ae design partnership
architecture urban design planning

COBAKI LAKES

URBAN DESIGN STRATEGY

PREPARED FOR:

LEDA

MODIFICATION 8
SEPTEMBER 2018

AE DESIGN PARTNERSHIP

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1.0 Introduction

1.1 Purpose

Leda Manorstead Pty Ltd has commissioned AE Design Partnership to prepare an urban design assessment to assist with the modification of Concept Plan Approval No. 06_0316 (MOD 4), which relates to a residential subdivision at Cobaki Estate (**the site**) under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This modification application (MOD 8) seeks concept approval for:

- Consolidation of the town centre in Precinct 5:
  - Northern portion of approved town centre (from connector road) replaced with residential uses;
  - Retain southern portion of approved town centre (from connector road).
- Amendments to increase building heights in Precinct 15 and Precinct 17 from 3 storeys up to 10 storeys.
  - Precinct 5: adjoining ridgeline/knoll in land zoned Environmental Protection Area to the north;
  - Precinct 15: adjoining ridgeline/knoll in land zoned Environmental Protection Area to the west.
  - Precinct 17: adjoining ridgeline/knoll in land zoned Environmental Protection Area to the west.

1.2 Objectives

A request for the issue of Secretary's Environmental Assessment Requirements (SEARs) was sought on July 2017. Accordingly, the SEARs were issued on 21 December 2017 (Refer to **Appendix 1**).

This assessment is in accordance with Section 75W of the EP&A Act, and addresses the key urban design issues raised in the SEARs, reproduced below.

Built Form

- *The proposed siting, height, bulk and scale of the proposed building envelopes are to be informed by a detailed urban design analysis and include consideration of the wider Concept Plan area, the strategic planning framework for the site and the potential visual and amenity impacts associated with the proposal;*
- *Consider various options for the siting, orientation and massing of the proposed building envelopes and consider alternative housing typologies (including low rise, medium density options) together with a comparative analysis demonstrating key strengths and weaknesses of each option;*
- *Demonstrate the proposal would result in a high-quality urban design outcome for the site with consideration of setbacks, building articulation, building separation and any necessary amendments to the Cobaki Estate Development Code; and*
- *Provide details of the proposed maximum building heights across the site in storeys and in metres measured from the lowest natural ground level and, where relevant, the adjoining ridge line.*

Environmental and Residential Amenity

- *Address potential solar access, wind, privacy and view loss impacts associated with the proposal; and*
- *Demonstrate future residential buildings are capable of complying with SEPP 65 - Design Quality of Residential Apartment Development, and the Apartment Design Guide, including justification for any compliance/non-compliance.*

Public Domain/Open Space

- *Address changes to public domain improvements, pedestrian linkages, street activation and landscaping; and*
- *Demonstrate the public domain and open spaces will:*
  - *maximise permeability throughout the development;*
  - *maximise street activation within the town centre;*
  - *provide sufficient open space for the expected population;*
  - *ensure access for people with disabilities; and*
  - *minimise potential for vehicle, bicycle and pedestrian conflicts.*

2.0 Site Context

2.1 Vegetation

Vegetation is located predominantly along the Pacific Ocean shoreline, around the lakes and creeks and to the west of the existing urban area. Notwithstanding adjoining dense vegetation associated with Cobaki Creek and Broadwater, the subject site is largely clear of dense vegetation.

There is an opportunity for development of the subject site:

- In accordance with its proximity to:
  - Employment, travel and education opportunities in the Gold Coast Airport/Southern Cross University;
  - Local employment and recreation opportunities in Tweed Heads/Coolangatta; and
  - The Pacific Highway, providing access to a full range of employment, education and recreation opportunities in the Gold Coast (30 minutes to the north) and Brisbane (1.5 hours to the north).
  - Where possible, retaining and re-establishing vegetation as part of a contiguous network between Cobaki Broadwater and rural lands to the west.

LEGEND

- Subject Site
- QLD & NSW Border
- Vegetation
- Open Space
- Private Open Space

Figure 1: Site Context - Vegetation

2.2 Land Uses

Land uses within the site are generally consistent with the land use zoning prescribed under Tweed Local Environmental Plan 2014 (Tweed LEP 2014) and Gold Coast City Plan 2016.

There is a distinct disparity between urban development between the north and south of the state border between Queensland/New South Wales.

This disparity is recognised through the site's zoning (located on the western side of the Pacific Motorway) to enable urban development. Therefore, there is an opportunity for development of the subject site to maximise the opportunity afforded by its close proximity to the Gold Coast Airport, Tweed Heads/Coolangatta and South East Queensland.

The site is identified as urban release land and is comprised of vegetation conservation and parklands.

Figure 2: Site Context - Land Uses

LEGEND

- Subject Site
- QLD & NSW Border
- Mixed Use/Commercial
- Industrial
- Large Lot/Rural Residential
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Urban Release Area
- Vegetation Conservation
- Private Recreation
- Rural
- Infrastructure
- Water Bodies

2.3 Building Heights

The site is located west of Gold Coast Airport and at present, is vacant of any structures. Development under flight paths associated with Gold Coast Airport are restricted to smaller building heights, with development in the periphery of the airport typical of buildings of heights up to 84 metres (in Coolangatta.

As illustrated in the figure below, development of buildings with greater heights are desired along the peripheral edges of cities adjacent Gold Coast Airport.

Figure 3: Site Context - Building Heights

LEGEND

Subject Site	Vegetation Conservation	84m	38m	22m
QLD & NSW Border	Private Recreation	54m	34m	
	Water Bodies	49.5m	29m	

2.4 Access and Movement

2.4.1 Vehicular Movement

Vehicular movement within the locality is primarily through the Pacific Highway.

The Pacific Highway forms the arterial spine that connects the coastal suburbs of northern New South Wales and south--east Queensland.

Gold Coast airport is located on the state border, immediately east of the site.

Road connections west of the Pacific Highway are limited to local road networks as a result of existing land uses dominated by vegetation reserves associated with Cobaki Creek and Broadwater within the area.

The site is accessible via:

- Gold Coast Highway via Boyd Street (Tugun); and
- Piggabeen Road via Tweed Heads West.

Figure 4: Site Context - Vehicular Movement

LEGEND

- Subject Site
- QLD & NSW Border
- Pacific Highway
- Gold Coast Highway
- Major Roads
- Local Roads
- Mixed Use/Commercial
- Vegetation Conservation
- Private Recreation
- Water Bodies

2.4.2 Public Transport Access

A number of public transport infrastructure projects are under investigation north of the state border, including:

- Extension of existing heavy rail line from Varsity Lakes to the Gold Coast Airport via Tugun (located to the north of the subject site), subject to "Existing capacity constraints on the Gold Coast line [being] addressed" through the completion of the Cross River Rail project, currently under construction; and
- Extension of existing light rail line from Broad Beach to the Gold Coast Airport (final community consultation report released 21 September 2017).

There is an opportunity for development of the subject site to maximise the opportunity afforded by its close proximity to the future Tugun Station on the extension of the heavy rail network from Robina, the likelihood of which is improved by the construction of the Cross River Rail project in Brisbane.

Figure 5: Site Context - Public Transport Access

2.4.3 Bicycle Movement

Adjacent cities north and south-east of the site provide an extensive bicycle network that links coastal suburbs of northern New South Wales with souh-eastern coastal suburbs of Queensland.

On-road cycleways are connected via major and arterial roads including the Gold Coast Highway. Off-road cycleways are located along the coast of Queensland.

There is an opportunity for development of the subject site to include a road network incorporating pedestrian and cycle infrastructure creating improved pedestrian and bicycle permeability between the southern and northern side of the border.

Figure 6: Site Context - Bicycle Movement

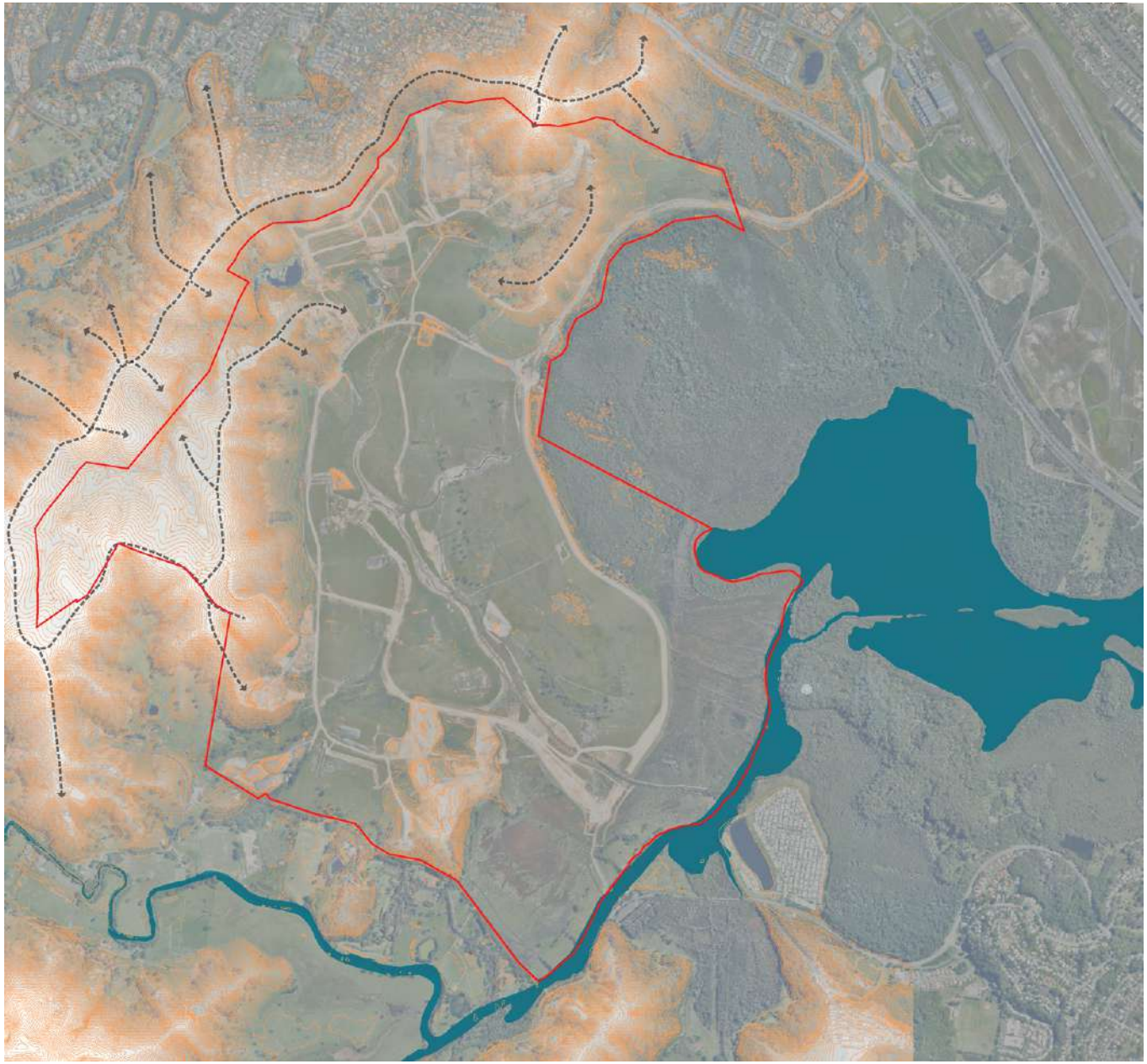
3.0 Site Analysis

3.1 Topography & Slope

The site is located in a basin surrounded by the vegetated mountains and hills of the McPherson Ranges.

The visual topography of land as it currently exists is characterised as a topographical amphitheater, comprising a low level central plain bordered by steep rising hills to the North, South and West.

To the East, the site adjoins Cobaki Creek and the Cobaki Broadwater, characterised by natural riparian landscapes with native vegetation including littoral rainforest, mangrove forest and wetlands.



LEGEND

Subject Site

Contours (2.0m intervals)

Ridgeline

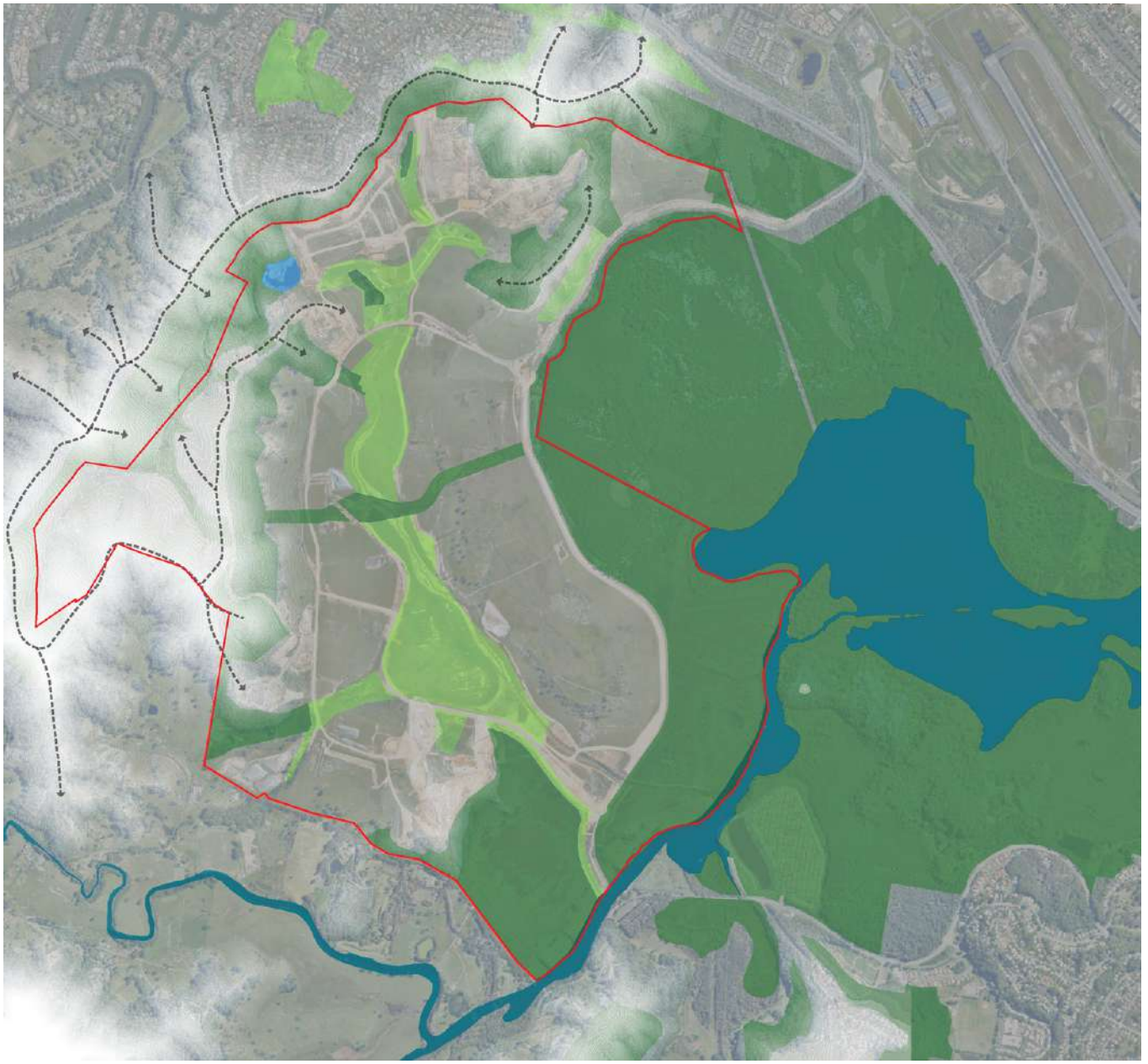
Figure 7: Site Topography & Slope

3.2 Vegetation & Open Space

The site is occupied by patches of vegetation, predominantly along the boundaries of the site. A portion of the site is identified as vegetation conservation associated with Cobaki Creek and Broadwater. These areas are located primarily along natural ridgelines that border the north and western boundaries of the site.

