/05/2019	30/05/2019	30/05/2019	30/05/2019	30/05/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	03/06/2019	03/06/2019	03/06/2019	03/06/2019	03/06/2019
Date analysed	-	03/06/2019	03/06/2019	03/06/2019	03/06/2019	03/06/2019
pH of soil for fluid# determ.	pH units	7.2	6.7	6.1	6.1	6.1
pH of soil TCLP (after HCl)	pH units	1.9	1.8	2.0	1.9	1.9
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	5.0	5.0	5.0	5.0	5.0
Arsenic in TCLP	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium in TCLP	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium in TCLP	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Lead in TCLP	mg/L	<0.03	<0.03	<0.03	<0.03	0.07
Mercury in TCLP	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Nickel in TCLP	mg/L	<0.02	<0.02	<0.02	0.02	<0.02

Client Reference: 19199 - Aureus

PAHs in TCLP (USEPA 1311)						
Our Reference		218689-1	218689-2	218689-3	218689-4	218689-5
Your Reference	UNITS	S1	S2	S3	S4	S5
Date Sampled		30/05/2019	30/05/2019	30/05/2019	30/05/2019	30/05/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	03/06/2019	03/06/2019	03/06/2019	03/06/2019	03/06/2019
Date analysed	-	04/06/2019	04/06/2019	04/06/2019	04/06/2019	04/06/2019
Naphthalene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	91	80	72	80	95

Client Reference: 19199 - Aureus

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.

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Method ID	Methodology Summary
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Org-012	Leachates are extracted with Dichloromethane and analysed by GC-MS.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

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QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/06/2019	1	03/06/2019	03/06/2019		03/06/2019	[NT]
Date analysed	-			04/06/2019	1	04/06/2019	04/06/2019		04/06/2019	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	<25	1	<25	<25	0	93	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	1	<25	<25	0	93	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	85	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	90	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	97	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	96	[NT]
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	93	[NT]
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	96	1	81	76	6	93	[NT]

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QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/06/2019	1	03/06/2019	03/06/2019		03/06/2019	[NT]
Date analysed	-			03/06/2019	1	03/06/2019	03/06/2019		03/06/2019	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	1	<50	<50	0	88	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	1	<100	<100	0	95	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	1	<100	<100	0	90	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	1	<50	<50	0	88	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	1	<100	<100	0	95	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	1	<100	<100	0	90	[NT]
Surrogate o-Terphenyl	%		Org-003	93	1	92	91	1	90	[NT]

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QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/06/2019	1	03/06/2019	03/06/2019		03/06/2019	[NT]
Date analysed	-			04/06/2019	1	04/06/2019	04/06/2019		04/06/2019	[NT]
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	110	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	100	[NT]
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	96	[NT]
Anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.1	0	90	[NT]
Pyrene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.1	0	92	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	102	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	0.05	0.05	0	94	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	95	1	92	101	9	86	[NT]

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QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/06/2019	1	03/06/2019	03/06/2019		03/06/2019	[NT]
Date analysed	-			04/06/2019	1	04/06/2019	04/06/2019		04/06/2019	[NT]
HCB	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	94	[NT]
gamma-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	97	[NT]
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	98	[NT]
delta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	102	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	100	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	103	[NT]
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	107	[NT]
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	105	[NT]
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	91	[NT]
Endosulfan II	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	104	[NT]
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	111	1	112	113	1	96	[NT]

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QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/06/2019	1	03/06/2019	03/06/2019		03/06/2019	[NT]
Date analysed	-			04/06/2019	1	04/06/2019	04/06/2019		04/06/2019	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	107	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	75	[NT]
Dimethoate	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	94	[NT]
Fenitrothion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	95	[NT]
Malathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	106	[NT]
Parathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	83	[NT]
Ronnel	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	72	[NT]
Surrogate TCMX	%		Org-008	111	1	112	113	1	106	[NT]

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QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/06/2019	1	03/06/2019	03/06/2019		03/06/2019	[NT]
Date analysed	-			04/06/2019	1	04/06/2019	04/06/2019		04/06/2019	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	100	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	111	1	112	113	1	106	[NT]

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QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			03/06/2019	1	03/06/2019	03/06/2019		03/06/2019	[NT]
Date analysed	-			03/06/2019	1	03/06/2019	03/06/2019		03/06/2019	[NT]
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	104	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	0.4	0.7	55	100	[NT]
Chromium	mg/kg	1	Metals-020	<1	1	25	26	4	113	[NT]
Copper	mg/kg	1	Metals-020	<1	1	33	40	19	104	[NT]
Lead	mg/kg	1	Metals-020	<1	1	100	110	10	125	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	1	0.1	0.1	0	90	[NT]
Nickel	mg/kg	1	Metals-020	<1	1	13	15	14	102	[NT]
Zinc	mg/kg	1	Metals-020	<1	1	680	840	21	111	[NT]

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QUALITY CONTROL: Metals in TCLP USEPA1311						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/06/2019	1	03/06/2019	03/06/2019		03/06/2019	[NT]
Date analysed	-			03/06/2019	1	03/06/2019	03/06/2019		03/06/2019	[NT]
Arsenic in TCLP	mg/L	0.05	Metals-020 ICP-AES	<0.05	1	<0.05	<0.05	0	117	[NT]
Cadmium in TCLP	mg/L	0.01	Metals-020 ICP-AES	<0.01	1	<0.01	<0.01	0	108	[NT]
Chromium in TCLP	mg/L	0.01	Metals-020 ICP-AES	<0.01	1	<0.01	<0.01	0	106	[NT]
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	1	<0.03	<0.03	0	105	[NT]
Mercury in TCLP	mg/L	0.0005	Metals-021 CV-AAS	<0.0005	1	<0.0005	<0.0005	0	115	[NT]
Nickel in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02	1	<0.02	<0.02	0	106	[NT]

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QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			03/06/2019	[NT]	[NT]	[NT]	[NT]	03/06/2019	[NT]
Date analysed	-			04/06/2019	[NT]	[NT]	[NT]	[NT]	04/06/2019	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	92	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	82	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	80	[NT]
Anthracene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	86	[NT]
Pyrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	84	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	88	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-012	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	76	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	71	[NT]	[NT]	[NT]	[NT]	77	[NT]

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Result Definitions	
NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions	
Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

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Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

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Project Name: Aureus
Email Results to: jake@envsolutions.com.au
Jane@envsolutions.com.au

	Sample ID	Date	Type	Container	Sample Location	Asbestos in Material	Asbestos in Soil	Asbestos in Dust	Asbestos Fibre Count	Asbestos in Water	Asbestos WA/NEPM	
1	S2	30/5	SOIL		Sample 2	X						
2	S3	"	"		" 3	X						
3	S5	"	"		" 5	X						
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												

URGENT

RECEIVED
31 MAY 2019
BY:

Relinquished By: J Coote
Date & Time: 30/5/19
Signature:

Received By:
Date & Time: 31/5/19 8.40 am
Signature:

Turn around time: 24 Hrs x ✓ | 3 Days | 48 Hrs | 5 Days
Method of Shipment: Express Post ✓

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD
ABN 36 088 095 112

Our ref : ASET73770 / 76950 / 1 - 3
Your ref : 19199 - Aurers
NATA Accreditation No: 14484

31 May 2019

ENV Solutions
P O Box 248
Ballina NSW 2478

Attn: Mr Jake Rozyn

Dear Jake,
Asbestos Identification
This report presents the results of three samples, forwarded by ENV Solutions on 31 May 2019, for analysis for asbestos.

1.Introduction: Three samples forwarded were examined and analysed for the presence of asbestos.

2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method **(Australian Standard AS 4964 - 2004 and Safer Environment Method 1 as the supplementary work instruction) (Qualitative Analysis only).**

3. Results :

Sample No. 1. ASET73770 / 76950 / 1. 19199-S2.
Approx dimensions 3.0 cm x 2.0 cm x 0.5 cm
The sample consisted of a fragment of a fibro plaster cement material containing organic fibres.
No asbestos detected.

Sample No. 2. ASET73770 / 76950 / 2. 19199-S3.
Approx dimensions 11.0 cm x 10.0 cm x 0.5 cm
The sample consisted of a fragment of a fibro plaster cement material containing organic fibres.
No asbestos detected.

Sample No. 3. ASET73770 / 76950 / 3. 19199-S5.
Approx dimensions 10.0 cm x 7.0 cm x 0.5 cm
The sample consisted of a fragment of a fibre cement material.
Chrysotile asbestos and Amosite asbestos detected.

Reported by,

Mahen De Silva. BSc, MSc, Grad Dip (Occ Hyg)
Occupational Hygienist / Approved Identifier.
Approved Signatory

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

The results contained in this report relate only to the sample/s submitted for testing. Australian Safer Environment & Technology accepts no responsibility for whether or not the submitted sample/s is/are representative. Results indicating "No asbestos detected" indicates a reporting limit specified in AS4964 -2004 which is 0.1g/ Kg (0.01%). Any amounts

SUITE 710 / 90 GEORGE STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY WESTFIELD NSW 1635
PHONE: (02) 99872183 FAX: (02)99872151 EMAIL: info@ausset.com.au WEBSITE: www.Ausset.com.au

detected at assumed lower level than that would be reported, however those assumed lower levels may be treated as "No asbestos detected" as specified and recommended by A4964-2004. Trace / respirable level asbestos will be reported only when detected.

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Appendix C NSW Coastal Design Guidelines Checklist

Appendix

Assessment checklist for planning proposals

Hierarchy of coastal management areas:

1. CWLRA = coastal wetlands and littoral rainforests area
2. CVA = coastal vulnerability area
3. CEA = coastal environment area
4. CUA = coastal use area

Outcome A. Protect and enhance coastal environmental values			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N) If 'No', justify this**
Outcome A.1 Protect coastal ecosystems			
A.1a Avoid development on undeveloped headlands and significant coastal landforms.	CVA, CEA	N	The rezoning site is located well away from any headland or significant coastal landform.
A.1b Do not increase development or intensify land uses where there is existing development on headlands and significant coastal landforms.	CVA, CEA	N	The rezoning site is located well away from any headland or significant coastal landform.
A.1c Identify, protect and enhance sensitive coastal ecosystems including coastal wetlands, littoral rainforests and other coastal threatened ecological communities that may be affected by development.	CWLRA, CEA	N	The rezoning site does not contain any sensitive coastal ecosystems.
A.1d Maintain and protect the presence of beaches, rock platforms, coastal dunes, riparian vegetation and the natural features of foreshores, including along estuaries and coastal lakes.	CWLRA, CVA, CEA	N	The rezoning site is located well away from beaches, rock platforms or coastal dunes.
A.1e Use environmental buffers and limit the number of access points and pathways to protect coastal ecosystems. In some cases, it may not be appropriate to allow public access to areas with highly sensitive ecosystems or animal populations.	CWLRA, CEA, CUA	N	The proposed rezoning has no implications for coastal access.
A.1f Consider if the planning proposal is needed or if development zones could be better located to minimise effects on biodiversity.	CWLRA, CEA, CUA	N	The proposed rezoning will have no impact on biodiversity values.
A.1g Avoid development that may disturb, expose or drain areas of Class 1 and Class 2 acid sulfate soils.	CWLRA, CEA, CUA	M	The site is not mapped as containing Acid Sulfate Soils.
A.1h Consider direct and indirect effects of development, including any necessary infrastructure, on water quality, water quantity and hydrological flows of waterways and groundwater.	CEA, CUA	N	Indirect impacts of development can be addressed and adequately managed at a subsequent development application stage.

Outcome A. Protect and enhance coastal environmental values			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N)** **If 'No', justify this**
Outcome A.2 Protect coastal wetlands and littoral rainforests			
A.2a Identify coastal wetlands and littoral rainforests, including areas that could be rehabilitated or restored in the future, and do not increase development or intensify land uses in these areas.	CWLRA	N	The rezoning site does not contain any areas of coastal wetland or littoral rainforest.
A.2b Allow for the adaptive management of stormwater run-off so that the quality of water leaving the site is better than pre-development quality to lessen effects on coastal wetlands or other sensitive receiving environments.	CWLRA, CEA, CUA	N	Adequate stormwater measures will be developed as part of a subsequent design of the residential development.
A.2c Provide environmental buffers and riparian corridors that enable the long-term management and protection of areas of biodiversity and ecosystem integrity.	CWLRA, CVA, CEA, CUA	N	Buffers are not required in this case as the site does not contain, nor is adjacent to, any areas of high biodiversity value.
A.2d Identify and protect areas that allow for landward migration pathways for coastal wetlands to respond to climate change.	CWLRA, CEA	N	The site does not contain nor is adjacent to areas of coastal wetland.
A.2e Exclude land uses that affect the natural state of coastal wetlands and littoral rainforests or that will make it harder to rehabilitate these ecosystems in the future.	CWLRA		
Outcome A.3 Protect marine parks and aquatic reserves			
A.3a Avoid development and land uses that affect the environmental, economic, social and cultural values of marine parks and aquatic reserves.	CEA, CUA	N	The site does not adjoin any marine parks or aquatic reserves.
A.3b Protect the ecological health of marine parks and aquatic reserves, including providing for riparian vegetation and buffers in their catchments.	CEA, CUA	N	The site does not adjoin any marine parks or aquatic reserves.

Outcome B. Ensure the built environment is appropriate for the coast and local context			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N) If 'No', justify this**
Outcome B.1 Respond to and protect elements that make the place special			
B.1a Integrate development within the natural topography of the site and ensure land use, building scale and height respond sympathetically to coastal landforms.	CWLRA, CVA, CEA, CUA	Y	The site is generally flat and adjoins existing medium density development to the west, a future neighbourhood centre to the north and coastal parkland to the east.
B.1b Ensure the intended form and footprint of development does not dominate coastal elements, including foreshores, public spaces and other areas of natural beauty.	CWLRA, CVA, CEA, CUA	Y	Future residential development will not dominate the adjoining coastal parkland.
B.1c Incorporate adaptive, water-sensitive urban design into the development footprint to reduce run-off and manage water quality within receiving environments.	CWLRA, CEA, CUA	Y	A Stormwater Management Plan will be developed as part of the residential design for the site.
B.1d Ensure that lot sizes, building heights and density are appropriate for the coastal settlement, and complement the existing or desired local character, supported by place-based strategies.	CEA, CUA	N	The proposed rezoning does not alter existing controls in relation to building heights and residential densities.
B.1e Avoid development that would harm geological features and geoheritage.	CEA, CUA	N	The reasoning site does not contain any areas of significance in this regard.
Outcome B.2 Ensure urban development complements coastal scenic values			
B.2a Limit ribbon development and urban sprawl wherever possible. In certain locations, place-based strategies may support increased development density and building heights as a better response to urban growth.	CEA, CUA	Y	The rezoning site is within an existing urban estate. The medium density zone will support an increase in local density and housing choice.
B.2b Use greenbelts to create, maintain and mark out separation between settlements.	CEA, CUA	N	The rezoning site does not impact on any greenbelt separation areas.
B.2c Consider effects on scenic values and maintain publicly accessible views to significant landmarks.	CEA, CUA	Y	The site can be development in a manner that will not significantly impact on views to the adjoining coastal areas.
B.2d Ensure that building heights consider the effect on views from different vantage points.	CEA, CUA	N	The rezoning does not alter allowable building heights.
B.2e Retain or create views from public spaces. Prioritise this over creating views from private property.	CEA, CUA	Y	The site can be development in a manner that will not significantly impact on views to the adjoining coastal areas.
B.2f Provide for active transport links along foreshores, including along estuaries and coastal lakes, and between settlements to increase public access and amenity.	CWLRA, CVA, CEA, CUA	N	The proposed rezoning does not alter existing transport links or create additional demands for new links.

Outcome C. Protect and enhance the social and cultural values of the coastal zone			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N)** **If 'No', justify this**
Outcome C.1 Protect and promote heritage values			
C.1a Ensure development does not harm heritage values or sites.	CWLRA, CVA, CEA, CUA	N	The site does not contain heritage values.
C.1b Work collaboratively with local Aboriginal people before and throughout the planning proposal process.	CWLRA, CVA, CEA, CUA	N	Previous cultural heritage assessment demonstrated that the site does not contain cultural heritage values.
C.1c With permission and guidance from local Traditional Custodians, identify and emphasise significant features of coastal land and sea Country.	CWLRA, CVA, CEA, CUA	N	As above.
C.1d With permission and guidance from local Traditional Custodians, identify and protect sacred and significant areas through the appropriate siting of development.	CWLRA, CVA, CEA, CUA	N	As above.
C.1e Ensure land use, building type, scale and height respond to heritage items and areas.	CEA, CUA	N	As above.
Outcome C.2 Provide public access to significant coastal assets			
C.2a Protect and, where practical, improve, public amenity, access to and use of beaches, foreshores, rock platforms, geoheritage sites and headlands, unless you must restrict access for public safety or for environmental or cultural protection. In doing so, consider both current and projected future coastal hazards.	CVA, CEA	N	The rezoning site does not create any implications for beach access.
C.2b Identify opportunities to maintain and improve existing public access to beaches, foreshores, coastal waters and coastal lakes that support active and passive recreation activities, where this does not interfere with existing coastal industries.	CWLRA, CVA, CEA, CUA	N	As above.
C.2c Consolidate access points and consider alternative access to protect sacred and significant Aboriginal cultural areas.	CWLRA, CVA, CEA, CUA	N	As above.
C.2d Maintain and improve foreshore access and connections to existing or proposed networks of public open spaces. This includes waterways, riparian areas, bushland and parks for active and passive recreation.	CWLRA, CVA, CEA, CUA	N	As above.
C.2e Consider opportunities to protect and improve habitat connectivity through settlements, such as those described in the *Greener Places Design Guide*.	CWLRA, CEA, CUA	N	The site does not contain or adjoin any habitat areas.

Outcome C. Protect and enhance the social and cultural values of the coastal zone			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N)** **If 'No', justify this**
C.2f Avoid development on coastal dunes and foreshore reserves unless it is for essential public purposes, such as surf life-saving club buildings. Any building or structure located on dunes must be of lightweight construction and relocatable.	CVA, CEA	N	The rezoning site is not located on dunes or with a coastal reserve area.
C.2g Define the boundaries of development sites with a public edge–for example, a pedestrian pathway or public laneway.	CEA, CUA	Y	The rezoning site is bounded by public places in the form of roads and the adjoining coastal parkland.
C.2h Prevent the privatisation of coastal open space by ensuring development next to foreshores is set back, maintains public access and accessibility, and provides links and connections to other public accessways.	CEA, CUA	N	Development within the rezoning site will not impede public access to important coastal areas.
Outcome C.3 Protect public amenity			
C.3a Avoid development that will overshadow the beach, foreshore or public domain. Apply the standard that there must be no overshadowing before 4 pm (midwinter) and 7 pm (Eastern Daylight Saving Time).	CEA, CUA	N	Development within the rezoning area will not overshadow the beach, and will be designed to ensure that the adjacent coastal parkland is not overshadowed.
C.3b Protect the amenity of public spaces from buildings, structures or land uses that may be visually and/or acoustically intrusive or create wind funnels.	CEA, CUA	N	Development within the rezoning area will be designed to minimise any impacts on the adjacent coastal parkland.

Outcome D. Support sustainable coastal economies			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N)** **If 'No', justify this**
Outcome D.1 Support sustainable industries and recreational activities that depend on the coast			
D.1a Ensure that development will not harm sustainable coastal industries needing waterfront access, or recreational use of the coastal environment.	CEA, CUA	N	The rezoning area does not adjoin areas required for waterfront access.
D.1b Protect and improve essential facilities such as access ramps and jetties for sustainable coastal industries needing waterfront access.	CEA, CUA	N	As above.
D.1c Ensure access ramps, jetties, pontoons, groynes and other structures do not impede navigation on the water or harm coastal landforms or impair processes such as surf breaks.	CWLRA, CVA, CEA, CUA	N	Development in the rezoning site will not result in any such impacts.
D.1d Ensure that the proposal considers how development in a waterway may affect the land.	CEA, CUA	N	There are no waterway components of the proposal.
Outcome D.2 Promote green infrastructure			
D.2a Do not allow development that is likely to significantly reduce connectivity of existing green infrastructure.	CEA, CUA	N	The rezoning site adjoins the coastal parkland, but does not impact an connectivity of or access to that open space.
D.2b Provide for diverse green infrastructure that can support the changing needs of current and future communities, and provide tourism and recreational opportunities.	CEA, CUA	N	The proposed rezoning will not generate demand for additional green infrastructure.

Outcome E. Respond to coastal hazards			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N)** **If 'No', justify this**
Outcome E.1 Respond to coastal processes			
E.1a Planning proposals that affect land within a coastal hazard and risk area must not alter coastal processes in a way that harms the natural environment or other land.	CWLRA, CVA, CEA, CUA	N	The rezoning site is not mapped within a coastal hazard / risk location.
E.1b Exclude development in areas affected by a current or projected future coastal hazard that is likely to increase the risk of coastal hazards on that land or other land.	CWLRA, CVA, CEA, CUA	N	As above.
E.1c Locate or consolidate development in areas with little or no exposure to current and projected future coastal hazards, to ensure public safety and prevent risks to life.	CWLRA, CVA, CEA, CUA	N	As above.
E.1d Do not increase development potential or intensify land uses in a coastal hazard or risk area.	CWLRA, CVA, CEA, CUA	N	As above.
Outcome E.2 Account for natural hazard risks			
E.2a Identify areas on and near the proposal that are affected by current or projected future coastal hazards. Ensure that the proposal is compatible with any identified threat or risk.	CWLRA, CVA, CEA, CUA	N	As above.
E.2b Account for potential interaction between coastal hazards and other current and future natural hazards. This includes flooding, bushfires, landslip, heatwaves, severe storms, east coast lows and cyclones. Refer to the *Strategic Guide to Planning for Natural Hazards*.	CWLRA, CVA, CEA, CUA	N	As above.
E.2c Manage natural hazard risk within the development site. Avoid using public space or adjoining land to lessen risk.	CWLRA, CVA, CEA, CUA	N	As above.
Outcome E.3 Account for climate change			
E.3a Demonstrate that the proposal applies a 100-year planning horizon for the full range of climate change projections for coastal hazards. This approach recognises that sea level is projected to continue to rise for centuries because of climate change.	CWLRA, CVA, CEA, CUA	N	As above.
E.3b Consider how climate change could affect the risk profile of existing natural hazards and create new vulnerabilities and exposure for the proposal in the future.	CWLRA, CVA, CEA, CUA	N	As above.

Outcome E. Respond to coastal hazards			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N)** **If 'No', justify this**
Outcome E.4 Provide sustainable defences to coastal hazards			
E.4a Reduce exposure to coastal hazards by protecting, restoring or improving natural defences. This includes coastal dunes, vegetation, coastal floodplains and coastal wetlands, where suitable.	CWLRA, CVA, CEA, CUA	N	As above.
E.4b If natural defences are not possible, reduce exposure to coastal hazards without significantly degrading: · biological diversity and ecosystem integrity · ecological, biophysical, geological and geomorphological coastal processes · beach and foreshore amenity, or the social and cultural value of these areas · public safety and access to, or use of, beaches or headlands.	CWLRA, CVA, CEA, CUA	N	As above.
Outcome E.5 Protect essential infrastructure			
E.5a Locate and design essential infrastructure to reduce vulnerability to current and projected future coastal hazards. Consider the effects of climate change over at least a 100-year planning horizon.	CWLRA, CVA, CEA, CUA	N	As above.
E.5b Where exposure to coastal hazards cannot be avoided, prepare adaptation plans for essential service infrastructure. These plans should be consistent with any applicable coastal management program.	CWLRA, CVA, CEA, CUA	N	As above.
E.5c Consult local Aboriginal land management experts and emergency management agencies on how to strategically locate access routes and other essential infrastructure.	CWLRA, CVA, CEA, CUA	N	As above.
Outcome E.6 Change land uses to manage legacy issues and avoid creating new ones			
E.6a Ensure the proposal will not require coastal management interventions to remain viable over its expected lifespan.	CWLRA, CVA, CEA, CUA	N	As above.
E.6b Consider the potential legacy effects of the proposal and if the proposed land uses or development will create a social, environmental, economic or cultural burden for future generations.	CWLRA, CVA, CEA, CUA	N	As above.
E.6c Consider if the proposed change of land use could remove redundant legacy infrastructure or reduce existing legacy effects.	CWLRA, CVA, CEA, CUA	N	As above.

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Appendix D Transport Statement

Transport Statement

Aureus – Neighbourhood Centre Rezoning Application

Date	25 September 2024	**Project Number**	P0054816
Client	Intrapac Property	**Prepared By**	Jamie Murray
Project	Aureus – Neighbourhood Centre Rezoning	**Reviewed By**	Jadyn Benzie RPEQ #24616

1. Introduction

Intrapac Property has commissioned Urbis Transport Advisory to provide traffic and transport engineering advice in relation to the proposed partial rezoning of the Neighbourhood Centre located at 21 Aureus Boulevard, Skennars Head.

The Neighbourhood Centre is situated within the approved Aureus residential subdivision at Skennars Head. The masterplan will result in approximately 400 dwellings within the development site, along with a Neighbourhood Centre.

The approved Neighbourhood Centre location is shown on Figure 1. Access to the Neighbourhood Centre is proposed via the creation of a fourth leg on the Aureus Boulevard / Surf Avenue roundabout.

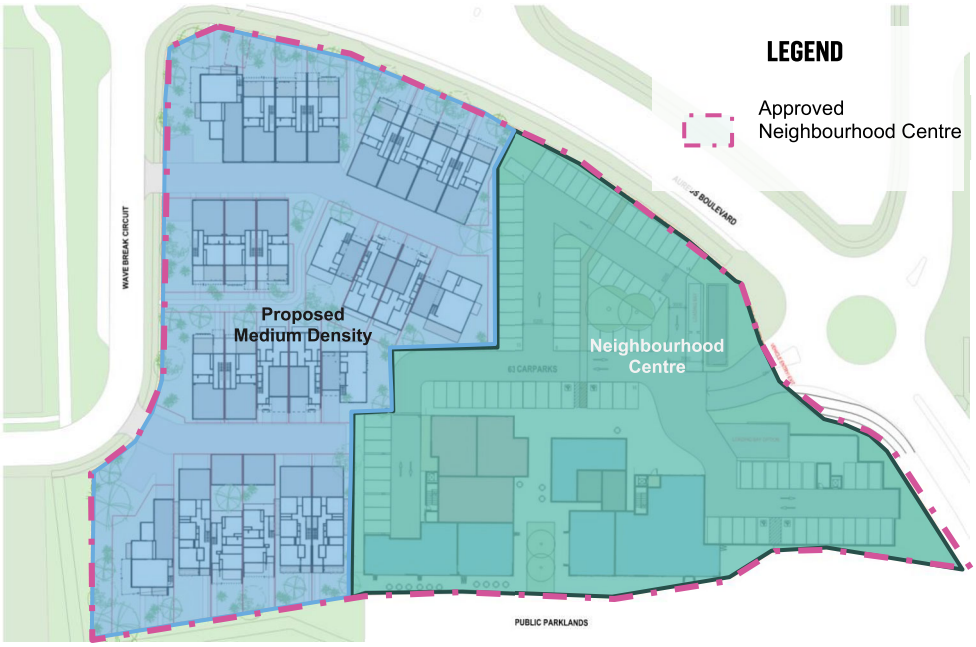
Figure 1 Site Location

Source: Nearmap

1.1 Proposed Rezoning

It is proposed to rezone part of the existing Neighbourhood Centre to medium density residential. The forecast yield is 20 – 30 townhouses with an indicative precinct plan shown on Figure 2. The Neighbourhood Centre reduces in scale by approximately 50%.

