

Landscape Character and Visual Impact Assessment

LOT 8 DP 626078, MARSHALL MOUNT NSW

prepared for:



Project Ref: 19-22
Revision D
13.02.2024

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1 Introduction

1.1 Definitions

<i>The subject lands</i>	registered Lot DP626078 (Lot 8)
<i>The subject site</i>	the proposed C4 development area within the registered Lots

1.2 Background

distinctive Living Design were engaged by the project manager and engineer, MAKER ENG on behalf of the landowner, to undertake a Landscape Character and Visual Impact Assessment (LVIA) to accompany a planning proposal. The proposal seeks a reduced minimum lot size for the C4 zoned land where large lot residential subdivision is proposed on the subject site, additionally to the earmarked R2 low density zoned land within the subject lands. The lands under review are located on Marshall Mount Road, in the suburb of Marshall Mount. The subject land comprises the entirety of one (1) registered lots being;

- Lot 8 DP 626078, 365 Marshall Mount Road, Marshal Mount, NSW ¹

The subject lands are located wholly within the Wollongong Local Government Area (LGA), however they are located on far south extremity of the LGA and share a boundary with the Shellharbour Local Government Area (LGA). The subject lands measure a combined total area of approximately 37Ha, whilst the subject site has a development footprint of approximately 14Ha. Under the 2009 Wollongong Local Environment Plan (LEP), the subject lands have multiple land zonings applied including (R2) Low Density Residential, (C2) Environmental Conservation, (C3) Environmental Management, and (C4) Environmental Living ².

The subject lands sit on undulating terrain, steep in parts, rural pastoral landscape that has been cleared in parts with evidence of previous livestock grazing. The lands are vegetated in parts with endemic dry sclerophyll woodland trees. Built structures are limited to single residential dwellings on each registered lot. Most notably the subject lands are located within a recognised scenic rural coastal landscape bounded by the Illawarra Escarpment to the west and Pacific Ocean to the east.

This LVIA has been prepared by Mark Santangelo (AILA Registered Landscape Architect #1951) primary author, and endorsed by Dean Boone (Expert Witness & Director) secondary author, of distinctive Living Design.

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1. Spatial Information Exchange NSW - July 2022
2. Wollongong City Council, 2009, Local Environmental Plan (LEP)

1.3 Purpose of the Report

The aim of this report is to analyse the landscape visual character, conduct a visual sensitivity assessment, and test the visual impacts of a modified development outcome as a result of a reduced minimum lot size from 4,999 sqm (i.e 0.5 ha) to 999 sqm (i.e 0.1 ha) on C4 zoned lands. The subject lots are proposed large lot environmental living allotments at 999 sqm or greater, and provide context to the broader regional scenic Landscape. The existing minimum lot size under this zoning is 4,999 sqm where permissible individual dwellings present a character similar to that of the proposed minimum lot size when seen in isolation. *Specifically, the report will;*

- Map the existing landscape, visual and scenic qualities of the site and surrounding area;
- Assess the subject lands in relation to the landscape values and landscape visual connections to the immediate and broader landscape;
- Provide a landscape analysis and visual sensitivity survey that will inform a planning proposal application;
- Provide generalised visual impact ratings of the proposed development;
- Analyse those visual impacts in the context of the proposed change in minimum lot size and that can be reasonably expected;
- Identify areas which are considered suitable for the proposed change of minimum lot size from a scenic and landscape point of view;
- Provide any mitigation measures on how the proposed development could be improved from a visual and landscape perspective;
- Provide detailed recommendations for mitigation applications.

1.4 Regional & Local Context

The subject lands are located entirely within the Wollongong LGA, although they do share a boundary with the Shellharbour LGA to the south. Locally, the subject lands are 1.0km west of Yallah and 1.5km north of the emerging Calderwood urban expansion centre. The lands are located within a primarily rural local setting. Marshall Mount creek directly to the south provides an east-west riparian arm that meets the north-south Macquarie Rivulet and Princess Motorway to the east. Calderwood Road to south also runs east-west parallel to the creekline as a sub-arterial transit road. Marshall Mount Road directly adjoins the subject lands to the north. The State Heritage listed Marshall Mount Homestead is in close proximity, as is the Local Heritage listed Public School and Hall sites, both situated on Marshall Mount Road to the west of the subject lands. Regionally, the site is within a 5km radius encompassing the Illawarra Escarpment, Avondale, Haywards Bay, Penrose, the Princess Motorway, Shellharbour Airport, Lake Illawarra, Albion Park, and Calderwood, extending in a directional radius from east to south. The regionally significant, and visually sensitive, Illawarra Escarpment sits to the north-west, while the secondary escarpment that divides the coastal landscape from the highlands to the west, continues south-west of the subject lands defined by the Knights Hill and Barren Grounds Plateau.

See Figure 1.1 Location and Regional Context Map

1.5 The Illawarra Escarpment

The Illawarra Escarpment Strategic Management Plan 2015, provides a reference document to understanding the visual scenic amenity of the escarpment within the coastal landscape setting and urban development of the Wollongong region from Stanwell to Marshall Mount. The escarpment is effectively a topographical divide between the low coastal plain landscape (including the Wollongong and Shellharbour regions) and the high plateaus of the Illawarra and Southern Highlands. This divide to the west of the subject lands is defined by the Knights Hill and Barren Grounds Plateau and the immediate backdrop it provides to the Shellharbour from Calderwood to Dunmore (including Albion Park in the context of this report). It identifies that; *“The visual quality of the escarpment is generally regarded as exceptional or very high (HLA-Envirosciences, 2007). Scenic Values to be Preserved or Enhanced; Scenic rural interface between the vegetated escarpment and urban development.”* (extracts only) ³.

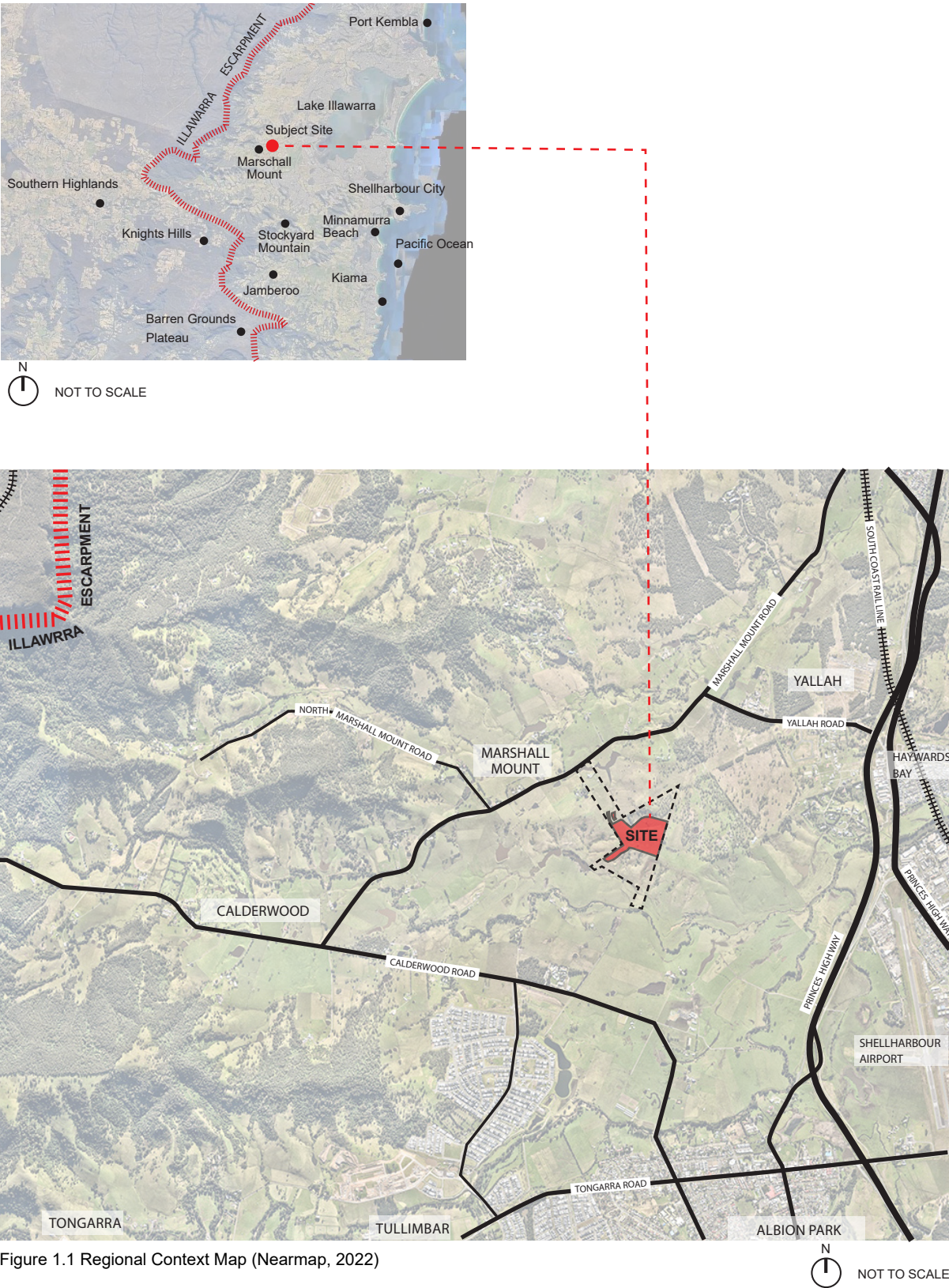


Figure 1.1 Regional Context Map (Nearmap, 2022)

3. Illawarra Escarpment Strategic Management Plan, (2015)

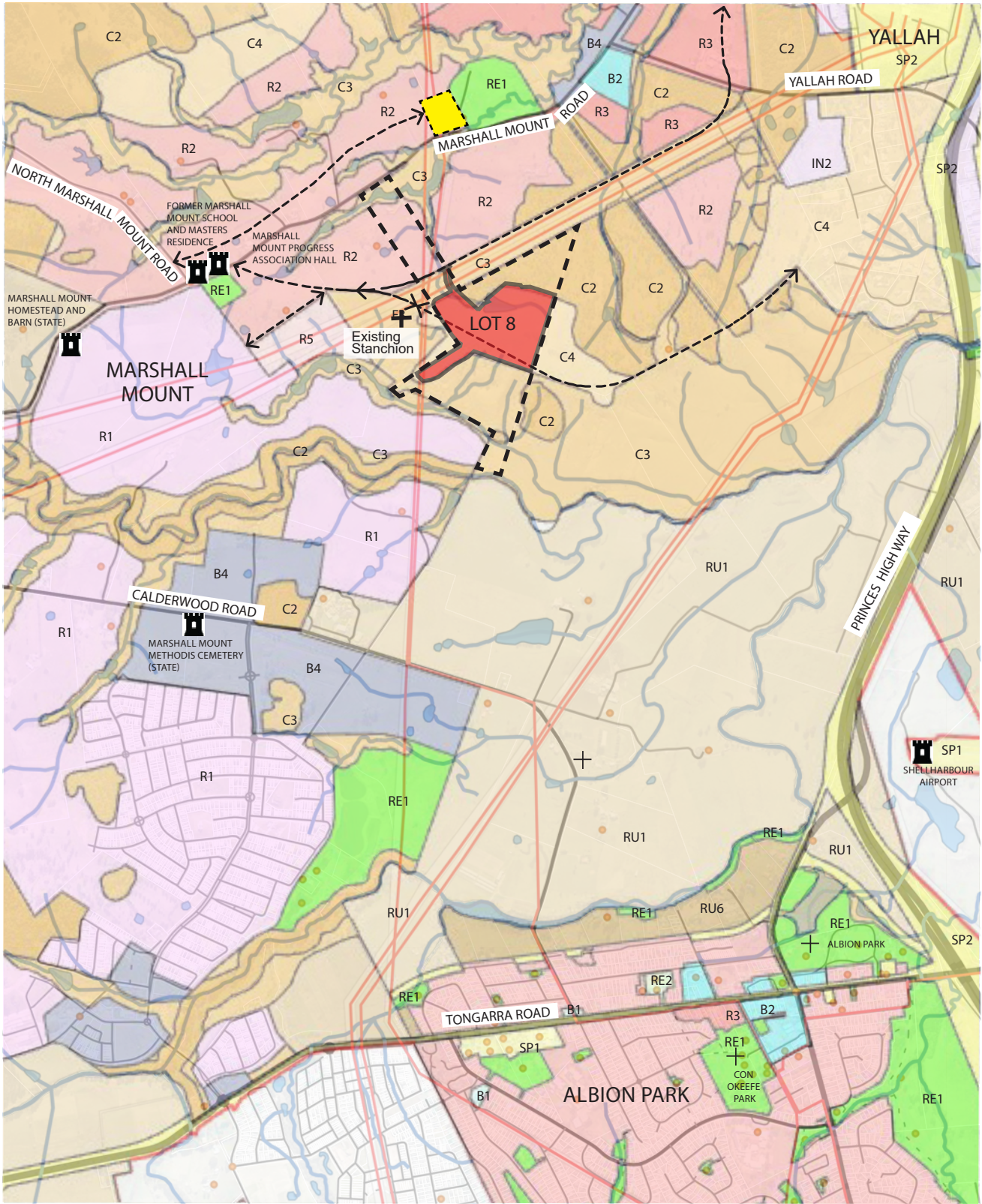


Figure 1.2 Local Context Map & Zoning Map (Nearmap, viewed September, 2022)
Source: Adapted from Wollongong City council LEP 2009 & NSW E-Planning Portal

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1.6 Existing Zoning and Draft Structure Plan

Under the *Wollongong Local Environment Plan 2009* zoning of the subject lands is (R2) Low Density Residential, (C2) Environmental Conservation, (C3) Environmental Management, and (C4) Environmental Living². In November 2013, Wollongong Council released their draft Structure Plan for the Yallah-Marshall Mount urban release area. The area captures the subject lands within its extents, and maps out a strategic planning framework and implementation plan for a new and emerging suburban / semi-urban community. This recognises the need to consider this and assess the subject site or potential modifications on a merits basis along with further planning studies and assessment, including this Landscape Character and Visual and Impact Assessment (LVIA). The LVIA is intended to support a planning proposal for the amendment to the minimum lot size map for the C4 zoned portion of the site only. A future DA process will determine the number of lots which can be delivered within this area, however the concept subdivision plan provided for information indicates that the amendment to the minimum lot size map would facilitate the delivery of approximately 72 large residential lots;