The site is generally clear of dense vegetation. Public recreation area has been located at the centre of the site, forming the spine of the property.

Vegetation corridors connect areas identified for public recreation with vegetation conservation areas.



LEGEND

Figure 8: Site Vegetation & Open Space

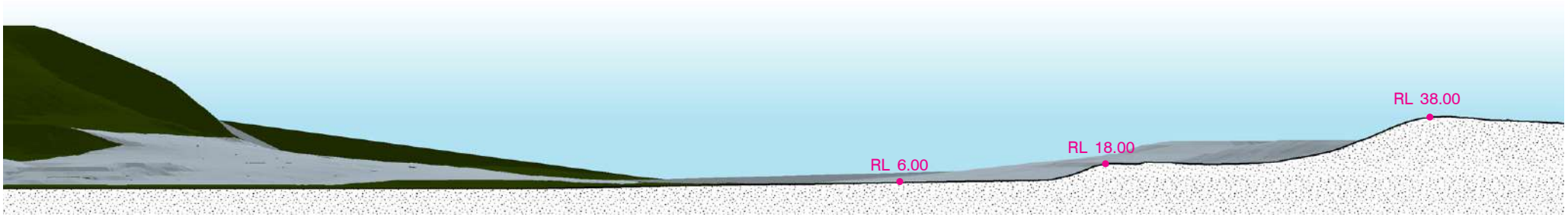
- Subject Site
- Vegetation Conservation
- Public Open Space
- Water Bodies
- Ridgeline

3.3 Existing Site Sections

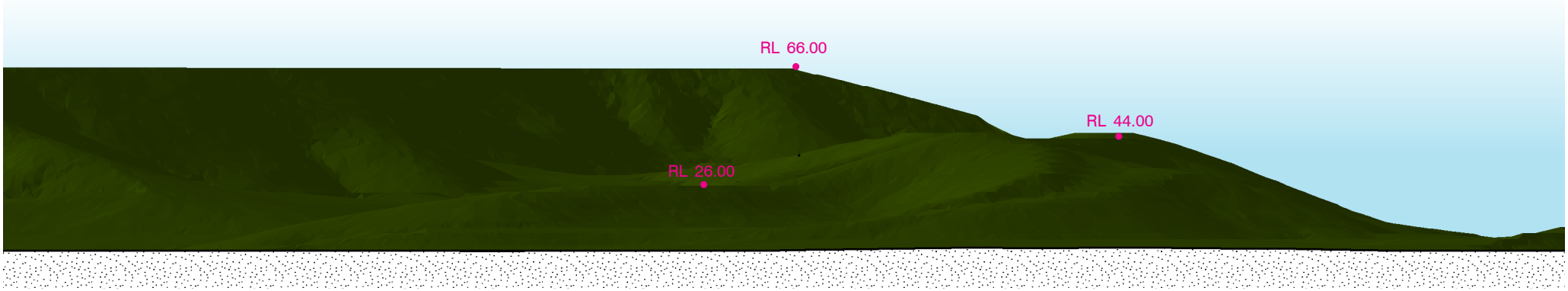
Section AA details a section across Precinct 5, illustrating the relatively flat topography of the precinct. Glimpses of Precinct 17 is visible at the southern portion of the section adjacent the ridges that envelope the western boundaries of the Cobaki Estate. Where Precinct 5 ends towards the north, the terrain increases to RL 18.00 exhibiting the modest slopes that characterise Precinct 4.

Section BB details an east-west section of Precinct 5 facing north, accentuating the flat topography. Ridges that form a portion of the environmental protection areas to the north produce a height of RL 66.00.

Section AA - North South



Section BB - East West

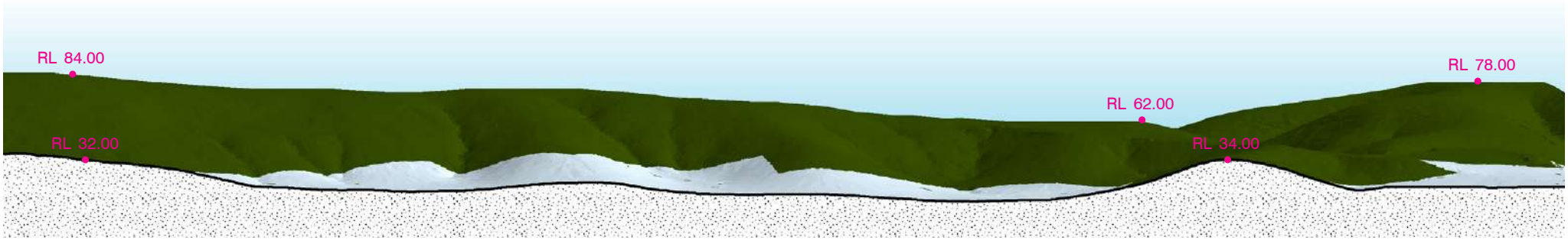


NOT TO SCALE

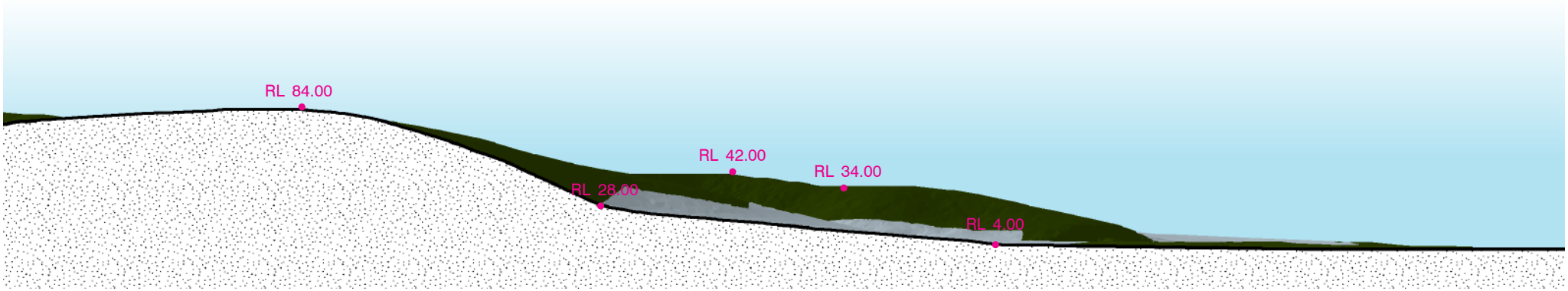
Section CC details a section across Precinct 15 facing west. Similar to other precincts subject to this modification (MOD 8), Precinct 15 is relatively flat, where environmental protection areas to the south produce a height of RL 32.00 and environmental protection areas to the north produce a height of RL 34.00.

Section DD details a section from the ridges at the western boundary, across Precinct 15 to the east. As illustrated in this section, the site falls dramatically from a height of RL 84.00 to RL 28.00 across a distance of approximately 170 metres. This fall, again, changes dramatically to a relatively flat topography with a height of RL 4.00

Section CC - North South



Section DD - East West



NOT TO SCALE

4.0 Opportunities

It is believed that urban consolidation and higher levels of urban density are related to perceptions of diminishment of open spaces which traditionally have been available for outdoor activities and enjoyment of an informal subtropical lifestyle.

As there maximum number of dwellings permitted on the site there is an opportunity to redistribute the densities and explore alternative housing typologies that ensure that the denser urban environment will achieve a sense of openness and retain a strong presence of nature.

Such opportunities can be adapted for the site are:

- Maintain both openness and permeability, and a strong connections with nature;
- Adapting a permeable urban form that promotes air movement in the spaces between buildings and facilitates ease of pedestrian movement;
- Locate denser housing forms overlooking green spaces; and
- Optimise solar access and air movement to external spaces though design type, heights and denseness of built form.

Figure 9: Opportunities

LEGEND

- Subject Site
- QLD & NSW Border
- Vegetation Conservation
- Private Recreation
- Water Bodies
- Road Connection
- Hospital
- Airport
- Educational Institution
- 84m; 54m
- 49.5m; 38m
- 34m; 29m
- 22m

4.0 Desired Future Character

4.1 Desired Future Character Statement

The MOD 8 application pertains to the modification of Precinct 5, Precinct 15 and Precinct 17 of Concept Plan Approval MP 06_0316 and subsequent approved modifications.

Each precinct subject to this modification is identified to rationalise the area dedicated to the town centre and maximise opportunity to provide increased building heights for residential development within the Cobaki Estate.

It is important to note, proposed modifications subject to this application do not alter the development footprint or development yield approved under Concept Plan Approval MP 06_0316 and subsequent approved modifications.

Precinct 5

Precinct 5 is envisioned to respond to contemporary trends identified in the Centres Catchment Analysis prepared by RPS Group, which informs this modification application to modify the approved area dedicated to the town centre.

The Centres Catchment Analysis, identifies:

> "*It is assumed 500 plus units could be established at some density in the town centre...The introduction of higher density residential will have a greater qualitative impact than quantitative on the way the town centre is designed and used.*"

Precinct 15 & 17

Precinct 15 is enveloped by environmental protection areas to the north, south and west. Immediately east of the precinct is an unnamed road adjacent to land dedicated for public open space approved under Concept Plan Approval MP 06_0316.

Precinct 17 is enclosed by environmental protection areas to the south and the west, and dedicated land for public open space to the north and east.

There is opportunity for built form within the precinct to explore increased heights for residential development proximate to the town centre without negating adjoining environmental protection areas.

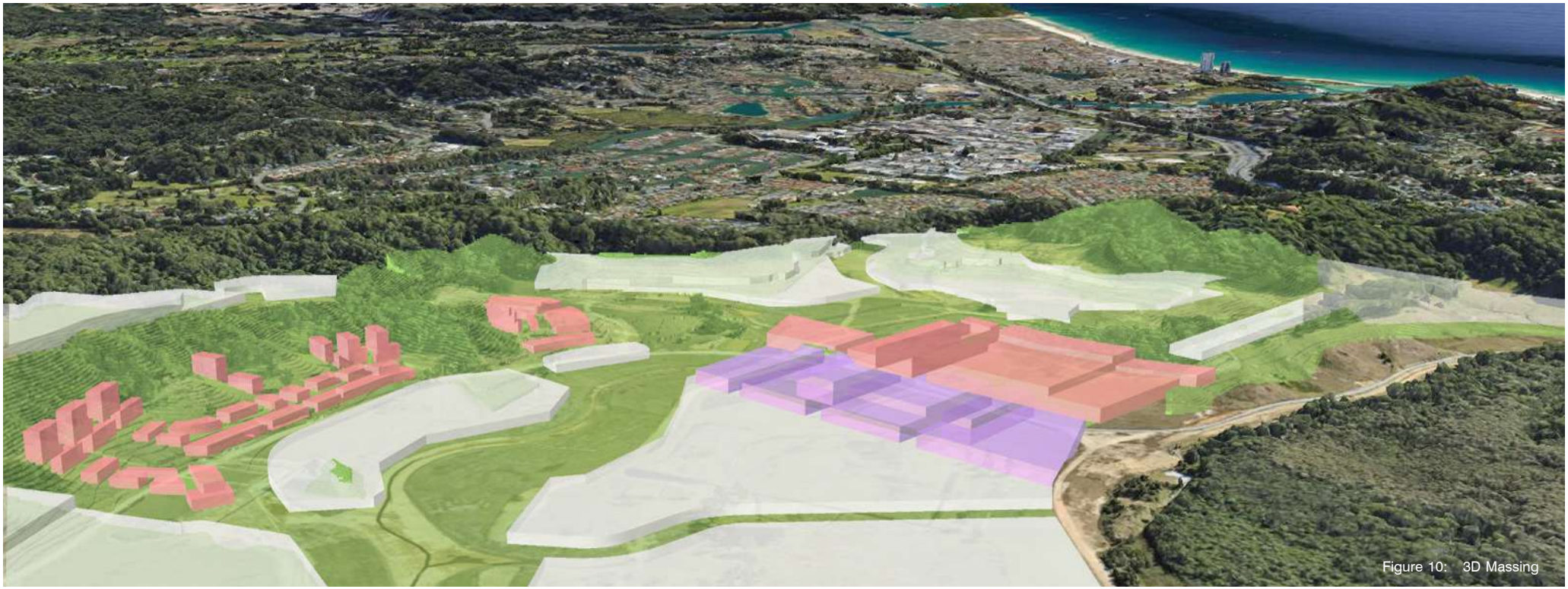


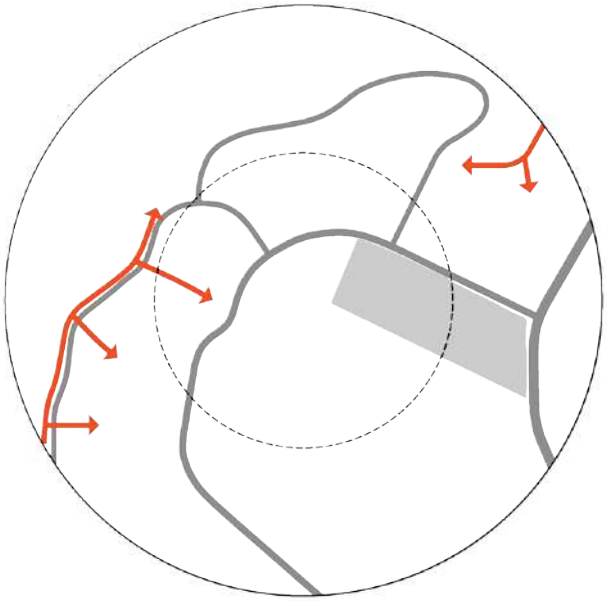
Figure 10: 3D Massing

4.2 Urban Design Drivers

Urban Design Drivers will ensure Precinct 5, Precinct 15 and Precinct 17 are unique and are making the most of their contextual surroundings. The creation of multiple villages/ precincts means design drivers are an important building block in emphasising the positive attributes of the existing landscape and future proposed urban design layout.