Figure 2 Indicative Precinct Plan



Source: Clarke Hopkins Overall - MEDIUM DENSITY + COMMERCIAL PRECINCT PLAN SK5000 dated 22 August 2024 (Draft)

2. Traffic Impact

2.1 Approved Neighbourhood Centre

The TPS Traffic & Parking Systems Pty Ltd (TPS) report accompanying the application assumed a 400 residential lot and a future Neighbourhood Centre consisting of approximately 3,000sq.m development. GFA would ultimately be developed as part of future applications. The Neighbourhood Centre was assumed to contain a small supermarket, several specialty stores, personal services and/or small offices, restaurants, small tavern and child-minding centre.

TPS also prepared a Proposed Amendment – Ballina Local Environmental Plan 2012 Traffic Engineering Report dated 13 June 2017 (TPS Amendment Report) for the approved amendment to the Ballina Local Environmental Plan 2012 (BLEP) to relocate / rezone the Neighbourhood Centre.

Table 2.1 of the TPS Amendment Report outlines the following Skennars Head estimated development traffic generation.

Figure 3 Estimated Development Traffic Generation

Ultimate Development				
Residential - 400 Dwellings (not including neighbourhood centre)				
AM Peak Hour	0.70	28	252	280
PM Peak Hour	0.70	238	42	280
Daily	7.00	1400	1400	2800
Neighbourhood Centre - 3,000 sq.m.(gfa)				
Development - Drop-In				
AM Peak Hour	0.15	0	4	5
PM Peak Hour	0.75	19	3	23
Daily	4.50	68	68	135
To/From Development				
AM Peak Hour	0.22	3	3	7
PM Peak Hour	1.10	17	17	33
Daily	6.60	99	99	198
To/From External Locations				
AM Peak Hour	0.90	14	14	27
PM Peak Hour	4.50	68	68	135
Daily	27.00	405	405	810
Total Neithbourhood Centre				
AM Peak Hour	1.27	17	21	38
PM Peak Hour	6.35	103	87	191
Daily	38.10	572	572	1143

Source: Table 2.1 of TPS Amendment Report

The above estimates suggest that the Neighbourhood Centre within the masterplan approval could generate between 40 – 200 vehicles per hour (vph) during the peaks, with the afternoon being the peak.

2.2 Estimated Generation – Proposed Medium Density

The estimated generation of the revised scheme is shown in Table 1.

The generation is determined by applying the above neighbourhood centre traffic rates to the remaining Neighbourhood Centre (portion). The remaining land is then assumed to be developed as residential. To calculate the estimated generation of the residential component, the average medium density residential rate (for larger units and town houses) from RTA 2002 has been adopted. The difference in generated trips is outlined in Table 1.

Table 1 Approved Neighbourhood Centre (portion) compared to Medium Density Development Trips

Land Use	Yield	AM Rate	PM Rate	AM	PM
Approved Neighbourhood Centre (portion)	1,200sq.m	1.27 trips / 100sq.m	6.35 trips / 100sq.m	15vph	76vph
Residential Lots	20 – 30 townhouses	0.65 trips / dwelling	0.65 trips / dwelling	13 – 20vph	13 – 20vph
Difference				(+) 5 – (-) 2vph	(-) 57 – (-) 63vph

Based on the above assessment, it is expected that in the AM peak, the generation of the site will be generally consistent with the approved scheme. In the PM peak, there is expected to be a significant reduction in generation. This level of traffic generation is well within the approved traffic generation for the masterplan.

Therefore, no adverse traffic impacts are expected as a result of the rezoning.

2.3 Access Locations

Access to the Neighbourhood Centre is to be retained via the activation of a fourth leg on the Aureus Boulevard / Surf Avenue roundabout.

No access is provided through the site to the townhouse use. As such, access to the medium density zone will occur via Wave Break Circuit.

Considering an average of 6.5 vehicles per dwelling, the daily traffic generated by 20-30 townhouses would range from 130 to 195 vehicles per day (vpd).

The TPS Amendment Report has projected the 2030 weekday traffic volumes for the ultimate development. This is shown below in Figure 4. Note that the streets highlighted in yellow, including Wave Break Circuit, are expected to handle volumes less than 200vpd. Wave Break Circuit is designed as a 'Local Access' to 'Access' Street. This means it can handle a daily traffic volume of between 1,000 and 3,000 vehicles per day (vpd).

Even with the higher traffic generation estimate of 195vpd, volumes along Wave Break Circuit would still be less than 400vpd. Based on a capacity of 1,000vpd – 3,000vpd, this traffic level will not cause significant disruptions or safety concerns, ensuring the street continues to function safely and efficiently.

Figure 4 Estimated 2030 Weekday Traffic Volumes for Ultimate Development (400 Dwellings + Neighbourhood Centre)

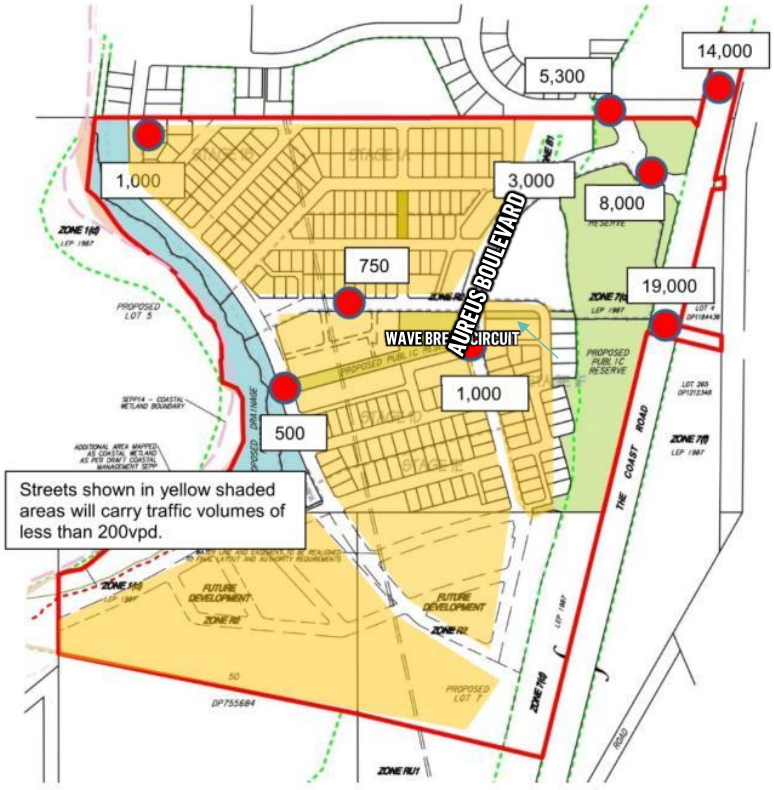


Fig 2.1 Estimated 2030 Weekday Traffic Volumes For Ultimate Development (400 Dwellings + Neighbourhood Centre)

Source: Figure 2.1 of TPS Amendment Report

3. Summary

Given the above evaluation, the rezoning will not negatively impact the surrounding road network. From a traffic standpoint, the proposed rezone is feasible and is recommended to be approved.

PLANIT CONSULTING

Appendix E Servicing Technical Memo

TECHNICAL MEMORANDUM

To: Intrapac Property Pty Ltd – Jacob Hunter

From: Matthew Fradgley

Date: 03 October 2024

Re: **Stormwater, sewer and water servicing – 21 Aureus Boulevard, Skennars Head - Lot 346 DP1271483**

Introduction

OSKA Civil Consultants were engaged by Intrapac Property Pty Ltd to prepare a Technical Memorandum to support a rezoning application to be lodged with Ballina Shire Council for 21 Aureus Boulevard, Skennars Head. The subject site is currently described as Lot 346 on DP1271483.

The purpose of this Technical Memo is to undertake a high-level review that the proposed rezoning can be serviced and connected to Council's existing stormwater drainage, sewerage and water reticulation networks.

Subject site

The subject site is located at 21 Aureus Boulevard, Skennars Head. The site fronts Aureus Boulevard to the north and west, a large coastal buffer area to the east and Wave Break Circuit to the south. Lot 346 DP1271843 covers a total of 1.304ha. A separate Development Application will be lodged to subdivide the site into 2 lots, a northern 6,402m^2 portion and a southern 6,638m^2 portion. The southern 6,638m^2 portion is the subject site of the rezoning application

Proposed Rezoning

The subject site is currently zoned as E1 Local Centre. The proposed rezoning proposes to convert the southern 6,638m^2 portion of lot 346 DP1271483 from E1 Local Centre to R3 Medium Density Residential. The subdivision of lot 346 DP1271483 into 2 lots (southern and northern portion) will be subject to a separate Development application.

Civil Engineering Servicing

Based on a high-level review of the stormwater drainage, sewer and water reticulation networks, the proposed rezoning can be adequately serviced. Stormwater quantity and quality will be addressed via on-site underground detention and treatment tank or similar. Flows will then be conveyed to the existing stormwater manhole to the east of the site, which is the Legal Point of Discharge (LPOD).

Sewer servicing of the proposed rezoned site will be achieved by connection to the existing sewer maintenance structure in the south-western corner of the site. Water supply will be achieved via connection to the existing reticulation network in Wave Break Circuit to the south of the site (refer to attached K3395-P408 Preliminary Water & Sewer Connection Plan).

Summary

After a high-level review and consideration of the stormwater, sewer and water requirements of this proposed rezoning, it has been found that servicing of this site is achievable and existing Council networks should have adequate capacity. Stormwater quantity and quality can be achieved by an on-site detention and treatment tank (or similar). Sewer and water servicing can be achieved via connection to the existing reticulation networks located in the adjacent verge area.

Yours faithfully

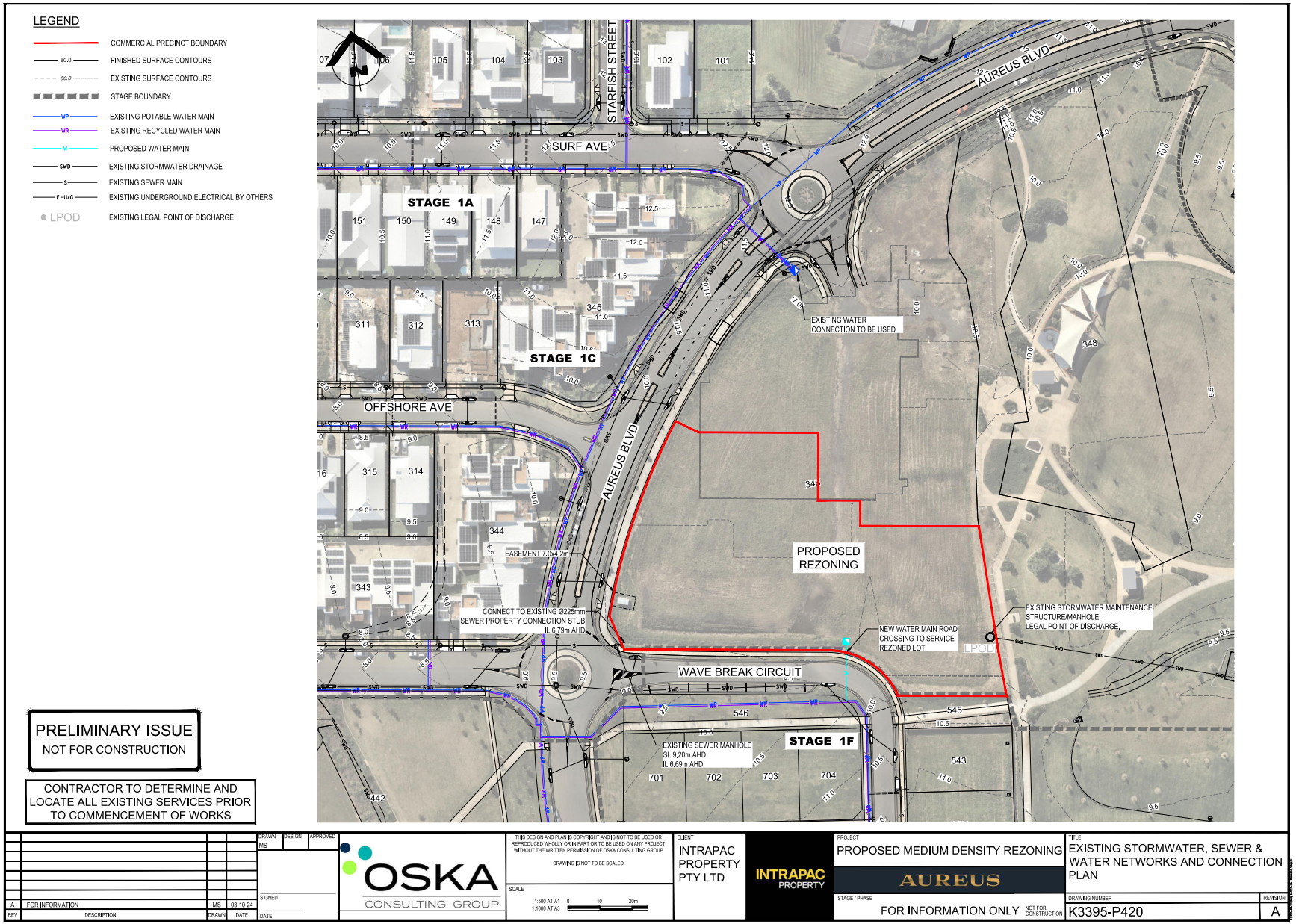
Trent Purdon
Director

Attachments
K3395-P420 Existing Stormwater, Sewer & Water Networks and Connection Plan

APPENDIX

A

OSKA Consulting Group, Existing Stormwater, Sewer & Water Networks and Connection Plan (Ref: K3395-P420)

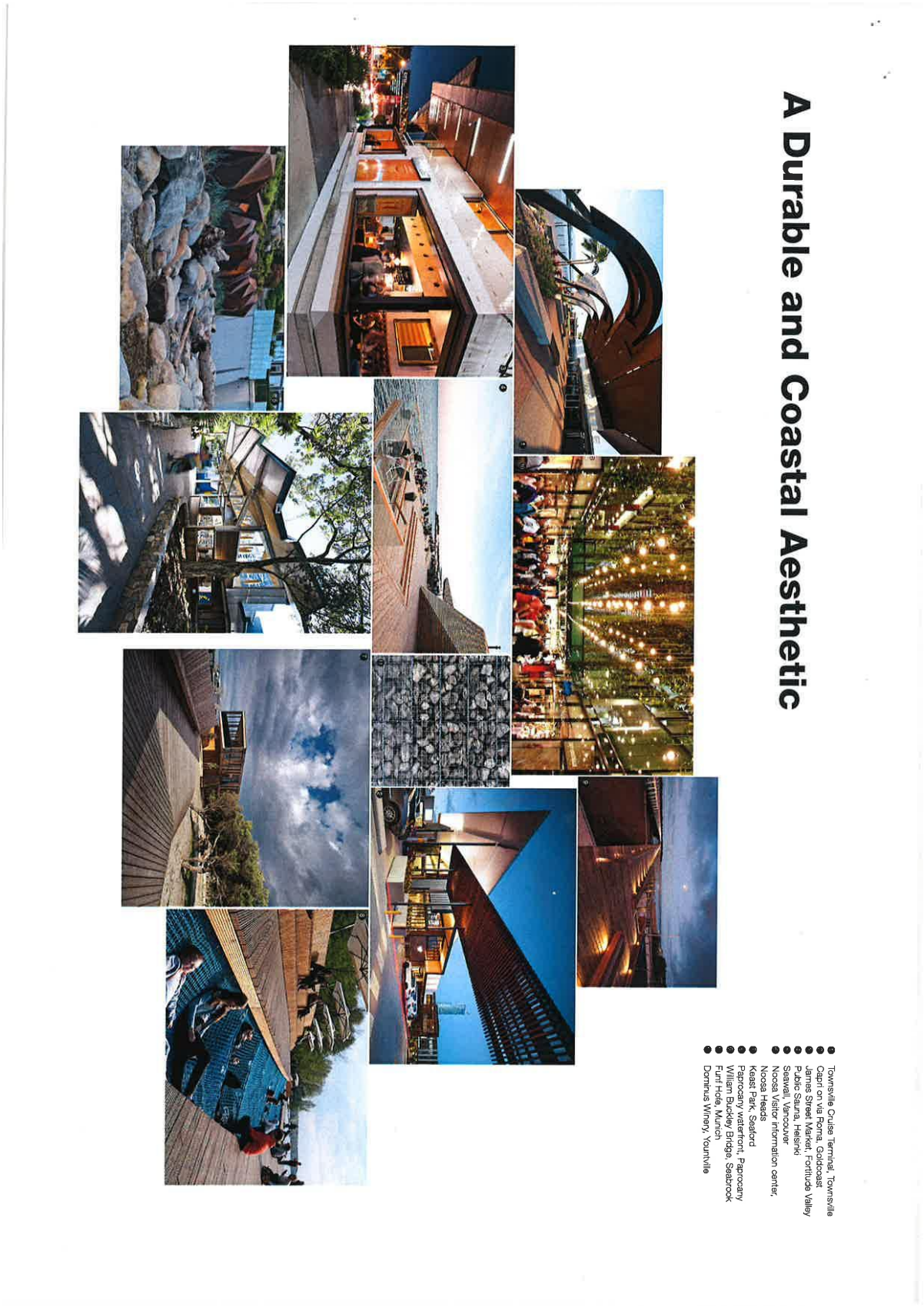

LEGEND
COMMERCIAL PRECINCT BOUNDARY
FINISHED SURFACE CONTOURS
EXISTING SURFACE CONTOURS
STAGE BOUNDARY
EXISTING POTABLE WATER MAIN
EXISTING RECYCLED WATER MAIN
PROPOSED WATER MAIN
EXISTING STORMWATER DRAINAGE
EXISTING SEWER MAIN
EXISTING UNDERGROUND ELECTRICAL BY OTHERS
LPOD
EXISTING LEGAL POINT OF DISCHARGE
STARFISH STREET
AUREUS BLVD
SURF AVE
STAGE 1A
STAGE 1C
STAGE 1F
OFFSHORE AVE
WAVE BREAK CIRCUIT
EXISTING WATER CONNECTION TO BE USED
PROPOSED REZONING
EASEMENT 7.0x42m
CONNECT TO EXISTING Ø225mm SEWER PROPERTY CONNECTION STUB IL 6.79m AHD
NEW WATER MAIN ROAD CROSSING TO SERVICE REZONED LOT
EXISTING STORMWATER MAINTENANCE STRUCTURE/MANHOLE, LEGAL POINT OF DISCHARGE
EXISTING SEWER MANHOLE SL 9.20m AHD IL 6.69m AHD
PRELIMINARY ISSUE
NOT FOR CONSTRUCTION
CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS
OSKA CONSULTING GROUP
INTRAPAC PROPERTY PTY LTD
INTRAPAC PROPERTY
PROPOSED MEDIUM DENSITY REZONING
AUREUS
FOR INFORMATION ONLY
EXISTING STORMWATER, SEWER & WATER NETWORKS AND CONNECTION PLAN
K3395-P420
A


PLANIT
CONSULTING

SKENNARS HEAD NEIGHBOURHOOD CENTRE

NOVEMBER 2018


Foster a vibrant, unique and eclectic coastal community that is a destinational point for people of all ages
• A sought after place to live, work, visit and holiday
• A unique identity distinct from Byron Bay
• A place with inherent attractiveness and vibrancy whether hosting an event or not
• A safe and walkable place that supports a healthy, outdoor lifestyle
• An inclusive place with something on offer for all ages
• A place with a range of housing and accommodation options to support both permanent and tourist populations
• A place that touches the earth lightly and promotes the preservation of the marine environment
• A place that evolves with its inhabitants and avoids an overly manufactured urban environment


A Durable and Coastal Aesthetic
Townsville Cruise Terminal, Townsville
Capri on via Roma, Gold coast
James Street Market, Fortitude Valley
Public Sauna, Helsinki
Seawall, Vancouver
Noosa Visitor information center,
Noosa Heads
Kelsit Park, Seaford
Paprocany waterfront, Paprocany
William Buckley Bridge, Seabrook
Furt Hofe, Munich
Dominus Winery, Yountville

Architectural Precedent

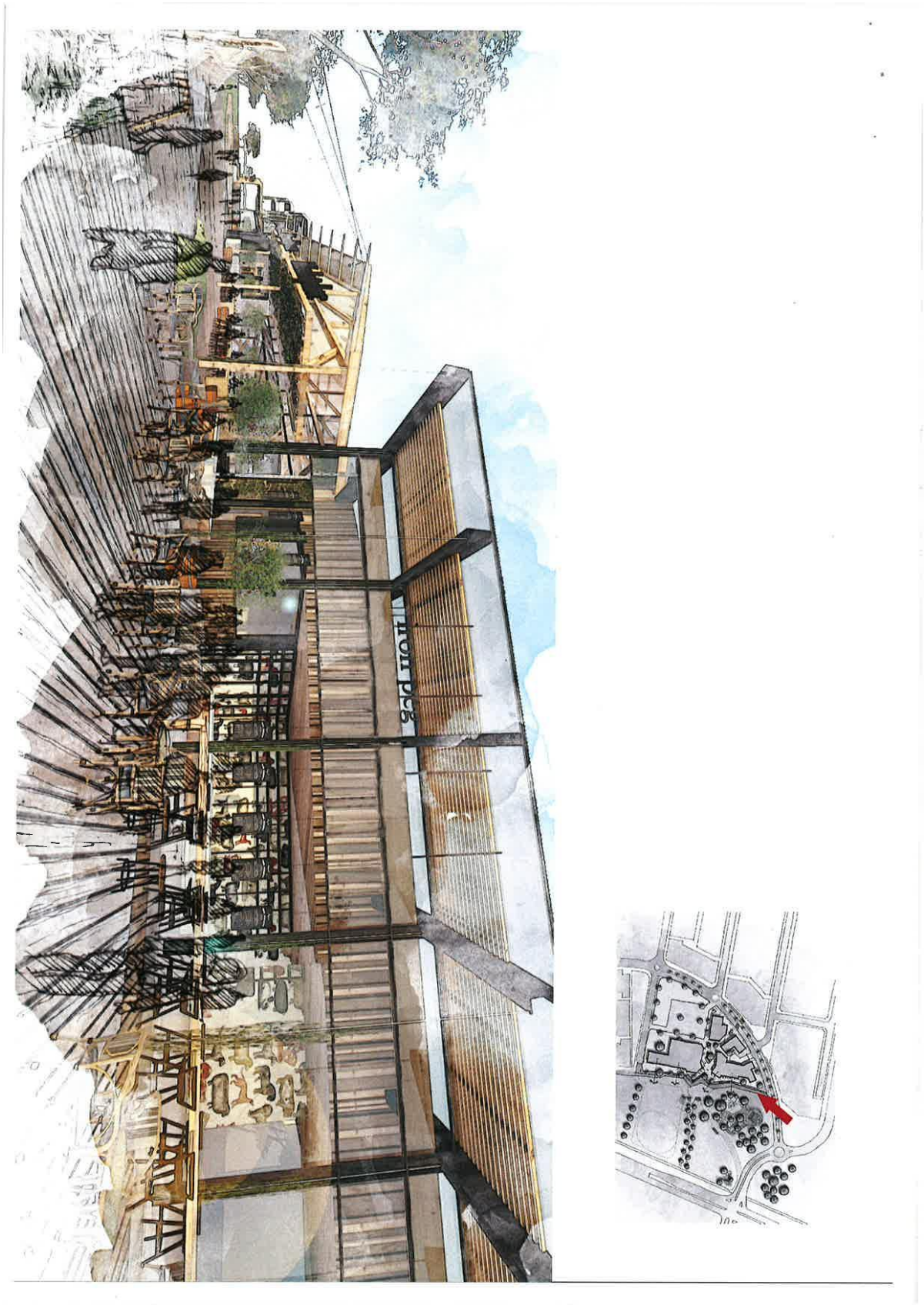
1. The Grounds of Alexandria, *Alexandria NSW*

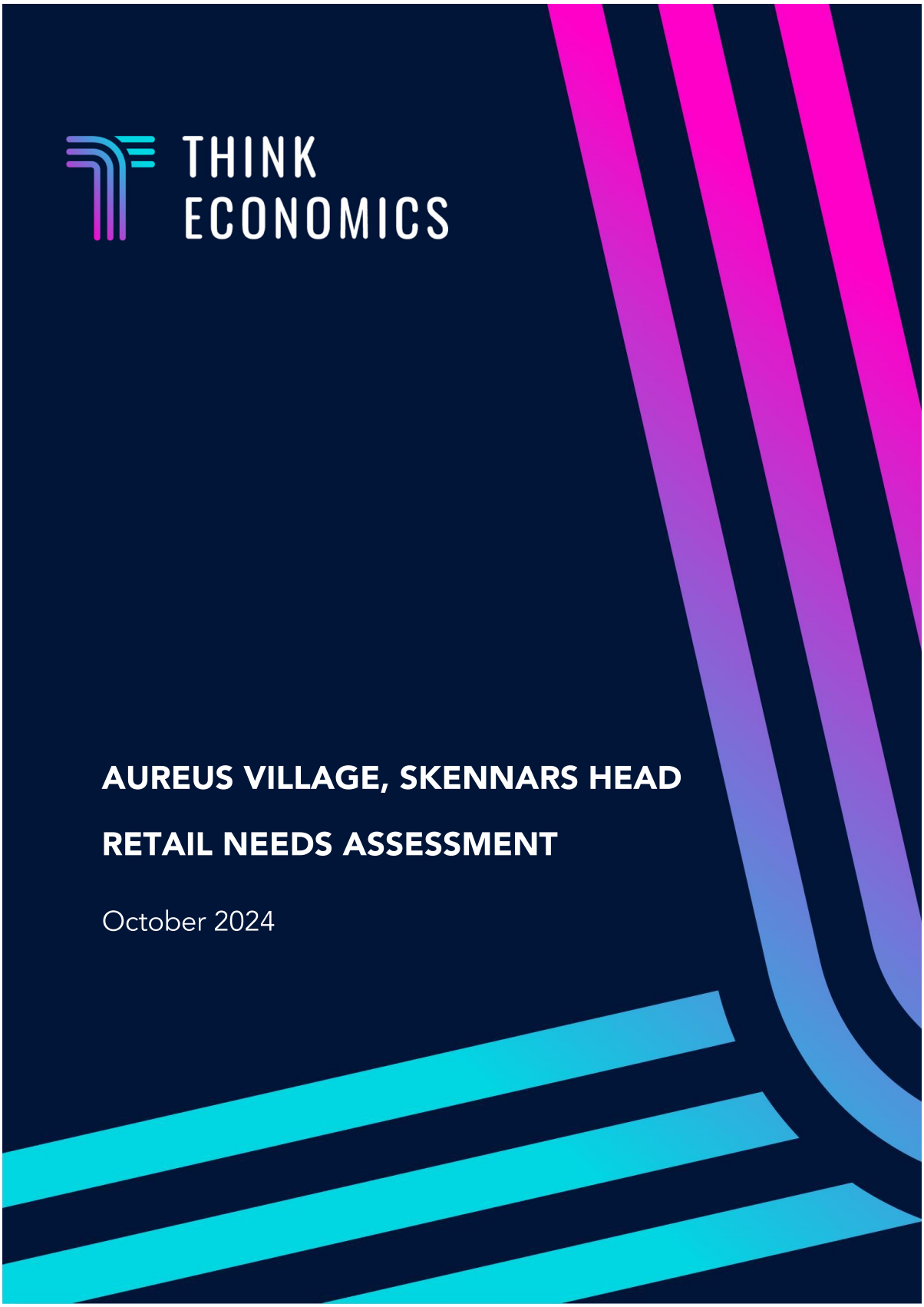
2. Walton's Precinct, *Toowoomba QLD*


Site Plan (for Retail & Commercial)
1. RETAIL/HOSPITALITY/COMMERCIAL
2. VEHICLE ENTRY
3. CARPARK
4. PARKING DROP-OFF
5. ALFRESCO DINING
6. PEDESTRIAN CROSSING
7. GULDERSACK
8. AMPHITHEATRE
9. PROMENADE
10. PLAY EQUIPMENT
11. OUTDOOR EXERCISE EQUIPMENT
12. SCULPTURE
13. PAVILION
14. INFORMAL SPORTS FIELD
CAFE
KITCHEN
BAKERY
TABLES

Site Massing (for Retail & Commercial)


Cape Iron Market Place

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ECONOMICS
AUREUS VILLAGE, SKENNARS HEAD
RETAIL NEEDS ASSESSMENT
October 2024

THINK ECONOMICS

CONTACT

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VERSION	DATE OF ISSUE	REVISIONS BY	APPROVED BY
1.0	1 October 2024	MVDS / JM	JM

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Table of Contents

1.0 Introduction

1.1 Scope

Think Economics has been engaged to provide an independent retail needs assessment for the proposed Aureus Village at Skennars Head, NSW.