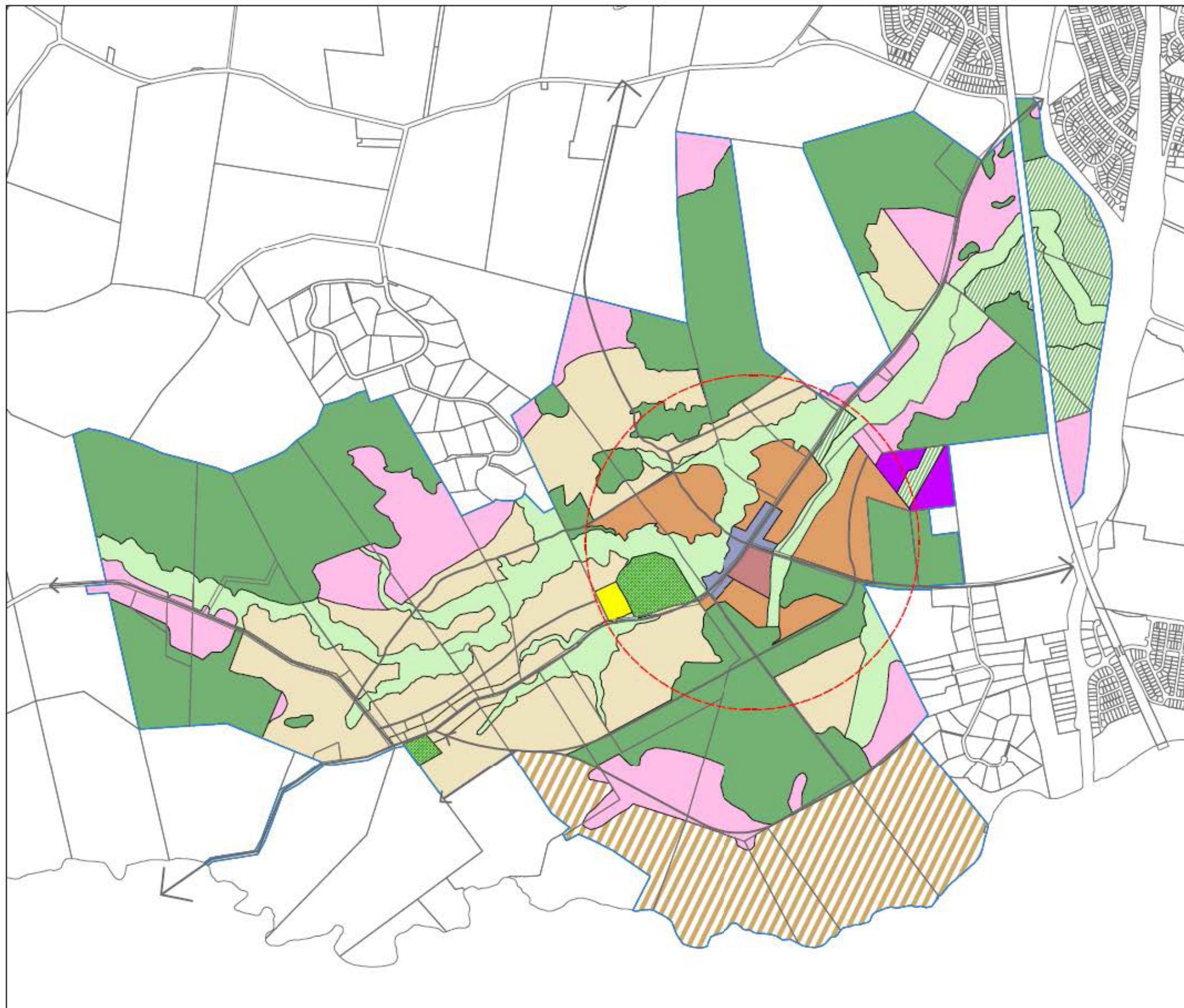
- 61 allotments approximately 0.1 hectare in size.
- 8 allotments approximately 0.15 to 0.2 hectares in size.
- 3 allotments approximately 0.3 hectares in size.

These allotments will allow a building envelope for each dwelling house.

See Figure 1.2 Local Context Map & Zoning Map
See Figure 1.3 Yallah-Marshall Mount Draft Structure Plan
See Figure 1.4 Site Zoning Map

LEGEND

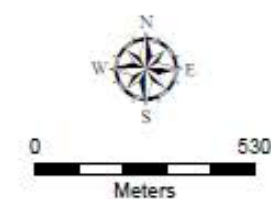
	THE SUBJECT SITES		B1 NEIGHBOURHOOD CENTRE (Wollongong LEP 2009)		E3 ENVIRONMENTAL MANAGEMENT (Wollongong LEP 2009)
	THE SUBJECT LANDS		B2 LOCAL CENTRE (Wollongong LEP 2009)		E4 ENVIRONMENTAL LIVING (Wollongong LEP 2009)
	HYDRO AREA		B4 MIXED USE (Wollongong LEP 2009)		IN1 GENERAL INDUSTRIAL (Wollongong LEP 2009)
	HYDRO LINE		R1 GENERAL RESIDENTIAL (Wollongong LEP 2009)		IN2 LIGHT INDUSTRIAL (Wollongong LEP 2009)
	PLACES OF INTEREST		R2 LOW DENSITY RESIDENTIAL (Wollongong LEP 2009)		RU1 PRIMARY PRODUCTION (Wollongong LEP 2009)
	ROAD SEGMENT HIERARCHY		R3 MEDIUM DENSITY RESIDENTIAL (Wollongong LEP 2009)		RU2 RURAL LANDSCAPE (Wollongong LEP 2009)
	ELECTRICITY TRANSMISSION LINE		R5 LARGE LOT RESIDENTIAL (Wollongong LEP 2009)		RU6 TRANSITION (Wollongong LEP 2009)
	EASEMENT		RE1 PUBLIC RECREATION (Wollongong LEP 2009)		SP1 SPECIAL ACTIVITIES (Wollongong LEP 2009)
	CADASTRAL		RE2 PRIVATE RECREATION (Wollongong LEP 2009)		SP2 INFRASTRUCTURE (Wollongong LEP 2009)
	HERITAGE LISTED		E2 ENVIRONMENTAL CONSERVATION (Wollongong LEP 2009)		DEFERRED MATTER (Wollongong LEP 2009)
	LANDMARKS				
	PROPOSED ROAD LAYOUT (Draft Structure Plan - Planning for Yallah-Marshall Moun Urban Release Area, 2013)				
	PROPOSED SCHOOL (Draft Structure Plan - Planning for Yallah-Marshall Moun Urban Release Area, 2013)				



Draft Structure Plan (October 2014)

Legend

- 800m Radius
- Proposed Road Layout
- WD Stage5 Boundary
- Employment
- School
- Mixed Use
- Conservation
- Low Density Residential
- Medium Density Residential
- Recreation
- Rural
- Rural Residential
- Semi Rural
- Town Centre
- Riparian Conservation



Drawn By: J Lewis

Date: 03 October 2014

File ref: Draft DSP 2014 03.10.14.mxd

1.7 Calderwood Urban Development Project

Although located in the Wollongong Council LGA, the subject lands fall directly adjacent to the Calderwood Urban Development Project area recognised in 2011 by the NSW State Government to be a *State Significant Site* within the Shellharbour LGA. As a result, this area is excluded from the Shellharbour Local Environmental Plan (LEP) 2013 and is now covered by *State Environmental Planning Policy (Precincts-Regional) 2021*. Again, this recognises the need to consider this and assess the subject site or potential planning modifications on a merits basis along with further planning studies and assessment, including this Landscape Character and Visual and Impact Assessment. From a visual perspective, the subject site specifically is positioned and closely relates topographically (and therefore sightlines) to the Calderwood Valley, its 'Landscape Character Areas', and 'Residential Character Zones', as identified in the *Calderwood Valley Landscape Masterplan 2019*. Zoning, Building heights, and site specific control identified in the SEPP also need consideration due to the visual connectivity. The area south of the ridge on the subject site to the Marshall Mount riparian corridor on lower lying lands is subject to the future development of the Calderwood Valley, and will result in visual impacts that have a direct relationship to the those determined in this report, and should be considered in such a way.

See Figure 1.5 Calderwood Valley & Site Location Map
See Figure 1.6 LGA Boundaries & Site Map
See Figure 1.7 Landscape Character Areas Map
See Figure 18 Residential Character Zones

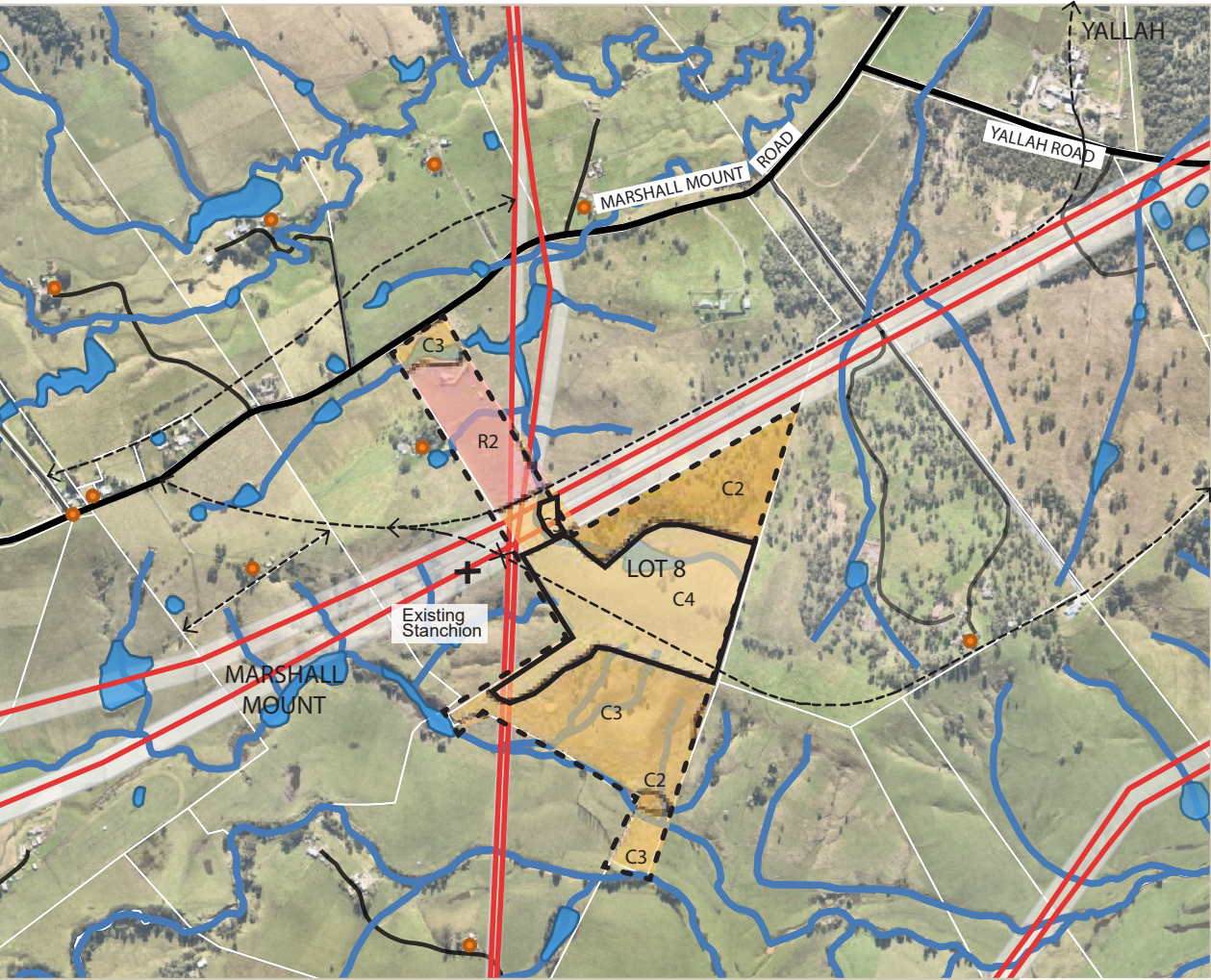
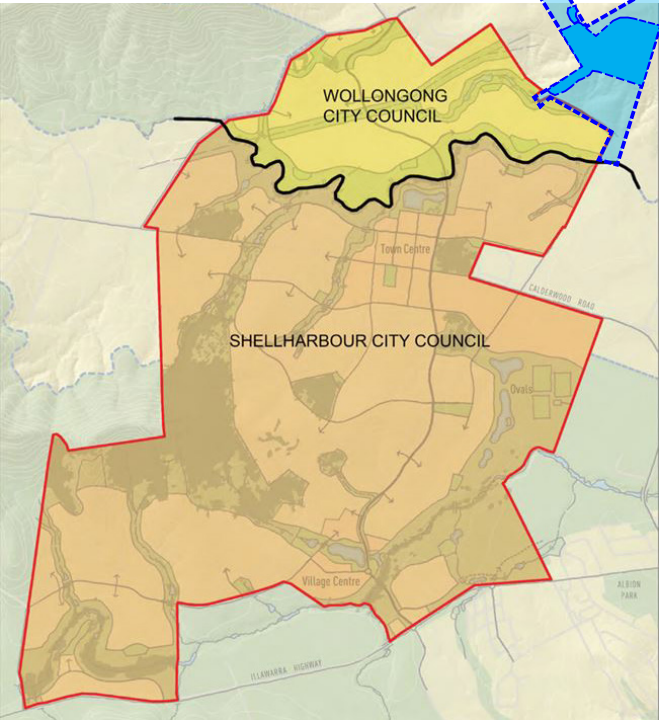
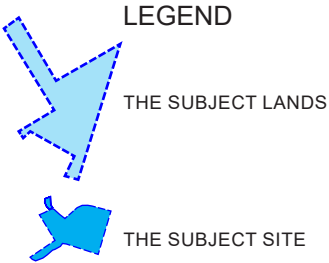
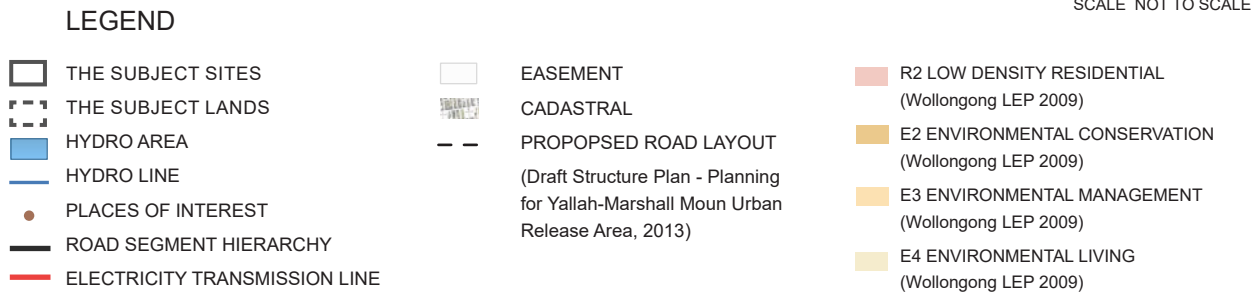