4.2.1 Respect Topography

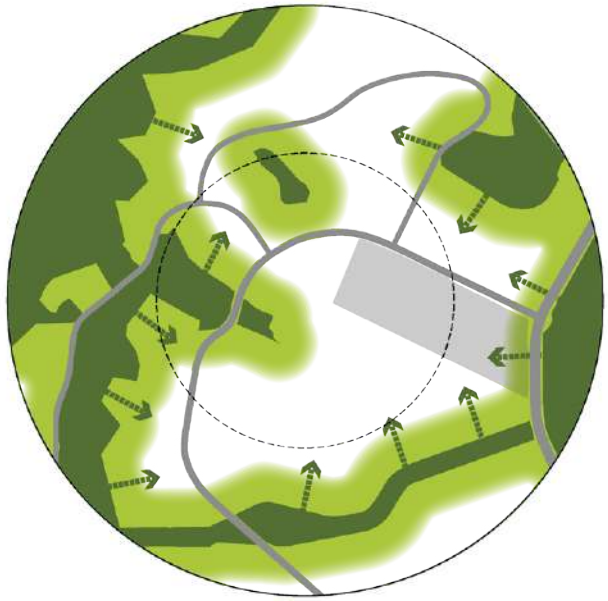
It is essential to maintain vegetation cover on ridgelines and steep slopes. It is important that development on lower slopes of significant ridges and knolls should not obstruct views of mountain tops or ridgelines from the surrounding roads, neighbourhoods and significant viewpoints. Development on upper slopes should not interrupt the skyline when viewed from the valley. There is an opportunity to work with the topographical form to achieve connectivity and amenity through open space and diverse built form typologies.



4.2.2 A Deep Green

In subtropical humid regions, well conceived open space can contribute to the natural cooling and has the potential to moderate the urban heat island effect, and reduce the need for energy-intensive air-conditioning systems in residential flat buildings.

There is an opportunity to locate denser housing forms overlooking green spaces within the 800m catchment from the town centre. By increasing density and locating taller buildings towards the west this optimises solar access to inner courtyards during cooler months and the shading potential provided by the buildings during the summer months

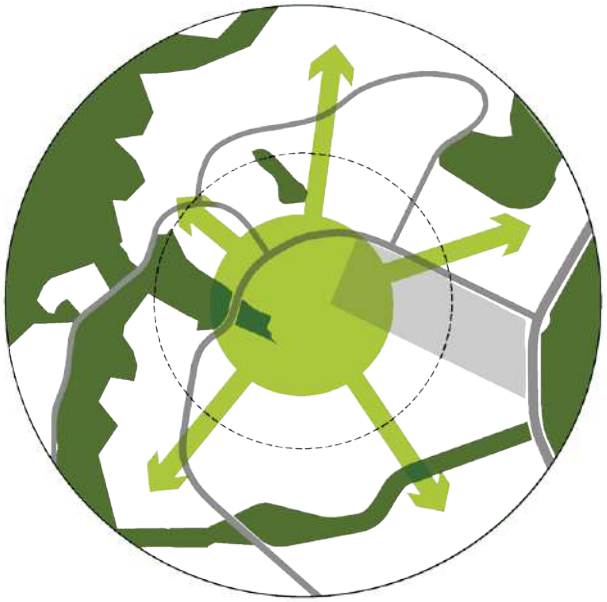


4.2.3 A Beating Core

It is essential to integrate centres into the network of open space and priorities provision of local high quality public open spaces such as:

- Public plazas and squares,
- Neighbourhood and Local parks,
- Recreational areas, and
- Semi-private open space within a subtropical urban block.

There is an opportunity to create a people place within the district park that provide a mixture of passive and active recreation opportunities including formal gardens, local community facilities, water features and passive recreation.



4.2.4 Life in one Place

There is an opportunity to link centres, schools and community facilities into the network of pedestrian and cycling pathways. It is essential that routes to centres are integrated into the local street network and where possible establish a network of subtropical journeys independent of the car dominated street network.

4.2.5 Active Streets and Places

It is desirable to nominate significant streets where one footpath can be a linear park to assist in moving and stopping, informal activities, street markets, outdoor dining, exercise, sitting and waiting for and catching transport.

There is an opportunity to design the town centre streets to enable a non-restrictive indoor-outdoor flow between the street environment and retail premises at ground level.

5.0 The Proposal

5.1 Precinct 5 - Plan of Development

Precinct 5 will be developed and designed as a major retail destination within the region. The core will be supported by a central Main Street to encourage a mix of land uses including retail, commercial, residential, entertainment and community uses.

The Built form of Precinct 5 will achieve a vibrant urban Town Centre. An urban outcome will be delivered through the scale of development with the potential for slab building development that defines the streets. Building height reflects the primacy of the Town Centre and transition down towards the east and west. Development provides an active frontage to the Main Street, and Squares.

Vehicle access to the retail core is gained from the surrounding street network. Rear access is encouraged for development fronting the Main Street as well as carparking which will be screened from external streets via landscaping and built form.

Figure 11: Precinct 5 POD Context

LEGEND

- Site Boundary
- Precinct Boundary
- Contours (2.0m Intervals)

LAND USES

- Retail/Commercial
- School/Utilities/Community Facilities
- Low Density Residential
- Medium Density Residential
- Medium-High Density Residential
- Open Space
- Environmental Protection Area

Figure 12: Precinct 5 POD

LEGEND

- Precinct Boundary
- Town Square
- Landscape Buffer
- Indicative Carparking Area
- Local Park (Indicative Location)

LAND USES

- Retail/Commercial
- Low Density Residential
- Medium Density Residential
- Medium-High Density Residential

BUILDING HEIGHTS

- (8) Up to 8 Storeys (28.0m)
- (5) Up to 5 Storeys (18.0m)
- (3) Up to 3 Storeys (13.6m)

INTERFACES

- Primary Building Frontage
- Secondary Building Frontage
- Key Corner Site

ROAD NETWORK HIERARCHY

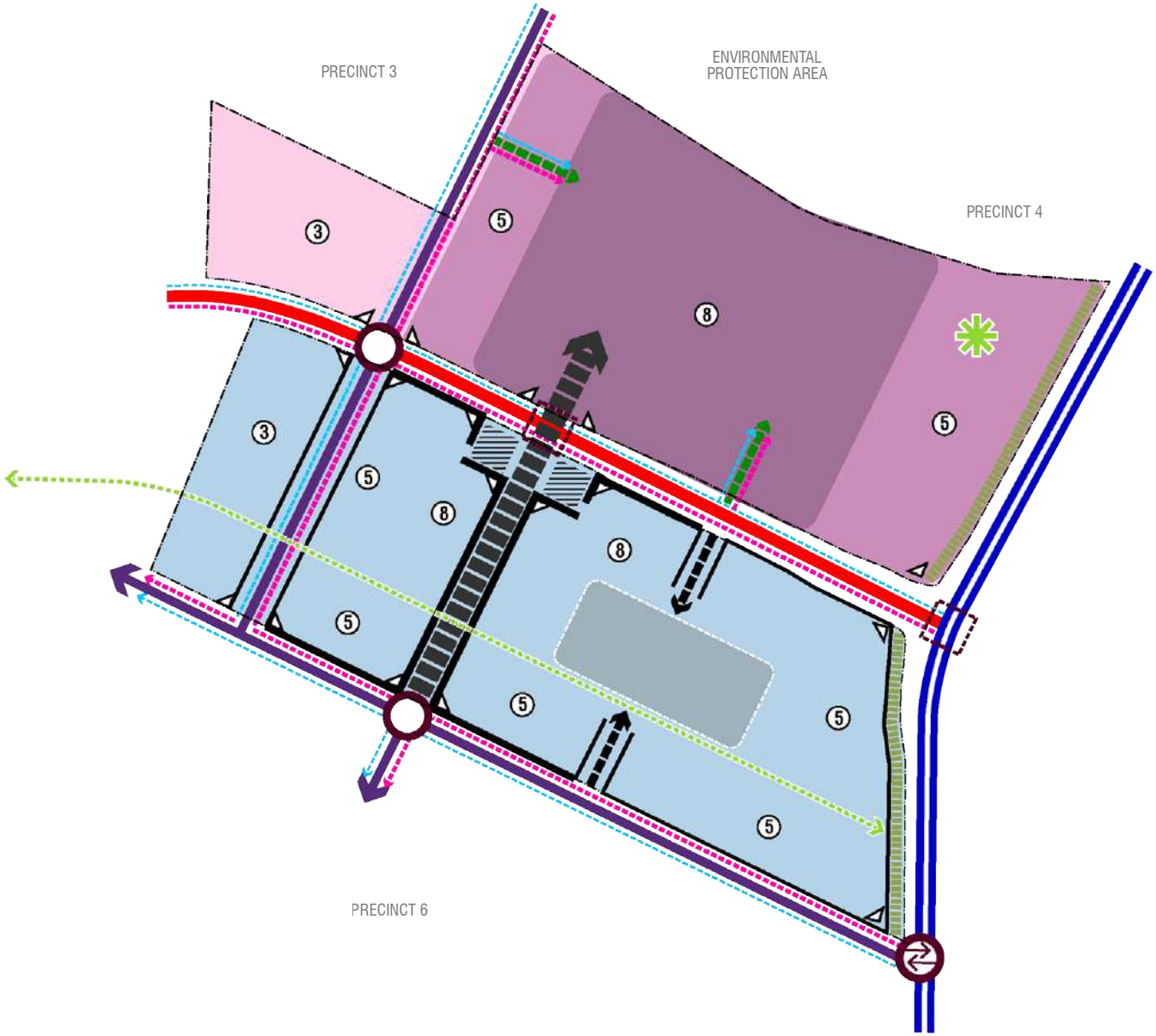
- Main Street
- Distributor Road (Cobaki Parkway) - 40.0m
- Neighbourhood Connector Road (Sandy Lane) - 22.4m
- Low Volume Neighbourhood Connector Road - 18.5m
- Access Street - 17.0m
- Indicative Access Point

INTERSECTIONS

- Roundabout
- Signalised Intersection
- Left In - Left Out Access

STREET SCAPE

- 2.5m Wide Off-Road Shared Path
- 1.5m Wide Off-Road Pedestrian Path
- Green Link Intent



5.2 Precinct 15 & 17 - Plan of Development

Precinct 15 and 17 is to provide a diverse mix of housing such as semi detached housing, terrace housing and medium density residential flat buildings. The Precincts comprises medium density residential dwellings on the western edges of the precinct and

The precincts will present an 'iconic' built form outcome which will be achieved by a built form that is set within the environment and of a slim form which will aim to address the coast.

The public realm within Precinct 15 and 17 will be designed to facilitate movement of pedestrians in a comfortable environment with a focus on creating strong links to the District Park and Retail Core.

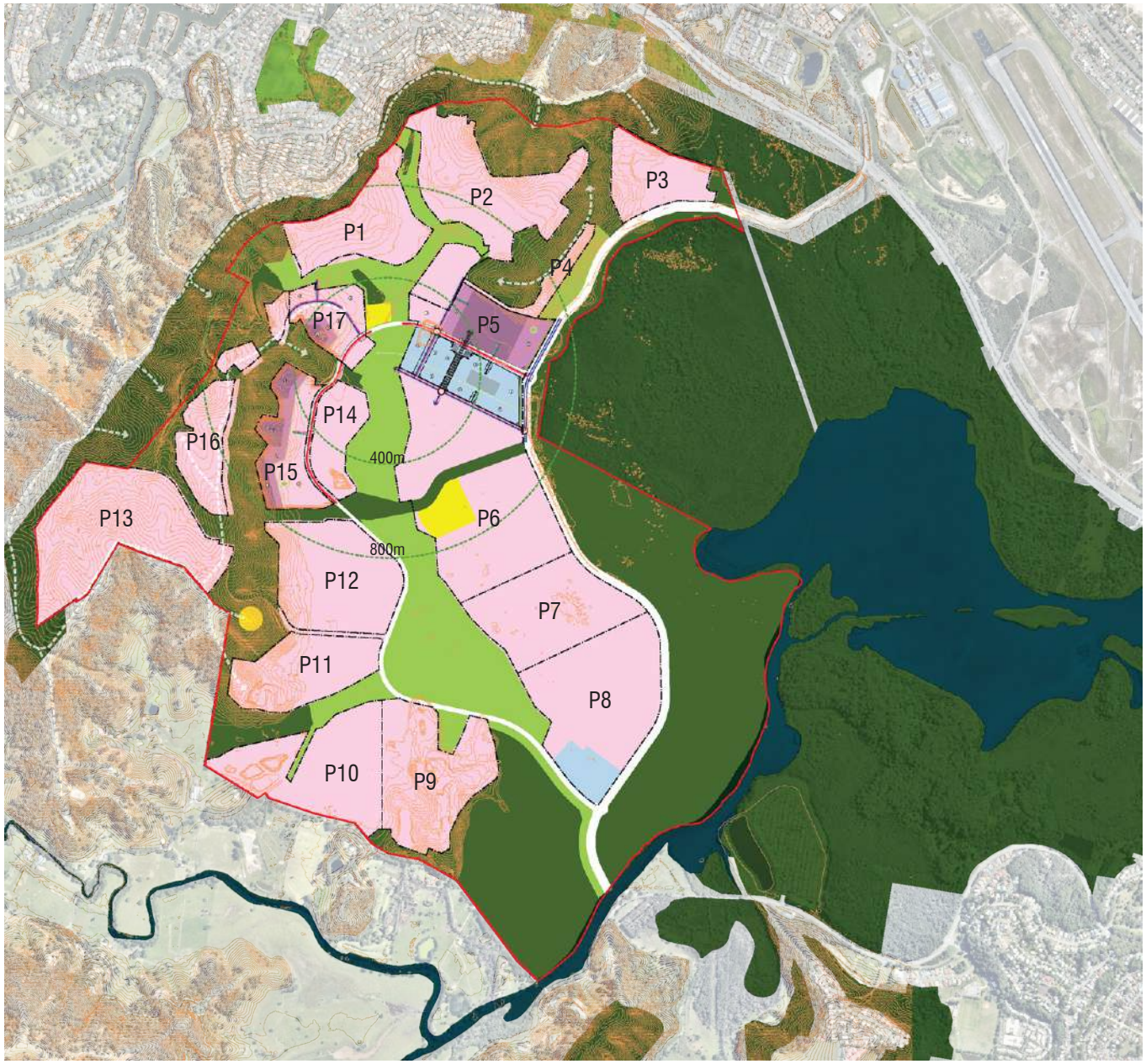


Figure 13: Precinct 15 & 17 POD Context

LEGEND

- Site Boundary
- Precinct Boundary
- Contours (2.0m Intervals)