This report has been prepared on behalf of Intrapac Property, the owner of Aureus Village ("subject site") and relates to the proposed development of 1,184sqm of retail commercial floorspace.

Key report formulation elements include:

Section 2 review the local and regional context of the centre, providing an overview of the existing centres and the proposed expansions. This sections also reviews the strategic planning framework within which the proposed centre operates.

Section 3 delineates the main trade area the proposed redevelopment will likely serve. This section provides estimates of current and future population levels within the trade area; analysis of the socio-demographic profile of the area; and assesses the current and future estimated retail expenditure generated by residents in main trade area.

Section 4 provides a review of the existing and proposed retail centres and the likely competitive framework of the proposed centre.

Section 5 provides an assessment of the market potential of the centre, including an assessment of retail floorspace demand and market gap within the trade area.

Section 6 presents an assessment of economic need and examines the net community benefits associated with the proposed expansion, including employment generation and other economic and social benefits.

2.0 Site Context

2.1 Location

The report relates to the development of a village centre within the Aureus residential estate at the corner of The Coast Road and Seaside Avenue in Skennars Head, otherwise referred to as the 'subject site' (refer Figure 2.1)

Skennars Head is a small town located between Ballina and Lennox Head in the Northern Rivers region of New South Wales. The region is a popular destination for tourists and has been attracting residents seeking a well-connected coastal living location. The subject site is about 6km north of Ballina, 25km south of Byron Bay, and 10km from the Ballina Byron Gateway Airport.

Ballina is the largest town in the region with an estimated residential population (ERP) of 18,578 people in 2021. The town serves as a regional commercial and cultural hub with significant retail provision including restaurants and cafes in addition to shopping centres with major supermarkets and department stores.

2.2 Development Overview

The Aureus Village residential development will comprise around 400 dwellings in total, with the first stage of the land subdivision completed and a large proportion of the townhouses under construction. The masterplan also includes parks and open areas, a playground, and a neighbourhood centre.

The subject site is approximately 13,500sqm and currently zoned E1 Local Centre. We understand this was designated as part of a 2018 approval, which at the time envisaged the inclusion of at-grade carparking, retail, commercial, public realm space and other local services. We also understand that from a role and function perspective, the initial concept plans for the subject site were for a neighbourhood centre catering for the day-to-day shopping needs of the surrounding community.

The current proposed development is for 1,184sqm of retail commercial floorspace, 65 car at-grade car parking, public realm space and shop-top residential (refer Figure 2.2)

Figure 2.1 Locational Context

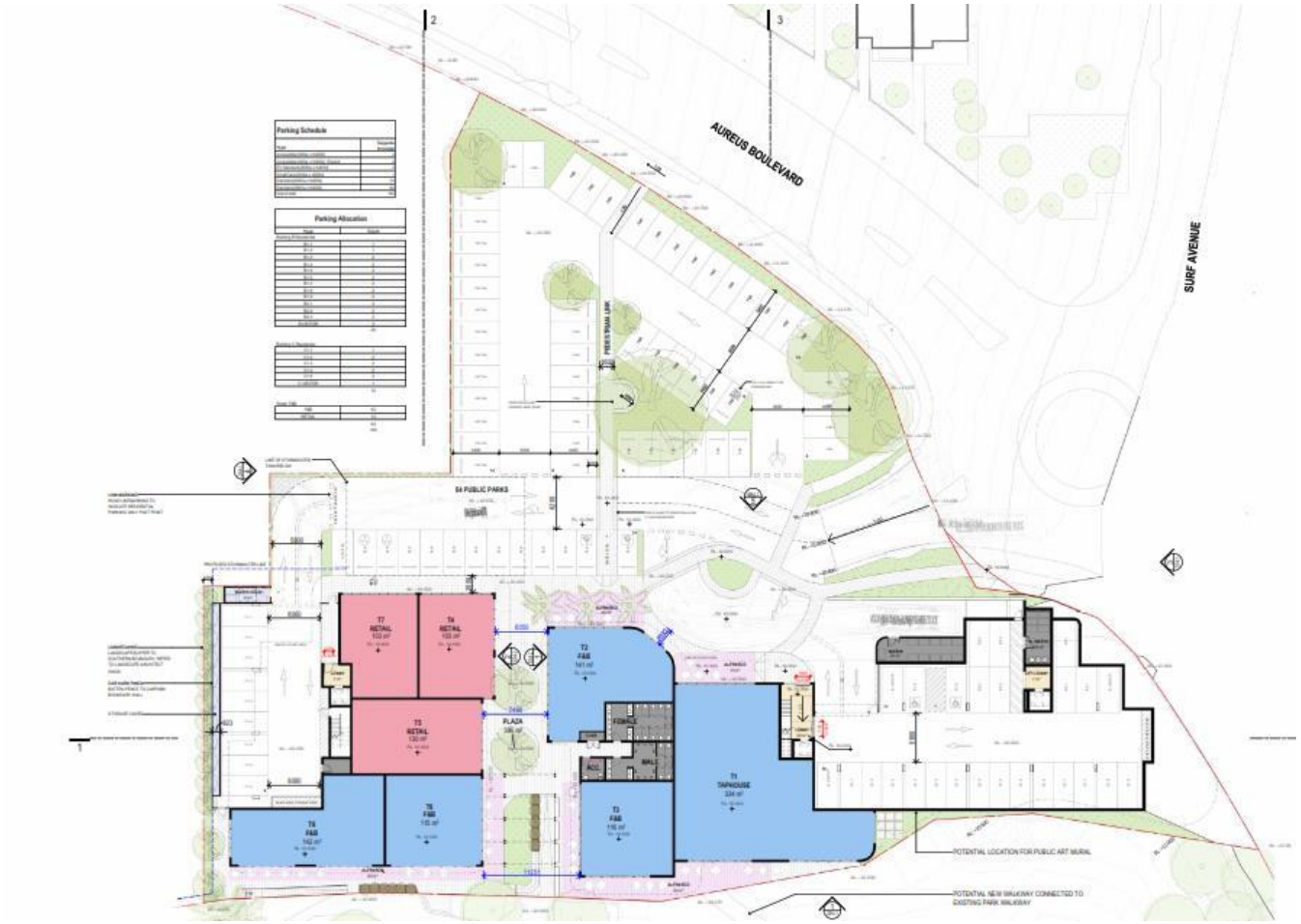

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Figure 2.2 Aureus Village – Ground Floor Plan

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3.0 Retail Context Update

This section of the report will discuss the current retail context and activity centres hierarchy within which the proposed commercial centre now operates since the centre was designated as part of a 2018 approval.

Factors such as COVID, inflationary pressures and the opening of the Epiq Shopping Centre at Lennox Head have had a significant impact on the potential commercial opportunity at Skennars Head and the role and function it can play in the activity centres hierarchy. New data from the 2021 Census of Population and Housing is also available to underpin updated analysis.

A more comprehensive exploration of each of these factors and their resultant implications to be discussed in more detail following.

3.1.1 Strategic Planning Context - Centres Hierarchy

The council's strategic plan for commercial and industrial growth relies on a retail centre structure designed for the Shire. This structure designates the Ballina Town Centre and the Kerr Street Retailing Precinct as the main retail hubs within the Shire. It suggests that these establishments should be safeguarded and strengthened as the highest-ranking components of the retail hierarchy. The present structure is visually represented in the Commercial and Industrial Hierarchy diagram in Figure 3.1 over the page.

Additional retail facilities of a neighbourhood/local scale are planned for the Cumbalum urban release area and Skennars Head expansion area in the future (the subject site). There is also a light industrial estate planned on the northern side of Lennox Head and a neighbourhood shopping centre (being a second retail area) now built in the Epiq development at Lennox Head.

The commercial hierarchy is also supplemented by a range of quasi-retail activities and bulky goods outlets located within the Southern Cross, Clark Street and Russellton Industrial Estate (Alstonville) areas, as well as dispersed bulky goods activity along the former Pacific Highway, Kerr Street (e.g. Super A-Mart and Good Guys).

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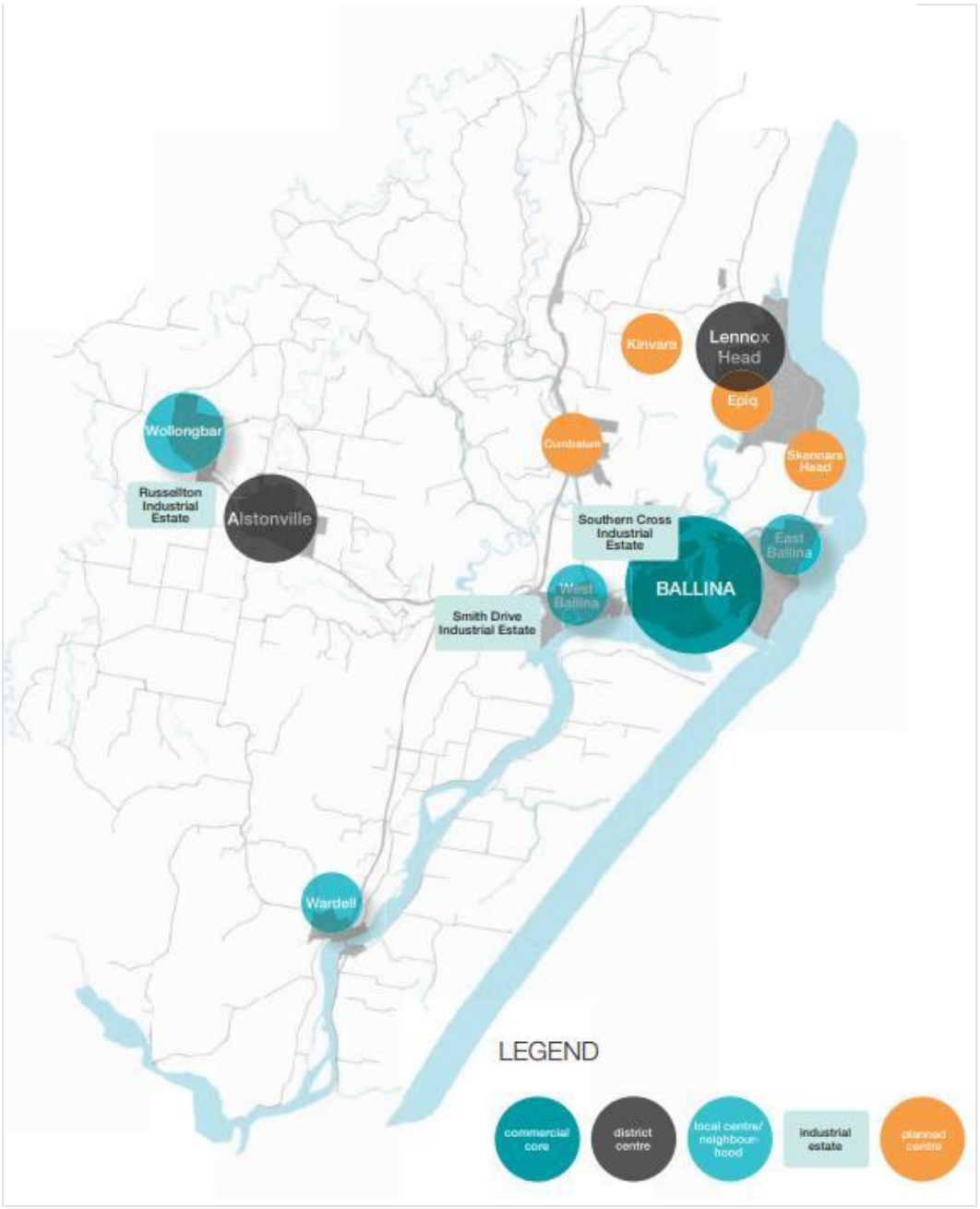
Figure 3.1 Commercial and Industrial Hierarchy Ballina Shire (2019)



Source: Ballina Shire Local Strategic Planning Statement 2020 – 2040

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In addition to the central facilities located in Ballina, surrounding localities also include a variety of smaller scale commercial areas, in East Ballina, West Ballina, Lennox Head and Alstonville, with a smaller neighbourhood shopping centre in Wollongbar. Modest levels of retail services are also provided in the Shire's rural villages such as Wardell, Newrybar and Tintenbar.

3.1.1 Epiq Market Place

While the subject site remains undeveloped since approval, significant changes to the surrounding retail hierarchy have occurred. Most significantly has been the delivery of Epiq Marketplace in Lennox Head in 2020, located just 3.4km from the subject site.

The Epiq marketplace is a 5,500sqm shopping centre located at the corner of Hutley Drive and Snapper Drive. The centre is part of the Epiq masterplan community which foresees approximately 500 dwellings upon completion and a retirement community with around 100 units. So far, the development has been successful with stage 7 now released.

During planning, the commercial precinct concept plans envisaged a neighbourhood centre to cater for the day-to-day shopping needs of the surrounding community providing increased accessibility and convenience to residents.

Since its opening in 2020, the Epiq Marketplace has become a vital component of the entire Lennox Head area serving not only as a location for food and grocery shop but also for medical consultations, fitness, leisure and social gathering.

The current role and function of Epiq Marketplace including its actual catchment, rather than being assumed can be visualised and determined using mobile geolocation data for devices that have been recorded within the existing shopping centre. This data is represented in Figure 3.2 over the page for the period September 2023 to September 2024 (to reflect visitation patterns that are unaffected by COVID impacts on travel) and covers approximately 37,823 visits made by around 15,036 devices.

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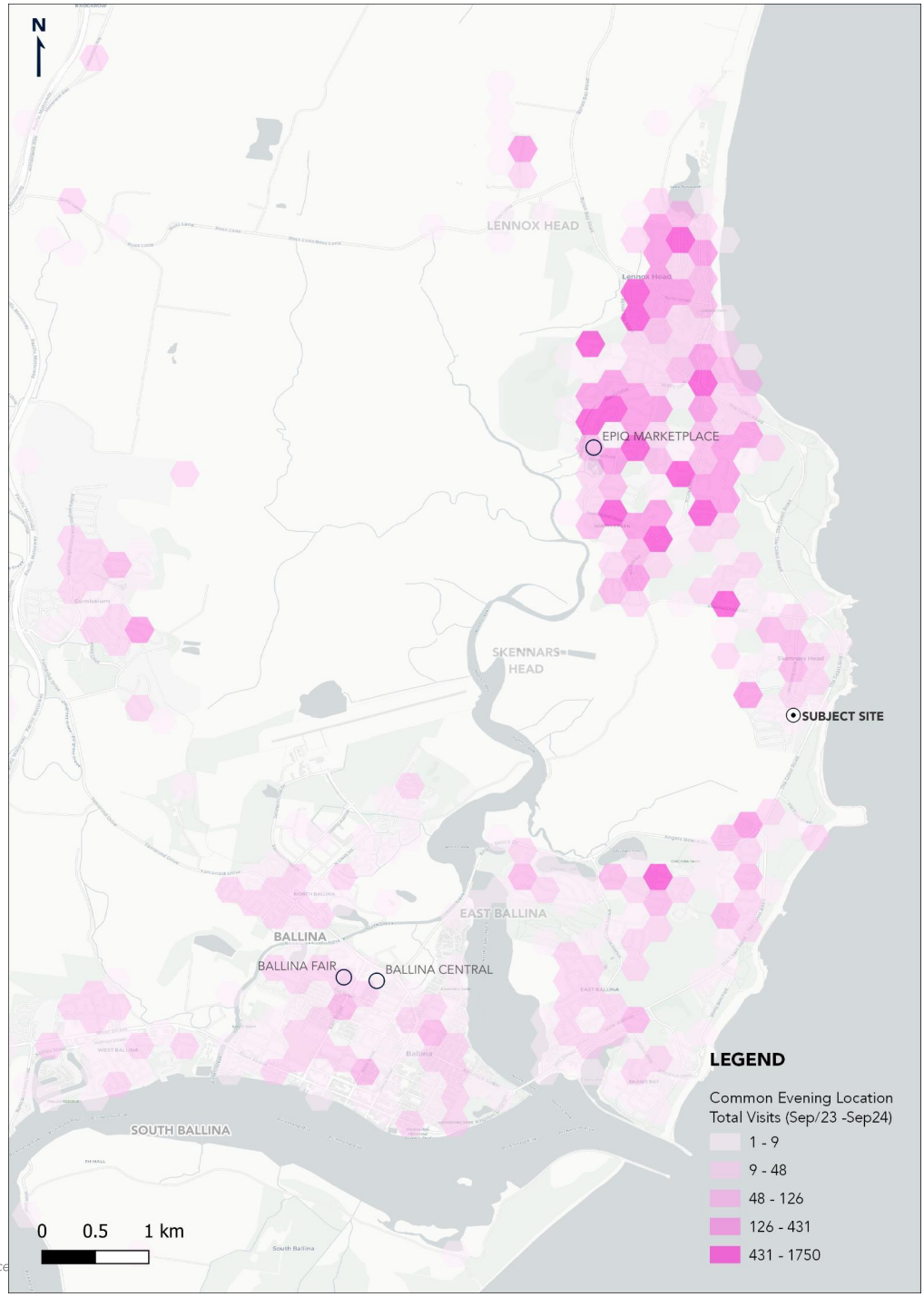
Figure 3.2 Epic Marketplace Visitation (Sep 23 – Sep 24)



Source: Near & Think Economics 2024 - Common Evening Location (CEL) - where a mobile device rests during "non work" hours, defined as evenings (6 pm to 8 am) and weekends.

The mobile geolocation data has been purchased through the VISTA platform operated by Azira and provides details of the geolocation of smartphone devices where owners have location services turned on. The data shows both the origin and frequency of visitation and illustrates the broad attraction the centre achieves across a wide area[1], especially Lennox Head north of Skennars Head Road.

Observed visitation patterns reflect a higher role and function of the Epiq centre than what was likely originally considered, with very strong penetration into the local suburbs extending down to East Ballina.

This effect has been considered in subsequent analysis and specifically in the delineation of an appropriate trade area for the Skennars Head commercial centre.

3.1.1 Ecommerce Platforms

The COVID-19 pandemic-induced lockdowns brought about a transformative impact on the retail sector, triggering a notable transition from traditional physical stores to online shopping. Despite the conclusion of lockdowns and pandemic-related limitations, consumer inclination towards online shopping remains strong and remains above pre-pandemic levels. Current online retail expenditure represents 16.8% of total retail expenditure ($63.6bn), up from 11.3% ($32bn) in 2019.[2]

The recent shift to online operations has seen many retailers rethinking their physical footprint and network location strategies. Delivery of additional retail floorspace nationally is at the lowest levels observed over the last 15 years as the impact of online-sales, construction delays and a slow-down in discretionary spending as a result of heightened cost-of-living pressures impact retail development.

This effect has been considered in subsequent analysis and informed by latest available 2021 Census of Population and Housing and Consumer Spend Potential (CSP) data sourced

[1] *Note that areas on the map with a darker shading represent those areas with higher visitation over the preceding 12-month period.*
[2] *Aus Post: Inside Australian Online Shopping Report 2024*

from Precisely which assesses both physical and online retail expenditure by trade area residents.

3.1.2 Food and Grocery Home Delivery Trends

While non-food purchases dominate online expenditure, the growth of online food sales has also risen significantly, increasing by 167% from $459.8 mil in August 2019 to $1.23 bn in August 2024.[3]

Woolworths achieved e-commerce sales of $4.08bn through their online platform, Woolies X for the financial year 2024 which is up 27.5% on the previous 12 month and now represents 11.4% of total sales. Meanwhile, its biggest competitor, Coles had its online sales increase 29.2% of the same period to $1.8bn.

Research indicates that almost half – 48% – of Australians buy at least some of their groceries online, with 10% now ordering most or all of their groceries via the internet[4]

The shift to online and food and grocery delivery has fundamentally changed the retail competitive landscape, with the concept of convenience shifting and large online ready operators' ability to service both larger trade areas and achieve greater market shares.

Smaller operators and those which do not offer home delivery services are increasingly at a significant disadvantage.

[3] *ABS, Retail Trade, June 2023*
[4] *Spryker - 'Australian Online Grocery Report 2022*

4.0 Aureus Village Trade Area

4.1 Trade Area Definition

A trade area is defined as the geographic area for which a centre generates the majority of its turnover and visitation. The extent of a trade area is driven by a range of accessibility and convenience factors including:

- Centre attraction relative to the competition, including tenancy mix, car parking and co-location with higher order facilities and/or services. The key factors that determine the strength and attraction of any convenience centre are primarily the scale and composition of the centre, in particular anchors, car parking, including access and ease of use and ambience and presentation of the centre.
- The surrounding competitive framework and existing supply. While the strength and appeal of a centre directly impacts its ability to extract market share, the proximity and attraction of competitive uses impact the extent of a centre's trade area. In essence, all being equal, consumers naturally gravitate to the most convenient option.
- Road networks and traffic flows. The available road network, public transport service and journey to work patterns all affect centre access and impact a centre's convenience and relative attractiveness.
- Natural and man-made physical boundaries such as rivers, rail, freeways etc. Significant physical barriers often act to delineate a trade area boundary. Evidence indicates that the more difficult a barrier to negotiate, the larger the decrease in customer patronage and market share experienced.

In regard to the subject site, the primary determinant impacting delineation of a retail catchment is the location and spatial distribution of existing centres and proximity to population critical mass.

In the context of the subject site, this primarily includes Epiq Marketplace (3.4km northwest of the subject site), the Lennox Local Centre (4.2km north) and the East Ballina neighbourhood centre (2.6km south).

On the basis of the previously outlined considerations, Figure 4.1 over the page illustrates the defined main trade area for the subject site, which consists of a primary sector and two secondary sectors that are described as follows:

- The Primary Trade Area consists of the entire Skennars Head area and a small southern part of Lennox Head which has easy access to the subject site via Skennars Head Road. The proposed Village Centre will be the most proximate and convenient retail development for residents of this area and therefore this area is expected to generate the majority of demand for retail uses onsite.

- The Secondary South Trade Area includes the entire East Ballina region. Residents of this area have relatively easy access to the subject site via Angels Beach Drive and The Coast Road with the proposed retail uses onsite providing increased choice. It is noted that this area is serviced by the East Ballina local centre and overlaps with the Ballina Fair and Ballina Central shopping centre catchments.

- The Secondary North Trade Area comprises a large part of Lennox Head's urban area. Residents of this area will also benefit from reasonable easy access to the subject site and increased retail options. As illustrated in Figure 3.2, the Epiq Marketplace dominates visitation from the Lennox Head region, and as such the potential retention rates which are considered achievable at the subject site are substantially impacted in the secondary north area due to the observed role and function of the Epiq Marketplace centre. It is expected that the proposed centre at the subject site would capture only a small proportion of demand from this area.

The Primary, Secondary South and Secondary North trade areas combined are referred to as the main trade area in the remainder of this report.