Figure 1.4 Site Zoning Map (Nearmap, viewed September, 2022)
Source: Adapted from Wollongong City council LEP 2009 & NSW E-Planning Portal



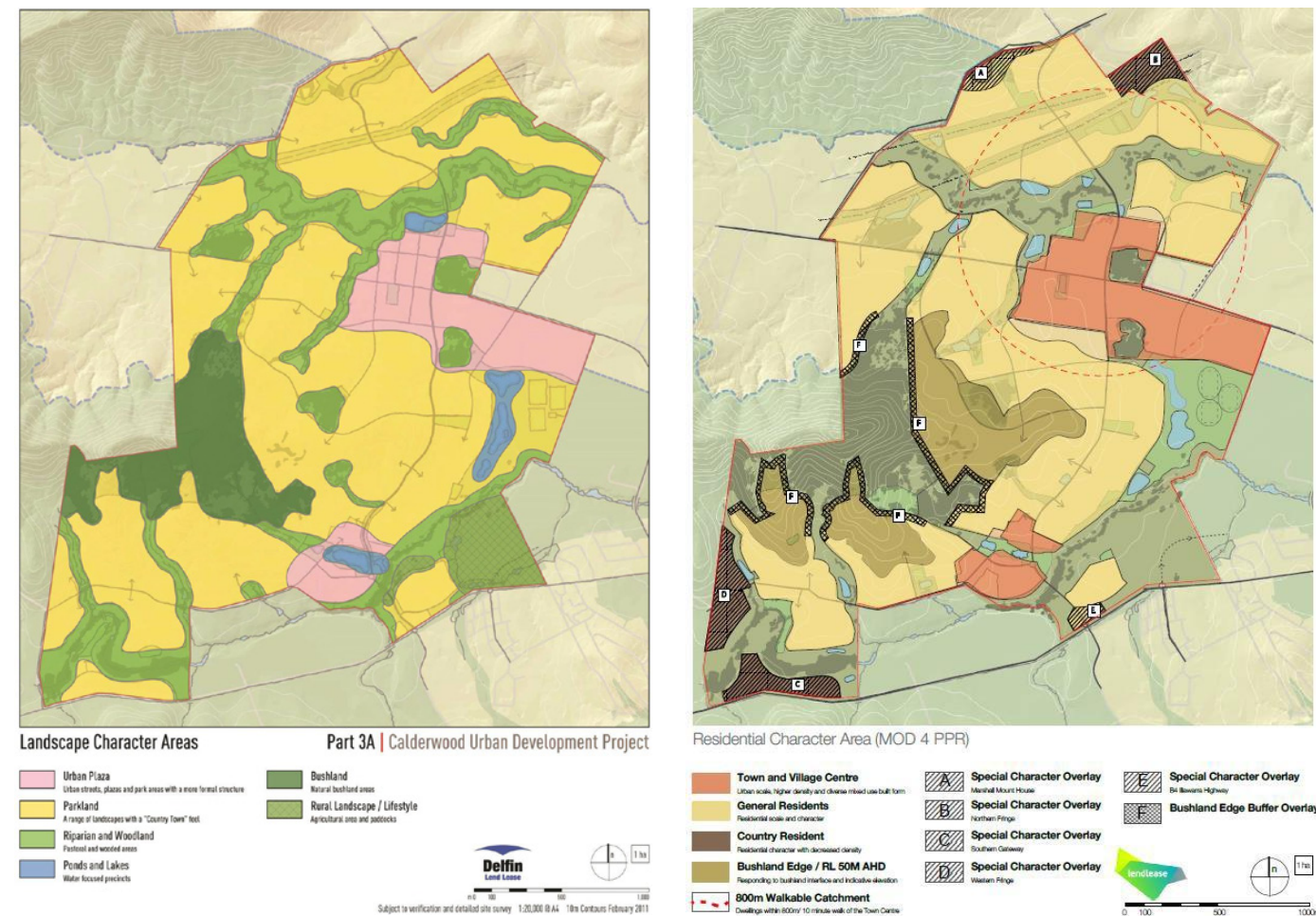


Figure 1.7 Landscape Character Areas Map
Source: Calderwood Urban Development Project 2021

Figure 1.8 Residential Character Zones
Source: Calderwood Urban Development Project 2021

1.8 Landscape and Visual Impact Objectives

- Objective;
- To identify, assess and document the preliminary visual and landscape qualities of the land within the study area;
 - To ensure any proposed modified development of the land adequately takes into account localised and regional visual impacts;
 - To provide the framework for future landscape management plans that may be required as a result of the outcomes of this study.

1.9 Methodology

The methodology employed to undertake this landscape and visual assessment involved:

1.9.1 Landscape Analysis

- Review of available studies of other areas related to the site
- Review of available Wollongong City Council documents relevant to the subject land
- Review of available Shellharbour City Council documents relevant to the subject land
- Review climate
- Review of topographical maps and aerial photography;
- Review vegetation, soils, and geology maps
- Review fire and flood prone land maps
- Review any other maps relative to the landscape by any relevant authority or government department, local or state
- Prepare site analysis diagrams including topography, hydrology, aspect, slope, vegetation, and soils & geology, and landscape character
- Analysis the sites existing character

1.9.2 Visual Survey and Impact Assessment

- Detail visual site survey and photography of the subject land from various viewpoints surrounding the subject lands
- Identify and map prominent landscape elements
- Examine photographs and plot visibility of the site from the defined viewpoints
- Assessment of each view point to determine the visual sensitivity of viewpoint
- Assessment of each view point to determine the visual impact of the proposed development or change in development

1.9.3 Conclusions

- Define all findings that are demonstrated by the Landscape and Visual Impact Assessment process. Provide conclusions for the proposed development.

1.9.4 Recommendations

- Provide any mitigation measures to ensure the landscape and visual integrity of the subject lands and greater regional environment are maintained in the context of the proposed development and/or proposed development planning modifications.

2 Landscape Analysis

2.1 Definitions

<i>The subject lands</i>	registered Lot DP626078 (Lot 8)
<i>The subject site</i>	the proposed C4 development area within the registered Lots

2.2 Site Context

The subject lands are sited on the southern-most fringe of the Wollongong LGA and shares a boundary with the Shellharbour LGA to the south, however this is chiefly geographical when analysing the subject site, as the primary aspect, orientation, and contextual relationship is towards the Shellharbour LGA to the south. The lands sit within the Yallah- Marshall Mount urban expansion area, but also the Calderwood Valley urban development area, currently rural landscape with no notable developed lands other than a farm dwelling, rural sheds, and farming infrastructure. The landscape character of these lands is rural consisting of cleared rolling pastures, and undisturbed natural vegetation usually on the stepper slopes and creek riparian zones. The 75 Ha subject lands are irregular shaped, with the 34 Ha subject site sitting centrally within that as shown on *Figure 1.4*, and coincides with the topographical ridge and gully that defines a ‘valley’ with a general northerly aspect.

2.3 Climate

The climate at Marshall Mount consists of mild to warm summers with a mean maximum temperature of 27.0 degrees Celsius in January and mean minimum temperature of 15.5 degrees Celsius in December. Winters are mild with a mean maximum of 17.8 degrees Celsius in July and mean minimum of 6.3 degrees Celsius in July. The annual mean rainfall is moderate at 911.7mm with the driest months being July to September with monthly rainfall of about 51mm and the highest rainfall occurring in February with 142mm on average in that month ⁴.

2.4 Topography and Elevation

The subject site has a multi-faceted topography consisting of gently to moderately rolling hills and slopes, steep in parts. It generally falls in elevation from north-east to south-west with one pronounced ridgeline protruding across the landscape in an irregular path, and is the dominant ridgeline in the immediate context both on the subject lands and adjoining properties. A series of knolls dot the ridgeline as topographic ‘highpoints’. A topographic low point corresponds to the westernmost portion of the subject lands where it meets the creek at approximately 12m AHD. Mapped contours indicate elevation ranges between 70m AHD and 12m AHD. The subject land is undulating in nature providing balanced and well dispersed drainage lines running perpendicular to the ridge. All lands south of the dominant ridge are ascending slopes that drop in elevation to meet the creekline ‘flats’ that characterise the Marshall Mount Creek natural drainage valley to the south. No major earthworks are apparent indicating natural virgin soil profiles and contouring. The only evidence of topographic disturbance is the shaping of the farm dam centrally on the subject lands at approximately 43m AHD.

See Figure 2.1 Topography, Elevation & Hydrology Analysis Diagram

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2.5 Hydrology

The subject lands have one defined drainage line intersecting the site, and higher in elevation, that aligns on the constructed farm dam. This is a drainage line from a localised catchment, with no riparian value mapped or otherwise. The Marshall Mount Creek catchment drains all land south of the main ridgeline and discharges into Marshall Mount Creek, a 1st order (Strahler System) riparian corridor and adjoins the subject in at the south-western extremity. This catchment is primary, accounting for two-thirds of the total subject land area. The Duck Creeks catchment captures all stormwaters north of the dominant ridge and drains towards Marshall Mount Road and discharging into Ducks Creek, a 1st order (Strahler System) riparian corridor. This catchment is secondary, accounting for one-third of the subject land area. The undulating nature provides balanced and well dispersed drainage lines running perpendicular to the ridge.

See Figure 2.1 Topography, Elevation & Hydrology Analysis Diagram

2.6 Aspect and Slope

As identified in section 2.2 Topography and Elevation, the subject lands are undulating rolling hills and slopes with a defined irregular protruding ridgeline, knolls, and minor gullies running perpendicular to this. Consequently, this translates into multi-faceted aspects without a dominant directional bearing. The subject site however a predominantly southerly (southeast tot south-west) aspect overlooking the valley & creek flats below. The site slopes vary considerably, with anything between 5 and 45% with a small percentage of localised slopes in excess of 50%, and a small percentage shallower than 5%. The steeper lands associated with the ‘slopes’ corresponds generally with the descending landscape towards to the creek flats and within the E3 (Environmental Management) zoned land. The far majority of the subject site proposed development area is within a gentle slope range of between 5 and 15%.

See Figure 2.2 Slope Analysis Diagram
See Figure 2.3 Aspect Analysis Diagram

2.7 Vegetation

The site is largely cleared agricultural land (approx. 70%) on shallower sloped lands and those zoned R2, C3, and C4. A small number of solitary endemic trees are scattered across the subject lands in the cleared paddocks. Vegetated land (approx. 30%) observed as woodland trees exists primarily on Lot 5, and to a lesser extent Lot 8 in areas highest in elevation primarily on those zoned E2 (Environmental Protection). Vegetation maps reveal these areas within the subject lands have been mapped as;

- South Coast Lowland Swamp Woodland
- South Coast Grassy Woodland
- Subtropical Dry Rainforest

Formalised identification, significance, and health of any endemic vegetation within the subject site is however for ecological assessment by a qualified Ecologist. No planted exotic species were observed on site nor any problematic weed infestations⁸. The subject site specifically has only solitary trees in cleared pasture with no mapped vegetation communities within.

See Figure 2.4 Vegetation Analysis Diagram

2.8 Soils and Geology

The underlying geology is both Sandstone and Latite. Maps indicate the subject lands are entirely within the group of Permian sedimentary (Ps) rocks and minor volcanic rocks, including sandstone, conglomerate, shale and coal measures (Sydney Basin). Soil maps indicate the subjects is split between 2 classifications being *Bombo* on the lower elevation steeper land and correlating with the topographical ‘shelf’ and those of the *Shellharbour* on the higher / shallower sloped land. Soils of *Bombo (bo) Goup* have generally; moderate fertility, shallow (<50cm), high erodibility, hardsetting, stable, sodicity, low permeability, and low limitations for urban development⁸. Soils of the *Shellharbour (sh)Group* have generally; moderate fertility, deep (>120cm), high erodibility, hardsetting, stable, sodicity, low permeability, and low limitations for urban development⁸.