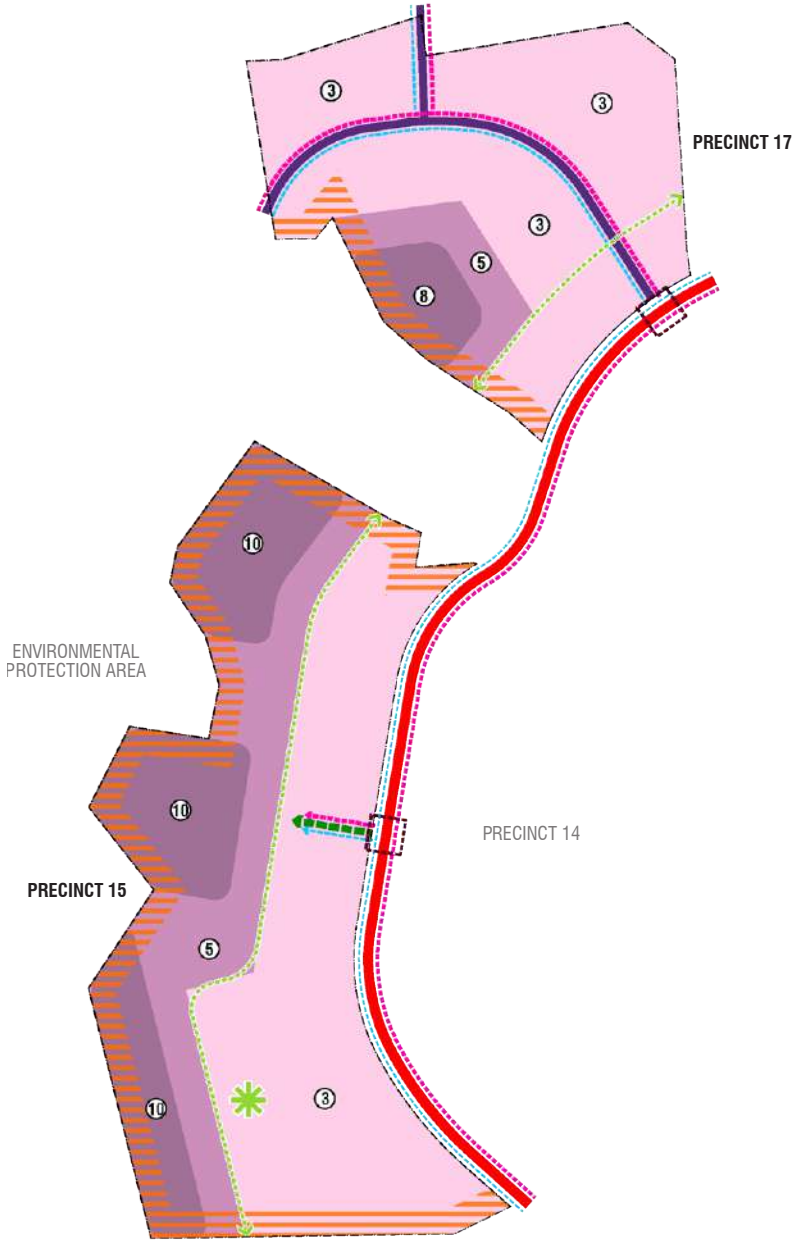
LAND USES

- Retail/Commercial
- School/Utilities/Community Facilities
- Low Density Residential
- Medium Density Residential
- Medium-High Density Residential
- Open Space
- Environmental Protection Area

The proposed plan of development aims to provide and enable medium-high density residential in combination with lower rise street edge development.

The typology comprises two parts; low-rise street edge and central tower form which is incorporated into the environment. The low-rise street form is typically 3-5 storey residential to provide identity and to enhance the street landscape character.

Figure 14: Precinct 15 & 17 POD



5.3 Application of CPTED Principles

The four principles used in the assessment of the development to minimise the opportunity for crime are:

1. **Surveillance**
   Increasing the opportunity for seeing and being seen.

2. **Access Control**
   Using physical and symbolic markers to restrict and encourage movement of people.

3. **Territorial Reinforcement**
   Distinguishing private and public spaces, and encouraging community ownership of public areas.

4. **Space Management**
   Creating formal uses for spaces to ensure maximum usage.

Given this modification application is for conceptual purposes of the Cobaki Estate, relative to approved Concept Plan of MP 06_0316, this section details CPTED principles that can be applied during detailed design application stage.

1. **Surveillance**

Proposed pedestrian and shared paths should be located to ensure natural surveillance by:

- Maintaining sightlines along paths between destination points;
- Effective lighting of public places;
- Allow overlooking from adjacent properties; and
- Provide landscaped vegetation in the public domain to increase the aesthetic appeal of the environment without providing opportunity for offenders a place to hide.

2. **Access Control**

The Cobaki Estate under current site conditions is serviced by four roads, two of which remain unnamed, including Cobaki Parkway and Sandy Road. Given the nature of this modification application, it is assumed local roads will branch off existing road infrastructure onsite to control vehicular access onto the site.

Effective access control can be achieved by:

- landscapes and physical location that channel and group pedestrians;
- public spaces that attract activity;
- Provision of physical barriers to restrict access onto internal areas or high-risk areas (such as car parks)

Access control to sites within the Cobaki Estate, inclusive of those precincts subject to this modification can be addressed during detailed development application stages to ensure effective access control.

3. **Territorial Reinforcement**

Community ownership of public spaces makes people feel comfortable and more likely to visit places that feel ‘owned’ and cared for.

Subject to detailed development application stage, territorial reinforcement can be achieved by:

- providing landscapes that channel and group pedestrians to generate activity;
- providing clear transitions and boundaries between public and private spaces; and
- design cues such as landscaping, to distinguish who and what the space is used for without making public spaces private spaces.

4. **Space Management**

Any proposed areas dedicated for public roads will be maintained by the relevant public authority (Tweed Shire Council). This includes maintenance of roads, pedestrian paths and landscape nature strips.

The management of each lot will be maintained by each owner to ensure site cleanliness, rapid repair of vandalism and graffiti and refurbishment of decayed physical elements.

6.0 Assessment of the Proposal

6.1 Connectivity

6.1.1 Road Hierarchy

Key features of the road layout:

- The Distributor Road (Cobaki Parkway) distributes traffic from the two access points to the first intersections internal to the subject site.
- Neighbourhood Connector Road (Sandy Lane) provides a primary and secondary circuit throughout the site and distributes traffic to Low Volume Nighbourhood Connector Roads.
- Tertiary level Access Streets are indicatively positioned where potential intersections may be located along Connector Roads.
- The indicative location for the Main Street runs North - South to provide a ideal orientation for pedestrian movement as one side of the street will always receive solar access

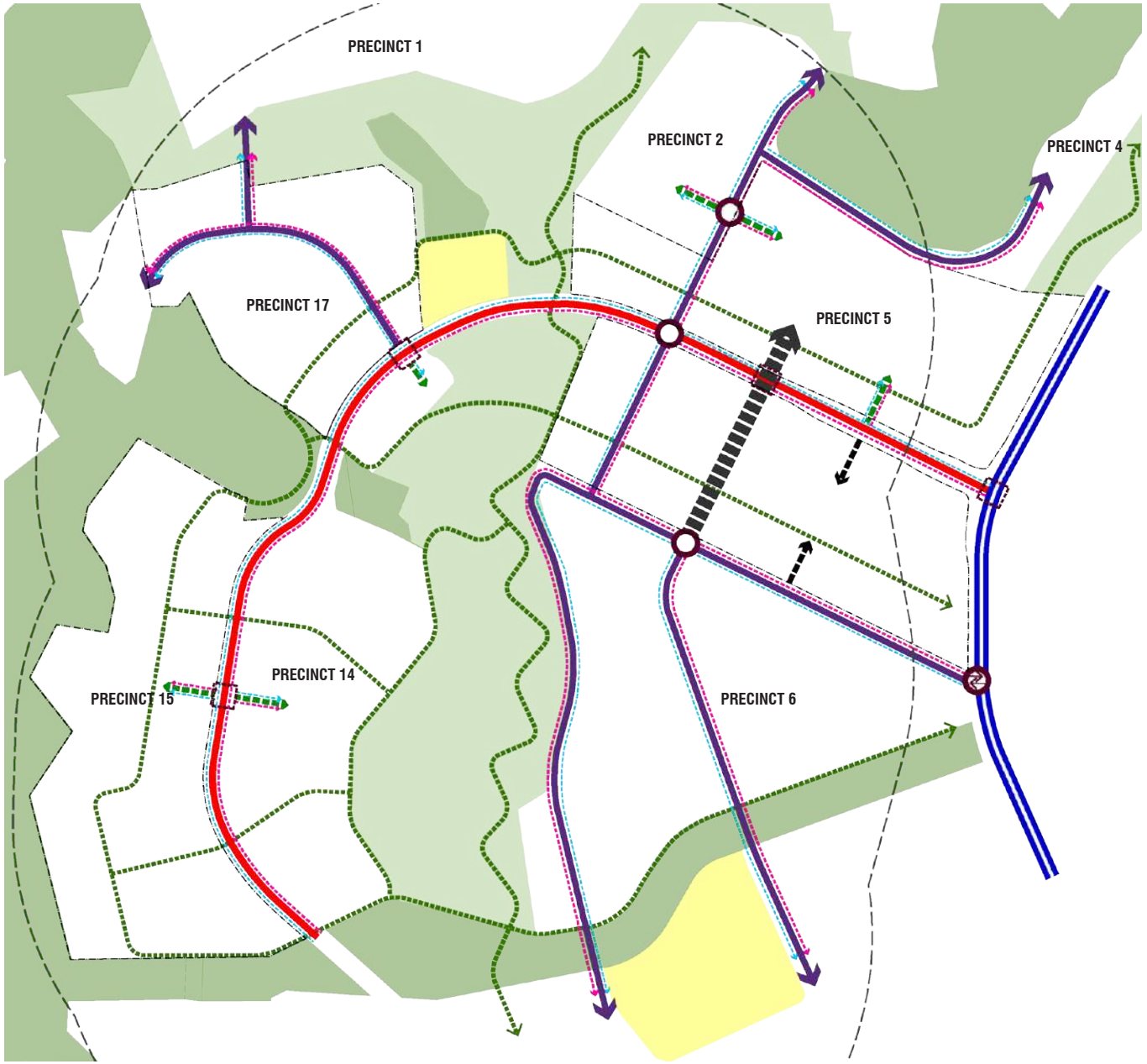


Figure 15: Assessment - Connectivity

LEGEND

Precinct Boundarys in Subject

LAND USES

- 400m Walkable Catchment (5 minute walk)
- Structured Open Space & District Park
- Environmental Protection
- Education & Community Facilities

ROAD NETWORK HIERARCHY

- Main Street
- Distributor Road (Cobaki Parkway) - 40.0m
- Neighbourhood Connector Road (Sandy Lane) - 22.4m
- Low Volume Neighbourhood Connector Road - 18.5m
- Access Street - 17.0m
- Indicative Access Point

STREET SCAPE

- 2.5m Wide Off-Road Shared Path
- 1.5m Wide Off-Road Pedestrian Path
- Green Link Intent / 3.0m Recreational Trail/Path

6.1.2 Active Transport Network

This development will be a catalyst for active transport infrastructure within the surrounding Cobaki area, proposing a connected network of shared pedestrian/cycle paths and recreational trails/paths.

The internal network reflects a strong preference for off-road shared paths instead of on road cycle lanes as these paths aim to capture both pedestrians and cyclists in providing a commuting and recreational function. This is consistent with the Cobaki Development Code approved under modification 7 for the Cobaki Estate.

The proposed path typologies are shown in **Figure 15** which provides connectivity between key internal destinations within the 400m walkable catchment from the structured open space / District Park such as:

- Environmental Protection Areas;
- Proposed higher density residential locations;
- Retail/Commercial centres;
- School; and
- Community centre.

Figure 16: Open Space Network Plan

LEGEND

- Town Centre / Neighbourhood Centre
- Residential
- School / Utilities / Community Facilities
- Open Space
- Environmental Protection Area
- Covenant Protection Area
- Dam
- 400m Walkable radius to town centre / local parks
- Indicative Location of 2.0M / 2.5M shared pedestrian and cycle path
- 1.2M on-road cycle pathway

6.2 Height

6.2.1 Precinct 5

The top of the ridge line adjacent to Precinct 5 produces a height between RL 42.0 - RL 44.0.

Within Medium-High density residential the proposed height is upto 8 storeys (upto 28.0m) and will not exceed RL34.0 - 10.0m less than the top of the ridge line.

Within Medium density residential the proposed height is up to 5 storeys and (upto 18.0m) and will not exceed RL 24.00 - 20.0m less than the top of the ridge line.