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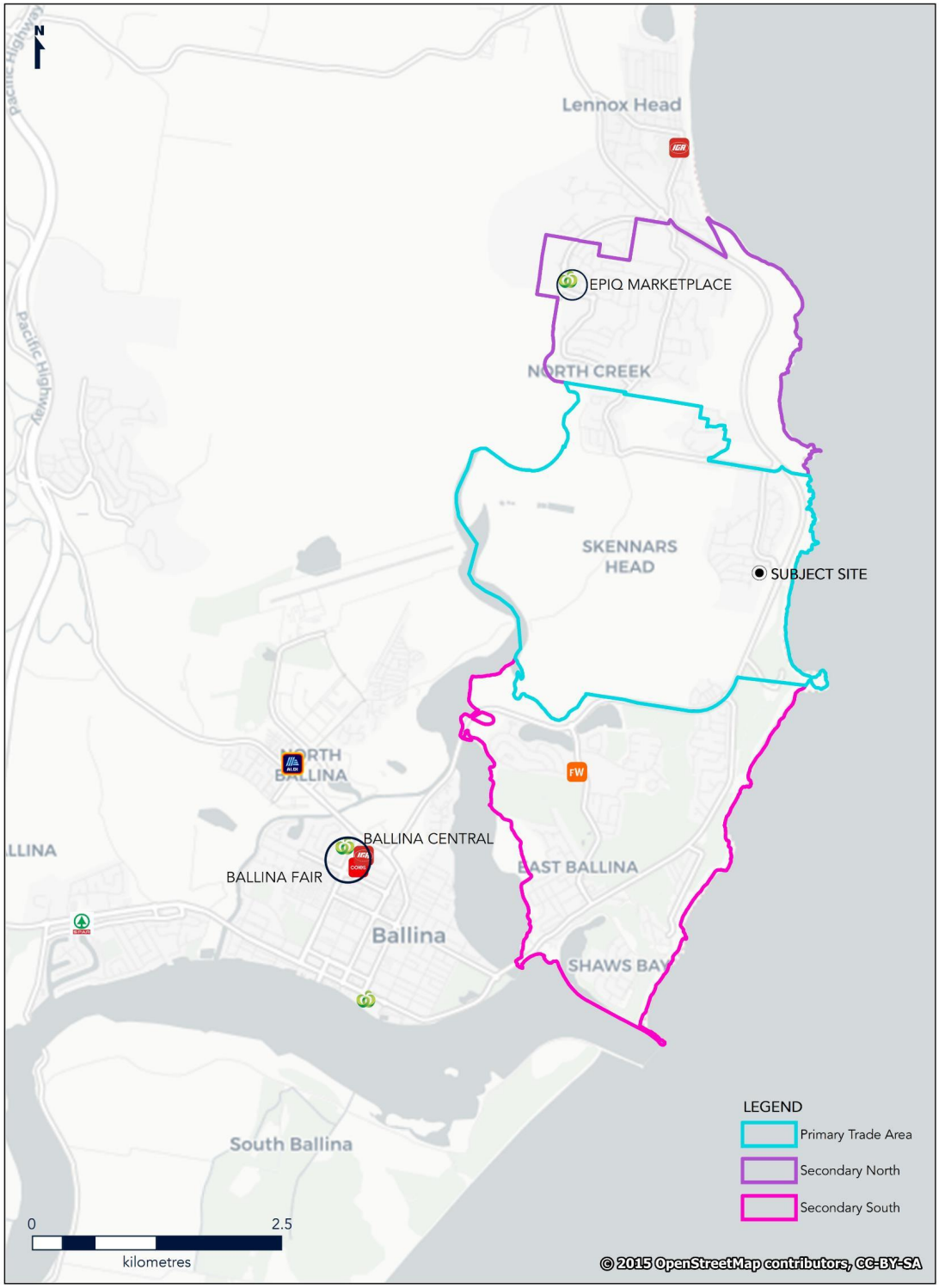
Figure 4.1 Aureus Commercial Centre Trade Areas



4.2 Competitive Framework

4.2.1 Existing supply

There is no existing retail supply within Skennars Head, with the closest commercial precincts being the East Ballina neighbourhood centre, about 2.6km southwest of the site, and the Epiq Marketplace, approximately 3.4km northwest of the subject site.

The East Ballina neighbourhood centre is a small commercial precinct located at Links Avenue, adjacent to the Southern Cross public school and the Goodstart Early Learning Ballina childcare centre. The commercial facility features approximately 2,000sqm and includes a FoodWorks supermarket, a pharmacy, bottle shop, butchery, medical and dental clinics, hair salon, and some cafes and restaurants.

The Epiq marketplace is a 5,500sqm neighbourhood shopping centre located at the corner of Hutley Drive and Snapper Drive. The centre is part of the Epiq masterplan community. The centre is anchored by a full-line Woolworths supermarket (3,500sqm) which includes designated parking bays for drive-through pickup services from online orders. Other retail tenants include a BWS, deli shop, Chempro, bulk foods store, and nail and hair salon. The centre also includes a range of non-retail commercial uses including a 24/7 gym, a dental clinic, a physiotherapy centre, and a medical centre with 12 general practitioners.

Further, there are two small retail precinct areas within the secondary south sector, one at Shaws Bay comprising the Shaws Bay Hotel tavern, a café, and a takeaway restaurant, and one at Lighthouse Beach comprising a restaurant at the Ballina surf club.

A summary of existing retail supply relevant to the subject site is presented on Table 4.1 following.

Table 4.1 Local Area Existing Retail Supply

Centre	Retail floorspace (sqm)	Main tenants	Distance from subject site (km)
Within trade area			
East Ballina neighbourhood centre	2,000	FoodWorks, Bottlemart, Amcal Pharmacy	2.6
Epiq marketplace	5,500	Woolworths, Chempro chemist, BWS	3.4
Shaws Bay	500	Shaws Bay Hotel tavern	4.3
Ballina Surf Club	400	Capiche restaurant	4.0
Beyond trade area			
Lennox Head Local Centre (Ballina St.)	8,500	IGA, Cellarbrations liquor, Pharmacy	4.2
Ballina Central	14,130	Big W, IGA, Priceline pharmacy	4.8
Ballina Fair	14,850	Woolworths, BWS, Best&Less	5.0
Ballina Bayside	10,500	Coles, Kmart, First Choice Liquor	4.9
Ballina Town Centre	42,000	Woolworths	5.8

Source: Think Economics 2024, HillPDA 2019.

Outside the main trade area to the north, the Lennox Head local centre along Ballina Street includes a range of retail facilities, predominantly food and beverage stores and an IGA supermarket.

Meanwhile, the largest concentration of retail floorspace within the region is located in Ballina, within the Town Centre and Kerr Street precinct. The Kerr Street precinct includes the collocated centres of Ballina Fair, Ballina Central, and Ballina Bayside comprise a total of nearly 40,000sqm of retail floorspace and include major supermarket brands, department stores, food and beverage shops, and numerous retail specialties.

Ballina Town Centre is the original retail and commercial centre in the LGA and comprises an elongated commercial core area focused upon River Street. It is estimated to comprise approximately 42,000sqm of retail and about the same of non-retail commercial floorspace.

4.2.2 Future supply

As outlined in Section 3, the Ballina Shire Council Strategic Planning Context foresees the development of future centres at Kinvara and Cumbalum which are located about 10km northwest and 12km west of the site respectively. We note however that there are currently no current active developments in these precincts.

In terms of current proposed major retail additions, a review of Ballina Shire Council development applications has identified four (4) major and/or relevant projects of interest:-

- **"EPIQ Lennox", Lennox Head (DA 2023/339.1) -** located approximately 3.4km form the subject site at the existing Epiq centre, the approval for development of a two (2) storey commercial building on the Pad Site at EPIQ Lennox Marketplace, incorporating Retail Shops, Café, Commercial Offices and associated Carparking.

  The development will have a total gross leasable floor area of 696sqm. External to the GLFA will be an alfresco dining area of 75sqm and an associated 6sqm amenities building. The proposal will increase the Epiq centre to a total GFA of approximately 6,200sqm, which is within the maximum commercial gross leasable floor area of 6,300sqm, as prescribed under the Concept Plan approval.

  The approval represents a 13% increase on the existing retail GFA at the Epiq centre and will have direct impact on the quantum and timing of potential uses at the subject site.

- **Harvey Norman, 32 Boeing Avenue Ballina (DA 2023/107.1)** - approval for the construction of specialised retail premises including approximately 10,500sqm of floorspace including:

  - Harvey Norman (Tenancy 3): comprising 7,696sqm of combined floor area, consisting of 5,533sqm of retail floor area, 1,968sqm of warehouse, 194sqm of offices, reception and administration floor areas space.

  - Tenancies 1 – 4: comprising 2,692sqm of floor area.

  - Ancillary take away food and drink premises: comprising 76sqm of floor area.

The approval is for predominately high-order destination bulky good uses and is considered to be of limited competitive relevance to the subject proposal.

- **Mixed-Use Retail 72 Ballina Street, Lennox Head (DA 2023/287.1)** – pending development application for the construction of a three-storey mixed use development including one food and drink premises and two retail premises at ground level and shop top housing comprising two dwellings above, and associated car parking (13 spaces), infrastructure works and signage.

  Total retail additions proposed equate to 200sqm of retail floorspace, however largely represent a replacement of existing ground floors tenancies within the Lennox local centre and are considered to be of limited impact to the subject proposal.

- **319 River Street (DA 2023/111.1)** – Approval for development of a specialised retail premises with a gross leasable floor area (GLFA) of 1,520sqm at 319 River Street in Ballina, approximately 8km from the subject site.

  The approval is for predominately high-order destination bulky good uses and is considered to be of limited competitive relevance to the subject proposal.

4.2.3 Socio-demographic Profile

Table 4.2 following details the socio-demographic profile of the identified trade areas. The profiles have been compared with the respective benchmarks for non-metro NSW and the Australian average.

The data is sourced from the 2021 Census of Population and Housing. Key points to note about the socio-demographic profile are as follows:

- The average household size within the main trade area is calculated at 2.46, slightly below the regional and national averages of 2.64 and 2.74 persons per household respectively. However, the household size varies significantly across the trade areas with 2.98 for the Secondary North, 2.42 for the Secondary South, and 2.60 for the Primary trade area.

- The main trade area attributes a higher proportion of 55+ residents with 36.1% of the population within this age cohort compared to 35.6% across Non-metro NSW and 29.1% across Australia. This is driven by the Secondary South trade area with 42.2% of residents aged 55+, while the proportion for the Secondary North sector is estimated at only 25.1%.

- The main trade area comprises a higher proportion of couple families with no children at 33.8%. This compares to 29.7% across Non-metro NSW and 26.9% across Australia. The main trade area also attributes a high proportion of couple families with children at 29.3%, driven by the Secondary North sector at 38.7% and lower in the Secondary South area at 23.6%.

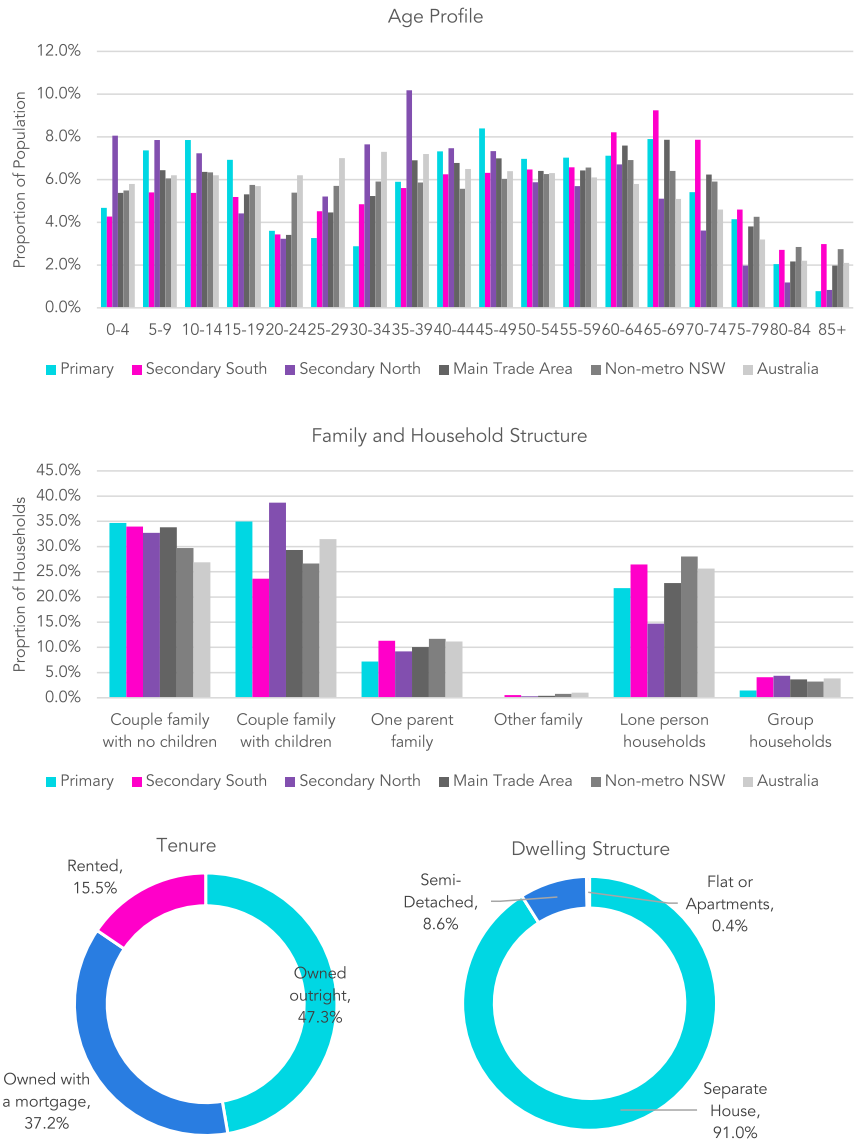
- The average total personal income of the main trade area is lower at than the regional and national benchmarks at $58,342, compared to $62,064 for Non-metro NSW and $70,522 for Australia.

- The residential product mix in the main trade area predominantly comprises separate houses (73.4%) with few townhouses (22.2%) and apartments (4.4%). Notably, across the

main trade area, 75.8% of homes are owned outright or with a mortgage, driven especially by the Primary sector (84.5%).

To summarise, the catchment is reflective of a developing community composed of a mix of young families with children predominately in the Lennox and Skennars Head area to the north and older couples with no children and lone person households in the Ballina East / secondary sector in the south.

Figure 4.1 Aureus Centre Trade Area – Socio-demographic Profile



Source: Census of Population and Housing 2021, Think Economics 2024

Table 4.2 Aureus Centre Trade Area – Socio-demographic Profile

	Primary	Secondary South	Secondary North	Main Trade Area	Non-metro NSW	Australia
Population (ERP):						
2016	1,852	5,587	1,896	9,335	2,707,935	24,190,907
2021	2,045	5,653	2,872	10,570	2,834,051	25,688,079
2022	2,068	5,653	2,918	10,639	2,862,910	26,014,540
2023	2,144	5,662	2,989	10,795	2,891,789	26,649,020
Average Annual Growth 2016 - 21 (%)	2.00%	0.24%	8.66%	2.52%	0.91%	1.21%
Average Annual Growth 2021 - 23 (%)	2.39%	0.08%	2.02%	1.06%	1.01%	1.85%
Population Density (persons/sqkm)	247.3	884.8	674.1	558.8	3.6	3.3
Household Size:	2.60	2.42	2.98	2.46	2.64	2.74
Age Profile:						
Median Age	45	49	39	45	43	38
0-4	4.7%	4.3%	8.1%	5.4%	5.5%	5.8%
5-9	7.4%	5.4%	7.9%	6.4%	6.1%	6.2%
10-14	7.9%	5.4%	7.2%	6.4%	6.3%	6.2%
15-19	6.9%	5.2%	4.4%	5.3%	5.8%	5.7%
20-24	3.6%	3.4%	3.2%	3.4%	5.4%	6.2%
25-29	3.3%	4.5%	5.2%	4.5%	5.7%	7.0%
30-34	2.9%	4.9%	7.6%	5.2%	5.9%	7.3%
35-39	5.9%	5.6%	10.2%	6.9%	5.9%	7.2%
40-44	7.3%	6.2%	7.5%	6.8%	5.6%	6.5%
45-49	8.4%	6.3%	7.3%	7.0%	6.0%	6.4%
50-54	7.0%	6.5%	5.9%	6.4%	6.3%	6.3%
55-59	7.0%	6.6%	5.7%	6.4%	6.6%	6.1%
60-64	7.1%	8.2%	6.7%	7.6%	6.9%	5.8%
65+	20.3%	27.4%	12.7%	22.0%	22.2%	17.2%
Family and Household Composition:						
Couple family with no children	34.7%	34.0%	32.7%	33.8%	29.7%	26.9%
Couple family with children	34.9%	23.6%	38.7%	29.3%	26.6%	31.5%
One parent family	7.2%	11.3%	9.2%	10.0%	11.7%	11.2%
Other family	0.0%	0.6%	0.3%	0.4%	0.8%	1.0%
Lone person households	21.7%	26.4%	14.7%	22.8%	28.0%	25.6%
Group households	1.4%	4.1%	4.3%	3.7%	3.2%	3.8%
Income:						
Average total personal income	$72,302	$53,613	$72,302	$58,342	$62,064	$70,522
Tenure:						
Owned outright	47.3%	45.9%	34.4%	43.5%	39.6%	32.1%
Owned with a mortgage	37.2%	25.2%	46.1%	32.4%	32.5%	36.2%
Rented	15.5%	28.9%	19.5%	24.2%	27.9%	31.7%
Dwelling Structure:						
Separate House	91.0%	61.0%	89.4%	73.4%	83.6%	73.0%
Semi-Detached	8.6%	32.1%	9.0%	22.2%	10.0%	12.7%
Flat or Apartments	0.4%	6.9%	1.6%	4.4%	6.4%	14.3%

Source: ABS Census of Population and Housing 2021, Think Economics 2024

4.2.4 Population Projections

In order to inform estimates of projected population growth, analysis of a range of data and information sources has been undertaken, including:

- Dwelling Approvals Data
- Estimated Residential Population (ERP) Data (2016-2023).
- Forecast ID Population Projections
- ABS Estimated Residential Population (ERP) 2023, NSW Dept. of Planning and Environment (2022)

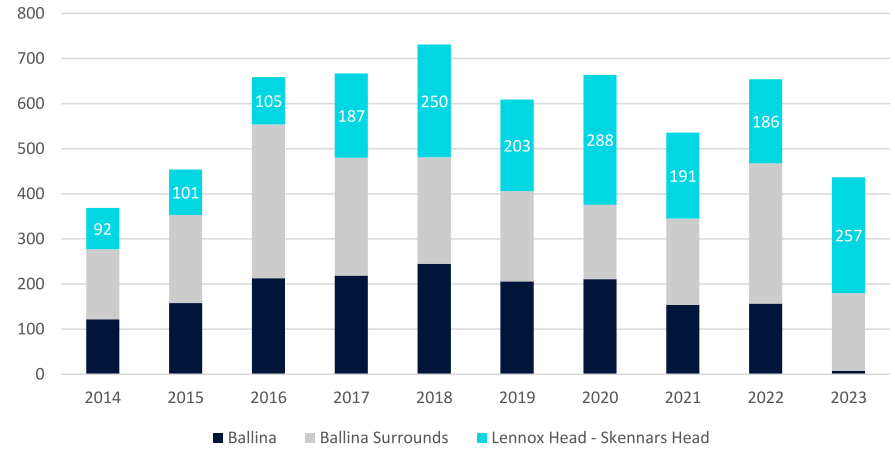
The rate of growth has continued to decline across the Ballina Region post-pandemic, with the latest ERP for 2023 showing an increase of +430 persons from 2022, below the long-term (10 year) average of +578 persons (refer Figure 4.2).

The rate of growth remains strongest within the Lennox Head-Skennars Head[8] area, which accounted for almost 60% of Ballina Shire population growth over the most recent period. Over the last 5 years, the Lennox Head-Skennars Head population has on average increased by 230 persons per annum.

Analysis of development approvals (refer Figure 4.3) across the Shire largely reflect the trend in ERP. Over the 12mth period to July 2024, the Lennox Head-Skennars Head area accounted for 138 dwelling approvals or 46% of total Ballina Shire activity. From July 2020, the average total dwelling approvals across these Lennox Head- Skennars Head SA2 has been 151 per year.

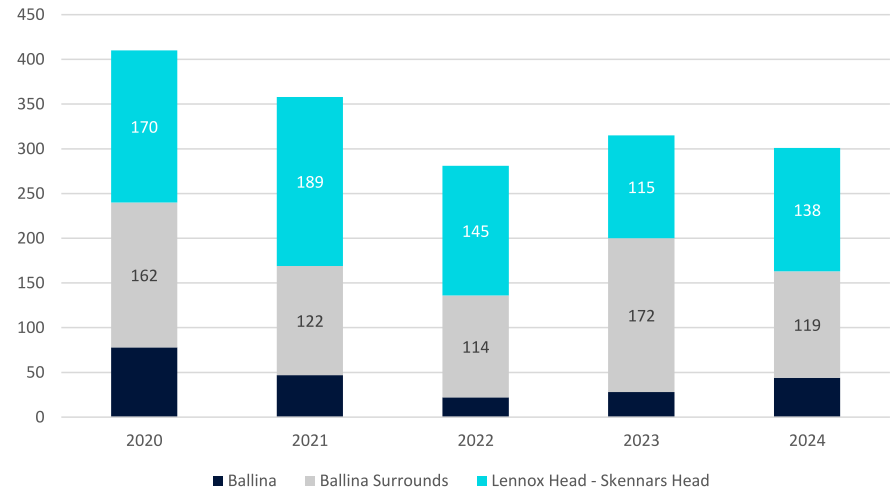
[8] *Australian Bureau of Statistics - Statistical Area 2. It is important to note that from a concordance perspective, the defined catchment does not align with the ABS defined SA2 boundaries, with the Primary and Secondary North sectors forming part of the Lennox Head-Skennars Head SA2 and the Secondary South sector a component of the Ballina SA2.*

Figure 4.2 Ballina Shire - Estimated Resident Population (ERP) – Annual Change



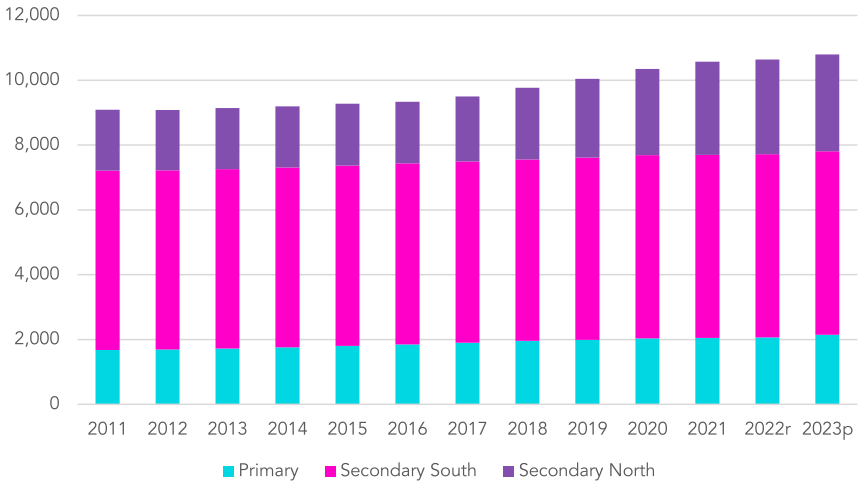
Source: Australian Bureau of Statistics, ERP by SA2 and above (ASGS Edition 3), 2001 onwards. Think Economics 2024

Figure 4.3 Ballina Shire - Total Dwelling Approvals (2020 – 2024)



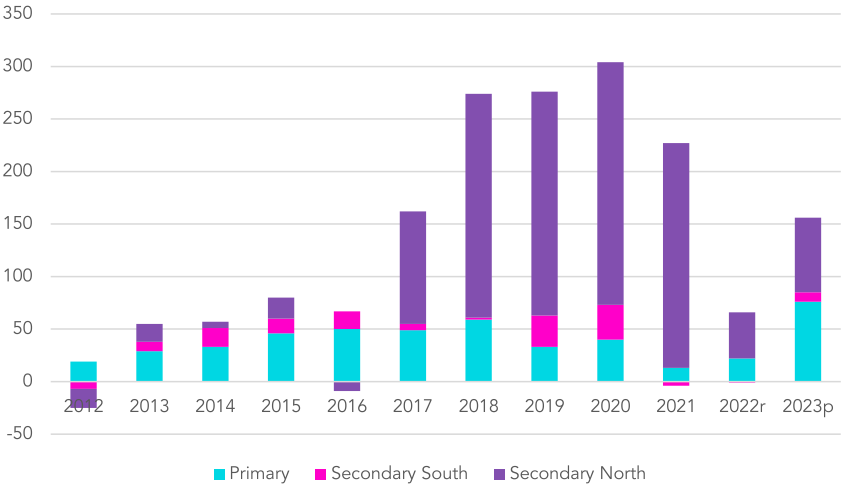
Source: Australian Bureau of Statistics, Building Approvals (July respective years), Australia. Think Economics 2024

Figure 4.4 Main Trade Area - Estimated Resident Population (ERP) (2016 – 2023)



Source: ABS Estimated Residential Population (ERP) 2023, Think Economics 2024

Figure 4.5 Main Trade Area - Annual Change in Population (2012-2023)



Source: ABS Estimated Residential Population (ERP) 2023, Think Economics 2024

At a catchment sector level, the secondary south represents the largest established population with a current estimated resident population of 5,662 persons, followed by the Secondary north at 2,989 persons and the primary with a population of 2,144.

Growth over the last few years between 2016-2023 has been driven largely by the secondary north trade area, mostly driven by the Epiq community development. During that period, the population increased by 156 people per year on average through the secondary north sector or an average annual growth rate of 6.7%. This rate of growth is expected to slow down in the coming years as the Epiq masterplan gets closer to completion.

Over the most recent 12month period, the primary trade area saw the largest growth in ERP, largely driven by development of the Aureus Estate. We have been advised by the developer that they have completed approximately 140 dwellings, with another 100 dwellings and 50 townhouses/apartments under construction. An additional 110 dwellings are still to be developed and assumed to be completed by 2031.

Over the medium to long term, ongoing population growth will be supported by remaining development capacity throughout the main trade area, in particular across the primary area.

In this instance analysis of population estimates and projections have been based on the latest ABS Estimated Residential Population (ERP) from April 2023 together with data from the 2022 Population, Housing and Implied Dwelling Projections from the New South Wales Department of Planning and Environment and small area projections completed by Forecastid for Ballina Shire Council.

Based on these considerations, the population of the primary trade area is projected to grow from 2,144 in 2023 to 3,019 in 2031 and to 3,419 people by 2036.

Going forward, the main trade area population is estimated to reach 12,570 by 2036, reflecting an average annual growth of 1.2%, or an average of 136 additional residents per year. Table 4.2 below presents the estimated population projections for the trade areas over the period to 2036.