See Figure 2.5 Geology Analysis Diagram
See Figure 2.6 Soils Analysis Diagram

2.9 Easements, Services, and Restrictions

Electricity Transmission Lines
Energy providers manages several easements for above ground transmission lines (poles and wires) in the central northern portion of the subject lands (Lot 8) as follows;

- Easement for transmission line 60.96 wide – High voltage line / Stanchions
- Easement for transmission line 30.48 wide – Low voltage line / Poles
- Easement for electricity purposes 30.48 wide – Low voltage line / Poles

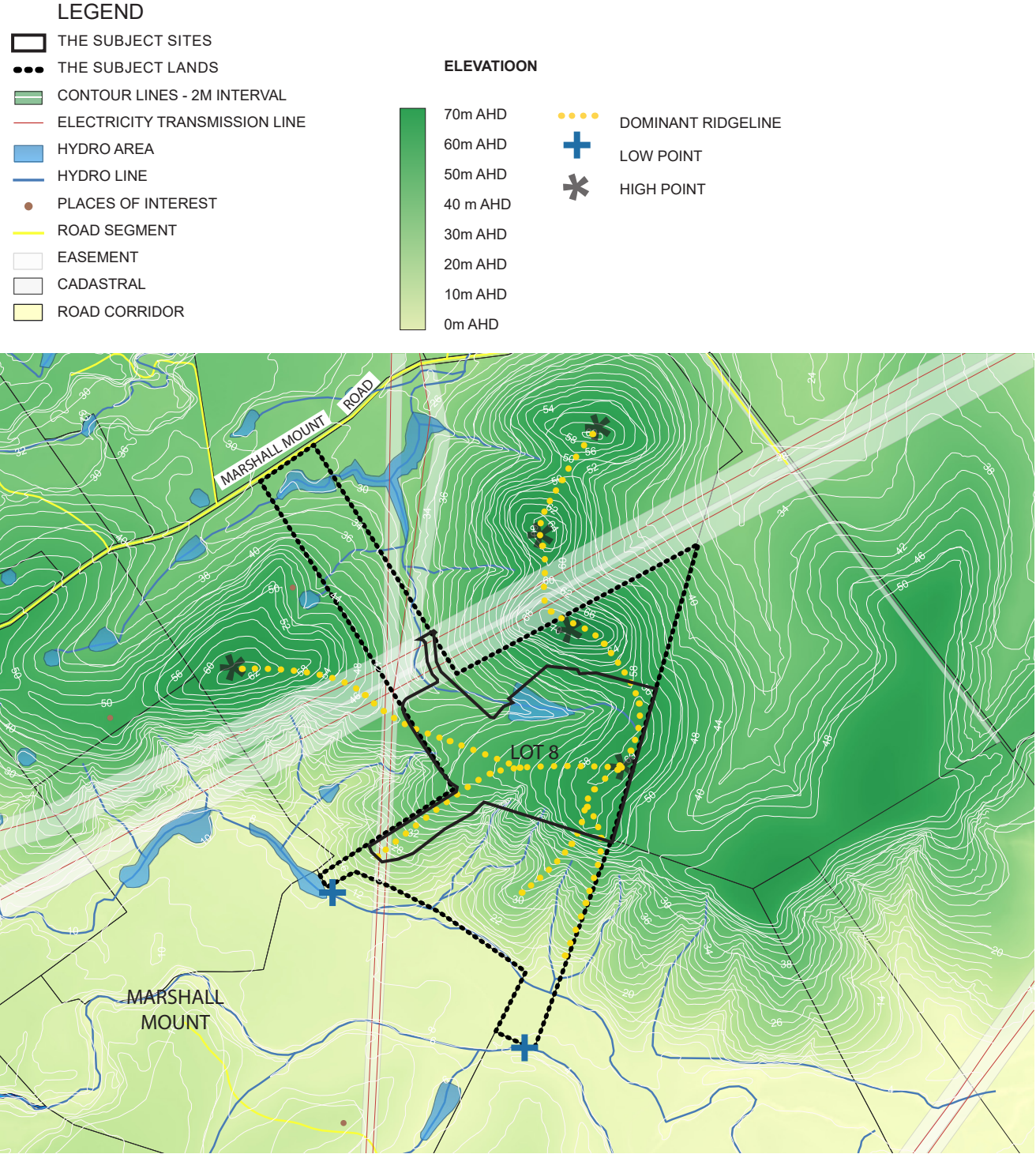


Figure 2.1 Topography, Elevation & Hydrology Analysis Diagram
(Cadastral and Contour, SIX Map viewed 29 June, 2022)
Adapted from Elevation and Depth - Foundation Spatial Data

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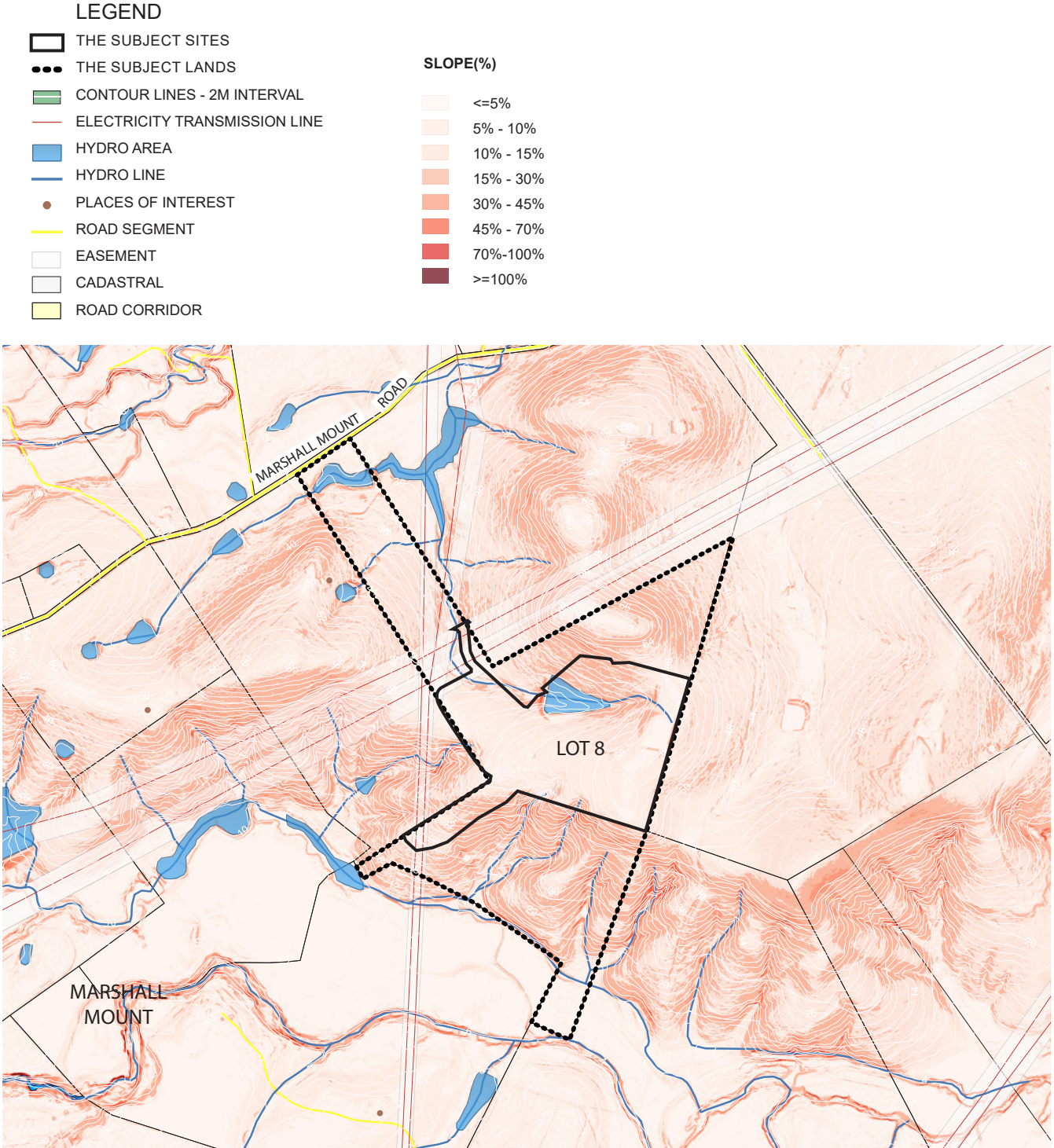


Figure 2.2 Slope Analysis Diagram
(Cadastral and Contour, SIX Map viewed 29 June, 2022)
Adapted from Elevation and Depth - Foundation Spatial Data

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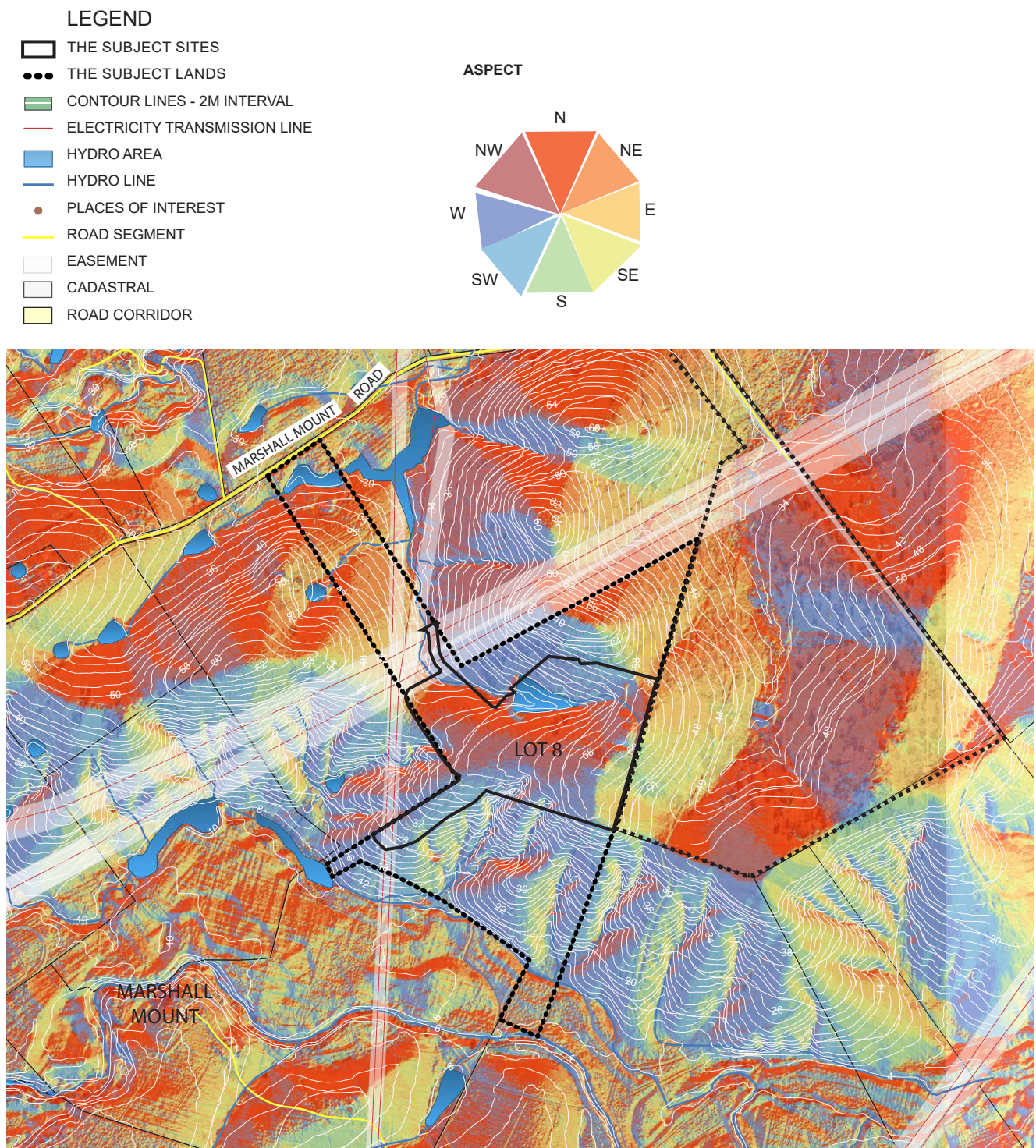


Figure 2.3 Aspect Analysis Diagram
(Cadastral and Contour, SIX Map viewed 29 June, 2022)
Adapted from Elevation and Depth - Foundation Spatial Data

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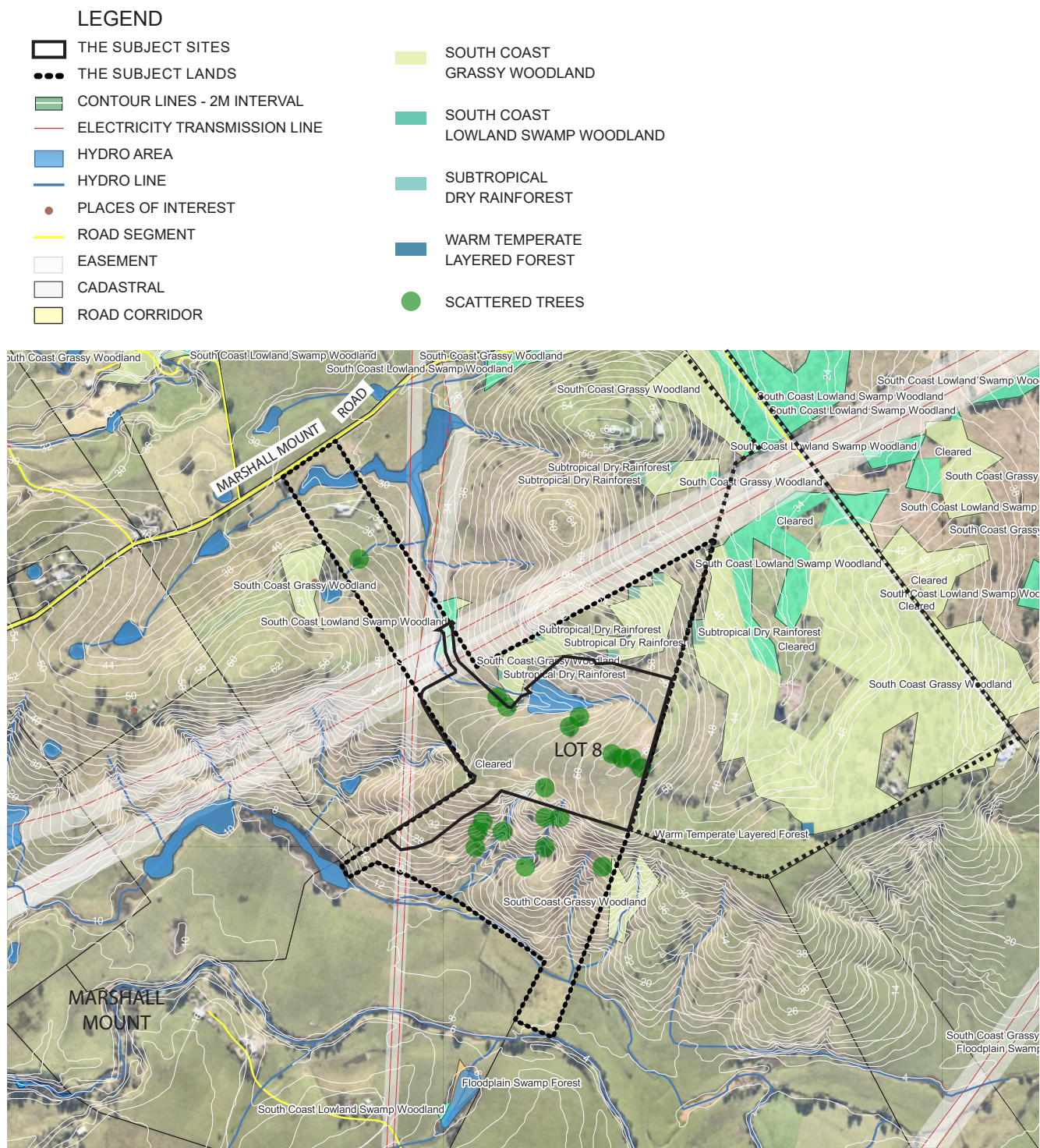


Figure 2.4 Vegetation Analysis Diagram
(Nearmap, viewed 29 June, 2022)
Adapted from Southeast NSW Native Vegetation Classification and Mapping - SCIVI. VIS_ID 2230, 2010