LEGEND

Figure 17: Assessment - P5 Height

- Precinct Boundary
- Local Park (Indicative Location)

LAND USES

- Retail/Commercial
- Low Density Residential
- Medium Density Residential
- Medium-High Density Residential

BUILDING HEIGHTS

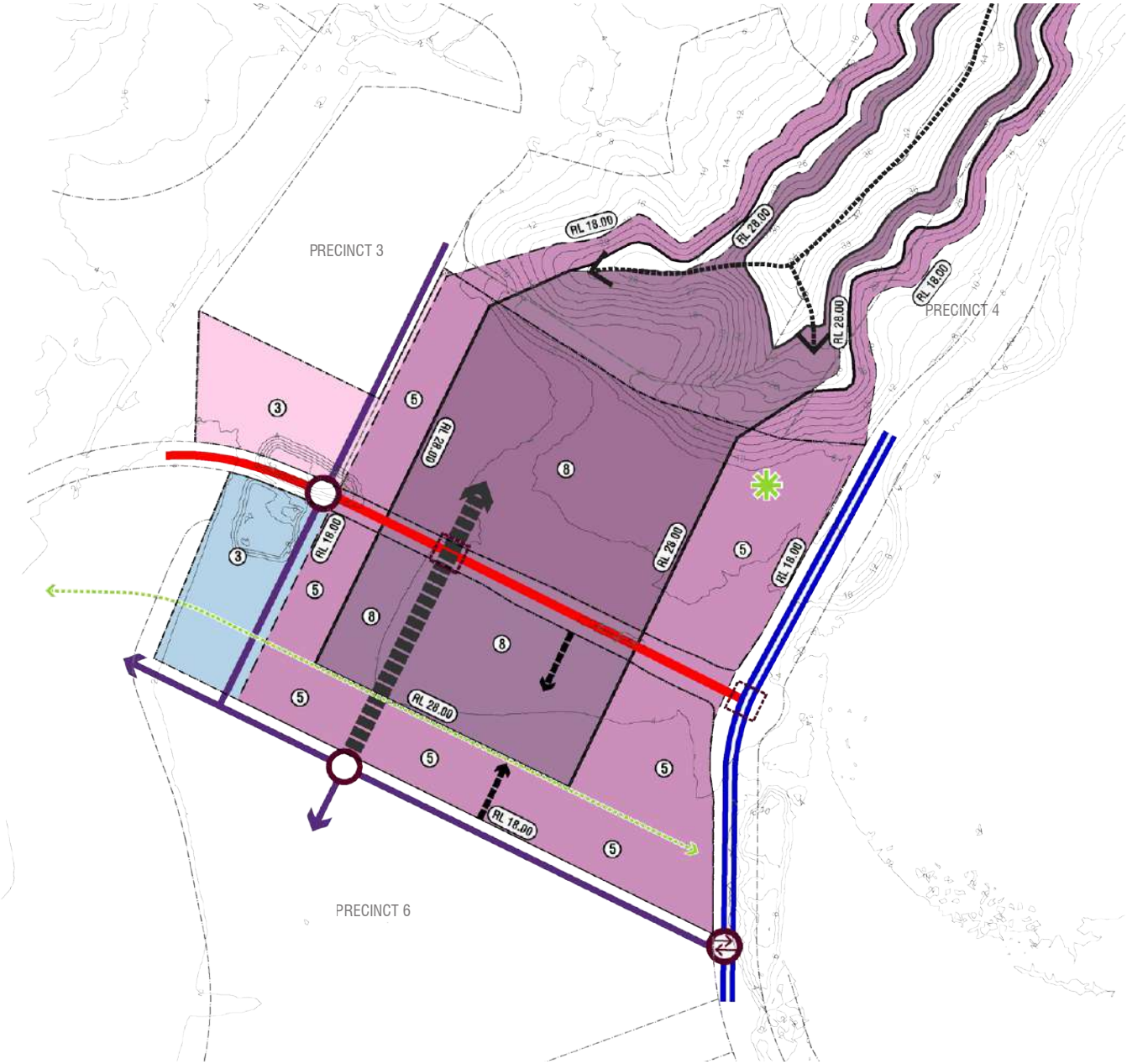
- (8) Up to 8 Storeys (28.0m)
- (5) Up to 5 Storeys (18.0m)
- (3) Up to 3 Storeys (13.6m)

ROAD NETWORK HIERARCHY

- Main Street
- Distributor Road (Cobaki Parkway) - 40.0m
- Neighbourhood Connector Road (Sandy Lane) - 22.4m
- Low Volume Neighbourhood Connector Road - 18.5m
- Access Street - 17.0m
- Indicative Access Point

INTERSECTIONS

- Roundabout
- Signalised Intersection
- Left In - Left Out Access



6.2.2 Precinct 15 & 17

The top of the ridge line adjacent to Precinct 15 is RL 48.0 - RL 74.0 and Precinct 17 is RL 36.0 - RL 48.0.

Within Medium-High density residential in Precinct 15 the proposed height is upto 10 storeys (upto 35.0m) and will not exceed RL52.0 - 22.0m less than the top of the ridge line.

Within Medium-High density residential in Precinct 17 the proposed height is upto 8 storeys (upto 28.0m) and will not exceed RL42.0 - 6.0m less than the top of the ridge line.

Within Medium density residential (building height transition zone) the proposed height is up to 5 storeys (upto 18.0m) and will not exceed RL 32.00.

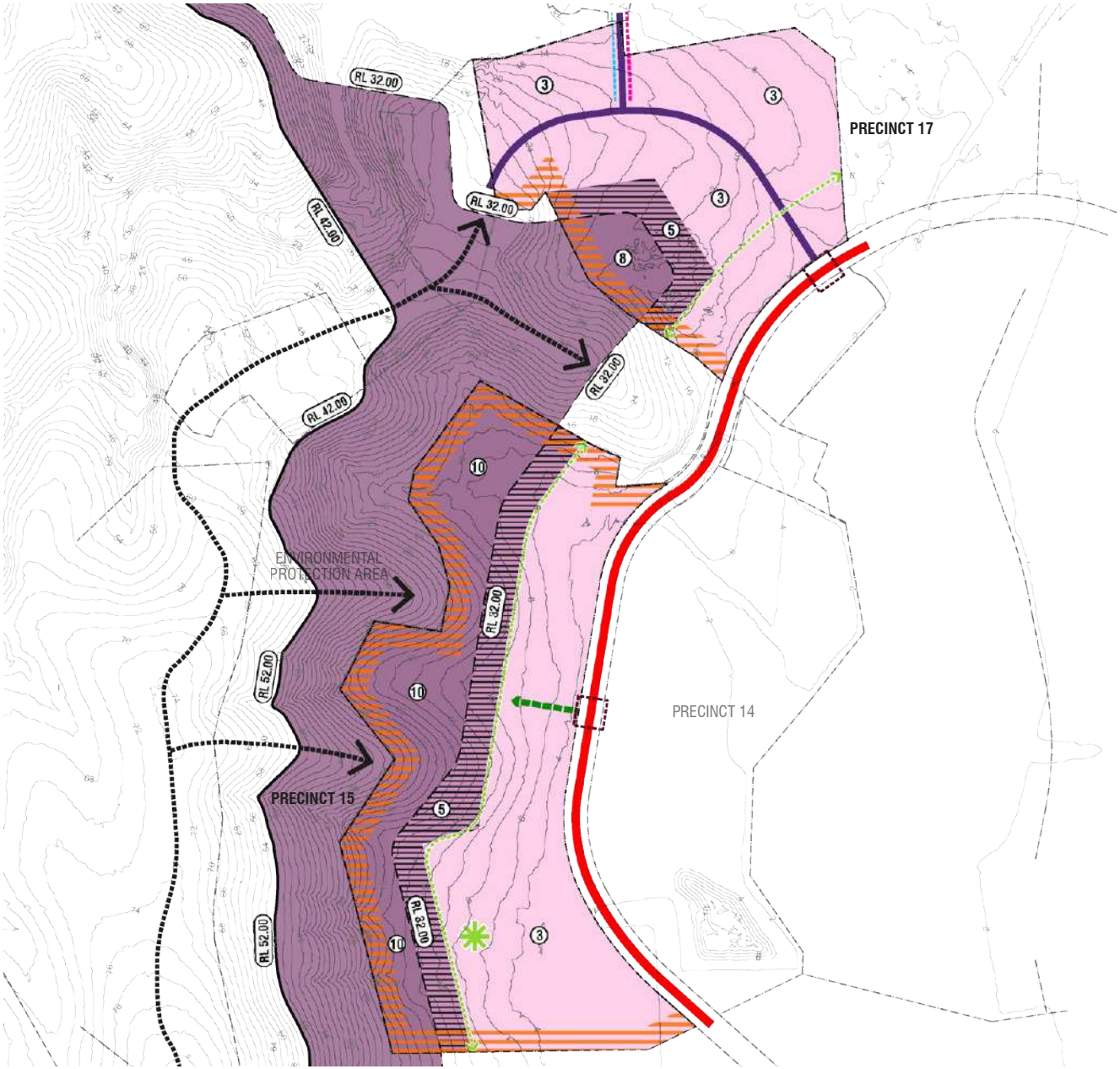


Figure 18: Assessment - P15 & P17 Height

LEGEND

- Precinct Boundary
- Local Park (Indicative Location)
- APZ (20.0m)

LAND USES

- Low Density Residential
- Medium Density Residential
- Medium-High Density Residential

BUILDING HEIGHTS

- 10 Up to 10 Storeys (35.0m)
- 8 Up to 8 Storeys (28.0m)
- Building Height transition zone (visual privacy)
- 5 Up to 5 Storeys (18.0m)
- 3 Up to 3 Storeys (13.6m)

ROAD NETWORK HIERARCHY

- Neighbourhood Connector Road (Sandy Lane) - 22.4m
- Low Volume Neighbourhood Connector Road - 18.5m
- Access Street - 17.0m

INTERSECTIONS

- Signalised Intersection

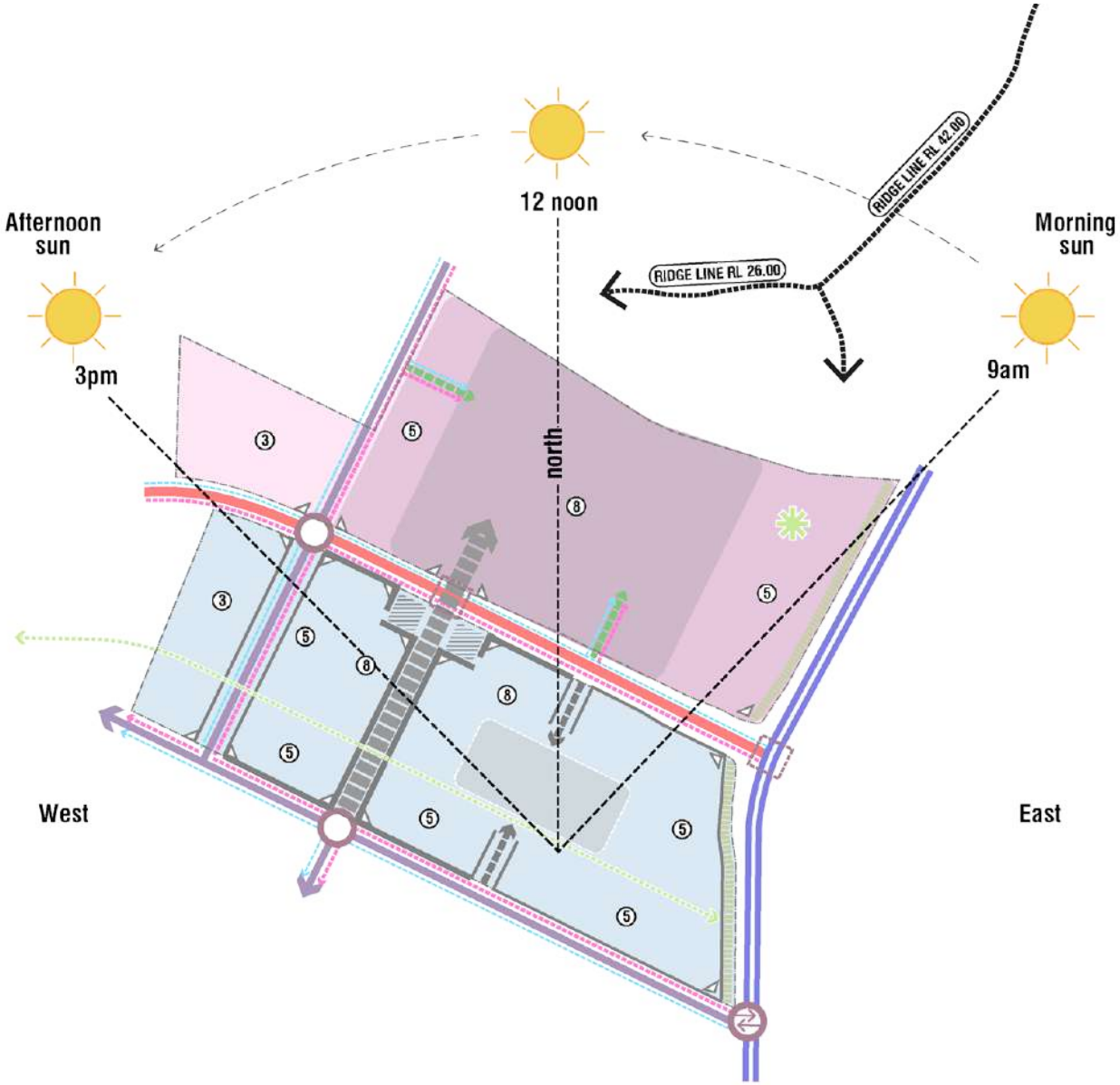
6.3 Solar Access

6.3.1 Precinct 5

Future subdivision design should consider generally blocks with:

- North-west to south-east orientation should have north-east facing single aspect or dual aspect apartments;
- North-east to south west orientation should also have dual aspect units with attention to solar control;

Precinct 5 has no constraints from environmental elements, topography or built form. The ridgeline to the north of the precinct will have minimal overshadowing effect as the ridgeline height is RL 26.00 - similar height to a 7-8 storey building.



LEGEND

Ridgeline

Figure 19: Assessment - P5 Solar Access

6.3.2 Precinct 15 & 17

Future subdivision design should consider generally blocks with:

- North-west to south-east orientation should have north-east facing single aspect or dual aspect apartments; and
- North-east to south west orientation should also have dual aspect units with attention to solar control.

Precinct 15 may have solar access constraints due by the ridgeline (between RL 34.00 to RL 74.00 towards the west of the precinct. After 12 noon the ridgeline may restrict the amount of sun light accessing Medium-High density residential zones as the sun altitude ratio of 1.55:1 at 12 noon to 2.9:1 at 3pm.

Precinct 17 has no constraints from environmental elements, topography or built form.