Table 4.3 Population Projections

	Estimated Residential Population					Forecast Population		
	2006	2011	2016	2021	2023	2026	2031	2036
	Population (Persons)							
Primary	1,449	1,675	1,852	2,046	2,144	2,519	3,019	3,419
Secondary	7,391	7,464	7,483	8,528	8,651	8,801	8,976	9,151
Secondary South	*5,632*	*5,536*	*5,587*	*5,654*	*5,662*	*5,692*	*5,692*	*5,692*
Secondary North	*1,759*	*1,928*	*1,896*	*2,874*	*2,989*	*3,109*	*3,284*	*3,459*
Main Trade Area	8,840	9,139	9,335	10,574	10,795	11,320	11,995	12,570
	2006-11	**2011-16**	**2016-21**	**2021-23**	**2023-26**	**2026-31**	**2031-36**	
	Average Annual Growth (Persons)							
Primary	45	35	39	49	125	100	80	
Secondary	15	4	209	62	50	35	35	
Secondary South	-19	10	13	4	10	0	0	
Secondary North	34	-6	196	58	40	35	35	
Main Trade Area	60	39	248	111	175	135	115	
	2006-11	**2011-16**	**2016-21**	**2021-23**	**2023-26**	**2026-31**	**2031-36**	
	Average Annual Growth (%)							
Primary	2.9%	2.0%	2.0%	2.4%	4.2%	3.7%	2.5%	
Secondary	0.2%	0.1%	2.6%	0.7%	0.6%	0.4%	0.4%	
Secondary South	-0.3%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	
Secondary North	1.9%	-0.3%	8.7%	2.0%	1.6%	1.1%	1.0%	
Main Trade Area	0.7%	0.4%	2.5%	1.0%	1.4%	1.2%	0.9%	

Source: ABS Estimated Residential Population (ERP) 2023, NSW Dept. of Planning and Environment 2022, Forecastid Ballina Shire Council, Aureus Development

5.0 Market Demand Assessment

This section assesses existing and forecast retail expenditure and retail floorspace demand within the main trade area as well as specific analysis of demand and market gap in order to determine underlying need conditions for the proposed retail development.

5.1 Retail Expenditure Analysis

The retail demand profile for the trade area will be dependent on the retail expenditure characteristics of residents within the area. Think Economics estimates retail expenditure capacity generated by trade area residents based on the latest available 2021 Consumer Spend Potential (CSP) data sourced from Precisely.

Unlike other products on the market, CSP was designed using a top-down method which overcomes several biases in base data for household expenditure. The size of the market for each CSP category is calculated from a variety of sources, the primary one being Household Final Consumption Expenditure (HFCE) tables from the National Accounts (Australia's gross domestic product figures). Because this dataset is an integral part of GDP statistics, it is the final arbiter of the size of the household market in Australia. In addition, Precisely uses other data sources to augment HFCE data. These include other National Accounts tables from the Australian Bureau of Statistics, as well as Retail Trade, Apparent Consumption of Alcohol, International Trade in Services, and Socio Economic Indexes for Areas (SEIFA). They also incorporate data from other Commonwealth sources – the Australian Prudential Regulation Authority, the Productivity Commission, and Tourism Research Australia – as well as other publicly available sources.

The CSP data is considered to be an accurate and detailed measure of retail expenditure capacity and behaviour and is widely relied on in the retail industry. Total retail expenditure is detailed in a number of categories, as follows:

- Food and groceries – goods typically sold in supermarkets and specialty fresh food stores.

- Off Premise liquor – packaged beer, wine and spirits such as those purchased at bottle shops and liquor outlets. The combination of take-home food and groceries and packaged liquor is referred to as FLG expenditure.

- Meals out and Fast Food – cafes, takeaway outlets and restaurants, including liquor consumed on such premises.

- Apparel – clothing, footwear, fashion and accessories.

- Household goods – giftware, electrical, computers, furniture and homewares.

- Leisure – sporting goods, music, DVDs, games, books, magazines and newspapers.

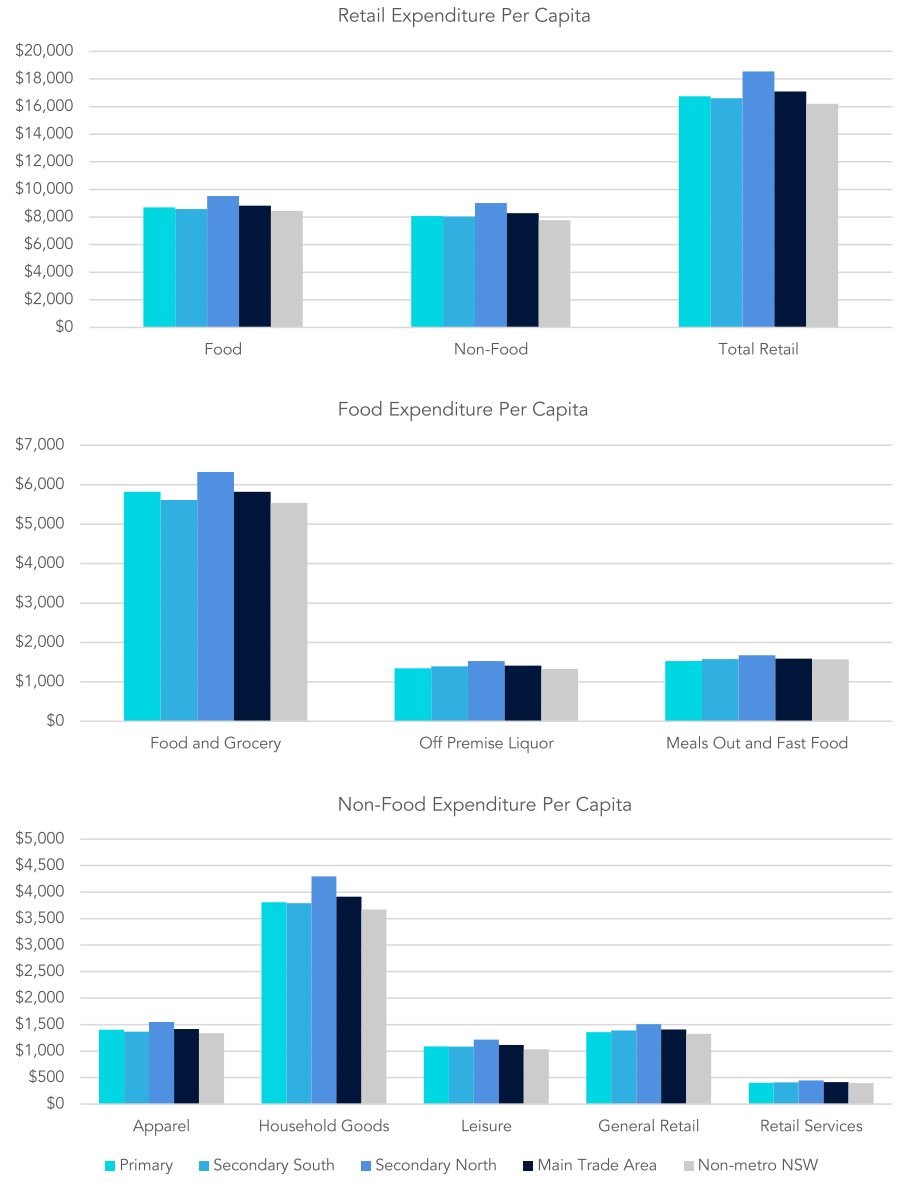
- General retail space –pharmaceutical goods, cosmetics, toys, florists and mobile phones.

- Retail Services – retail services such as key cutting, shoe repairs, hair and beauty.

Figure 5.1 presents a comparison of the retail spending behaviour of the trade area residents with Non-metro NSW averages. The total level of annual retail expenditure per person for the main trade area is estimated at $17,091, which is above the regional average of $16,198. Around 51.6% of this expenditure, or $8,821 per annum, is food expenditure. Per capita expenditure levels fluctuate across retail categories and are above the regional benchmark for most retail categories such as leisure (+7.9%), household goods (+6.6%), and off-premises liquor (6.6%).

Expenditure levels also vary among trade areas influenced by different socio demographic characteristics as well as the retail supply provision within each region. Annual retail expenditure per person is higher across the secondary north sector at $18,546 and 14.5% above the Non-metro NSW average.

Figure 5.1 Aureus Village Main Trade Area - Retail Expenditure Per Capita



Source: Precisely Consumer Spend Potential 2021, Think Economics 2024

5.2 Retail Market Size

Table 5.1 presents estimates of total retail expenditure generated by the resident population within the primary, secondaries and combined main trade area over the forecast period to 2036. All spending forecasts are inclusive of GST and presented in constant 2021 dollars. Forecasts include estimated real growth in retail expenditure, which is assumed to average approximately 0.7% per annum.

Total available retail expenditure within the trade area is forecast to grow moderately, from $181.5 million in 2021 to $238.7 million in 2036, reflecting an average annual growth rate of around 1.84% per annum over the forecast period. The primary sector expenditure is expected to grow from $34.3 million in 2021, to around $63.3 million in 2036, reflecting an average annual rate of 4.17%. On average the retail expenditure pool in the main trade area is forecast to increase by $3.8 million per annum.

Table 5.1 Aureus Village Main Trade Area – Retail Expenditure by Sector

Aureus Village - Retail Expenditure ($M), 2021 - 2036				
Year	Primary	Secondary South	Secondary North	Main Trade Area
2021	34.3	93.9	53.3	181.5
2022	34.9	94.5	54.5	183.9
2023	36.4	95.3	56.2	187.9
2024	38.8	96.1	57.3	192.2
2025	41.2	96.9	58.4	196.5
2026	43.6	97.7	59.6	201.0
2027	45.7	98.4	60.7	204.7
2028	47.7	99.1	61.8	208.5
2029	49.8	99.7	62.9	212.4
2030	51.9	100.4	64.0	216.3
2031	54.0	101.1	65.1	220.2
2032	55.8	101.7	66.2	223.8
2033	57.7	102.4	67.4	227.4
2034	59.5	103.1	68.5	231.1
2035	61.4	103.8	69.7	234.9
2036	63.3	104.5	70.9	238.7
Average annual growth ($M)				
2021 - 2036	1.9	0.7	1.2	3.8
Average annual growth (%)				
2021 - 2036	4.17%	0.71%	1.92%	1.84%

**Constant 2021 dollars & including GST*

Source: Precisely 2021 Consumer Spend Potential, Think Economics (2024)

Table 5.2 details the projected retail spending of the Aureus Village main trade area population by retail category. Food and groceries are the main expenditure category for supermarkets. Spending on food and groceries currently represents 34% of the total retail expenditure in the main trade area and is forecast to grow from $61.8 million in 2021 to $83.4 million by 2036, reflecting an average annual growth rate of 2.0% or an average annual increase of $1.4 million.

Meals out and fast food is projected to see the strongest rate of growth at 2.3% per annum over the projection period.

Table 5.2 Aureus Village Main Trade Area – Retail Expenditure by Category

Aureus Village - Main Trade Area Retail Expenditure ($M), 2021 - 2036

Year	Food and Grocery	Off Premise Liquor	Meals Out and Fast Food	Apparel	Household Goods	Leisure	General Retail	Retail Services	Total Retail
2021	61.8	15.0	16.9	15.0	41.6	11.9	15.0	4.4	181.5
2022	62.7	15.2	17.1	15.2	42.1	12.0	15.1	4.5	183.9
2023	64.2	15.6	17.6	15.5	42.9	12.2	15.4	4.6	187.9
2024	65.7	15.9	18.1	15.8	43.8	12.5	15.8	4.7	192.2
2025	67.3	16.3	18.6	16.1	44.7	12.7	16.1	4.8	196.5
2026	68.9	16.7	19.0	16.4	45.7	13.0	16.4	4.9	201.0
2027	70.3	17.0	19.5	16.6	46.4	13.2	16.7	5.0	204.7
2028	71.7	17.4	19.9	16.9	47.2	13.4	17.0	5.1	208.5
2029	73.2	17.7	20.4	17.1	48.0	13.6	17.2	5.2	212.4
2030	74.6	18.0	20.8	17.4	48.8	13.8	17.5	5.3	216.3
2031	76.1	18.4	21.3	17.6	49.6	14.0	17.8	5.4	220.2
2032	77.5	18.7	21.7	17.8	50.3	14.2	18.1	5.5	223.8
2033	78.8	19.0	22.2	18.1	51.1	14.4	18.3	5.5	227.4
2034	80.2	19.4	22.6	18.3	51.8	14.6	18.6	5.6	231.1
2035	81.6	19.7	23.1	18.5	52.6	14.8	18.9	5.7	234.9
2036	83.1	20.0	23.6	18.7	53.3	15.0	19.1	5.8	238.7
Average annual growth ($M)									
2021 - 2036	1.4	0.3	0.4	0.2	0.8	0.2	0.3	0.1	3.8
Average annual growth (%)									
2021 - 2036	2.0%	2.0%	2.3%	1.5%	1.7%	1.6%	1.7%	1.9%	1.8%

**Constant 2021 dollars & including GST*

Source: Precisely 2021 Consumer Spend Potential, Think Economics (2024)

5.3 Retail Demand Analysis

The amount of floorspace which can be supported at the proposed Aureus Village centre, and which will be appropriate to meet the needs of the trade area population, will be driven primarily by the level of retail sales which the centre can reasonably expect to retain from the pool of available expenditure generated by the trade area population.

Table 5.3 presents estimates of total retail expenditure by category which the Aureus Village could reasonably expect to retain from the trade area population over the forecast period to 2036. These indicative estimates take into account the competitive framework in which the centre will operate, having regard to the surrounding alternative offers discussed in Section 4 earlier.

The respective retention rates which are considered achievable by the proposed centre at the subject site are substantially impacted in the secondary north area due to the observed role and function of the Epiq Marketplace centre, and in the secondary south sector based on the existing Ballina East local centre and overlapping trade area with the Ballina Fair and Ballina Central shopping centres.

The demand assessment takes all of these factors into account in providing indicative estimates of the sales potential for the subject centre by retail category for the defined trade area, based on estimated market shares of available retail expenditure, by category and by trade area sectors, which the centre can attract. All spending forecasts include estimated real growth in retail expenditure, which is assumed to average 0.7% per annum.

Across the total retail spectrum, the proportion of available retail expenditure which the centre is forecast to retain from the defined trade area is in the order of around 4.6%. This proportion increases to around 12.3% across the primary sector, which is the key sector for the Aureus Village centre.

This means that approximately 95.4% of all expenditure generated by residents in the main trade area would be directed to other retail facilities including the Epiq Marketplace, the East Ballina neighbourhood centre, and the Ballina Fair and Ballina Central shopping centres.

Total retained retail expenditure within the primary trade area is forecast to grow from $7.7 million in 2021 to $11.8 million in 2036, reflecting an average annual growth rate of around 2.8% per annum over the forecast period.

This growth in expenditure will be dispersed across all retail categories, though the highest rates of growth are anticipated within the Meals Out and Fast Food category, followed by the Retail Services and Leisure categories.

Table 5.3 Aureus Village - Retained Retail Expenditure ($M), 2021 - 2036

Year	Food and Grocery	Off-Premise Liquor	Meals Out and Fast Food	Apparel	Household Goods	Leisure	General Retail	Retail Services	Total Retail
2021	4.3	1.0	1.3	0.1	0.4	0.2	0.3	0.1	7.7
2022	4.3	1.0	1.3	0.1	0.4	0.2	0.3	0.1	7.8
2023	4.5	1.1	1.4	0.1	0.4	0.2	0.3	0.1	8.1
2024	4.6	1.1	1.4	0.1	0.4	0.2	0.4	0.1	8.4
2025	4.8	1.1	1.5	0.1	0.4	0.2	0.4	0.1	8.7
2026	5.0	1.2	1.6	0.2	0.4	0.2	0.4	0.1	9.0
2027	5.1	1.2	1.6	0.2	0.4	0.2	0.4	0.1	9.3
2028	5.3	1.3	1.7	0.2	0.5	0.2	0.4	0.1	9.5
2029	5.4	1.3	1.7	0.2	0.5	0.2	0.4	0.1	9.8
2030	5.6	1.3	1.8	0.2	0.5	0.2	0.4	0.1	10.1
2031	5.7	1.4	1.8	0.2	0.5	0.2	0.5	0.1	10.4
2032	5.8	1.4	1.9	0.2	0.5	0.2	0.5	0.1	10.6
2033	6.0	1.4	1.9	0.2	0.5	0.2	0.5	0.1	10.9
2034	6.1	1.5	2.0	0.2	0.5	0.2	0.5	0.1	11.2
2035	6.3	1.5	2.0	0.2	0.5	0.2	0.5	0.2	11.4
2036	6.4	1.5	2.1	0.2	0.5	0.3	0.5	0.2	11.7
Average annual growth ($M)									
2021 - 2036	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3
Average annual growth (%)									
2021 - 2036	2.7%	2.7%	3.2%	2.6%	2.8%	3.1%	3.0%	3.2%	2.8%
% Retail Expenditure Retained									
Primary	15.0%	20.0%	20.0%	5.0%	5.0%	7.5%	15.0%	15.0%	12.3%
Secondary South	5.0%	5.0%	5.0%	0.5%	0.5%	0.5%	1.0%	1.0%	2.9%
Secondary North	5.0%	5.0%	5.0%	0.5%	0.5%	0.5%	1.0%	1.0%	2.9%
Main Trade Area	6.9%	7.7%	7.8%	1.4%	1.3%	1.8%	3.6%	3.6%	4.6%

Source: Precisely Consumer Spend Potential 2021, Think Economics 2024

5.4 Retail Gap

Having addressed the market capture which the proposed Aureus Village centre is considered able to achieve, Table 5.4 provides indicative estimates of the amounts of supportable retail floorspace for the subject centre on a year-on-year basis, taking into account the estimated levels of expenditure which the centre is considered likely to retain.

The following retail demand forecasts utilise average retail turnover densities (RTDs) by retail category to estimate floorspace demand. The RTDs provide an estimation of the sustainable turnover per sqm for each category, with these RTDs applied to the retail expenditure forecasts presented in Table 5.3 to determine the existing and forecast floorspace demand by category.

The RTD assumed for 2024 is approximately $8,221/sqm for total retail. The estimation allows for real growth in this RTD, averaging around 0.7% per annum from 2021 onwards, as well as additional demand from beyond trade area which varies across retail categories with an average of 12%.

Table 5.4 details the estimated quantum of retail floorspace demand expected to be retained by the proposed centre at the subject site. The analysis indicates that, as of 2024, the estimated amount of supportable retail floorspace for the centre would be in the order of around 1,165sqm, with the majority of that floorspace being allocated across the food categories (904sqm or 78%). Total retail floorspace demand is expected to grow to approximately 1,395sqm by 2031 and 1,522 by 2036.

Total growth in food and liquor sustainable floorspace is estimated to increase from 904sqm in 2024 to 1,167sqm in 2036.

Table 5.4 Skennars Head - Retained Floorspace (sqm), 2021 - 2036

Year	Food and Grocery	Off-Premise Liquor	Meals Out and Fast Food	Apparel	Household Goods	Leisure	General Retail	Retail Services	Total Retail
2021	515	106	228	30	97	30	62	22	1,091
2022	519	107	231	31	98	30	63	22	1,100
2023	531	110	237	31	100	31	65	23	1,127
2024	546	113	245	33	104	32	68	24	1,165
2025	562	117	254	34	109	34	70	25	1,204
2026	577	120	262	35	113	35	73	26	1,242
2027	590	123	269	36	116	36	75	27	1,272
2028	602	126	276	37	119	37	78	28	1,303
2029	615	129	283	38	122	38	80	29	1,334
2030	627	132	291	39	125	39	82	30	1,364
2031	640	134	298	40	128	40	84	30	1,395
2032	650	137	304	40	131	41	86	31	1,420
2033	661	139	310	41	133	42	88	32	1,446
2034	671	142	316	42	136	43	90	33	1,471
2035	682	144	323	42	138	43	91	33	1,497
2036	692	146	329	43	141	44	93	34	1,522

Source: Precisely Consumer Spend Potential 2021, Think Economics 2024

6.0 Need Implications

Any retail development at the Skennars Head site will cater primarily to a limited trade area, encompassing Skennars Head and a small southern portion of Lennox Head accessible via Skennars Head Road. This area is expected to generate the majority of demand for retail uses at the site.

With a primary trade area of only 2,150 persons growing to 3,420 by 2036 and limited opportunities to attract market share from the north, a supermarket is unlikely to be sustainable at the subject site, both now and into the future. Full-line supermarkets typically require a minimum primary trade area of at least 8,000 people to be viable. It is also important to note that without a large supermarket anchor at the subject site the amount of supportable specialty retail also becomes limited by overall reduced foot traffic and customer flows to the centre.

Based on the analysis of catchment demand, existing supply and information on similar centres, we consider there is an opportunity for the establishment of a small retail centre within a total retail floorspace ranging from 1,000sqm to 1,500sqm.

Small neighbourhood centres of this size tend to be anchored by a food related tenant, supported by a small selection of specialties, again predominantly food, liquor and takeaway related. Non-food tenancies such as apparel, household goods and leisure are generally limited. Depending on the surrounding provision, the centre may include a small amount of non-retail commercial floorspace such as medical, allied health, or local professional office (i.e. real estate)

In this instance, we consider that most of the larger non-retail commercial opportunities have been realized at Epiq Marketplace which includes a 24/7 gym, a medical centre, and adjacent childcare centre.

Based on site coverage benchmarks, a centre of around 1,000 – 1,500sqm would typically necessitate a site area of between 3,000sqm – 5,000sqm. On this basis, we would consider the current designated E1 zoned area of 13,500sqm excessive. An area of this size area is more suitable to large neighbourhood centres supported and anchored by large full-line supermarkets (GFA 3,000sqm+) which is considered un-sustainable at the subject site.

6.1 Social, community and employment impacts

The development of the proposed Aureus Village centre will result in additional on-going employment on site, as well as further jobs throughout the supply chain, including those in industries servicing the retail tenants at the site, such as transport workers, wholesalers and the like.

Furthermore, the construction phase of the project will support temporary construction related employment, and additional temporary jobs through the broader economic supply chain (i.e. multiplier impacts).

In estimating the various employment benefits, we have relied upon various data sources including information from retail operators, the ABS, state and local government agencies, as well as past experience in preparing assessments of this nature.

The following table illustrates the estimated net increase in direct on-site retail employment that could potentially be created if the proposed development at the subject site were to proceed. An estimated 35 jobs could be created on site once the development is fully operational. Making an allowance of around 5% for employment being redirected from other centres, the proposed development could result in a net addition of 33 jobs.

Table 6.1 Aureus Village – Estimated employment impacts

Scenario	Estimated sq.m per worker	GLA (sq.m)	Employment (persons)
Food & Beverage	30	848	28
Specialty retail	50	336	7
Total Centre			35
Net employment increase*			**33**

Source: Think Economics 2024

The proposed development at the subject site would generate a range of other economic benefits, in particular the following:

- Increased choice and amenity for the population of the main trade area as well as likely increased competition for the benefit of consumers.
- More convenient access to new retail shopping facilities, to serve both the current residents of the main trade area and future residents.
- Reduced travels distances, leading to savings on time and fuel for main trade area residents, due to a much better provision of shopping facilities at the local level.
- Providing additional convenience retail to service a growing residential growth area, without reducing the level of service provision anywhere else.
- Opportunities for small businesses to open premises within the local centre.
- Providing jobs near people's homes and consequent economic multiplier impacts, which will boost the local economy.

6.2 Conclusion

This report provides evidence indicating that there is a market gap for the proposed Aureus Village at the subject site which would result in a net community benefit to residents within the main trade area and surrounds.

Overall, we consider the proposed development concept will provide a positive net community benefit given the following:

- There is currently no retail floorspace within Skennars Head and analysis indicates a sustainable market gap of between 1,000 – 1,500sqm.

- Overall, the proposed development concept and associated scale and mix will result in negligible impacts on surrounding centres, with any potential impact offset by ongoing population and retail expenditure growth throughout the local area.

- Our analysis demonstrates that the proposed development concept is of an appropriate scale and composition based on both current and projected demand conditions within the main trade area and taking into consideration the context of the existing and planned centres hierarchy in the surrounding area.

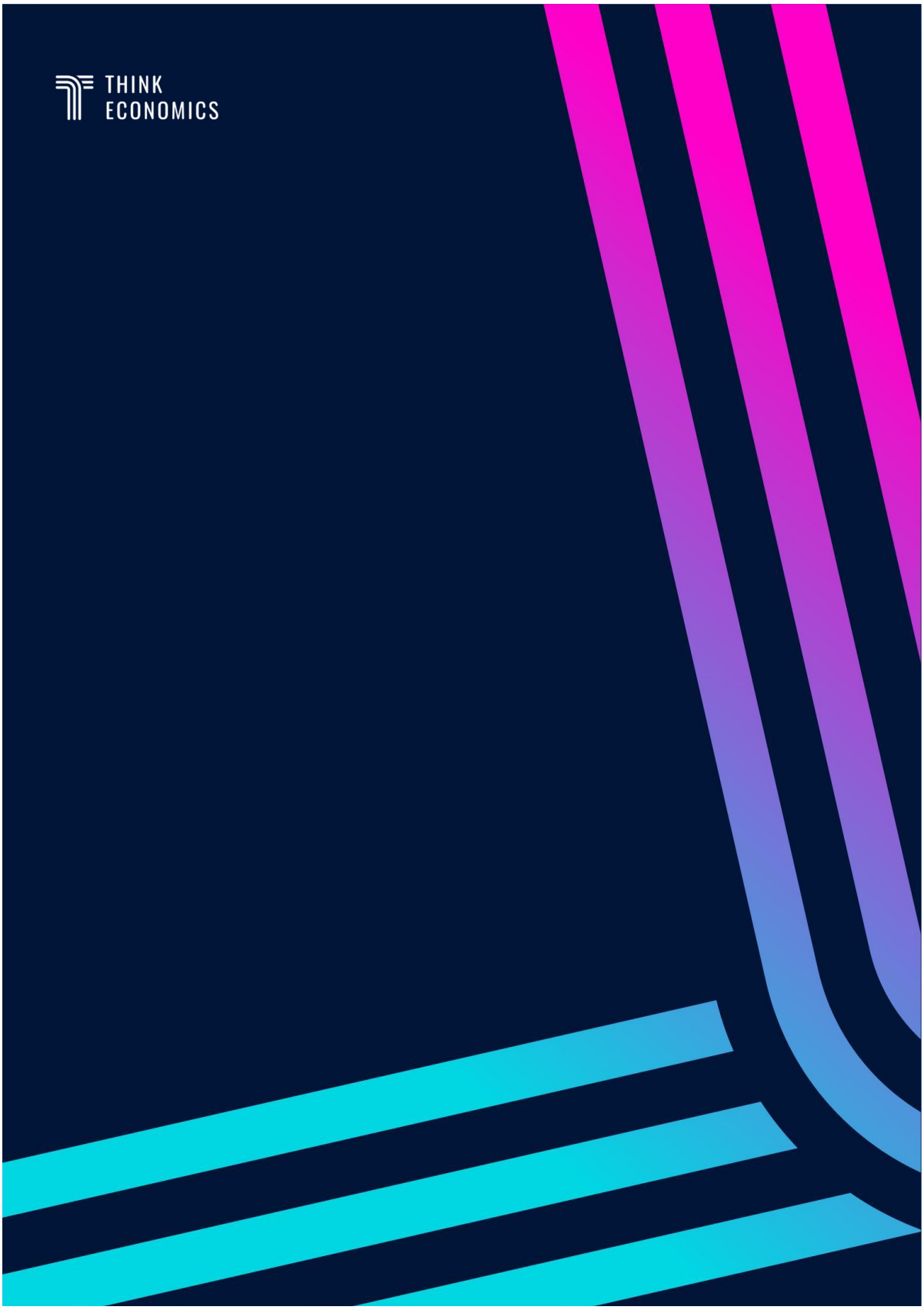
- Based on site coverage benchmarks, a centre of around 1,000 – 1,500sqm would typically necessitate a site area of between 3,000sqm – 5,000sqm. We consider the current designated E1 zoned area of 13,500sqm excessive. The proposal supports opportunities to deliver more appropriate land uses on the residual land parcel that will multiply net benefits for the community.