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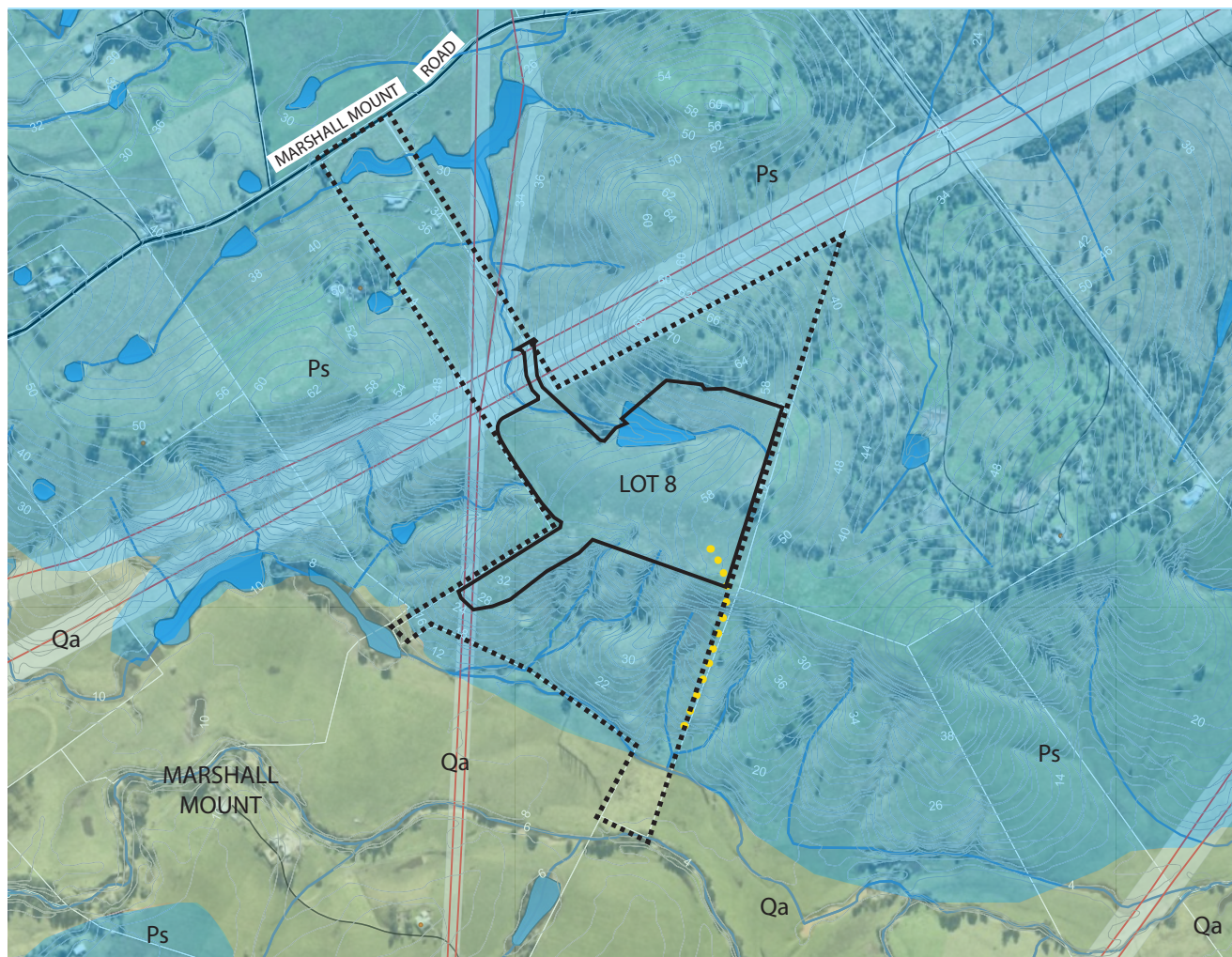
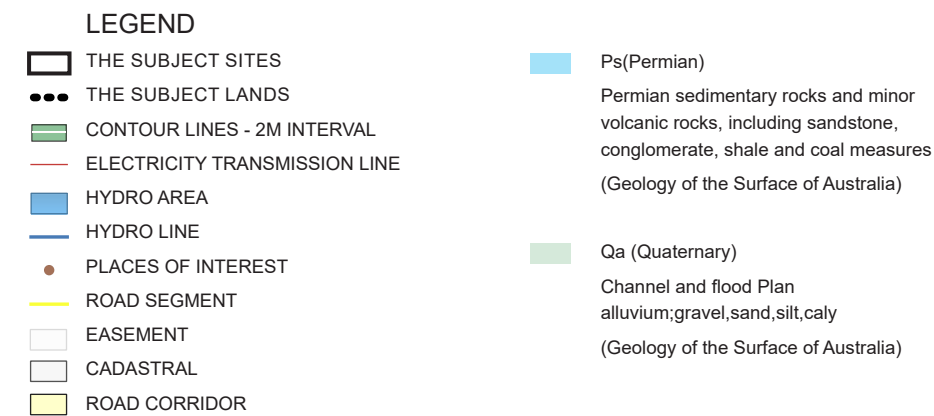


Figure 2.5 Geology Analysis Diagram (Nearmap, viewed 29 June, 2022)
(Cadastral and Contour, SIX Map viewed 29 June, 2022)
Adapted from Geology of the Surface of Australia - Geoscience Australia Portal

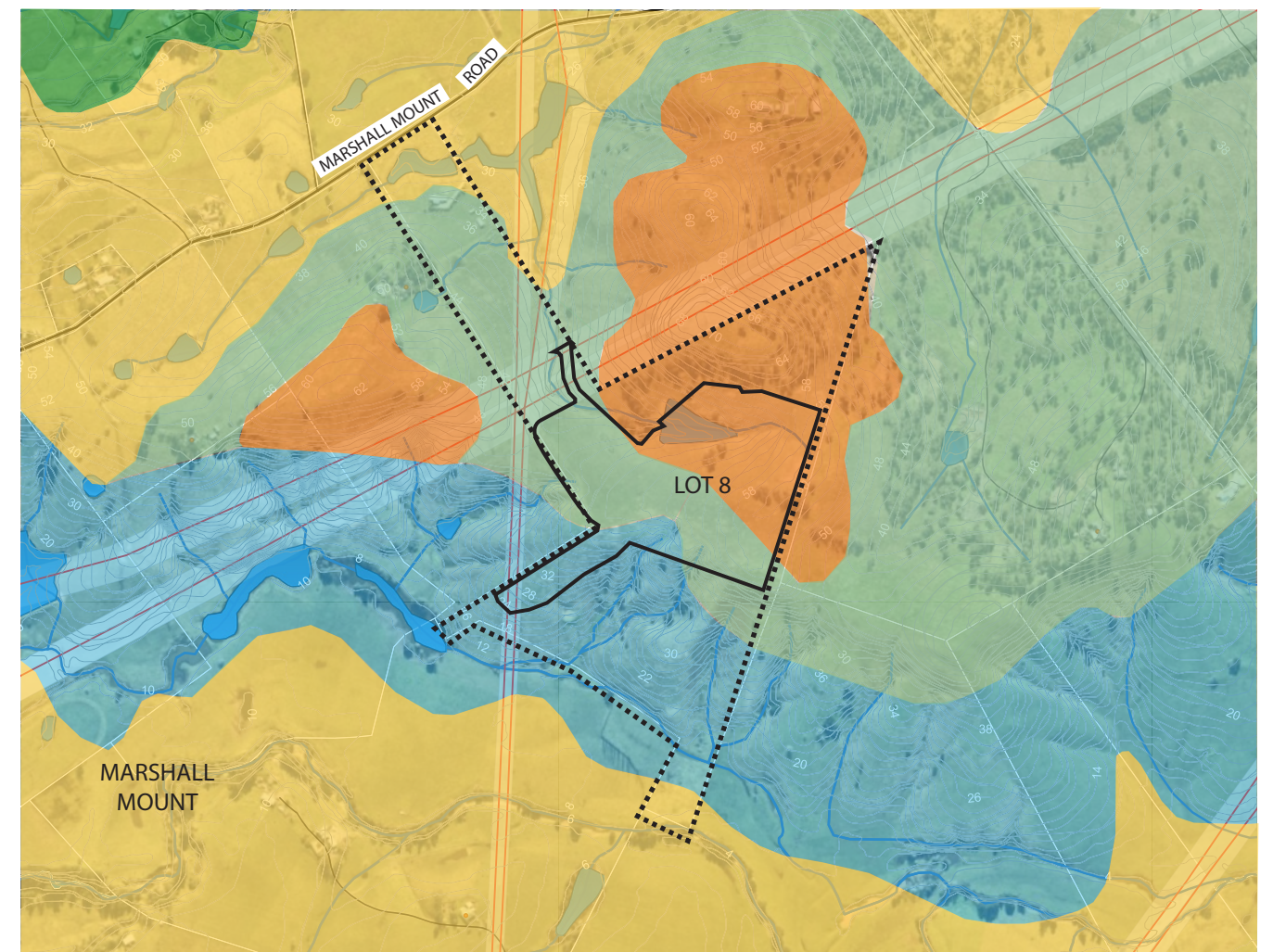
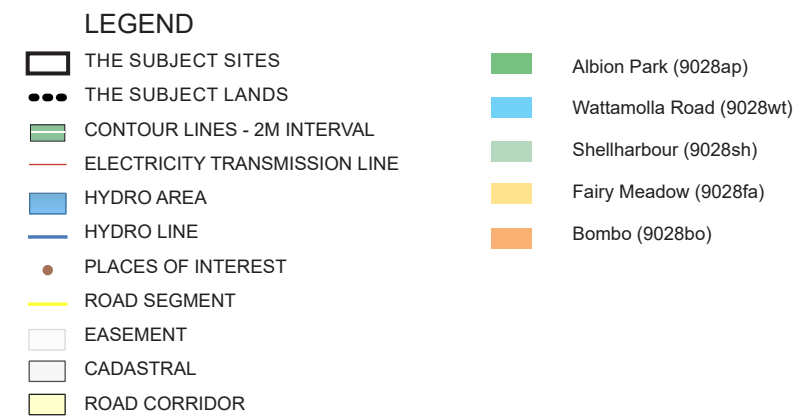


Figure 2.6 Soils Analysis Diagram (Nearmap, viewed 29 June, 2022)
(Cadastral and Contour, SIX Map viewed 29 June, 2022)
Adapted from NSW Soil and Land Information - eSPADE

2.10The Proposed Development

As a means to implement the planning policy set out in the draft Structure Plan for the Yallah- Marshall Mount urban release area, the proposal seeks to amend the minimum lot size of the C4 zoned portion of the subject site from 4,999sqm to 999sqm. Lands zoned R2 along the Marshall Mount Road corridor is proposed to be developed accordingly via a separate NP and DA process, while providing an access road west thought the electrical easement of an anticipated Bypass Road servicing a road network of large lot residential within the C4 zoned lands on Lot 8. These are the subject lots sought for minimum lot size reduction under the planning

proposal and basis for this visual impact assessment. An approximate total of 72 large residential allotments greater than 999 sqm in size, on the C4 zoned lands are proposed, serviced by a series of internal local roads. The development provisions for the required OSD water quality basin/s identified by the project engineer. Minimal vegetation clearing is expected under the current scheme when overlaid on mapped vegetation.

See Figure 2.7 The Proposed Development Plan

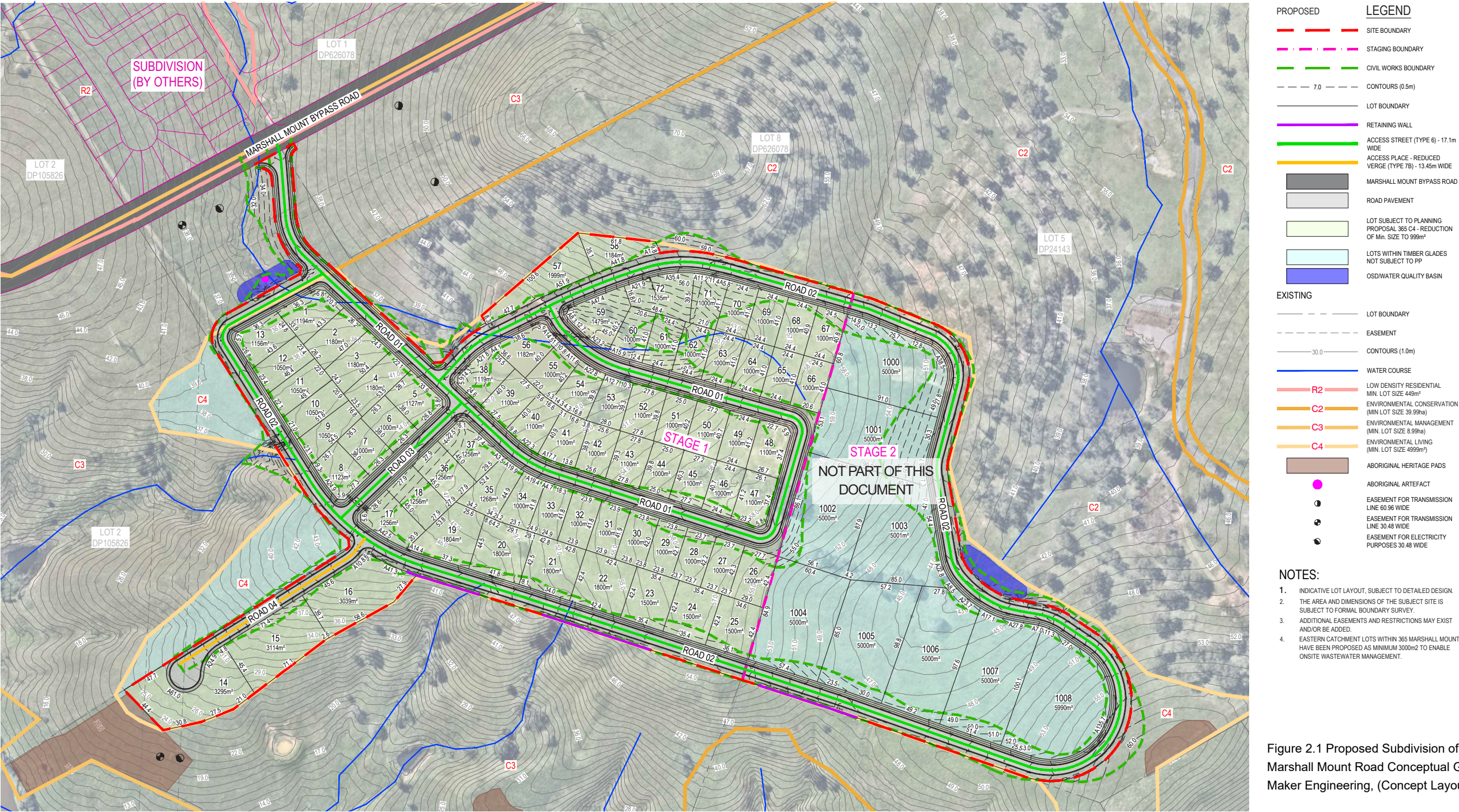


Figure 2.1 Proposed Subdivision of Lot 8 in DP626078 365 Marshall Mount Road Conceptual General Arrangement Layout Plan
Maker Engineering, (Concept Layout & Constraint Plan) 20.06.23

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3 Visual Survey and Impact Assessment

3.1 Terminologies

Viewpoint - The specific location of a view used for assessment purposes.