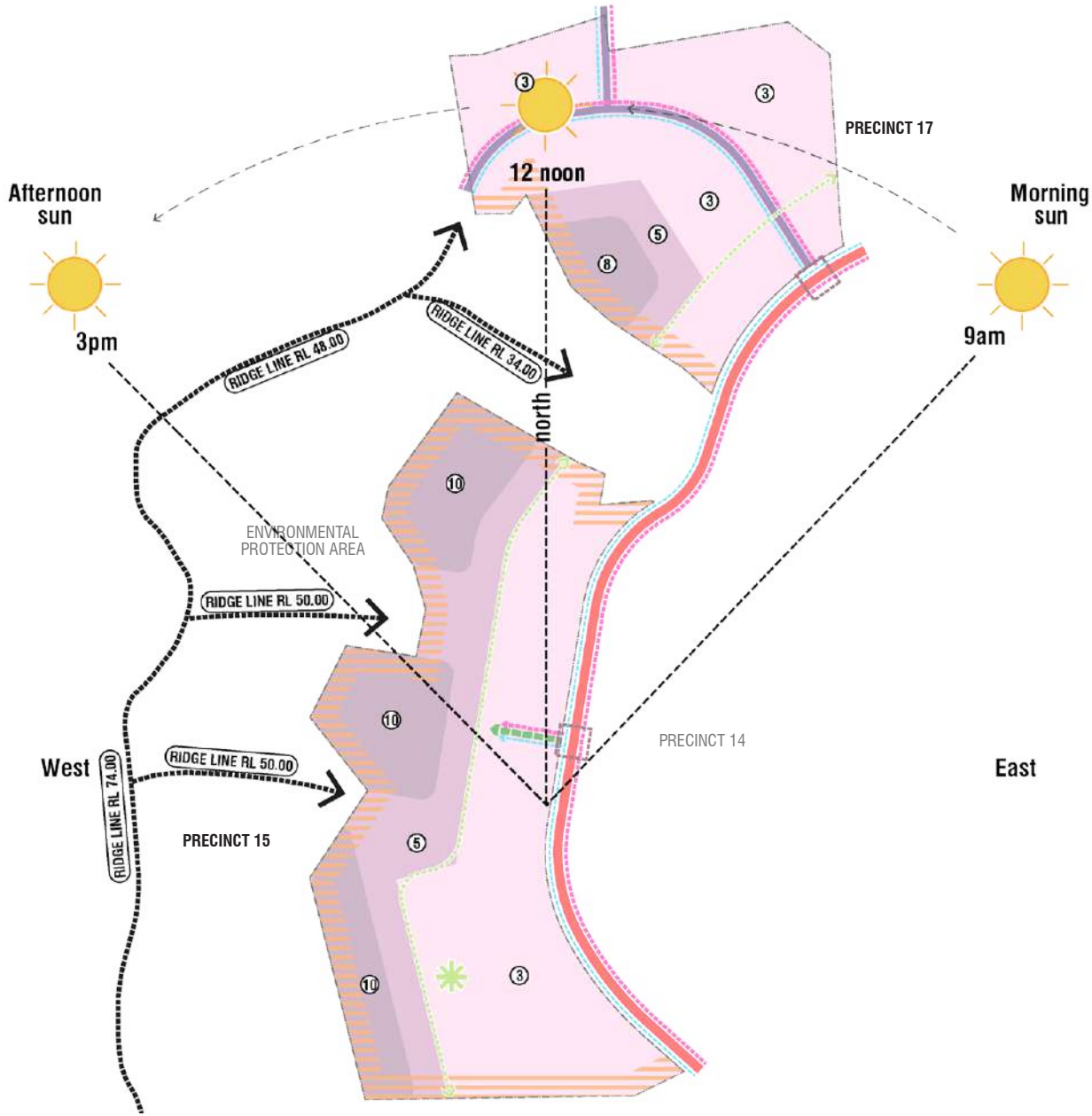
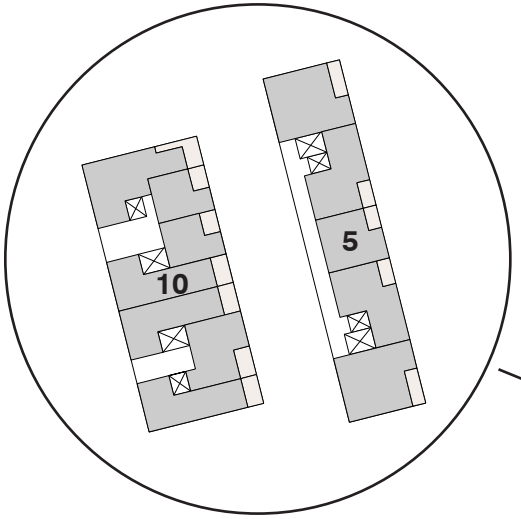


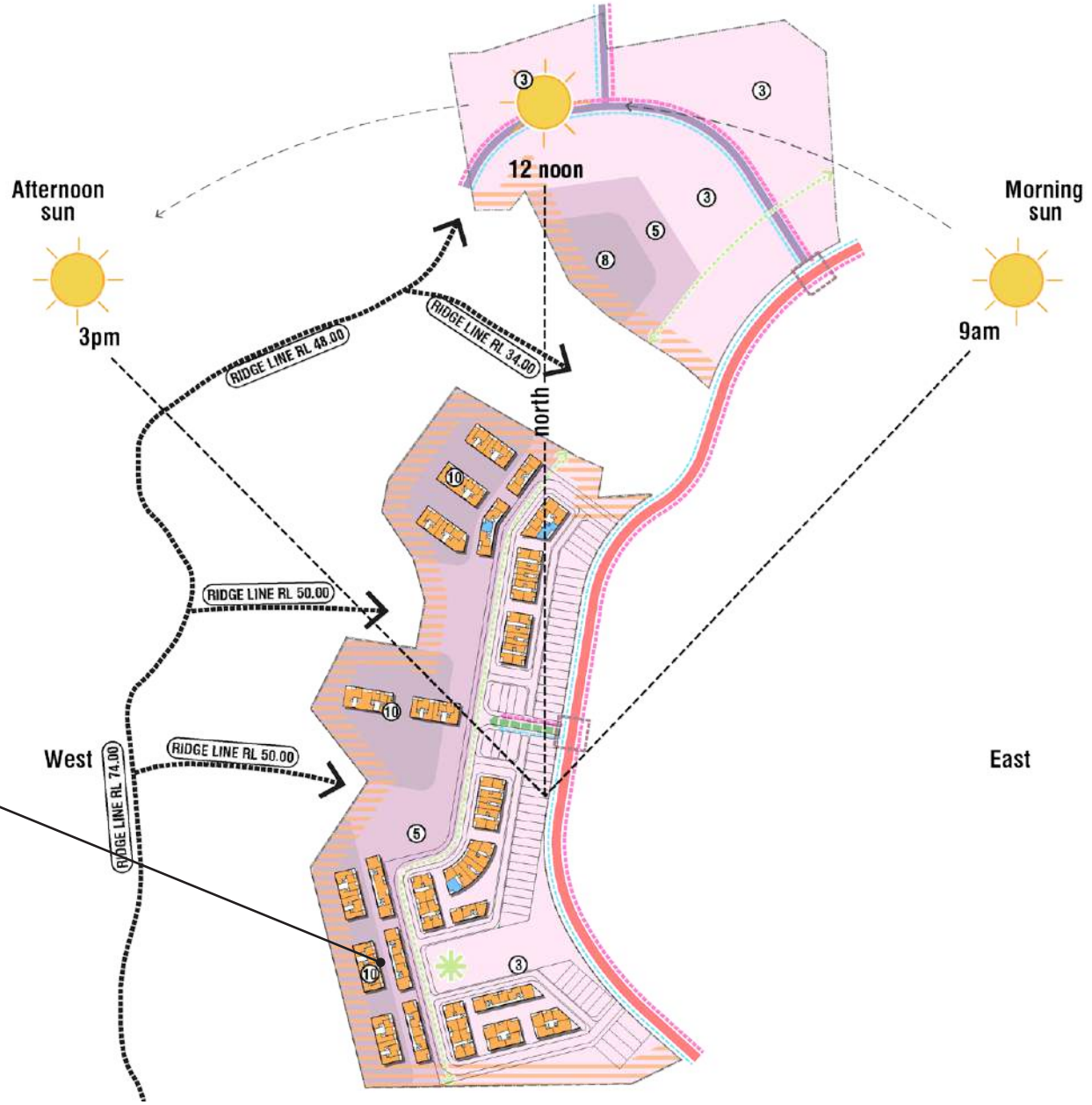
Figure 20: Assessment - P15 & P17 Solar Access

6.3.3 Mid Winter Solar Access Analysis - Indicative Layout & Built Form

General architectural principles applied in to producing indicative built form of Precinct 15 are to:

- maximise north to north-east facing apartments;
- minimise building depth;
- minimise south to south-west facing apartments;
- minimise double loaded corridor access apartments.





LEGEND

Figure 21: P15 Mid Winter Solar Access Analysis

Ridgeline

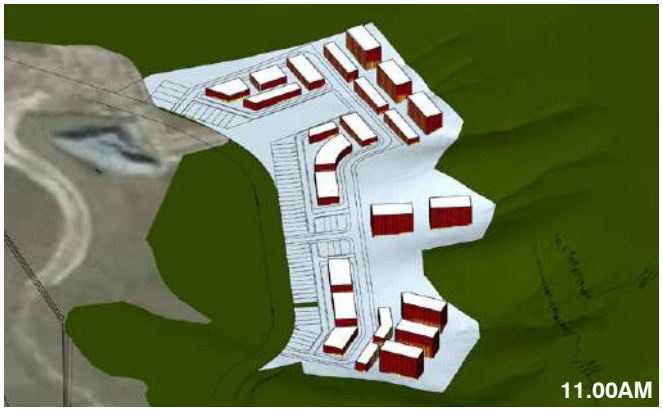
Dwellings that receive 2 hours or more sunlight

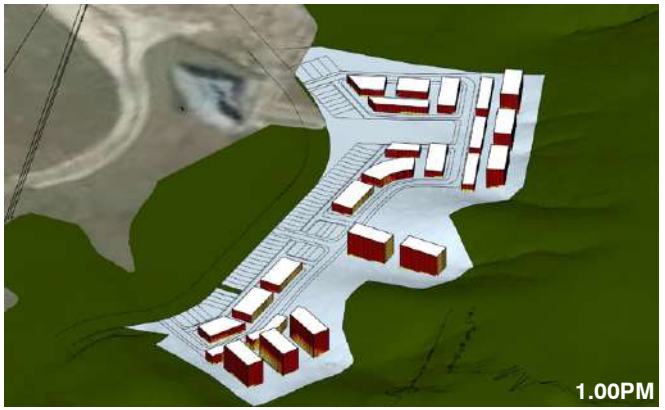
Dwellings that do not receive 2 hours or more sunlight

6.3.4 Mid Winter Solar Access Analysis

A 'views from angle of sun' analysis was conducted to indicative built form within Precinct 15 to address concerns of potential overshadowing to residential dwellings facing the western aspect from the adjacent ridges to the west.

Residential dwellings at the western aspect achieve 2 hrs solar access between 1pm and 3pm. This is considered an acceptable design outcome as it results in compliance with Objective 4A-1 Design Criteria 1 of the ADG under SEPP No. 65.





LEGEND

- Precinct 15
- Environmental Protection
- 6 Hours Solar Access
- 5 Hours Solar Access
- 4 Hours Solar Access
- 2 Hours Solar Access
- 1 Hours Solar Access
- 0 Hours Solar Access

6.4 Wind

6.4.1 Prevailing Winds

- The prevailing wind direction from Cobaki Estate comes from the south-south-west.
- East-facing slopes have greater potential for natural ventilation, particularly if the north to north-eastern aspect can be maximised for buildings.
- The eastern slope is protected from westerly winds.

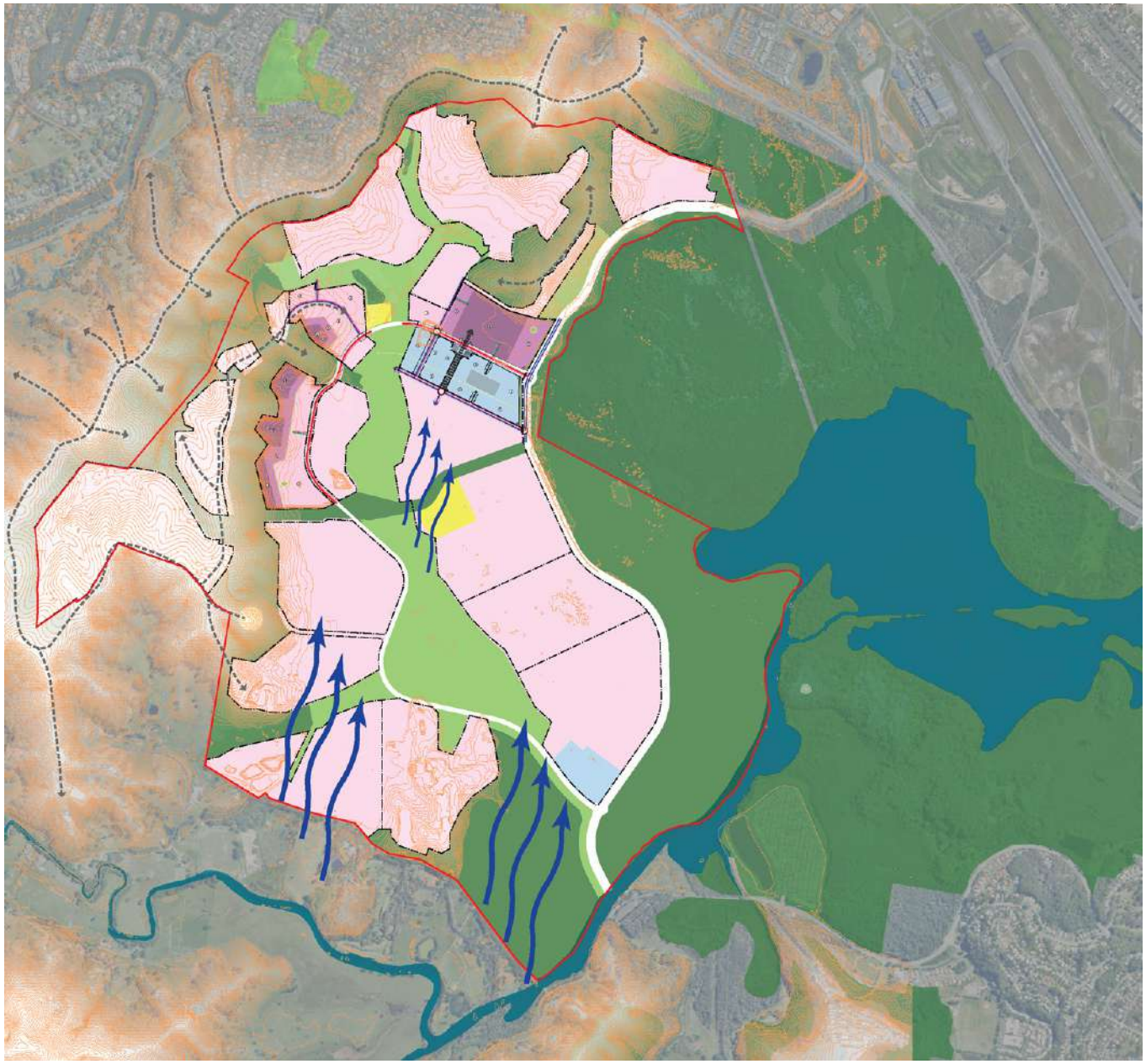


Figure 22: Prevailing Winds

LEGEND

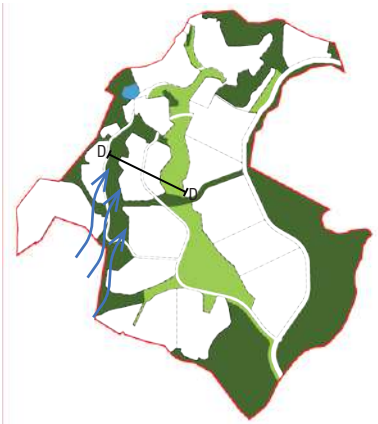
- Site Boundary
- Precinct Boundary
- Contours (2.0m Intervals)
- Ridge Line
- Prevailing Wind Direction - South South West