- The proposed centre will provide a supporting retail function and will not impact the role or function of higher order centres (such as the Ballina Town Centre) within the surrounding area.

- The proposal will create an employment generating use which will provide 33 net additional on-going jobs.

- The proposed development is likely to result in additional consumer choice, convenience and amenity for local shoppers, and is also likely to reduce vehicle kilometres travelled by residents and workers. It will thus result in a net community benefit.

On the basis of the findings presented above, there is considered strong economic, planning and community need conditions supporting the current proposed Aureus Village centre concept and a reduction in the designated E1 zoned area.


THINK
ECONOMICS

INTRAPAC PROPERTY

3 October 2024

The General Manager

Ballina Shire Council

PO Box 450

BALLINA NSW 2478

Re: **Planning Proposal Voluntary Planning Agreement (VPA) Offer**

Aureus Village, Lot 346 DP 1271483, Skennars Head

We refer to discussions about the proponent entering into a Voluntary Planning Agreement (VPA) with Ballina Shire Council associated with a Planning Proposal to rezone part of the site for medium density residential development, to ensure that the local centre will be developed in a timely manner.

We confirm that the Directors of Intrapac Skennars Head Pty Ltd have discussed the matter and agree to a VPA specifying that no residential lots (strata or otherwise) will be registered within the area rezoned to R3 Medium Density Residential until such time as an Occupation Certificate has been issued for at least 50% of the approved commercial floor space at the site.

Parties to the Agreement

Ballina Shire Council

Intrapac Skennars Head Pty Ltd

Land to which the VPA will relate:

Lot 346 DP 127483, 21 Aureus Boulevard, Skennars Head.

General Notes:

1. Developer contributions under the provisions of section 7.11 of the Environmental Planning and Assessment Act will still apply.
2. The planning agreement will be exhibited contemporaneously with the Planning Proposal.
3. The planning agreement is not required to be registered and will not require security other than the restriction on the issue of a subdivision certificate and/or occupation certificate for the Development.
4. Proponent may assign or transfer its interest in the planning agreement provided it procures a Deed signed by the assignee or transferee agreeing to comply with all relevant obligations in the planning agreement.

Acuity Business Park
Building 1, Level 3, Suite 3
209 Robina Town Centre Drive
Robina QLD 4226
PO Box 4982
Robina Town Centre QLD 4230

+617 5535 0414 ABN: 83 609 488 780 Intrapac.com.au

5. Proponent to pay Council's legal costs (if any) relating to reviewing and executing the planning agreement up to a maximum amount of $1,500.00 (incl GST).

6. Any disputes to be the subject of attempted resolution by mediation prior to Court proceedings being commenced, and if circumstances occur that materially affect the operation of the planning agreement, the parties will discuss those changes in good faith.

We would be pleased to discuss this further with Council. If you have any questions, please feel free to contact the writer.

Jacob Hunter

Senior Development Manager

Intrapac Property

Suite 3 - Level 3

Acuity Business Park – Building 1

209 Robina Town Centre Drive

Robina QLD 4226

02

MASTER PLAN


SWELL AVENUE
AUREUS BOULEVARD
SURF AVENUE
BUILDING A
BUILDING B
BUILDING C
3
3
PRELIMINARY
Clarke Hopkins Clarke
AUREUS VILLAGE
Skennars Head, NSW 2748
Project No. 160151
www.chc.com.au | studio@chc.com.au | 03 9418 4340 | NSW Nominated Architect: Jordan Curran (10259)
Scale 1 : 250 @ A1
0
5m
Site Plan
06.08.2024
SK00
a


SWELL AVENUE
AUREUS BOULEVARD
SURF AVENUE
T11
COMMERCIAL
67 m²
28 BUILDING A PARKS
26 RESIDENTIAL
5 VISITOR
RESIDENTIAL SERVICES
71 m²
LOADING
T7
RETAIL
93 m²
T4
RETAIL
94 m²
T5
RETAIL
112 m²
T2
F&B
140 m²
T3
F&B
117 m²
T1
TAPHOUSE
283 m²
T6
F&B
122 m²
T8
F&B
133 m²
9 BUILDING C PARKS
33 BUILDING B BASEMENT PARKS
33 RESIDENTIAL
6200
5400
PRELIMINARY
Clarke Hopkins Clarke
AUREUS VILLAGE
Skennars Head, NSW 2748
Project No. 160151
www.chc.com.au | studio@chc.com.au | 03 9418 4340 | NSW Nominated Architect: Jordan Curran (10259)
Scale 1 : 250 @ A1
0
12.5m
Overall - Ground Floor
06.08.2024
SK01
a

Clarke Hopkins Clarke | AUREUS VILLAGE
SKENNARS HEAD, NSW 2478
160151

RENDER - OVERALL VILLAGE | 01.04 a
JULY 2024
PAGE 27

Clarke Hopkins Clarke | AUREUS VILLAGE
SKENNARS HEAD, NSW 2478
160151

RENDER - ENTRY TO VILLAGE
JULY 2024
01.05 a
PAGE 28

Clarke Hopkins Clarke | AUREUS VILLAGE
SKENNARS HEAD, NSW 2478
160151

RENDER - THE VILLAGE
JULY 2024 | 01.06 a
PAGE 29

Clarke Hopkins Clarke | AUREUS VILLAGE
SKENNARS HEAD, NSW 2478
160151

RENDER - VIEW FROM PARK
JULY 2024
01.07 a
PAGE 30

Clarke Hopkins Clarke | AUREUS VILLAGE
SKENNARS HEAD, NSW 2478
160151

RENDER - VIEW FROM PARK
JULY 2024
01.08 a
PAGE 31

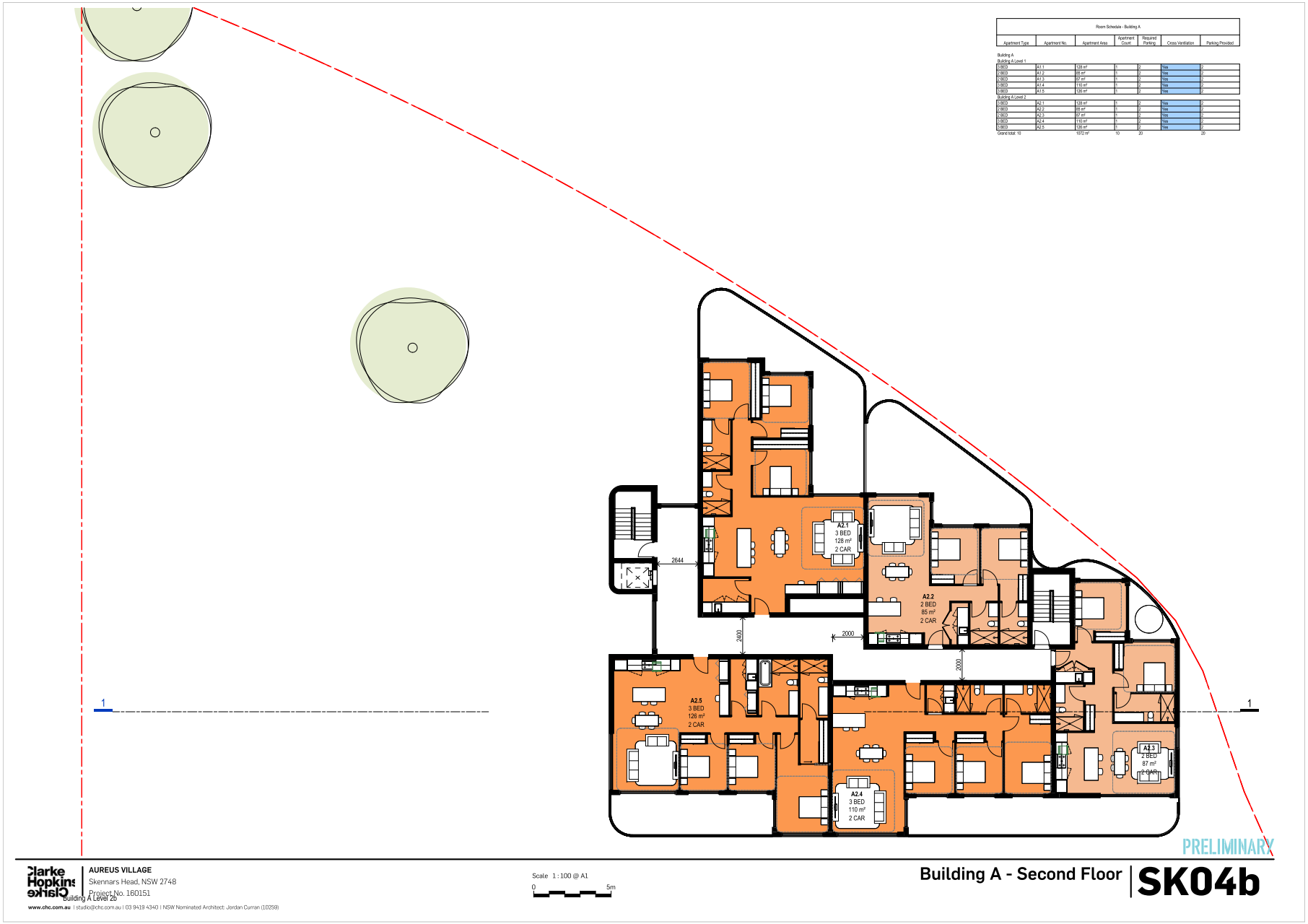

RENDER
THE VILLAGE
the village
ap.house

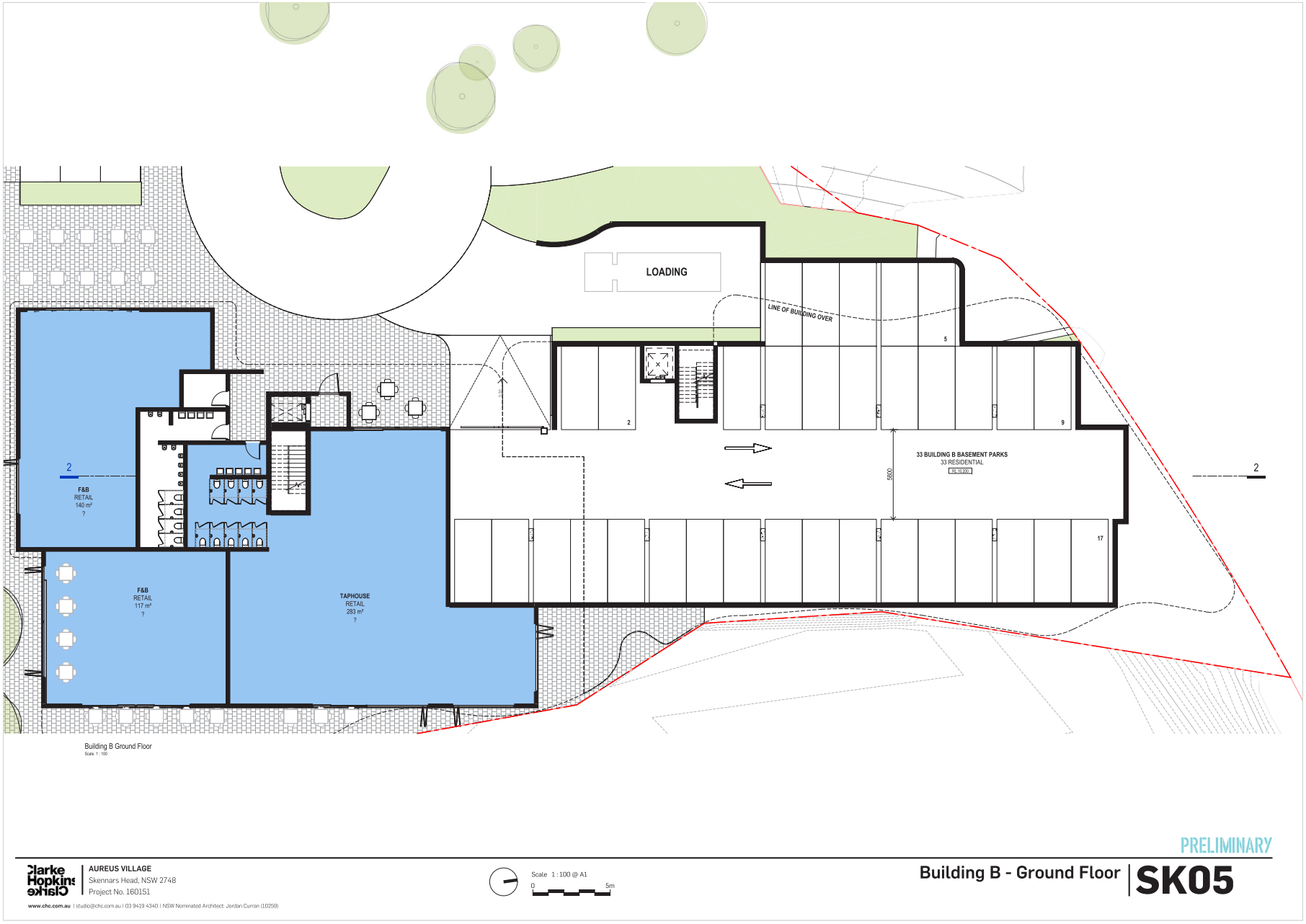
03

CALL OUT PLANS


AUREUS BOULEVARD
RL: +9.85
RL: +9.86
RL: +10.00
RL: +10.97
RL: +10.830
RL: +10.30
RL: +10.00
T11
COMMERCIAL
67 m²
6200
6200
6200
5400
5400
5900
5400
2400
2600
31 BUILDING A PARKS
20 RESIDENTIAL
9 VISITOR
67 PUBLIC PARKS
15 RETAIL/OFFICE
52 F&B
RESIDENTIAL SERVICES
103 m²
LOADING
PRELIMINARY
Clarke Hopkins Clarke
AUREUS VILLAGE
Skennars Head, NSW 2748
Project No. 160151
www.chc.com.au | studio@chc.com.au | 03 9419 4340 | NSW Nominated Architect: Jordan Curran (10259)
Scale 1:100 @ A1
0
5m
Building A - Ground Floor
SK03


Room Schedule - Building A
Apartment Type
Apartment No.
Apartment Area
Apartment Count
Required Parking
Cross Ventilation
Parking Provided
Building A
Building A Level 1
3 BED A1.1 126 m² 1 2 Yes 2
2 BED A1.2 85 m² 1 2 Yes 2
2 BED A1.3 87 m² 1 2 Yes 2
3 BED A1.4 110 m² 1 2 Yes 2
3 BED A1.5 126 m² 1 2 Yes 2
Building A Level 2
3 BED A2.1 126 m² 1 2 Yes 2
2 BED A2.2 85 m² 1 2 Yes 2
2 BED A2.3 87 m² 1 2 Yes 2
3 BED A2.4 110 m² 1 2 Yes 2
3 BED A2.5 126 m² 1 2 Yes 2
Grand total: 10 1072 m² 10 20 20
A1.1 3 BED 126 m² 2 CAR
A1.2 2 BED 85 m² 2 CAR
A1.3 2 BED 87 m² 2 CAR
A1.4 3 BED 110 m² 2 CAR
A1.5 3 BED 126 m² 2 CAR
2644
2400
2000
2000
1
1
PRELIMINARY
Clarke Hopkins Clarke
AUREUS VILLAGE
Skennars Head, NSW 2748
Project No. 160151
www.chc.com.au | studio@chc.com.au | 03 9418 4340 | NSW Nominated Architect: Jordan Curran (10259)
Scale 1:100 @ A1
0
5m
Building A - First Floor
SK04a


Room Schedule - Building A
Apartment Type
Apartment No.
Apartment Area
Apartment Count
Required Parking
Cross Ventilation
Parking Provided
Building A
Building A Level 1
1 BED A1.1 128 m² 1 2 Yes 2
2 BED A1.2 85 m² 1 2 Yes 2
2 BED A1.3 87 m² 1 2 Yes 2
1 BED A1.4 110 m² 1 2 Yes 2
1 BED A1.5 126 m² 1 2 Yes 2
Building A Level 2
1 BED A2.1 128 m² 1 2 Yes 2
2 BED A2.2 85 m² 1 2 Yes 2
1 BED A2.3 87 m² 1 2 Yes 2
1 BED A2.4 110 m² 1 2 Yes 2
1 BED A2.5 126 m² 1 2 Yes 2
Grand total: 10 1072 m² 10 20 20
A2.1
3 BED
128 m²
2 CAR
A2.2
2 BED
85 m²
2 CAR
A2.3
2 BED
87 m²
2 CAR
A2.4
3 BED
110 m²
2 CAR
A2.5
3 BED
126 m²
2 CAR
2644
2400
2000
2000
1
1
PRELIMINARY
Clarke Hopkins Clarke
AUREUS VILLAGE
Skennars Head, NSW 2748
Project No. 160151
Building A Level 2
www.chc.com.au | studio@chc.com.au | 03 9419 4340 | NSW Nominated Architect: Jordan Curran (10259)
Scale 1:100 @ A1
0
5m
Building A - Second Floor
SK04b


LOADING
LINE OF BUILDING OVER
33 BUILDING B BASEMENT PARKS
33 RESIDENTIAL
F&B
RETAIL
140 m²
F&B
RETAIL
117 m²
TAPHOUSE
RETAIL
283 m²
5800
Building B Ground Floor
PRELIMINARY
AUREUS VILLAGE
Skennars Head, NSW 2748
Project No. 160151
Scale 1:100 @ A1
Building B - Ground Floor
SK05

Room Schedule - Building B

Apartment Type	Apartment No.	Apartment Area	Apartment Count	Required Parking	Cross Ventilation	Parking Provided
Building B						
Building A Level 2a						
1 BED	B1.1	96 m²	1	1	No	1
1 BED	B1.2	99 m²	1	1	No	1
2 BED	B1.3	101 m²	1	2	Yes	2
3 BED	B1.4	96 m²	1	2	No	2
2 BED	B1.5	99 m²	1	2	Yes	2
Building B Level 2						
3 BED	B1.6	99 m²	1	2	Yes	2
3 BED	B1.8	119 m²	1	2	No	2
3 BED	B1.9	127 m²	1	2	Yes	2
Building B Level 3						
1 BED	B2.1	96 m²	1	1	No	1
1 BED	B2.2	99 m²	1	1	No	1
2 BED	B2.3	101 m²	1	2	Yes	2
3 BED	B2.4	96 m²	1	2	No	2
2 BED	B2.5	99 m²	1	2	Yes	2
Grand total: 13		1156 m²	13	22		24

Building B Level 2

PRELIMINARY

Clarke Hopkins Clarke | AUREUS VILLAGE
Skennars Head, NSW 2748
Project No. 160151

www.chc.com.au | studio@chc.com.au | 03 9418 4340 | NSW Nominated Architect: Jordan Curran (10259)

Scale 1:100 @ A1
0 5m

Building B - First Floor | SK06a


Room Schedule - Building B
Apartment Type
Apartment No.
Apartment Area
Apartment Count
Required Parking
Cross Ventilation
Parking Provided
Building B
Building B Level 2a
1 BED
B1.1
56 m²
No
1 BED
B1.2
56 m²
No
2 BED
B1.3
101 m²
Yes
3 BED
B1.4
96 m²
No
3 BED
B1.5
99 m²
Yes
Building B Level 2
3 BED
B1.6
99 m²
Yes
3 BED
B1.8
119 m²
Yes
3 BED
B1.9
127 m²
Yes
Building B Level 3
1 BED
B2.1
56 m²
No
1 BED
B2.2
56 m²
No
2 BED
B2.3
101 m²
Yes
3 BED
B2.4
96 m²
No
3 BED
B2.5
99 m²
Yes
Grand total: 13
1158 m²
13
22
24
B2.1
1 BED
56 m²
1 CAR
B2.2
1 BED
56 m²
1 CAR
B2.3
2 BED
101 m²
2 CAR
B2.4
3 BED
96 m²
2 CAR
B2.5
3 BED
99 m²
2 CAR
ROOFTOP TERRACE
RL 17.150
RL 16.900
LOT BOUNDARY
2
2
Building B Level 3
PRELIMINARY
Clarke Hopkins Clarke
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Project No. 160151
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Scale 1 : 100 @ A1
0
5m
Building B - Second Floor
SK06b

Building C Ground Floor

PRELIMINARY

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Skennars Head, NSW 2748
Project No. 160151

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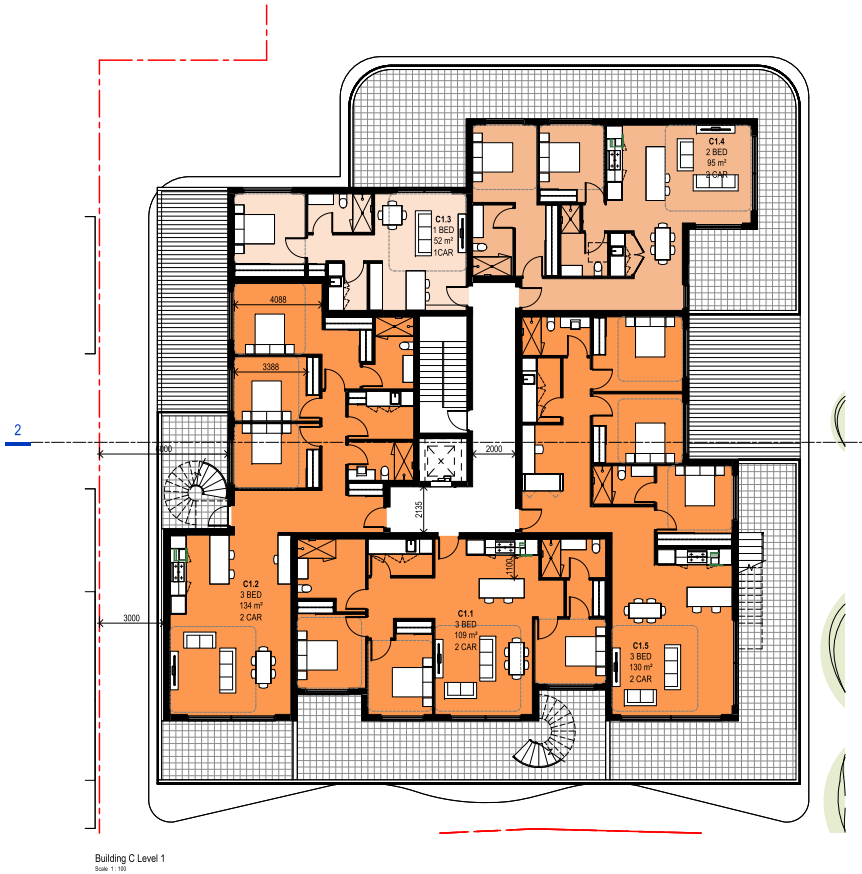
Scale 1:100 @ A1
0 5m

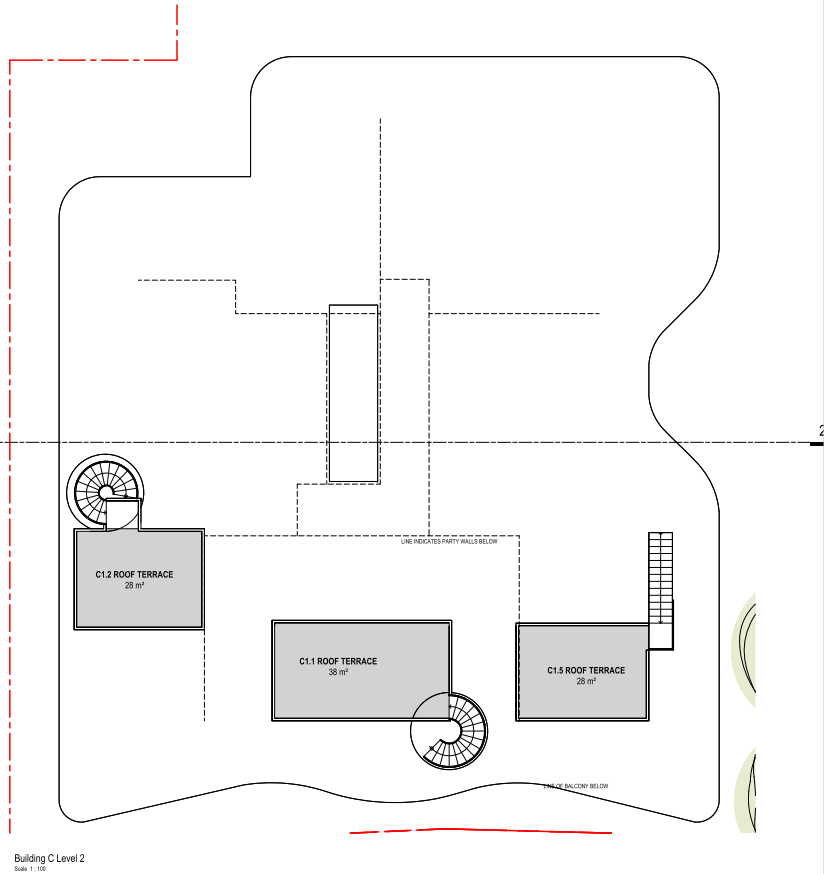
Building C - Ground Floor | SK07

Room Schedule - Building C

Apartment Type	Apartment No.	Apartment Area	Apartment Count	Required Parking	Cross Ventilation	Parking Provided
Building C						
Building C Level 1						
1 BED	C1.1	109 m²	1	2	No	2
3 BED	C1.2	134 m²	1	2	Yes	2
1 BED	C1.3	52 m²	1	1	Yes	1
2 BED	C1.4	95 m²	1	2	Yes	2
3 BED	C1.5	130 m²	1	2	Yes	2
Grand total: 5		521 m²	5	9		9