Receptor - A place, route, viewer audience or interest group which may receive an effect and require assessment.

Viewshed - Areas visible from a particular location (may be modelled or field-validated).

Visual Amenity - The attractiveness of a scene or view.

Visual Sensitivity – The ability of a view to absorb change relative to the visual amenity and relationship of key scenic protection areas, heritage, and any other valuable landscape or built structure or urban form.

Visual Representation - Graphic representation of a proposal in context showing its likely appearance and scale. Not applicable in this VIA

Photomontage - An accurate visual representation of a proposal from a particular receptor viewpoint, on a photographic base. Not applicable in this VIA

Scenic Amenity - A measure of the relative contribution of each place to the collective appreciation of the landscape. The term scenic amenity has a specific meaning to a combination of visual exposure and scenic preference.

Magnitude of Change - The extent of change that will be experienced by receptors. This change may be adverse or beneficial. Factors that could be considered in assessing magnitude are: the proportion of the view / landscape affected; extent of the area over which the change occurs; the size and scale of the change; the rate and duration of the change; the level of contrast and compatibility.

Mitigation - Measures to avoid, reduce and manage identified potential adverse impacts.

3.2 Impact Definitions

Nil - No adverse change to the existing visual resource in the landscape and with no viewer response to change in the visual environment ¹⁰.

Low - Minor adverse change to the existing visual resource in the landscape, with low viewer response to change in the visual environment. New development may or may not require mitigation using conventional practices such as architectural design, recessive exterior finishes, building height controls, landscaping ¹⁰.

Moderate - Moderate adverse change to the visual resource in the landscape with moderate viewer response. Impact can be mitigated within five years using conventional practices ¹⁰.

Moderately High - Moderate adverse visual resource change with high viewer response or high adverse visual resource change in the landscape, with moderate viewer response. Extraordinary mitigation practices may be required. Landscape treatment required will generally take longer than five years to mitigate ¹⁰.

High - A high level of adverse change to the resource or a high level of viewer response to visual change in the landscape such that architectural design and landscape treatment cannot mitigate the impacts. Viewer response level is high. An alternative project design may be required to avoid highly adverse impacts ¹⁰.

Reference: The above has been adapted from the US Federal Highway Administration visual analysis methodology for suggested scale of sensitivity/visual impact; US Department of Transportation, Federal Highway Administration, Guidelines for the Visual Impact Assessment of Highway Projects.

3.3 Survey Method

This section of the report concentrates on the visual survey of the subject lands and an analysis of the visibility of the site and visual sensitivity from existing adjoining public lands, nearby roads, important views, landmarks, heritage items, trig points, vista locations, and residential areas. The Wollongong DCP Chapter B6 (*Development in the Illawarra Escarpment*) identifies 'Key Viewpoints' in Appendix 1 (*Precinct 1 Marshall Mount / Calderwood Precinct*). 3 of the 4 key Viewpoints were visited and determined as 'non applicable' due to the fact the subject lands were not visible at all from those locations. 1 of the 4 Key Viewpoints was applicable and represented as Viewpoint #2 in the following section. The method used to determine visibility of the site was to undertake a detailed visual survey of the site on a clear day to identify areas around the subject land from where significant views to the site could be obtained.

A number of visually prominent landmark points, such as existing buildings, noticeable trees, ridgelines, infrastructure, and roads were identified nearby or on the subject lands. Viewpoints to the subject lands were identified through a broad understanding of the Wollongong and Shellharbour local environment and driving throughout the surrounding areas to ascertain the visibility of the subject land.

Refer Figure 3.1 Regional Landmark Location Plan.

The following locations were visited and subsequently removed from further visual assessment due to the fact the subject land was not visible at all from those locations;

- Cleveland Road; Easting 292666 / Northing 6178571 (WDCP B6 Key Viewpoint)
- Marshall Mount Rd; Easting 295290 / Northing 6176379 (WDCP B6 Key Viewpoint)
- Marshall Mount Rd; Easting 292374 / Northing 6174461 (WDCP B6 Key Viewpoint)
- Yallah rural-residential estate
- Cnr Yallah Road & Marshall Mount Road
- Shellharbour Airport
- Princess Motorway – noting safety and access restrictions prevented ability to analyse a stationary position.

Photographic points were identified and single frame photos landscape orientation were taken looking from the viewpoint towards the subject land. A total of 8 Viewpoints were identified and studied around the subject land.

Each viewpoint photo was analysed and visible areas of the site and surrounds were noted on a topographic map of the subject land and surrounds.

Each of the topographic plans was then overlayed to determine the most visible areas of the site. The most visible areas being those areas viewed from most viewpoints.

Refer Figure 3.2 Viewpoint Location Plan.

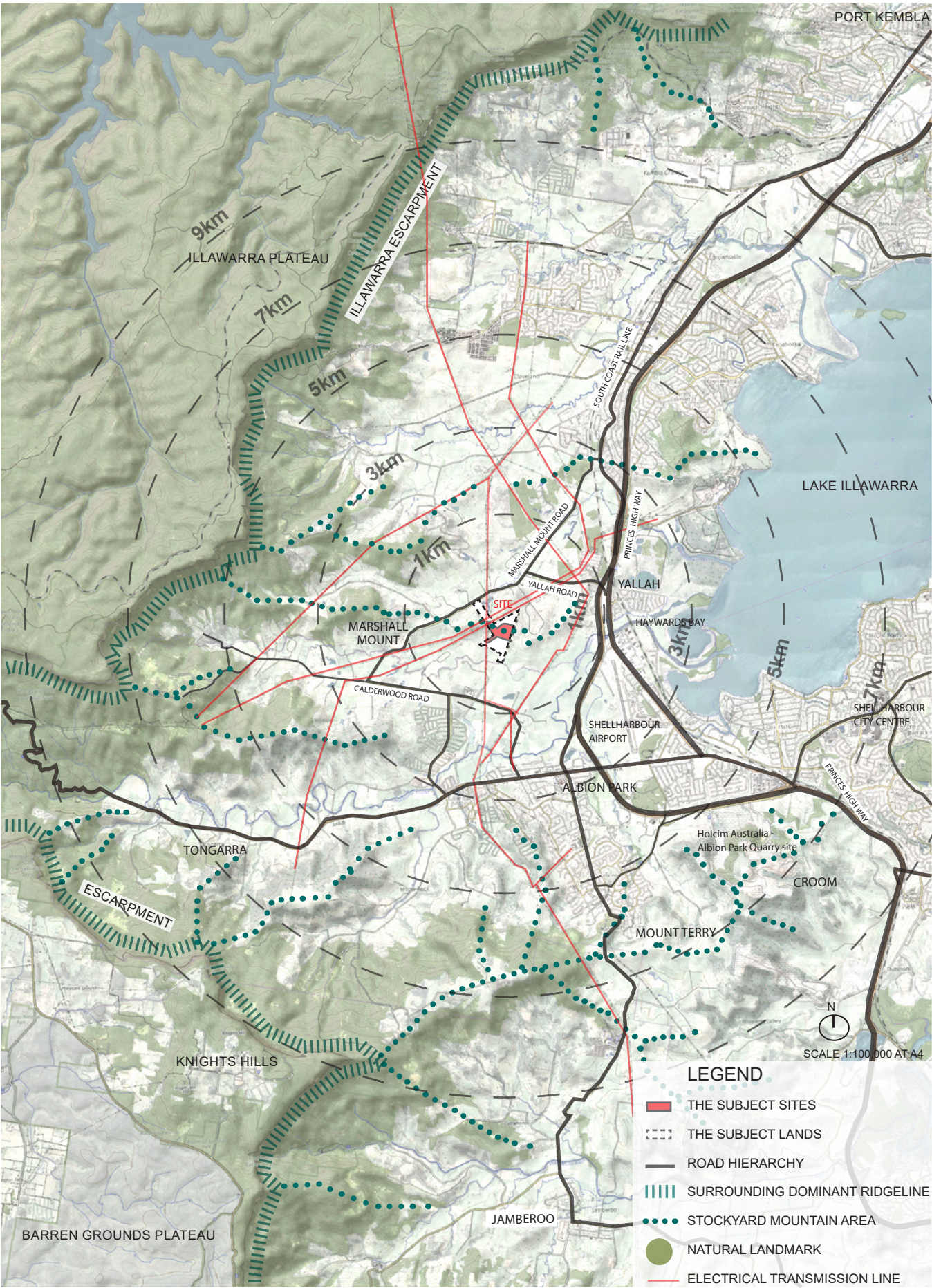


Figure 3.1: Regional Landmark Location Plan (Nearmap, viewed 5 July , 2022)
distinctive Living Design

10. Guidelines for the Visual Impact Assessment of Highway Projects

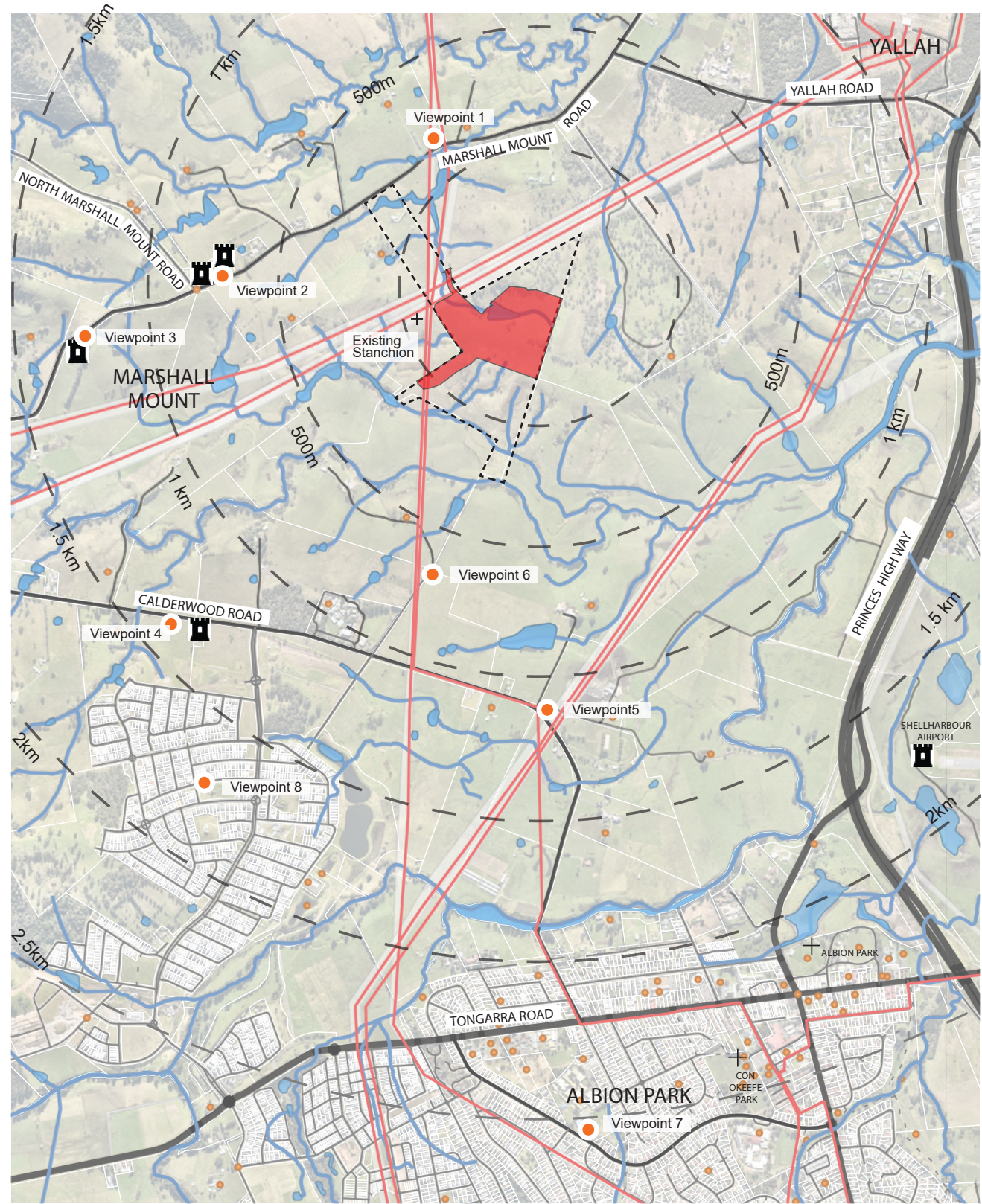
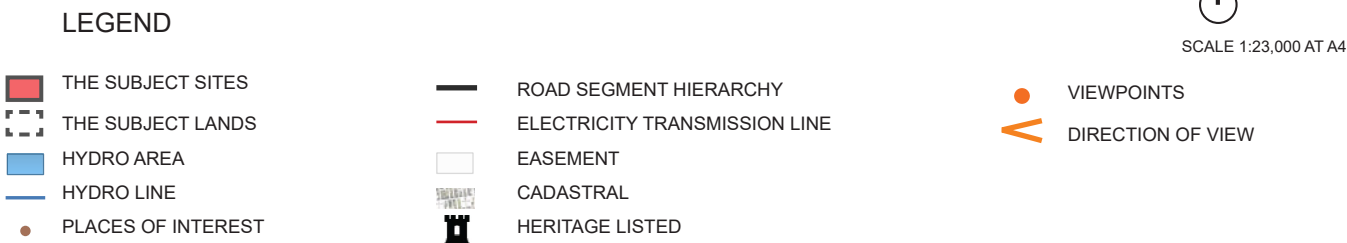


Figure 3.2: Viewpoint Location Plan (Nearmap, viewed 4 July, 2022)