LAND USES

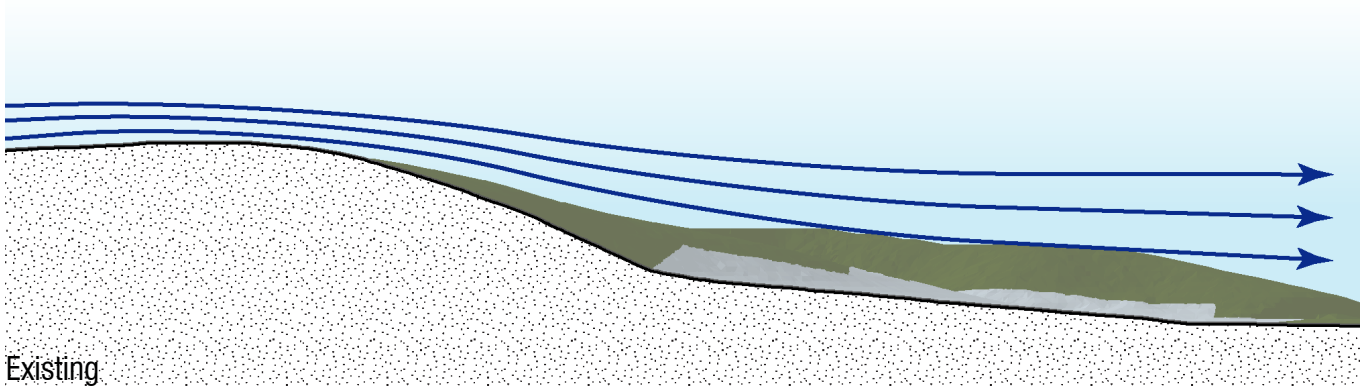
- Retail/Commercial
- School/Utilities/Community Facilities
- Low Density Residential
- Medium Density Residential
- Medium-High Density Residential
- Open Space
- Environmental Protection Area

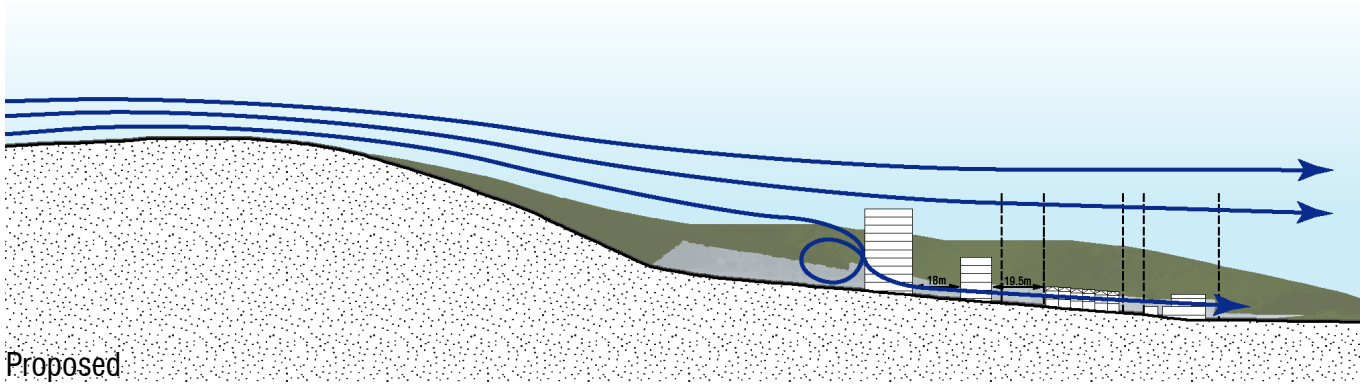
6.4.2 Local Micro-climate Effects

- Hillsides which give access to breezes are desirable locations for residential development in humid subtropical places.
- Higher rates of air movement occur near the hilltop on the windward side.
- Winds are strongest at the top and sides of the crest of the hill, and wind speeds are lowest near the bottom of the hill.
- The leeward side of hill is generally in a 'wind shadow' where there is no breeze.
- Providing higher density residential at the base of the adjacent knoll gives the opportunity of capturing the southern prevailing winds and circulating those winds throughout Precinct 15 & 17 to assist in ventilation.



Section DD - East West





6.5 Visual Privacy

Objective 3F-1 Design Criteria 1 of the ADG under SEPP No. 65 is in the following terms:

1. *Separation between windows and balconies is provided to ensure visual privacy is achieved. Minimum required separation distances from buildings to the side and rear boundaries are as follows:*

Building height	habitable rooms and balconies	non-habitbale rooms
up to 12m (4 storeys)	6m	3m
up to 25m (5-8 storeys)	9m	4.5m
over 25m (9+ storeys)	12m	6m

6.5.1 Precinct 5

As illustrated in Section BB below, there is capacity for built form within Precinct 5 to remain consistent with building separation requirements set out by the Apartment Design Guide under SEPP No. 65.

Indicative built form produces a transition in height from three storey building envelopes to the west, up to eight storey building envelopes to the centre of the precinct, and a transition to five storey building envelopes to the east.

Proposed increase in heights do extend beyond the adjoining ridgeline to the north of the precinct.

6.5.2 Precinct 15 & 17

Section DD illustrates indicative built forms for Precinct 15. It is important to highlight that indicative built form within Precinct 17 would produce heights similar to that of Precinct 15, as illustrated in Section DD. The only difference would be that maximum heights would be up to 8 storeys instead of 10.

Similar to indicative built forms in Precinct 5, proposed increase in heights do extend beyond the adjoining ridgeline to the north of the precinct.

Section BB - Precinct 5

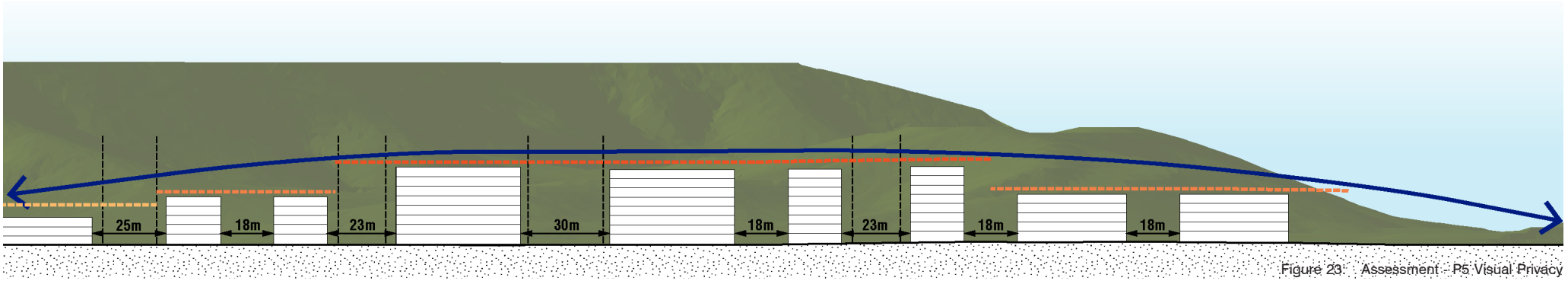


Figure 23: Assessment - P5 Visual Privacy

Section DD - Precinct 15 & 17

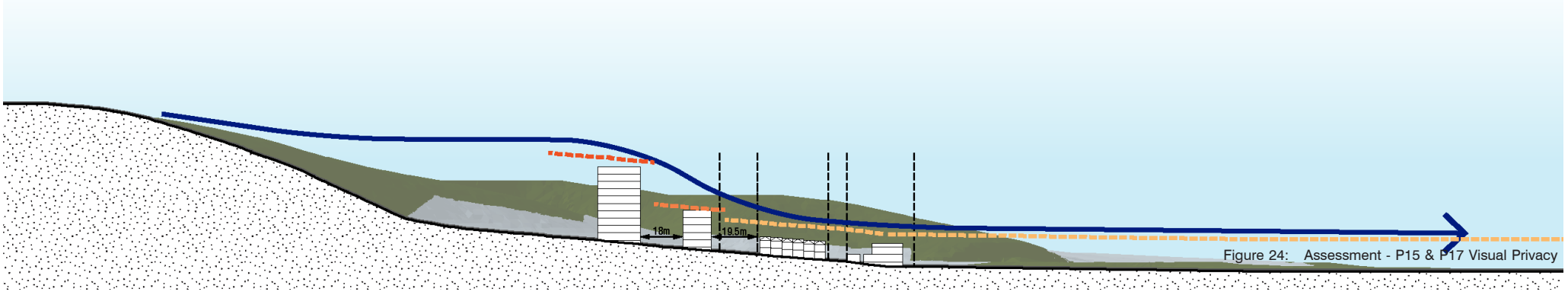


Figure 24: Assessment - P15 & P17 Visual Privacy

6.6 View Loss

Figure 25 and Figure 26 illustrates the extent of potential view loss within the precincts subject to this modification application.

In Section AA:

- Views to the western horizon are affected by potential built form within Precinct 5;
- Views to the sky are affected by potential built form within Precinct 5;
- Landscape views are lost to built form within a 15.0m and 13.6m height blanket within Precinct 17 to the south.

In Section BB:

- No views to the western horizon are affected by potential built form within Precinct 5;
- Landscape views are lost to built form within a 28.0m, 15.0m and 13.6m height blanket within Precinct 5, facing north; and
- No built form extends beyond a height of the adjacent ridgeline.

Section AA - North South

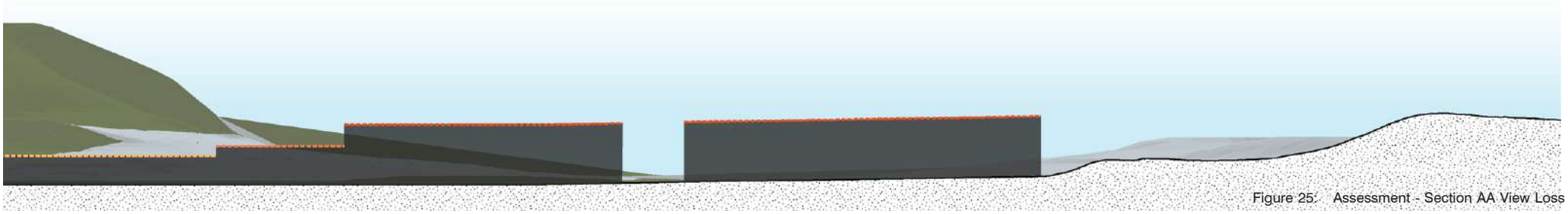


Figure 25: Assessment - Section AA View Loss

Section BB - East West

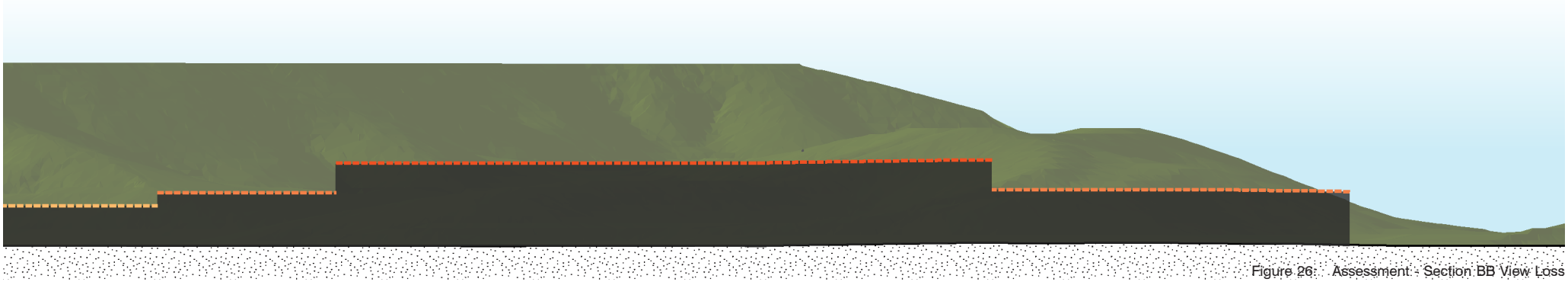


Figure 26: Assessment - Section BB View Loss

LEGEND

NOT TO SCALE

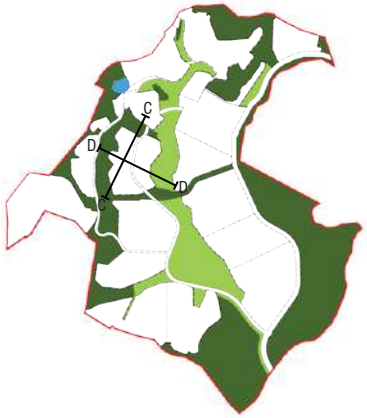
28.0m Height Blanket | 18.0m Height Blanket | 13.6m Height Blanket | Potential View Loss

In Section CC:

- Views to the western horizon are not affected by potential built form within Precinct 15;
- Views to the sky are not affected by potential built form within Precinct 15;
- Landscape views are lost to built form within a 35.0m, 15.0m and 13.6m height blanket within Precinct 15 and Precinct 17.

In Section DD:

- Views to the northern horizon are affected by potential built form within Precinct 15 and Precinct 17, as potential view loss extends beyond the ridgelines further north, past Precinct 17;
- Landscape views are lost to built form within a 35.0m, 15.0m and 13.6m height blanket within Precinct 15 and Precinct 17; and
- No built form extends beyond a height of the adjacent ridgeline.