Building C Level 1
Scale 1 : 100



Building C Level 2
Scale 1 : 100

PRELIMINARY

Clarke Hopkins Clarke

AUREUS VILLAGE
Skennars Head, NSW 2748
Project No. 160151

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Scale 1 : 100 @ A1
0 5m

Building C - First Floor | SK08

Room Schedule - Building A						
Apartment Type	Apartment No.	Apartment Area	Apartment Count	Required Parking	Cross Ventilation	Parking Provided
Building A						
Building A Level 1						
3 BED	A1.1	128 m²	1	2	Yes	2
2 BED	A1.2	85 m²	1	2	Yes	2
2 BED	A1.3	87 m²	1	2	Yes	2
3 BED	A1.4	110 m²	1	2	Yes	2
3 BED	A1.5	126 m²	1	2	Yes	2
Building A Level 2						
3 BED	A2.1	128 m²	1	2	Yes	2
2 BED	A2.2	85 m²	1	2	Yes	2
2 BED	A2.3	87 m²	1	2	Yes	2
3 BED	A2.4	110 m²	1	2	Yes	2
3 BED	A2.5	126 m²	1	2	Yes	2
Grand total: 10		1072 m²	10	20		20

Room Schedule - Building B						
Apartment Type	Apartment No.	Apartment Area	Apartment Count	Required Parking	Cross Ventilation	Parking Provided
Building B						
Building A Level 2a						
1 BED	B1.1	56 m²	1	1	No	1
1 BED	B1.2	56 m²	1	1	No	1
2 BED	B1.3	101 m²	1	2	Yes	2
3 BED	B1.4	96 m²	1	2	No	2
3 BED	B1.5	99 m²	1	2	Yes	2
Building B Level 2						
3 BED	B1.6	99 m²	1	2	Yes	2
3 BED	B1.8	119 m²	1	2	Yes	2
3 BED	B1.9	127 m²	1	2	Yes	2
Building B Level 3						
1 BED	B2.1	56 m²	1	1	No	2
1 BED	B2.2	56 m²	1	1	No	2
2 BED	B2.3	101 m²	1	2	Yes	2
3 BED	B2.4	96 m²	1	2	No	2
3 BED	B2.5	99 m²	1	2	Yes	2
Grand total: 13		1158 m²	13	22		24

Room Schedule - Building C						
Apartment Type	Apartment No.	Apartment Area	Apartment Count	Required Parking	Cross Ventilation	Parking Provided
Building C						
Building C Level 1						
3 BED	C1.1	109 m²	1	2	No	2
3 BED	C1.2	134 m²	1	2	Yes	2
1 BED	C1.3	52 m²	1	1	Yes	1
2 BED	C1.4	95 m²	1	2	Yes	2
3 BED	C1.5	130 m²	1	2	Yes	2
Grand total: 5		521 m²	5	9		9

Room Schedule - Retail & Commercial			
Function	Internal Area	Required Parking	Parking Provided
Retail			
Ground Floor			
COMMERCIAL	67 m²	2	2
F&B	122 m²	10	15
F&B	142 m²	6	10
F&B	117 m²	5	10
F&B	140 m²	2	4
RETAIL	93 m²	3	5
RETAIL	94 m²	5	5
RETAIL	112 m²	2	2
TAPHOUSE	283 m²	6	10
Grand total: 9	1171 m²	41	63

TO BE UPDATED

CROSS VENTILATION:

BUILDING A
Y 10
N 0
% 100%

BUILDING B
Y 7
N 6
% 54

BUILDING C
Y 4
N 1
% 80

TOTAL
Y 21
N 7
% 75%

DCP CONTROLS

- 10% ADAPATABLE HOUSING IN COMPLIANCE WITH AS4299
- ALL SHOPTOP HOUSING UNDER CHAPTER 4 OF BALLIINCA DCP 2012 (RESIDENTIAL DEVELOPMENT)
- FSR = 0.4:1 (7491m² SITE)
  1. 2996.4m² MAX GFA
- CURRENT ADAPTABLE HOUSING REQUIRED APTS. = 4

PRELIMINARY

Clarke Hopkins Clarke

AUREUS VILLAGE
Skennars Head, NSW 2748
Job No. 160151

www.chc.com.au | studio@chc.com.au | 03 9419 4340 | NSW Nominated Architect: Jordan Curran (10259)

Scale @ A3
0 5m

Schedules | SK25

Impact Tomorrow

ClarkeHopkinsClarke

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studio@chc.com.au
www.chc.com.au

Melbourne
Wurundjeri Woiwurrung Country

L9, 700 Swanston St
Carlton VIC 3053

Sydney
Gadigal Country

Suite 3, Ground Floor, 91 Campbell
St Surry Hills NSW 2010
03 9419 4340

Planning Proposal 24/004 *(PP-2024-2212)*

Aureus Village Centre, Skennars Head

Ballina Local Environmental Plan 2012

December 2024 (V1 Commencement - 24/77588)

ballina shire council

ballina
shire council

40 cherry street • po box 450 • ballina nsw 2478
t 1300 864 444 • **e** council@ballina.nsw.gov.au

ballina.nsw.gov.au

Contents

1. Introduction

1.1 Summary

This planning proposal (PP) primarily seeks to rezone part of Lot 346 DP 1271483 (Lot 346), 21 Aureus Boulevard, Skennars Head, from its current E1 Local Centre (E1) zoning, to R3 Medium Density Residential (R3) under the provisions of Ballina LEP 2012 (BLEP2012).

The planning proposal also seeks to correct a zoning anomaly, created through the misalignment of cadastral boundaries and zoning map data. Correction of the anomaly will result in the rezoning of that part of Lot 346 zoned 7(d) Environmental Protection (Scenic / Escarpment) under the provisions of Ballina LEP 1987 (BLEP1987) to E1 or R3. Minor adjustment of zones along road boundaries will also result through the correction of zone map boundaries to match cadastral boundaries.

Consequential changes to the Floor Space Ratio map, and Land Application map if required, are also proposed.

Lot 346 is located on the eastern side of the Aureus Estate at Skennars Head, between Aureus Boulevard and the coastal parkland public open space. Figure 1 below shows the location of Lot 346.

Figure 1 - Site Locality Aerial Photo

Lot 346 has an area of 1.305 hectares. This planning proposal primarily relates to part of Lot 346 which has an area of 6,650m², bordered by Aureus Boulevard to the west, Wave Break Circuit to the south, and public open space to the east. The remainder of Lot 346, located north of the rezoning area, will retain an E1 zoning.

Figures 2 and 3 below shows the existing and proposed zones to be applied to Lot 346.

Figure 2 – Existing Site Zoning

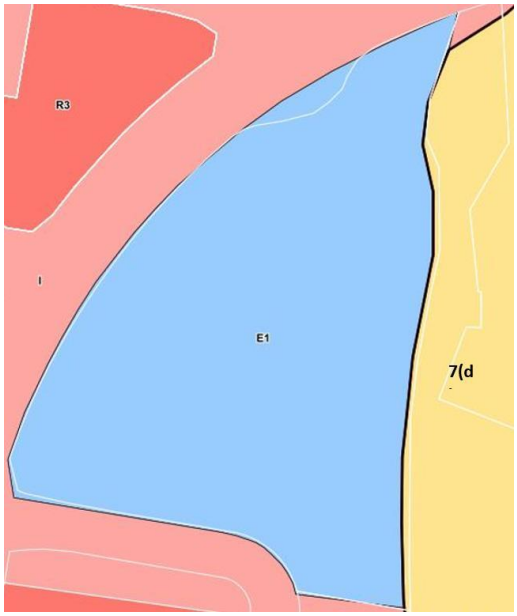
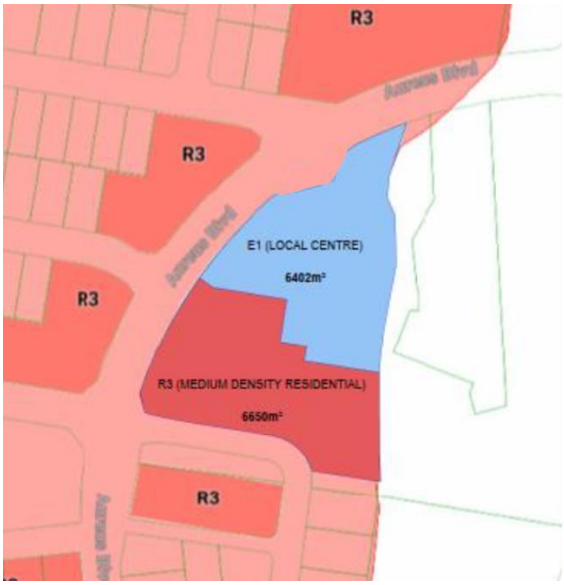


Figure 3 – Proposed Site Zoning



The proposed rezoning also seeks to facilitate the development of medium density housing, enhancing the site's residential diversity while maintaining the viability of commercial activities.

In support of the planning proposal, the proponent has offered to enter into a planning agreement to ensure the timely completion of part of the proposed commercial development.

The planning proposal is considered to be consistent with the strategic planning framework applicable to the site and to have local and strategic planning merit. Specifically, the proposal seeks to amend the Ballina Local Environmental Plan 2012 (BLEP 2012) to rezone the southern portion of Lot 346, covering 6,650m² to R3. The northern portion, comprising 6,402m², will retain a E1 zoning.

Zone boundary mapping anomalies are also proposed to be corrected. This will remove a sliver of 7(d) zoned land from the eastern side of Lot 346, and align lot zone boundaries with road boundaries.

This planning proposal also proposes to amend the Floor Space Ratio (FSR) map. The FSR map is proposed to be amended to remove that part of Lot 346 proposed to be rezoned R3 from the map.

This planning proposal has been prepared following consideration by the Council of a request to prepare a planning proposal submitted on behalf of the property owners.

1.2 Background to Planning Proposal

The Aureus Estate was initially zoned for urban development in April 2014 via Amendment No. 8 to the BLEP 2012. This amendment applied an R2 Low Density Residential zoning to the site, with a small portion of land near Headlands Drive in the northern section zoned as B1 Neighbourhood Centre.

In December 2019, BLEP2012 Amendment No. 38 was made. This amendment amongst other matters increased the area of B1 zoned land within the Aureus Estate from 870m^2 to its current size of 1.305ha. The B1 area was also relocated to a more central location adjoining open space. At that time the planning controls permitted the construction of a neighbourhood cente having a maximum 5,400m^2 gross leaseable floor area.

The objective of Amendment No 38 was to facilitate the development of a neighbourhood centre, providing small-scale retail, business, and community services to meet the needs of the surrounding residents.

In December 2021, the State Government implemented reforms to employment zones. This changed the zoning of the site from substantially B1 Neighbourhood Centre to substantially E1 Local Centre. The E1 Local Centre zone being the same zone as is applicable to the Epiq Centre, and the Lennox Head and East Ballina commercial centres.

Economic analysis conducted in 2018, as part of the process leading to BLEP2012 Amendment No. 38 identified sufficient retail demand to support the proposed uses, including a local supermarket, specialty stores, and supporting development such as gyms and childcare facilities. This analysis was based on Council's retail hierarchy and the economic conditions at the time.

A *Retail Needs Assessment* submitted in support of the current planning proposal request (Appendix 5) highlights significant changes since the 2018 analysis. The most notable

change being the completion of the Epiq Marketplace in Hutley Drive at Lennox Head. This centre now attracts a substantial portion of local retail spending.

Although Epiq Marketplace was approved at the time of the 2018 analysis, it was then not operational. It has since been fully developed. It contains a full-line Woolworths supermarket, specialty shops (including a bottle shop and medical facilities), a gym, and cafes. This marketplace has become a major retail destination, significantly reducing the demand for additional commercial development in the surrounding area, including Skennars Head. Additions approved in 2024 to the Epiq Marketplace have increased retail floorspace within this centre to approximately 6,500m^2.

The *Retail Needs Assessment* also points to shifts in consumer behavior, particularly the growth of online shopping and home delivery services, which it is argued have further reduced demand for traditional brick-and-mortar retail.

Given these economic shifts, the *Retail Needs Assessment* concluded that the original allocation of a 13,500m^2 E1 zoned site was excessive. The retail demand analysis indicates a market gap of between 1000 – 1500m^2 of retail floor space at Skennars Head. This would typically require a site area of between 3000 – 5,000m^2.

Consequently, this planning proposal seeks to reduce the size of the proposed Skennars Head local centre and rezone that part of the site no longer required for commercial purposes by applying an R3 zone. This will facilitate this area being developed for medium density residential development. Preliminary site planning suggests that this area could accommodate 20 to 30 medium-density townhouses, depending on the final unit mix.

1.3 Council Resolutions

Council at its meeting on xx/xx/xxxx resolved as follows:

[Insert details after Council meeting]

1.4 Gateway Determination

[Insert details when available]

2. Planning Proposal

Section 3.33(2) of the *Environmental Planning and Assessment Act 1979* (the Act) outlines requirements that must be provided for when preparing PPs. The following sections provide details of the Planning Proposal (PP) as it relates to Section 3.33(2) of the Act.

Part 1 – Objectives and intended outcomes

The objective of this PP is to amend the BLEP 2012 to provide a fit for purpose urban structure and to facilitate the development of part of the site for medium density residential purposes. This will be achieved by:

1. Amending the BLEP 2012 Land Zoning Map by rezoning part of Lot 346 from E1 to R3.
2. Correcting a zoning anomaly and rezoning that part of Lot 346 zoned 7(d) to match the proposed zone to the west (R3 or E1) as well as better aligning zone boundaries with road and lot boundaries.
3. Amending the BLEP 2012 Floor Space Ratio Map to remove FSR provisions from that part of Lot 346 proposed to be rezoned R3.
4. Amending the Land Application Map if required to include that part of the land subject to a 7(d) zone (designated as a deferred matter) within Ballina LEP 2012 if required.

Part 2 – Explanation of provisions

The amendments contained in this planning proposal are detailed below.

The amendments are mapping only amendments. They do not require the preparation of an LEP amendment by the NSW Parliamentary Counsel's Office.

It is proposed to rezone part of Lot 346 from E1 to R3, remove the 7(d) zone as it affects this lot and better align lot and road boundaries with zone boundaries. This will require Land Zoning Maps – Sheet LZN_006C and Sheet LZN_005D to be amended.

It is also proposed to remove the floor space ratio restriction applicable to that part of Lot 346 proposed to be zoned R3. This will require the Floor Space Ratio Maps – Sheet FSR_006C and Sheet FSR_005D to be amended so as to reconfigure Area J.

No change is proposed to BLEP2012 clause 7.11 Floor space ratio—Skennars Head Expansion Area. This clause will continue to apply to that part of Lot 346 which will retain an E1 zone.

A minor change to the Land Application Map LAP_001 may also be required to incorporate the area currently zoned 7(d) under Ballina LEP 1987 within Ballina LEP2012 as it affects Lot 346.

Part 3 – Justification

Section A – Need for the planning proposal

Q1 Is the planning proposal a result of an endorsed local strategic planning statement, strategic study or report?

No.

The planning proposal is a result of a *Retail Needs Assessment* report. The report concludes that there is insufficient commercial /retail demand to support the development of the whole of Lot 346 for neighbourhood shopping facilities.

The *Retail Needs Assessment* report also concludes, based on the analysis of catchment demand, existing supply, and information on similar centres, that there is an opportunity for the establishment of a retail centre with a total floorspace ranging from 900m^2 to 1,200m^2 within the Aureus estate. The report states that site coverage benchmarks would indicate that this quantum of floorspace would typically require a site area of between 3,000m^2 and 5,000m^2.

Based on the analysis undertaken in the *Retail Needs Assessment*, it is proposed to make provision for an E1 zoned local centre with a site area of 6,402m^2 within Lot 346. The remaining area of Lot 346 (6,650m^2) is proposed to be zoned R3 and is the subject of this planning proposal.

Q2 Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

Yes.

A planning proposal is the appropriate mechanism for achieving the proposed changes to the Ballina LEP 2012 Land Zoning, Floor Space Ratio Map, and Land Application Map if required.

Section B – Relationship to strategic planning framework

Q3 Will the planning proposal give effect to the objectives and actions of the applicable regional or district plan or strategy (including any exhibited draft plans or strategies)?

Yes.

The *North Coast Regional Plan 2041* is the current top level strategic planning document applicable to the Ballina Shire. It provides the regional framework for the consideration of policy development and the overall vision of the future.

The site is located within the "*urban growth area boundary*" as mapped in the North Coast Regional Plan 2041.

"Support the delivery of housing supply and greater diversity in strategic and local centres, including higher density housing within and close to Ballina CBD" is a specific action of this Plan.

This planning proposal will directly deliver on this action, while also ensuring that an appropriate area of E1 Local Centre zoning remains on the site to facilitate a local mixed-use village scale commercial development to meet the needs of residents and visitors.

Q4 Is the planning proposal consistent with a council LSPS that has been endorsed by the Planning Secretary or CSC, or another endorsed local strategy or strategic plan?

Yes.

Ballina Shire Local Strategic Planning Statement 2020-2040 (LSPS)

The planning proposal is consistent with the intent of relevant planning priorities contained within the LSPS.

LSPS Planning Priority 5 states:

Maintain a supply of suitably located employment land, close to population centres at Alstonville – Wollongbar and Ballina – Lennox Head, so as to foster local employment opportunities and reduce journey to work travel distances.

The *Retail Needs Assessment* (Appendix 5) demonstrates that the current area of E1 zoned land is well in excess of the area required to support a level of commercial / retail floor space that can be sustained at Skennars Head. Rezoning the southern part of the site will therefore ensure that an economically viable and sustainable neighbourhood centre can be delivered. This is consistent with the intent of the LSPS Planning Priority 5.

LSPS Planning Priority 6 states:

Incorporate diverse housing choice options, including infill development options, when preparing placed based strategic plans.

The proposed R3 zone will provide for a local increase in housing diversity, to add to the existing townhouse supply within the Aureus estate. Shop top housing is also proposed as part of the commercial development proposed for the retained E1 zoned portion of the site.

The planning proposal is also consistent with the *Ballina Shire Housing Strategy 2024*. The preparation of this strategy is referenced as Action Item 6.4 of the LSPS. The Housing Strategy principles support the delivery of diverse housing options on infill sites.

Ballina Shire Council Community Strategic Plan 2022-2032 (CSP)

The planning proposal is consistent with the elements and specified outcomes contained within Council's CSP as its objectives align with the principles of good governance and ensuring that planning instruments are operating optimally.

Q5 Is the planning proposal consistent with any other applicable State and regional studies or strategies?

N/A

There are no other relevant state or regional studies or strategies relevant to the planning proposal.

Q6 Is the planning proposal consistent with applicable State Environmental Planning Policies (SEPPs)?

Yes

The planning proposal is generally consistent with applicable State Environmental Planning Policies as demonstrated in the table below.

SEPP	Comments	Consistency
SEPP (Biodiversity and Conservation) 2021	Chapter 3 Koala habitat protection 2021 This Chapter aims to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline.	The site is not located within the Koala Planning Area mapped with Ballina Shire Koala Management Strategy, 2017. The site does not contain any native vegetation that could be considered potential koala habitat.
SEPP (Housing) 2021		While the delivery of additional diverse housing options at the site is consistent with the principles of this Policy, there are no provisions directly relevant to the proposed rezoning.
SEPP (Planning Systems) 2021	Chapter 2 deals with State and regional development and is applicable at DA stage rather than rezoning.	There are no provisions directly applicable. Future residential development within the rezoned parcel could be regionally significant, depending on the estimated cost.
SEPP (Resilience and Hazards) 2021	Chapter 2 Coastal Management The aim of this Chapter is to promote an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the Coastal Management Act 2016.	The site is not mapped under the SEPP as containing any areas of coastal wetland or littoral rainforest, nor is it mapped within areas proximate to those attributes. An area of mapped wetland is located approx. 350m to the west of the site. The site is not identified as a Coastal Vulnerability Area and is not within the Coastal Environment Area. It is mapped within the Coastal Use Area. Considerations for a future Development Application in this area relate to access to foreshore areas, protection of coastal amenity, and protection of cultural and built environmental heritage. The location of the site is such that its future development can be designed in a way that it will not impact on these coastal values.
	Chapter 4 Remediation of land This Chapter aims to promote the remediation of contaminated land for the purpose of reducing the risk of	The potential for soil contamination was comprehensively addressed as part of the original subdivision

	harm to human health or any other aspect of the environment: *(a) by specifying when consent is required, and when it is not required, for a remediation work, and* *(b) by specifying certain considerations that are relevant in rezoning land and in determining development applications in general and development applications for consent to carry out a remediation work in particular, and* *(c) by requiring that a remediation work meet certain standards and notification requirements.*	application for the Aureus Estate. A Remediation of Contaminated Soil – Validation Report (Appendix 5) was prepared in 2019 and details how a minor area of contamination was remediated. That area of concern was located south of the Aureus Village site. The Validation Report demonstrates that the whole of the area is suitable for residential use.
SEPP (Sustainable Buildings) 2022	The Policy aims to encourage the design and delivery of sustainable buildings.	There are no provisions of this Policy directly applicable at rezoning stage. Future residential development at the site will be designed in accordance with the principles and requirements of this SEPP.
SEPP (Transport and Infrastructure) 2021		There are no provisions of this SEPP directly applicable at rezoning stage.

Q7 Is the planning proposal consistent with applicable Ministerial Directions (s9.1 Directions)?

Yes, or justifiably inconsistent.

A number of section 9.1 Directions are relevant to the planning proposal. A section 9.1 Direction checklist is provided at Appendix 3.

Section C – Environmental, social and economic impact

Q8 Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected because of the proposal?

No.

Lot 346 has been cleared and was subject to extensive earthworks as part of subdivisional works for the broader Aureus estate. The land does not contain native vegetation or other vegetation having biodiversity value.

Q9 Are there any other likely environmental effects of the planning proposal and how are they proposed to be managed?

No

There are no likely adverse environmental effects associated with the planning proposal.

Q10 Has the planning proposal adequately addressed any social and economic effects?

Yes

The planning proposal is considered likely to achieve positive social and economic effects by:

- Providing additional R3 zoned land which will add to the potential housing diversity within this residential estate via the provision of 20 to 30 townhouse style dwelling units.
- Provide an E1 Local Centre zoned site of a size able to be supported by the local Skennars Head population. Refer to the *Retail Needs Assessment* which forms a part of the proponent's planning proposal request submission contained within Appendix 5.

Section D – Infrastructure (Local, State and Commonwealth)

Q11 Is there adequate public infrastructure for the planning proposal?

Yes

The adequacy of public infrastructure consisting of water, sewer and stormwater drainage has been confirmed in a Technical Memorandum from OSKA Consulting Group. This document forms a part of the planning proposal request submission contained in Appendix 5.

Section E – State and Commonwealth Interests

Q12 What are the views of state and federal public authorities and government agencies consulted in order to inform the Gateway determination?

Consultation is proposed to be undertaken with the Ballina Byron Gateway Airport and any other relevant agencies as required by the Gateway determination.

Part 4 – Mapping

The following map sheets of the BLEP 2012 are proposed to be amended as outlined in response to Part 2, as part of this PP:

- Land Zoning Map – Sheet LZN_006C and LZN_005D
- Floor Space Ratio Map –Sheet FSR_006C and FSR_005D
- Land Application Map – Sheet LAP_001

Part 5 – Community Consultation

This proposal will be exhibited in accordance with the Gateway determination, the terms of the *Environmental Planning and Assessment Act 1979* and Council's Community Participation Plan 2019.

A minimum exhibition period of 28 days is required as the planning proposal will be exhibited concurrently with a planning agreement and associated explanatory statement.

Part 6 – Timeline

The proposed timeline for completion of the planning proposal is as follows:

Plan Making Step	Estimated Completion (Before)
Gateway Determination	January 2025
Government Agency Consultation	January - February 2025
Public Exhibition Period	January - February 2025
Public Hearing	N/A
Submissions Assessment	March 2025
Local Plan Making Authority (LPMA) Assessment of Planning Proposal and Exhibition Outcomes	April 2025
Submission of Endorsed LEP to DPHI for Finalisation	May 2025
PPA Decision to Make the LEP Amendment (if delegated) #	May 2025
Forwarding of LEP Amendment to DPHI for Notification (if delegated)	May 2025

Appendices

Appendix 1 – Council Reports

Appendix 2 – Gateway

Appendix 3 – Section 9.1 Direction Checklist

Section 9.1 Ministerial Direction Checklist Planning Proposal – BSCPP2024-004	
Direction No.	Compliance of Planning Proposal
Focus area 1: Planning Systems	
Implementation of Regional Plans	Consistent The Planning Proposal is consistent with the North Coast Regional Plan 2041. The site is located within the Urban Growth Area Map for Ballina LGA.
Development of Aboriginal Land Council land	Does not apply to this Planning Proposal
Approval and Referral Requirements	Consistent This Planning Proposal does not contain provisions requiring concurrence, consultation or referral of development applications.
Site Specific Provisions	Consistent The Planning Proposal proposes to rezone part of Lot 346 to an existing zone in BLEP 2012, which allows the proposed land use without imposing any development standards or requirements in addition to those already contained in that zone.
1.4A Exclusion of Development Standards from Variation	Does not apply to this Planning Proposal.
Focus area 1: Planning Systems – Place-based	
1.5 to 1.22	These Directions do not apply to Ballina Shire.
Focus area 2: Design and Place	
Focus area 3: Biodiversity and Conservation	
Conservation Zones	Consistent. The proposal does not relate to an environmentally sensitive area or land within a conservation zone.
Heritage Conservation	Consistent. The proposal does not relate to an environmentally sensitive area or land within a conservation zone.
Sydney Drinking Water Catchments	Does not apply to this Planning Proposal.
Application of C2 and C3 Zones and Environmental Overlays in Far North Coast LEPs	Not applicable. The proposal does not involve the introduction of an environmental zones.
Recreation Vehicle Areas	Consistent. The proposal does not enable land to be developed for the purposes of a recreational vehicle area.
Strategic Conservation Planning	Consistent. This planning proposal does not relate to land identified as avoided land or a strategic conservation area.
Public Bushland	Does not apply to Ballina Shire.
Willandra Lakes Region	Does not apply to Ballina Shire.
Sydney Harbour Foreshores and Waterways Area	Does not apply to Ballina Shire.
Water Catchment Protection	Consistent. This planning proposal does not affect land in a regulated catchment.
Focus area 4: Resilience and Hazards	
Flooding	Consistent. This planning proposal does not seek to create, remove or alter a zone or provision that affects flood prone land.