3.4 Identification of View Points

LOCAL

1. Marshall Mount Road, Marshall Mount
2. Old Public School & Hall Local Heritage sites, Marshall Mount *
3. Marshall Mount State Heritage Homestead, Marshall Mount
4. Calderwood Rd, Marshall Mount
5. Tait Dairy / Calderwood Rd, Marshall Mount
6. Calderwood Christian School / Cattle Road, Marshall Mount

REGIONAL

7. Summit Park, Albion Park
8. Oak Farm Road, Calderwood

*(WDCP Chapter B6 Key Viewpoint)

3.5 Co-ordinates of View Points

LOCAL

1. -34.539595, 150.759208
-34° 32' 23", 150° 45' 33"
2. -34.544077, 150.749383
-34° 32' 39", 150° 44' 58"
3. -34.546096, 150.744261
-34° 32' 46", 150° 44' 39"
4. -34.555515, 150.742578
-34° 33' 20", 150° 44' 33"
5. -34.560107, 150.763812
-34° 33' 36", 150° 45' 50"
6. -34.554780, 150.759074
-34° 33' 17", 150° 45' 33"

REGIONAL

7. 34.576587, 150.762772
-34° 34' 36", 150° 45' 46"
8. -34.563065, 150.748678
-34° 33' 47", 150° 44' 55"

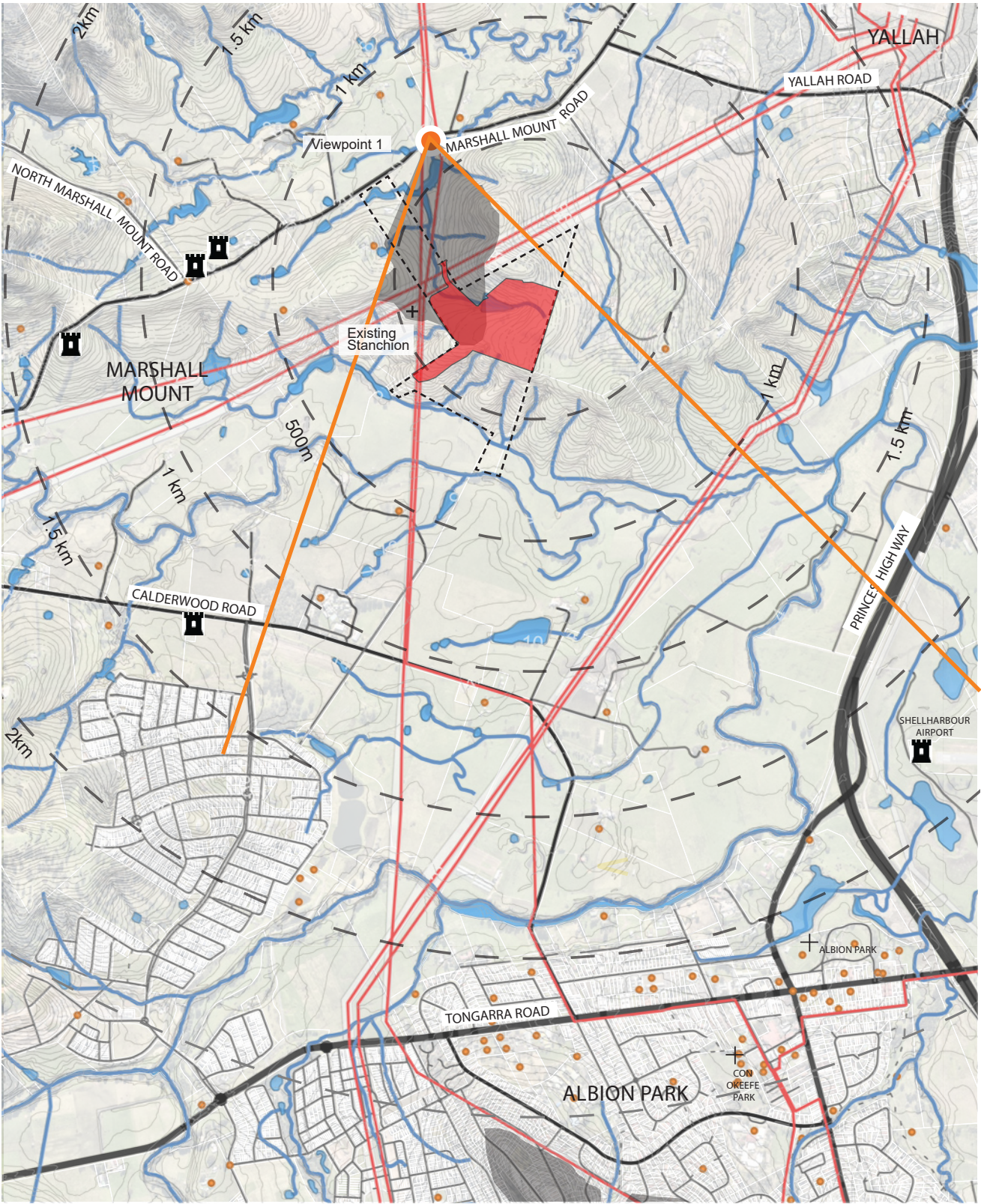


Figure 3.3 Viewpoint 1 - View shed plan (Nearmap, viewed , 2022)

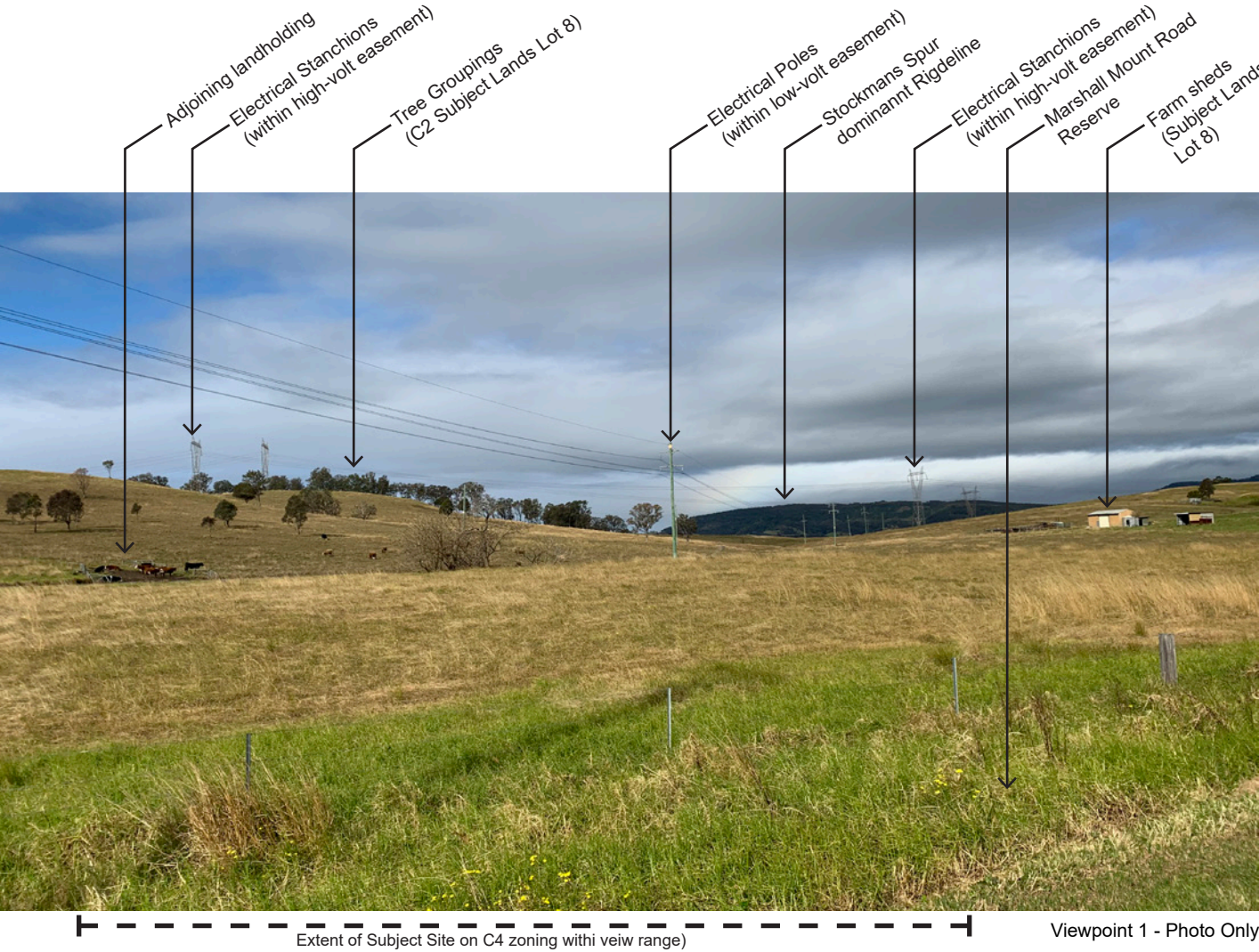
LEGEND

- THE SUBJECT SITE
- THE SUBJECT LANDS
- HYDRO AREA
- HYDRO LINE
- PLACES OF INTEREST

- ROAD SEGMENT HIERARCHY
- ELECTRICITY TRANSMISSION LINE
- EASEMENT
- CADASTRAL
- HERITAGE LISTED

- VIEWPOINTS
- DIRECTION OF VIEW
- VIEW SHEDS

N
SCALE 1:23,000 AT A4



Viewpoint 1 – 200m north-east of subject land from Marshall Mount Road, Marshall Mount

Description of view	Visual sensitivity of view	Visual impact of development on C4 lots (4,999 m ² v 999 m ²)	Rating*
The viewpoint is taken from Marshall Mount Road in a south-bound direction where sightlines open up into the subject lands and adjoining properties to the south-east. The road verge and rural stock fencing on the boundary can be observed in the foreground leading up and into the picturesque rolling hills, grazing paddocks, and scattered trees in the midground. The rural sheds, associated with the dwelling house on the subject land, can be seen right of view. Running across the viewshed higher on the hills in the background are the electrical transmission lines and corresponding stanchions dotted from left to right of view. A grouping of trees are also seen on the hilltop which are identified as being on the subject land within the C2 zoned land immediately south of the transmission easement. A depression in the hills, centre of view, allows for a sightline to the distant dominant ridgeline of Stockmans Spur, just south of Albion Park. A relatively small portion of the subject lands are visible from this viewpoint (mainly those zoned R2). Sightlines are impeded by the topographic elevation and aspect of the land viewed from this angle to almost all of the C4 zoned land in distant proximity.	This viewpoint exhibits very good scenic amenity, enhanced by the picturesque rolling hills and distant Stockmans Spur ridgeline. In the local context, visual sensitivity of this viewpoint is not elevated due to the fact the viewshed does not capture any of the key Heritage sites. In the regional context, no views to the Illawarra Escarpment, or Knights Hill-Barren Grounds Plateau is captured between or beyond the dominant ridgeline observed. The receptor group would primarily be motorists using this arterial transit route from Yallah or Penrose (Dapto) to Albion Park, and to a much lesser extent local landholders and residents. Observation would be limited to a glimpses while in motion. Frequency would be moderate but exposure low to moderate considering the 80km/h speed limit. Visual sensitivity therefore is rated as moderate.	Views to proposed low density (R2) dwellings on the subject lands from this location will be visible and in clear sight. Views to the proposed large lot (C4) dwellings, if at all visible, would be very low considering the magnitude of change expected from future development along this road corridor. Several rooftops may be observed on the ridge from these dwellings, however they are not expected to be dissimilar to future dwellings on the existing minimum lot size (4,999 sqm). Visual impacts are therefore expected to be diminished due to the fact future R2 residential dwellings (both on the subject land and adjoining landholdings) will be observed in the viewshed in association with the approved neighbourhood plan. Therefore the expected visual impacts from the addition of the C4 dwellings (on min 999 sqm lots) would be either nil or at worst negligible. Therefore, visual impacts of the proposed development on a reduced lot size is rated as nil	nil

*Visual Impact Rating - refer to definitions

Table 3.2 Viewpoint 01 Assessment Table

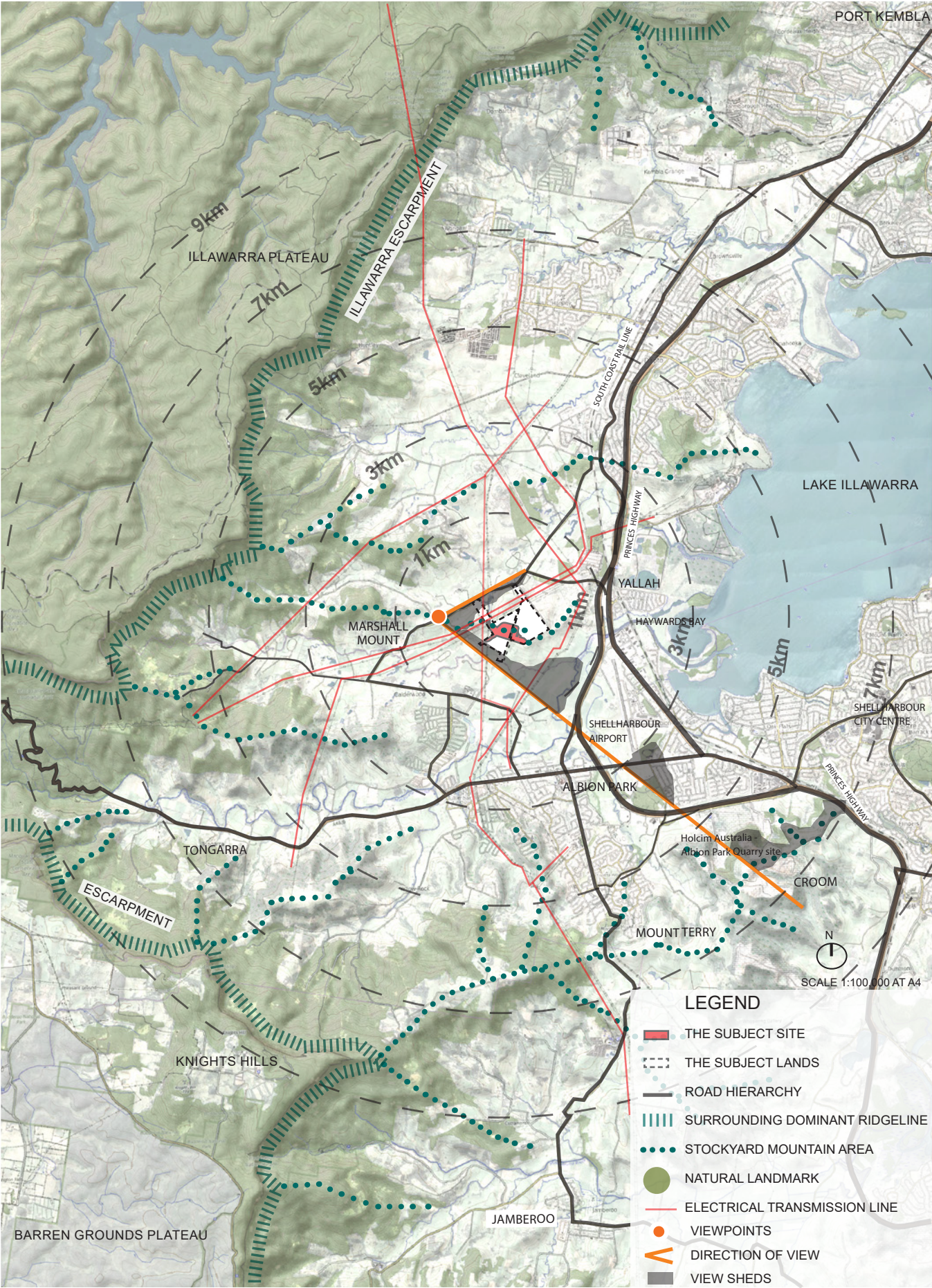


Figure 3.4: Viewpoint 2 - View shed plan (Nearmap, viewed, 2022)