Section CC - North South

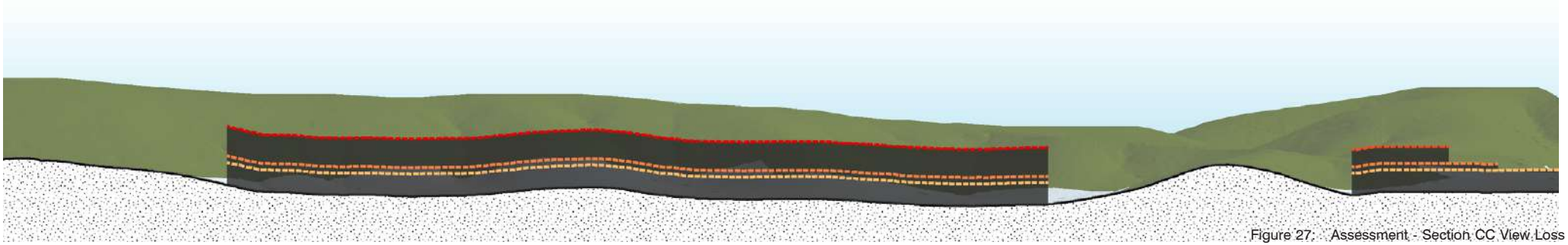


Figure 27: Assessment - Section CC View Loss

Section DD - East West

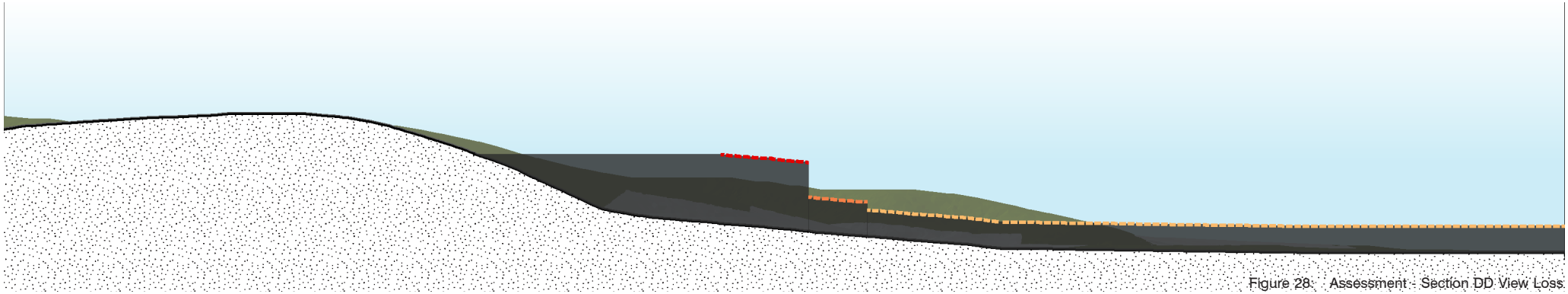


Figure 28: Assessment - Section DD View Loss

LEGEND

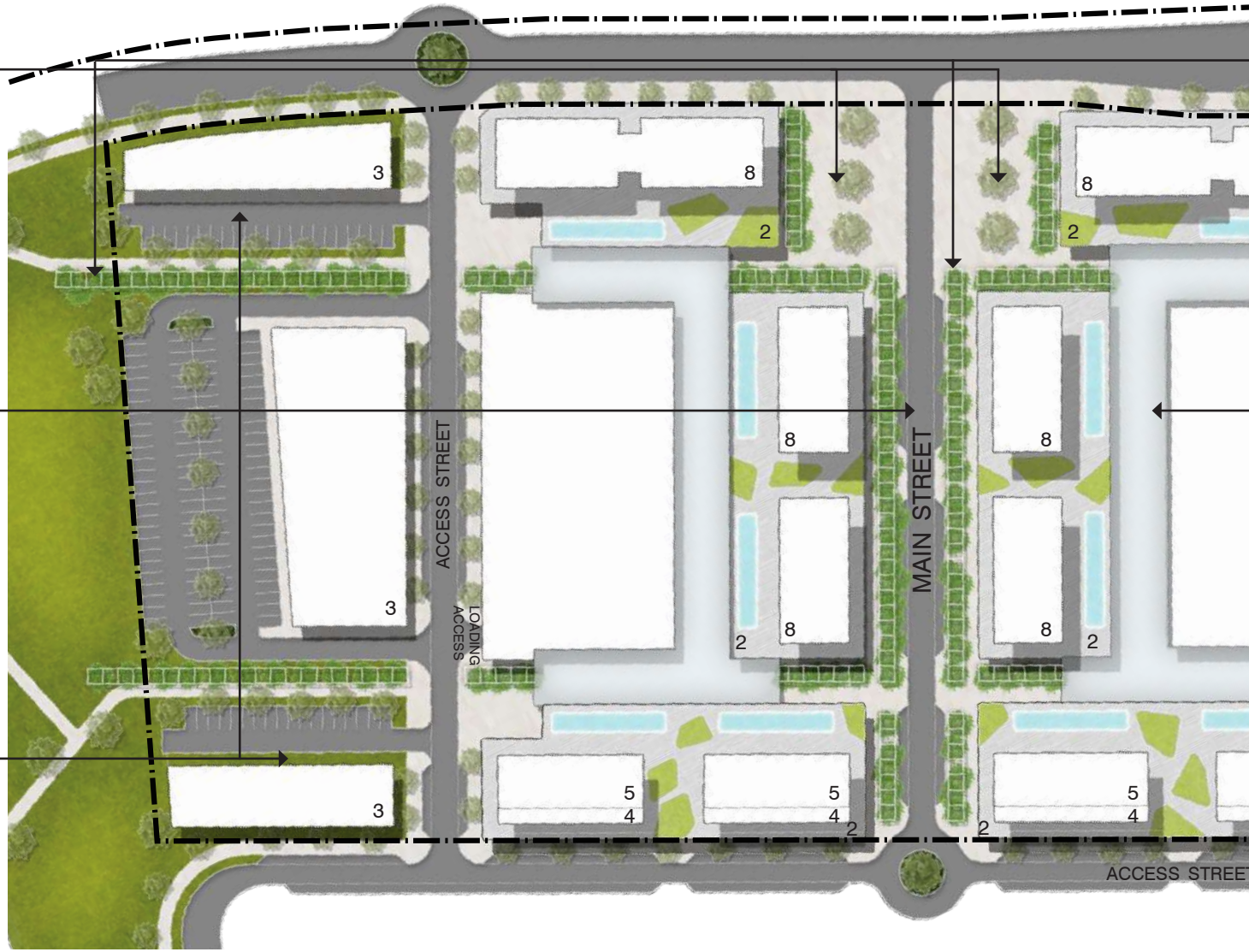
35.0m Height Blanket | 28.0m Height Blanket | 18.0m Height Blanket | 13.6m Height Blanket | Potential View Loss

6.7 Indicative Concept Plan for the Town Centre

Main Street Squares

Deep Layered Facades

Open Frame Construction



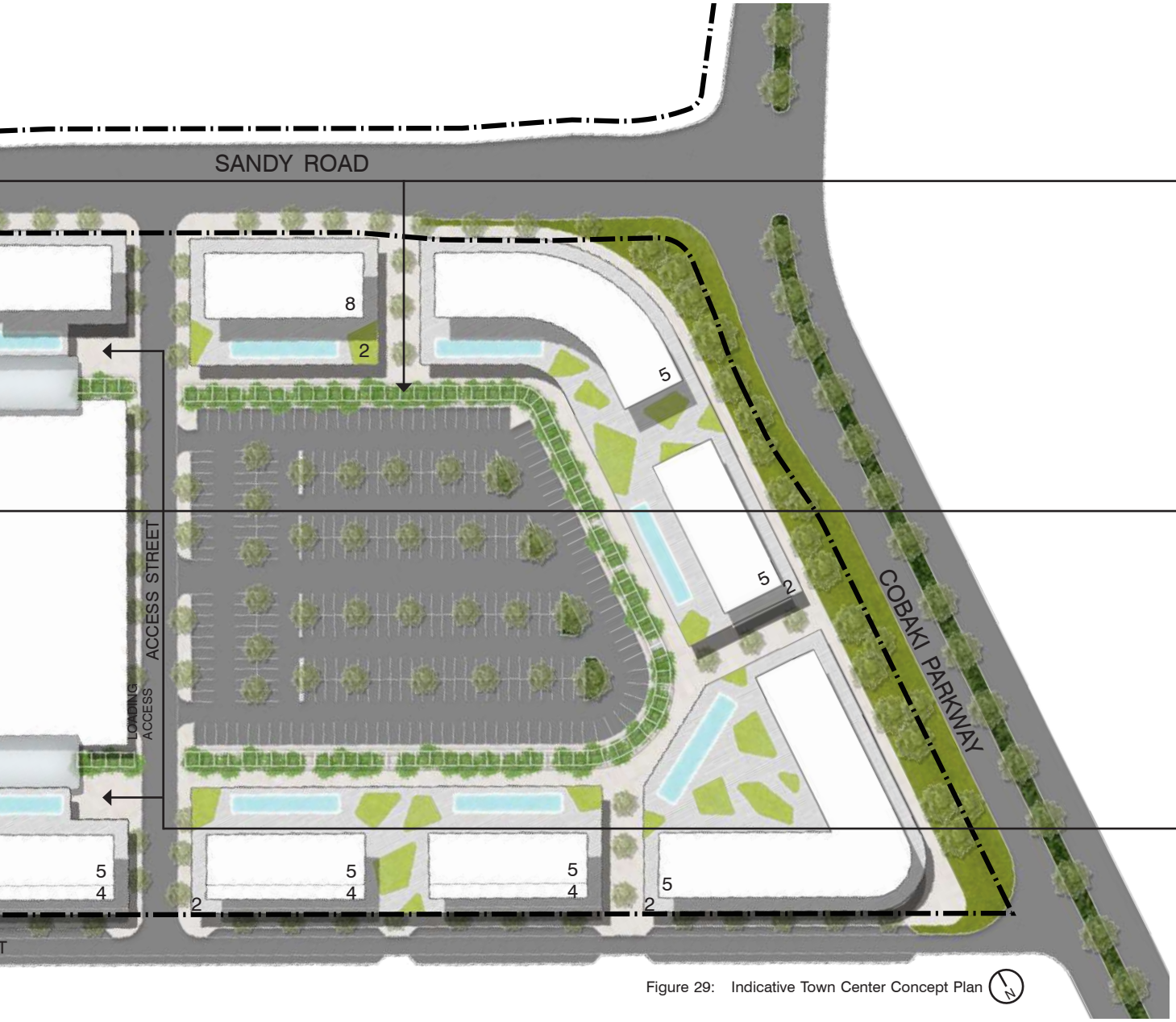


Figure 29: Indicative Town Center Concept Plan

Semi Enclosed Spaces

Semi Outdoor Spaces

Water Element at Entry Points

7.0 Conclusion

7.1 Summary

The state significant development proposed on the site, formally identified as 1111-1141 Elizabeth Drive, Cecil Park is supported on the following grounds:

The application for modification of Concept Plan Approval No. 06_0316 (MOD 4), which relates to a residential subdivision at Cobaki Estate is supported on the following grounds:

Built Form

- **Precinct 5**
  - The top of the ridge line adjacent to Precinct 5 produces a height between RL 42.0 - RL 44.0. Higher density residential development are proposed with heights up to 8 storeys (i.e. 28.0m). This height will not exceed RL 34.0m - 10.0m, which is less than the top of the ridge line.
  - Medium density residential development are proposed with heights up to 5 storeys and (i.e. 18.0m) and will not exceed RL 24.00 - 20.0m, which is less than the top of the ridge line immediately north of the subject Precinct.
  - There is capacity for built form within Precinct 5 to remain consistent with building separation requirements set out by the Apartment Design Guide under SEPP No. 65 to address visual amenity between buildings as well as density transition.
- **Precinct 15 & 17**
  - There is opportunity for built form within the precinct to explore increased heights for residential development proximate to the town centre without negating adjoining environmental protection areas.
  - The top of the ridge line adjacent to Precinct 15 is RL 48.0 - RL 74. Higher density residential development in Precinct 15 are proposed with heights up to 10 storeys (i.e. 35.0m) and will not exceed RL 52.0 - 22.0m less than the top of the ridge line. Medium density residential development (building height transition zone) are proposed with heights up to 5 storeys (upto 18.0m) and will not exceed RL 32.00.
  - The top of the ridge line adjacent to Precinct 17 is RL 36.0 - RL 48.0. Higher density residential development in Precinct 17 are proposed with heights up to 8 storeys (i.e. 28.0m) and will not exceed RL42.0 - 6.0m, which is less than the top of the ridge line. Similar to Precinct 15, medium density residential development (building height transition zone) are proposed with heights up to 5 storeys (i.e. 18.0m) and will not exceed RL 32.00.
  - There is capacity for built form within Precinct 15 & 17 to remain consistent with building separation requirements set out by the Apartment Design Guide under SEPP No. 65 to address visual amenity between buildings as well as density transition.

Environmental and Residential Amenity

- **Precinct 5**
  - Proposed amendments to increase height within Precinct 5 does not adversely impact built form in terms of overshadowing.
  - Residential development up to 8 storeys south of the ridge lines would still achieve minimum solar access requirements between 12pm and 3pm, consistent with Apartment Design Guide objectives under SEPP No. 65.
  - Indicative built form in Precinct 5 produces a transition in height from three storey building envelopes to the west, up to eight storey building envelopes to the centre of the precinct, and a transition to five storey building envelopes to the east. Proposed increase in heights within Precinct 5 do not extend beyond the adjoining ridgeline to the north of the precinct.
- **Precinct 15 & 17**
  - This modification does not amend the entirety of Precinct 15 and Precinct 17 for increased heights, any solar impacts to areas approved for 3 storey residential development would still receive adequate sunlight to maintain residential amenity.
  - The mid-winter solar access analysis study concluded that residential dwellings at the western aspect achieve 2 hrs solar access between 1pm and 3pm. This is considered an acceptable design outcome as it results in compliance with Objective 4A-1 Design Criteria 1 of the ADG under SEPP No. 65.
  - Providing higher density residential at the base of the adjacent knoll gives the opportunity of capturing the southern prevailing winds and circulating those winds throughout Precinct 15 & 17 to assist in ventilation.
  - Similar to indicative built forms in Precinct 5, proposed increase in heights within Precinct 15 and Precinct 17 do not extend beyond the adjoining ridgeline to the north of the precinct.

Accordingly, it is recommended that the Department of Planning and Environment support the proposed modification application on urban design grounds.

7.2 SEARs Requirement

4. Built Form	
The proposed siting, height, bulk and scale of the proposed building envelopes are to be informed by a detailed urban design analysis and include consideration of the wider Concept Plan area, the strategic planning framework for the site and the potential visual and amenity impacts associated with the proposal	"Detailed urban design analysis" - Section 2.0 & 3.0 "proposed siting, height" - Section 5.0
Consider various options for the siting, orientation and massing of the proposed building envelopes and consider alternative housing typologies (including low rise, medium density options) together with a comparative analysis demonstrating key strengths and weaknesses of each option	Section 5.0 & 6.7
Demonstrate the proposal would result in a high-quality urban design outcome for the site with consideration of setbacks, building articulation, building separation and any necessary amendments to the Cobaki Estate Development Code	Section 6.5
Provide details of the proposed maximum building heights across the site in storeys and in metres measured from the lowest natural ground level and, where relevant, the adjoining ridge line.	Section 6.2
6. Environmental and Residential Amenity	
Address potential solar access, wind, privacy and view loss impacts associated with the proposal	"Potential solar access" - Section 6.3 "wind" - Section 6.4 "privacy" - Section 6.5 "view loss impacts" - Section 6.6
Demonstrate future residential buildings are capable of complying with SEPP 65 - Design Quality of Residential Apartment Development, and the Apartment Design Guide, including justification for any compliance/non-compliance.	Section 6.0
7. Public Domain/Open Space	
Address changes to public domain improvements, pedestrian linkages, street activation and landscaping	Section 6.1
Demonstrate the public domain and open spaces will: • maximise permeability throughout the development; • maximise street activation within the town centre; • provide sufficient open space for the expected population; • ensure access for people with disabilities; and • minimise potential for vehicle, bicycle and pedestrian conflicts.	Section 4.2, 5, 6.1 & 6.7

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