Section 9.1 Ministerial Direction Checklist Planning Proposal – BSCPP2024-004	
Direction No.	Compliance of Planning Proposal
Coastal Management	Consistent. See detailed assessment below.
Planning for Bushfire Protection	Not applicable. The site is not mapped as bushfire prone land
Remediation of Contaminated Land	Consistent. See detailed assessment below.
Acid Sulfate Soils	Consistent. The site is not mapped as containing Acid Sulfate Soils.
Mine Subsidence and Unstable Land	Does not apply to this Planning Proposal.
Focus area 5: Transport and Infrastructure	
Integrating Land Use and Transport	Consistent. See detailed assessment below.
Reserving Land for Public Purposes	Consistent. This planning proposal does not create, alter or reduce existing zonings or reservations of land for public purposes.
Development Near Regulated Airports and Defence Airfields	Justifiably Inconsistent at this stage. This planning proposal relates to land within the Obstacle Limitation Surface Control area for Ballina Byron Gateway Airport. This airport is a regulated airport which will require that consultation take place with the lessee/operator of the airport during the preparation of the planning proposal. At this stage consultation with the airport operator has not taken place. It is proposed that consultation take place post Gateway determination during the public exhibition phase of this planning proposal. It is noted that no changes to permitted building heights are proposed.
Shooting Ranges	Does not apply to this planning proposal.
Focus area 6: Housing	
Residential Zones	Consistent. The Planning Proposal will provide for increased housing diversity / choice and make efficient use of existing services and infrastructure.
Caravan Parks and Manufactured Home Estates	Does not apply to this Planning Proposal.
Focus area 7: Industry and Employment	
Employment Zones	Justifiably Inconsistent. See detailed assessment below.
Reduction in non-hosted short term rental accommodation period	Does not apply to planning proposal.
Commercial and Retail Development along the Pacific Highway, North Coast	Does not apply to this Planning Proposal.
Focus area 8: Resources and Energy	
Mining, Petroleum Production and Extractive Industries	Does not apply to this Planning Proposal.
Focus area 9: Primary Production	
Rural Zones	Does not apply to this Planning Proposal.
Rural Lands	Does not apply to this Planning Proposal.
Oyster Aquaculture	Does not apply to this Planning Proposal.

Section 9.1 Ministerial Direction Checklist Planning Proposal – BSCPP2024-004	
Direction No.	Compliance of Planning Proposal
Farmland of State and Regional Significance on the NSW Far North Coast	Does not apply to this Planning Proposal.

Detailed Assessment Comments Relating to Identified Directions

Direction 4.2 – Coastal Management

Direction 4.2 applies when a Planning Proposal affects land within the coastal zone that is identified in the mapping associated with State Environmental Planning Policy (Resilience and Hazards) 2021.

The provisions of this direction are addressed below:

(1) A Planning Proposal must include provisions that give effect to and are consistent with:

(a) The objects of the Coastal Management Act 2016 and the objectives of the relevant coastal management areas.

The objects of the Act are addressed below:

(a) to protect and enhance natural coastal processes and coastal environmental values including natural character, scenic value, biological diversity and ecosystem integrity and resilience, and

The subject site is located to the west of the Coast Road, and west of the recently developed coastal parkland provided as part of the Aureus Estate. It is located well outside of the active coastal zone.

Development of medium density residential development within the rezoned portion of the site will not detract from the scenic or coastal amenity and will be consistent in character with the existing development within the Aureus Estate.

(b) to support the social and cultural values of the coastal zone and maintain public access, amenity, use and safety, and

Not directly applicable to this Planning Proposal.

(c) to acknowledge Aboriginal peoples' spiritual, social, customary and economic use of the coastal zone,

A detailed Cultural Heritage Assessment was undertaken as part of the original subdivision application and concluded that development of the estate would not result in cultural heritage impacts.

(d) to recognise the coastal zone as a vital economic zone and to support sustainable coastal economies, and

Not directly applicable to this Planning Proposal.

(e) to facilitate ecologically sustainable development in the coastal zone and promote sustainable land use planning decision-making, and

The site does not contain any areas identified as having high biodiversity values.

(f) to mitigate current and future risks from coastal hazards, taking into account the effects of climate change, and

The location of the subject site, well west of the active coastal zone, will ensure that future development will not be subject to coastal hazards.

(g) to recognise that the local and regional scale effects of coastal processes, and the inherently ambulatory and dynamic nature of the shoreline, may result in the loss of coastal land to the sea (including estuaries and other arms of the sea), and to manage coastal use and development accordingly, and

Not directly applicable to this Planning Proposal request.

(h) to promote integrated and co-ordinated coastal planning, management and reporting, and

The Planning Proposal request and supporting studies demonstrate consistency with this objective.

(i) to encourage and promote plans and strategies to improve the resilience of coastal assets to the impacts of an uncertain climate future including impacts of extreme storm events, and

The location of the site provides an adequate buffer from coastal storms now and into the future.

(j) to ensure co-ordination of the policies and activities of government and public authorities relating to the coastal zone and to facilitate the proper integration of their management activities, and

Not directly applicable to this Planning Proposal request.

(k) to support public participation in coastal management and planning and greater public awareness, education and understanding of coastal processes and management actions, and

The Planning Proposal will be publicly exhibited to gain community feedback.

(l) to facilitate the identification of land in the coastal zone for acquisition by public or local authorities in order to promote the protection, enhancement, maintenance and restoration of the environment of the coastal zone, and

Not directly applicable to this Planning Proposal request.

(m) to support the objects of the Marine Estate Management Act 2014.

Not directly applicable to this Planning Proposal request.

(b) the NSW Coastal Management Manual and associated Toolkit

The Manual provides guidance to local councils in the preparation and implementation of coastal management programs. The Toolkit provides additional technical information to assist in this process. Council is undertaking a coastal management program, but it is not likely that it would contain policies or actions directly applicable to the subject site. *(c) Section 3.2 of the NSW Coastal Design Guidelines 2023* Appendix 6 to this Planning Proposal contains an assessment checklist against the provisions of Chapter 3 of the NSW Coastal Design Guidelines 2023. *(d) any relevant Coastal Management Program that has been certified by the Minister, or any Coastal Zone Management Plan under the Coastal Protection Act 1979 that continues to have effect under clause 4 of Schedule 3 to the Coastal Management Act 2016, that applies to the land* Council has not yet finalised a Coastal Management Program. *(2) A Planning Proposal must not rezone land which would enable increased development or more intensive land-use on land:* *(a) within a coastal vulnerability area identified by chapter 2 of the State Environmental Planning Policy (Resilience and Hazards) 2021* The site is not identified as being within a coastal vulnerability area. *(b) that has been identified as land affected by a current or future coastal hazard in a local environmental plan or development control plan, or a study or assessment* The site is not identified as being affected by a current or future coastal hazard. *(3) A Planning Proposal must not rezone land which would enable increased development or more intensive land-use on land within a coastal wetlands and littoral rainforests area identified by chapter 2 of the State Environmental Planning Policy (Resilience and Hazards) 2021.* The site does not contain any areas identified within the SEPP as Coastal Wetland or Littoral Rainforest. *(4) A Planning Proposal for a local environmental plan may propose to amend the following maps, including increasing or decreasing the land within these maps, under chapter 2 of the State Environmental Planning Policy (Resilience and Hazards) 2021:* This Planning Proposal does not propose to amend any of the SEPP maps.
Direction 4.4 – Remediation of Contaminated Land This direction applies when a Planning Proposal applies to land where specified land uses have been known to have been carried out. *(1) A Planning Proposal authority must not include in a particular zone (within the meaning of the local environmental plan) any land to which this direction*

applies if the inclusion of the land in that zone would permit a change of use of the land, unless:

(a) the Planning Proposal authority has considered whether the land is contaminated, and

(b) if the land is contaminated, the Planning Proposal 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 Proposal authority is satisfied that the land will be so remediated before the land is used for that purpose.

In order to satisfy itself as to paragraph 1(c), the Planning Proposal authority may need to include certain provisions in the local environmental plan.

(2) Before including any land to which this direction applies in a particular zone, the Planning Proposal authority is to obtain and have regard to a report specifying the findings of a preliminary investigation of the land carried out in accordance with the contaminated land planning guidelines

A detailed contamination assessment of the site was undertaken as part of the Aureus Estate subdivision application.

A *Remediation of Contaminated Soil – Validation Report* (Appendix 5) was prepared in 2019 demonstrating how a minor area of contamination was remediated. That area of concern was located south of the Aureus Village site.
The Validation Report demonstrates that the whole of the estate is suitable for residential use.

Direction 5.1 – Integrating Land Use and Transport

This direction applies to a Planning Proposal that creates, alters or removes a zone relating to urban land, including for employment purposes.

(1) A Planning Proposal must locate zones for urban purposes and include provisions that give effect to and are consistent with the aims, objectives and principles of:

(a) Improving Transport Choice – Guidelines for planning and development (DUAP 2001), and

(b) The Right Place for Business and Services – Planning Policy (DUAP 2001).

Improving Transport Choice – Guidelines for planning and development includes the following design guidelines that are relevant to this Planning Proposal:

Street networks should allow permeability for buses and pedestrians.

Permeability has been provided throughout the Aureus Estate, with main internal roads wide enough to allow a bus to circulate. Footpaths are provided on all internal roads, with connections out to the shared paths constructed along the Coast Road and near the wetland area to the west.

Future residential development of the site will provide appropriate connections to this existing network.

Pedestrian amenity, such as footpaths to bus stops and sandwich shops, should be given a higher priority in employment/industrial areas.

As indicated above, footpaths and bus circulation are provided internally within the Aureus Estate, with connections to the external public infrastructure.

Intensification and a greater mix of uses, including residential development, should be encouraged along the public transport routes and corridors that serve these areas to support more frequent bus services.

Medium density residential development in the site is consistent with this principle. Minimum setbacks from the street and between adjoining buildings should be employed. Room to expand, and staff and visitor parking, can be accommodated at the rear of properties.

Council DCP controls will govern development of the lots that would be created at this site.

Direction 7.1 – Employment Zones

This direction applies where a Planning Proposal affects land within an existing or proposed employment zone.

A Planning Proposal must:

(a) give effect to the objectives of this direction

The objectives are to protect employment land, encourage employment growth in suitable locations and support the viability of identified centres.

The *Retail Needs Assessment* (Appendix 5) contains a detailed assessment of the existing retail/ commercial demand and the associated extent of commercial floor space that is considered to be viable at the subject site, supporting the reduced area of the existing E1 Local Centre zoning.

The assessment also notes that the development of excess commercial floor at this site would result in detrimental impacts on existing local centres in the Lennox Head / Ballina area.

(b) retain the areas and locations of Employment zones

The Planning Proposal seeks to reduce the area current zoned E1 Local Centre. This is justified by a *Retail Needs Assessment* (Appendix 5) which gives consideration to the objectives of this direction and demonstrates that the proposed rezoning is an appropriate response to local economic circumstances.

(c) not reduce the total potential floor space area for employment uses and related public services in Employment Zones

See above.

(d) not reduce the total potential floor space area for industrial uses in E4, E5 and W4 zones

(e)

Not directly relevant to this Planning Proposal.

(f) ensure that proposed employment areas are in accordance with a strategy that is approved by the Planning Secretary.

The proposal is consistent with the retail hierarchy as detailed in the *Ballina Shire Local Strategic Planning Statement 2020 - 2040* (LSPS). The LSPS nominated a planned centre at Skennars Head within the Shire's commercial centre hierarchy but did not nominate a size for such a centre.

Source: Ballina Shire Economic Development Strategy 2019

Appendix 4 – Mapping

Appendix 5 – Proponent's Planning Proposal Request Submission

(Under Separate Cover)

Appendix 6 – Coastal Zone Assessment

Appendix

Assessment checklist for planning proposals

Hierarchy of coastal management areas:

1. CWLRA = coastal wetlands and littoral rainforests area
2. CVA = coastal vulnerability area
3. CEA = coastal environment area
4. CUA = coastal use area

Outcome A. Protect and enhance coastal environmental values			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N) If 'No', justify this**
Outcome A.1 Protect coastal ecosystems			
A.1a Avoid development on undeveloped headlands and significant coastal landforms.	CVA, CEA	N	The rezoning site is located well away from any headland or significant coastal landform.
A.1b Do not increase development or intensify land uses where there is existing development on headlands and significant coastal landforms.	CVA, CEA	N	The rezoning site is located well away from any headland or significant coastal landform.
A.1c Identify, protect and enhance sensitive coastal ecosystems including coastal wetlands, littoral rainforests and other coastal threatened ecological communities that may be affected by development.	CWLRA, CEA	N	The rezoning site does not contain any sensitive coastal ecosystems.
A.1d Maintain and protect the presence of beaches, rock platforms, coastal dunes, riparian vegetation and the natural features of foreshores, including along estuaries and coastal lakes.	CWLRA, CVA, CEA	N	The rezoning site is located well away from beaches, rock platforms or coastal dunes.
A.1e Use environmental buffers and limit the number of access points and pathways to protect coastal ecosystems. In some cases, it may not be appropriate to allow public access to areas with highly sensitive ecosystems or animal populations.	CWLRA, CEA, CUA	N	The proposed rezoning has no implications for coastal access.
A.1f Consider if the planning proposal is needed or if development zones could be better located to minimise effects on biodiversity.	CWLRA, CEA, CUA	N	The proposed rezoning will have no impact on biodiversity values.
A.1g Avoid development that may disturb, expose or drain areas of Class 1 and Class 2 acid sulfate soils.	CWLRA, CEA, CUA	M	The site is not mapped as containing Acid Sulfate Soils.
A.1h Consider direct and indirect effects of development, including any necessary infrastructure, on water quality, water quantity and hydrological flows of waterways and groundwater.	CEA, CUA	N	Indirect impacts of development can be addressed and adequately managed at a subsequent development application stage.

Outcome A. Protect and enhance coastal environmental values			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N) If 'No', justify this**
Outcome A.2 Protect coastal wetlands and littoral rainforests			
A.2a Identify coastal wetlands and littoral rainforests, including areas that could be rehabilitated or restored in the future, and do not increase development or intensify land uses in these areas.	CWLRA	N	The rezoning site does not contain any areas of coastal wetland or littoral rainforest.
A.2b Allow for the adaptive management of stormwater run-off so that the quality of water leaving the site is better than pre-development quality to lessen effects on coastal wetlands or other sensitive receiving environments.	CWLRA, CEA, CUA	N	Adequate stormwater measures will be developed as part of a subsequent design of the residential development.
A.2c Provide environmental buffers and riparian corridors that enable the long-term management and protection of areas of biodiversity and ecosystem integrity.	CWLRA, CVA, CEA, CUA	N	Buffers are not required in this case as the site does not contain, nor is adjacent to, any areas of high biodiversity value.
A.2d Identify and protect areas that allow for landward migration pathways for coastal wetlands to respond to climate change.	CWLRA, CEA	N	The site does not contain nor is adjacent to areas of coastal wetland.
A.2e Exclude land uses that affect the natural state of coastal wetlands and littoral rainforests or that will make it harder to rehabilitate these ecosystems in the future.	CWLRA		
Outcome A.3 Protect marine parks and aquatic reserves			
A.3a Avoid development and land uses that affect the environmental, economic, social and cultural values of marine parks and aquatic reserves.	CEA, CUA	N	The site does not adjoin any marine parks or aquatic reserves.
A.3b Protect the ecological health of marine parks and aquatic reserves, including providing for riparian vegetation and buffers in their catchments.	CEA, CUA	N	The site does not adjoin any marine parks or aquatic reserves.

Outcome B. Ensure the built environment is appropriate for the coast and local context			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N) If 'No', justify this**
Outcome B.1 Respond to and protect elements that make the place special			
B.1a Integrate development within the natural topography of the site and ensure land use, building scale and height respond sympathetically to coastal landforms.	CWLRA, CVA, CEA, CUA	Y	The site is generally flat and adjoins existing medium density development to the west, a future neighbourhood centre to the north and coastal parkland to the east.
B.1b Ensure the intended form and footprint of development does not dominate coastal elements, including foreshores, public spaces and other areas of natural beauty.	CWLRA, CVA, CEA, CUA	Y	Future residential development will not dominate the adjoining coastal parkland.
B.1c Incorporate adaptive, water-sensitive urban design into the development footprint to reduce run-off and manage water quality within receiving environments.	CWLRA, CEA, CUA	Y	A Stormwater Management Plan will be developed as part of the residential design for the site.
B.1d Ensure that lot sizes, building heights and density are appropriate for the coastal settlement, and complement the existing or desired local character, supported by place-based strategies.	CEA, CUA	N	The proposed rezoning does not alter existing controls in relation to building heights and residential densities.
B.1e Avoid development that would harm geological features and geoheritage.	CEA, CUA	N	The reasoning site does not contain any areas of significance in this regard.
Outcome B.2 Ensure urban development complements coastal scenic values			
B.2a Limit ribbon development and urban sprawl wherever possible. In certain locations, place-based strategies may support increased development density and building heights as a better response to urban growth.	CEA, CUA	Y	The rezoning site is within an existing urban estate. The medium density zone will support an increase in local density and housing choice.
B.2b Use greenbelts to create, maintain and mark out separation between settlements.	CEA, CUA	N	The rezoning site does not impact on any greenbelt separation areas.
B.2c Consider effects on scenic values and maintain publicly accessible views to significant landmarks.	CEA, CUA	Y	The site can be development in a manner that will not significantly impact on views to the adjoining coastal areas.
B.2d Ensure that building heights consider the effect on views from different vantage points.	CEA, CUA	N	The rezoning does not alter allowable building heights.
B.2e Retain or create views from public spaces. Prioritise this over creating views from private property.	CEA, CUA	Y	The site can be development in a manner that will not significantly impact on views to the adjoining coastal areas.
B.2f Provide for active transport links along foreshores, including along estuaries and coastal lakes, and between settlements to increase public access and amenity.	CWLRA, CVA, CEA, CUA	N	The proposed rezoning does not alter existing transport links or create additional demands for new links.

Outcome C. Protect and enhance the social and cultural values of the coastal zone			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N) If 'No', justify this**
Outcome C.1 Protect and promote heritage values			
C.1a Ensure development does not harm heritage values or sites.	CWLRA, CVA, CEA, CUA	N	The site does not contain heritage values.
C.1b Work collaboratively with local Aboriginal people before and throughout the planning proposal process.	CWLRA, CVA, CEA, CUA	N	Previous cultural heritage assessment demonstrated that the site does not contain cultural heritage values.
C.1c With permission and guidance from local Traditional Custodians, identify and emphasise significant features of coastal land and sea Country.	CWLRA, CVA, CEA, CUA	N	As above.
C.1d With permission and guidance from local Traditional Custodians, identify and protect sacred and significant areas through the appropriate siting of development.	CWLRA, CVA, CEA, CUA	N	As above.
C.1e Ensure land use, building type, scale and height respond to heritage items and areas.	CEA, CUA	N	As above.
Outcome C.2 Provide public access to significant coastal assets			
C.2a Protect and, where practical, improve, public amenity, access to and use of beaches, foreshores, rock platforms, geoheritage sites and headlands, unless you must restrict access for public safety or for environmental or cultural protection. In doing so, consider both current and projected future coastal hazards.	CVA, CEA	N	The rezoning site does not create any implications for beach access.
C.2b Identify opportunities to maintain and improve existing public access to beaches, foreshores, coastal waters and coastal lakes that support active and passive recreation activities, where this does not interfere with existing coastal industries.	CWLRA, CVA, CEA, CUA	N	As above.
C.2c Consolidate access points and consider alternative access to protect sacred and significant Aboriginal cultural areas.	CWLRA, CVA, CEA, CUA	N	As above.
C.2d Maintain and improve foreshore access and connections to existing or proposed networks of public open spaces. This includes waterways, riparian areas, bushland and parks for active and passive recreation.	CWLRA, CVA, CEA, CUA	N	As above.
C.2e Consider opportunities to protect and improve habitat connectivity through settlements, such as those described in the *Greener Places Design Guide*.	CWLRA, CEA, CUA	N	The site does not contain or adjoin any habitat areas.

Outcome C. Protect and enhance the social and cultural values of the coastal zone			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N) If 'No', justify this**
C.2f Avoid development on coastal dunes and foreshore reserves unless it is for essential public purposes, such as surf life-saving club buildings. Any building or structure located on dunes must be of lightweight construction and relocatable.	CVA, CEA	N	The rezoning site is not located on dunes or with a coastal reserve area.
C.2g Define the boundaries of development sites with a public edge–for example, a pedestrian pathway or public laneway.	CEA, CUA	Y	The rezoning site is bounded by public places in the form of roads and the adjoining coastal parkland.
C.2h Prevent the privatisation of coastal open space by ensuring development next to foreshores is set back, maintains public access and accessibility, and provides links and connections to other public accessways.	CEA, CUA	N	Development within the rezoning site will not impede public access to important coastal areas.
Outcome C.3 Protect public amenity			
C.3a Avoid development that will overshadow the beach, foreshore or public domain. Apply the standard that there must be no overshadowing before 4 pm (midwinter) and 7 pm (Eastern Daylight Saving Time).	CEA, CUA	N	Development within the rezoning area will not overshadow the beach, and will be designed to ensure that the adjacent coastal parkland is not overshadowed.
C.3b Protect the amenity of public spaces from buildings, structures or land uses that may be visually and/or acoustically intrusive or create wind funnels.	CEA, CUA	N	Development within the rezoning area will be designed to minimise any impacts on the adjacent coastal parkland.

Outcome D. Support sustainable coastal economies			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N) If 'No', justify this**
Outcome D.1 Support sustainable industries and recreational activities that depend on the coast			
D.1a Ensure that development will not harm sustainable coastal industries needing waterfront access, or recreational use of the coastal environment.	CEA, CUA	N	The rezoning area does not adjoin areas required for waterfront access.
D.1b Protect and improve essential facilities such as access ramps and jetties for sustainable coastal industries needing waterfront access.	CEA, CUA	N	As above.
D.1c Ensure access ramps, jetties, pontoons, groynes and other structures do not impede navigation on the water or harm coastal landforms or impair processes such as surf breaks.	CWLRA, CVA, CEA, CUA	N	Development in the rezoning site will not result in any such impacts.
D.1d Ensure that the proposal considers how development in a waterway may affect the land.	CEA, CUA	N	There are no waterway components of the proposal.
Outcome D.2 Promote green infrastructure			
D.2a Do not allow development that is likely to significantly reduce connectivity of existing green infrastructure.	CEA, CUA	N	The rezoning site adjoins the coastal parkland, but does not impact an connectivity of or access to that open space.
D.2b Provide for diverse green infrastructure that can support the changing needs of current and future communities, and provide tourism and recreational opportunities.	CEA, CUA	N	The proposed rezoning will not generate demand for additional green infrastructure.

Outcome E. Respond to coastal hazards			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N) If 'No', justify this**
Outcome E.1 Respond to coastal processes			
E.1a Planning proposals that affect land within a coastal hazard and risk area must not alter coastal processes in a way that harms the natural environment or other land.	CWLRA, CVA, CEA, CUA	N	The rezoning site is not mapped within a coastal hazard / risk location.
E.1b Exclude development in areas affected by a current or projected future coastal hazard that is likely to increase the risk of coastal hazards on that land or other land.	CWLRA, CVA, CEA, CUA	N	As above.
E.1c Locate or consolidate development in areas with little or no exposure to current and projected future coastal hazards, to ensure public safety and prevent risks to life.	CWLRA, CVA, CEA, CUA	N	As above.
E.1d Do not increase development potential or intensify land uses in a coastal hazard or risk area.	CWLRA, CVA, CEA, CUA	N	As above.
Outcome E.2 Account for natural hazard risks			
E.2a Identify areas on and near the proposal that are affected by current or projected future coastal hazards. Ensure that the proposal is compatible with any identified threat or risk.	CWLRA, CVA, CEA, CUA	N	As above.
E.2b Account for potential interaction between coastal hazards and other current and future natural hazards. This includes flooding, bushfires, landslip, heatwaves, severe storms, east coast lows and cyclones. Refer to the *Strategic Guide to Planning for Natural Hazards*.	CWLRA, CVA, CEA, CUA	N	As above.
E.2c Manage natural hazard risk within the development site. Avoid using public space or adjoining land to lessen risk.	CWLRA, CVA, CEA, CUA	N	As above.
Outcome E.3 Account for climate change			
E.3a Demonstrate that the proposal applies a 100-year planning horizon for the full range of climate change projections for coastal hazards. This approach recognises that sea level is projected to continue to rise for centuries because of climate change.	CWLRA, CVA, CEA, CUA	N	As above.
E.3b Consider how climate change could affect the risk profile of existing natural hazards and create new vulnerabilities and exposure for the proposal in the future.	CWLRA, CVA, CEA, CUA	N	As above.

Outcome E. Respond to coastal hazards			
Requirement	**Relevant coastal management area(s)**	**Applicable to planning proposal (Y/N)**	**Planning proposal is consistent with guidelines (Y/N) If 'No', justify this**
Outcome E.4 Provide sustainable defences to coastal hazards			
E.4a Reduce exposure to coastal hazards by protecting, restoring or improving natural defences. This includes coastal dunes, vegetation, coastal floodplains and coastal wetlands, where suitable.	CWLRA, CVA, CEA, CUA	N	As above.
E.4b If natural defences are not possible, reduce exposure to coastal hazards without significantly degrading: · biological diversity and ecosystem integrity · ecological, biophysical, geological and geomorphological coastal processes · beach and foreshore amenity, or the social and cultural value of these areas · public safety and access to, or use of, beaches or headlands.	CWLRA, CVA, CEA, CUA	N	As above.
Outcome E.5 Protect essential infrastructure			
E.5a Locate and design essential infrastructure to reduce vulnerability to current and projected future coastal hazards. Consider the effects of climate change over at least a 100-year planning horizon.	CWLRA, CVA, CEA, CUA	N	As above.
E.5b Where exposure to coastal hazards cannot be avoided, prepare adaptation plans for essential service infrastructure. These plans should be consistent with any applicable coastal management program.	CWLRA, CVA, CEA, CUA	N	As above.
E.5c Consult local Aboriginal land management experts and emergency management agencies on how to strategically locate access routes and other essential infrastructure.	CWLRA, CVA, CEA, CUA	N	As above.
Outcome E.6 Change land uses to manage legacy issues and avoid creating new ones			
E.6a Ensure the proposal will not require coastal management interventions to remain viable over its expected lifespan.	CWLRA, CVA, CEA, CUA	N	As above.
E.6b Consider the potential legacy effects of the proposal and if the proposed land uses or development will create a social, environmental, economic or cultural burden for future generations.	CWLRA, CVA, CEA, CUA	N	As above.
E.6c Consider if the proposed change of land use could remove redundant legacy infrastructure or reduce existing legacy effects.	CWLRA, CVA, CEA, CUA	N	As above.