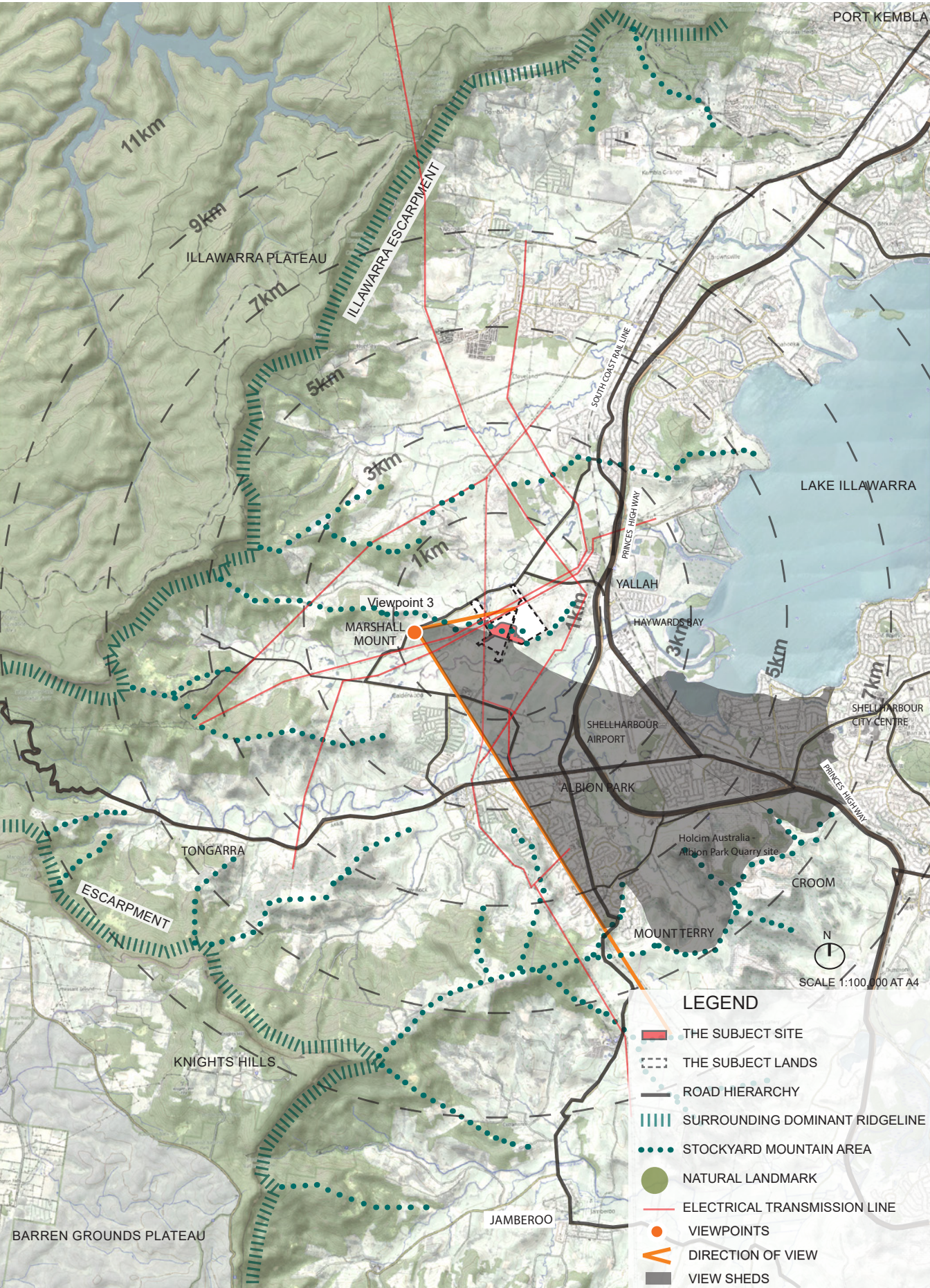
Extent of Subject Site on C4 zoning with view range) Viewpoint 2 - Photo Only

Viewpoint 2 – 1km west of subject land from Old Public School & Hall Local Heritage site, Marshall Mount (WDCP Chapter B6 Key Viewpoint)

Description of view	Visual sensitivity of view	Visual impact of development on C4 lots (4,999 m ² v 999 m ²)	Rating*
The viewpoint is taken from the Local Heritage listed Marshall Mount Public School, Cottage, and Community Hall sites on Marshall Mount Road (No. 450 & 456), a key viewpoint identified in Wollongong DCP Chapter B6. The viewpoint is looking east towards the subject land. The road corridor can be observed in the foreground leading across to the picturesque rolling hills, grazing paddocks, and scattered trees in the midground. Low voltage power lines interrupt the views. Several rural sheds and dwelling houses are dotted across the landscape. Left of view, on the hills in the background are the electrical transmission lines and corresponding stanchions on the higher slopes. A grouping of trees are also seen on the highest hilltop which are identified as being on the subject land within the C2 zoned land immediately south of the transmission easement. Right of view, lands lower in elevation observed are those associated with Marshall Mount Creek flats. In the background a distant sightline captures the wooded hills and slopes of ascending landform and ridgeline around the Holcim Australia - Albion Park Quarry site.	This viewpoint exhibits very good scenic amenity, enhanced by the picturesque rolling hills, creek flats, and distant ridgeline. In the local context, visual sensitivity of this viewpoint is not elevated due to the fact the viewshed does not capture any additional Heritage sites. In the regional context, no views to the Illawarra Escarpment Range, or Knights Hill-Barren Grounds Plateau is captured between or beyond the dominant ridgeline observed. The receptor group would primarily be motorists using this arterial transit route from Yallah or Penrose (Dapto) to Albion Park, and to a much lesser extent, tourists visiting the heritage site, but also local residents. Observation would be glimpses but also sustained. Frequency would be moderate and exposure low to moderate depending on the receptor group. Visual sensitivity therefore is rated as moderately high.	Views to proposed low density (R2) dwellings on the subject lands from this location will not be visible due to topography. Views to the proposed large lot (C4) dwellings (on minimum 999 sqm lots), if at all visible, would be negligible. Several rooftops may be observed on the ridge from these dwellings, however they are not expected to be dissimilar to future dwellings on the existing minimum lot size (4,999 sqm). The far majority in this viewshed would be hidden behind the midground hills obstructing sightlines. Visual Impact of the proposed development on a reduced lot size would therefore be negligible and therefore rated as nil.	nil

*Visual Impact Rating - refer to definitions

Table 3.3 Viewpoint 02 Assessment Table



Extent of Subject Site on C4 zoning withi veiw range)

Viewpoint 3 - Photo Only

Viewpoint 3 – 1.5km west of subject land from Marshall Mount State Heritage Homestead, Marshall Mount

Description of view	Visual sensitivity of view	Visual impact of development on C4 lots (4,999 m² v 999 m²)	Rating*
The viewpoint is taken from the State Heritage listed Marshall Mount Homestead (House and Estate grounds) circa 1841, on Marshall Mount Road (No. 503). The viewpoint is looking east towards the subject land. The property boundary fence can be observed in the foreground leading sightlines down and across descending landscape towards the Marshall Mount Creek flats, and characterised by picturesque rolling hills, dams, grazing paddocks, and tree groupings in the fore and midgrounds. Several rural sheds and dwelling houses are dotted across the landscape. Centre of view, on the hills in the background are the electrical transmission lines and corresponding stanchions ascending the slopes. A grouping of trees are also seen on the highest hilltop which are identified as being on the subject land within the C2 zoned land immediately south of the transmission easement. The descending slopes are also observed that represent the change of landform on the subject lands as the slopes descend to the creek flats. Right of view, lands lower in elevation observed are those associated with Marshall Mount Creek flats. In the background a distant sightline captures the wooded hills and slopes of ascending landform and ridgeline around the <i>Holcim Australia - Albion Park Quarry</i> site, as well as the Shellharbour urban area. Development can be seen on the slopes and higher lands.	This viewpoint exhibits very good scenic amenity, enhanced by the picturesque rolling hills, trees, rural landscape, creek flats, and distant ridgelines. In the local context, visual sensitivity of this viewpoint is diminished due to the fact the viewshed does not capture any additional Heritage sites. In the regional context, no views to the <i>Illawarra Escarpment Range</i> or <i>Knights Hill-Barren Grounds Plateau</i> is captured between or beyond the dominant ridgeline observed. The receptor group would be the homestead residents (currently occupied) and visitor / tourist groups viewing the home and surrounding grounds. Frequency would be low but exposure high. Visual sensitivity therefore is rated as moderately high.	Views to proposed low density (R2) dwellings on the subject lands from this location will not be visible due to topography. Views to the proposed large lot (C4) dwellings (on minimum 999 sqm lots) would be observed on the hilltop where their proposed location is (centre view) but would be limited to a relatively small portion of the viewshed, however they are not expected to be dissimilar to future dwellings on the existing minimum lot size (4,999 sqm). Several dwellings and rooftops may be observed on the ridgeline, however the far majority would be hidden behind the midground hills obstructing sightlines. Future development on the Calderwood Urban Development Project area will also be captured in the viewshed further diminishing the impacts over the medium to long term. Visual impacts of the proposed development on a reduced lot size would therefore be low.	Low

*Visual Impact Rating - refer to definitions

Table 3.4 Viewpoint 03 Assessment Table

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Viewpoint 3 - Visual Representation

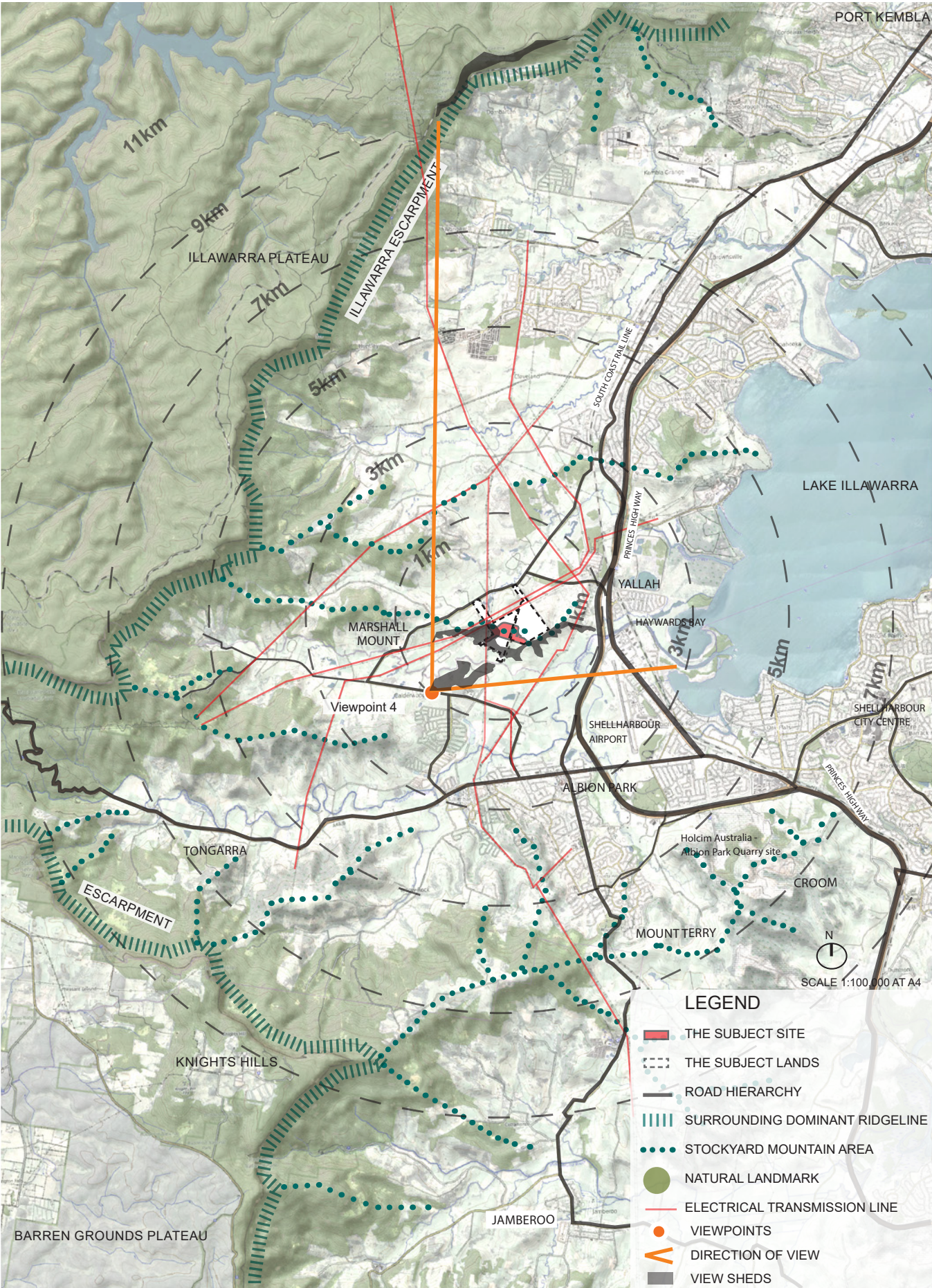


Figure 3.6: Viewpoint 4 - View shed plan (Nearmap, viewed, 2022)

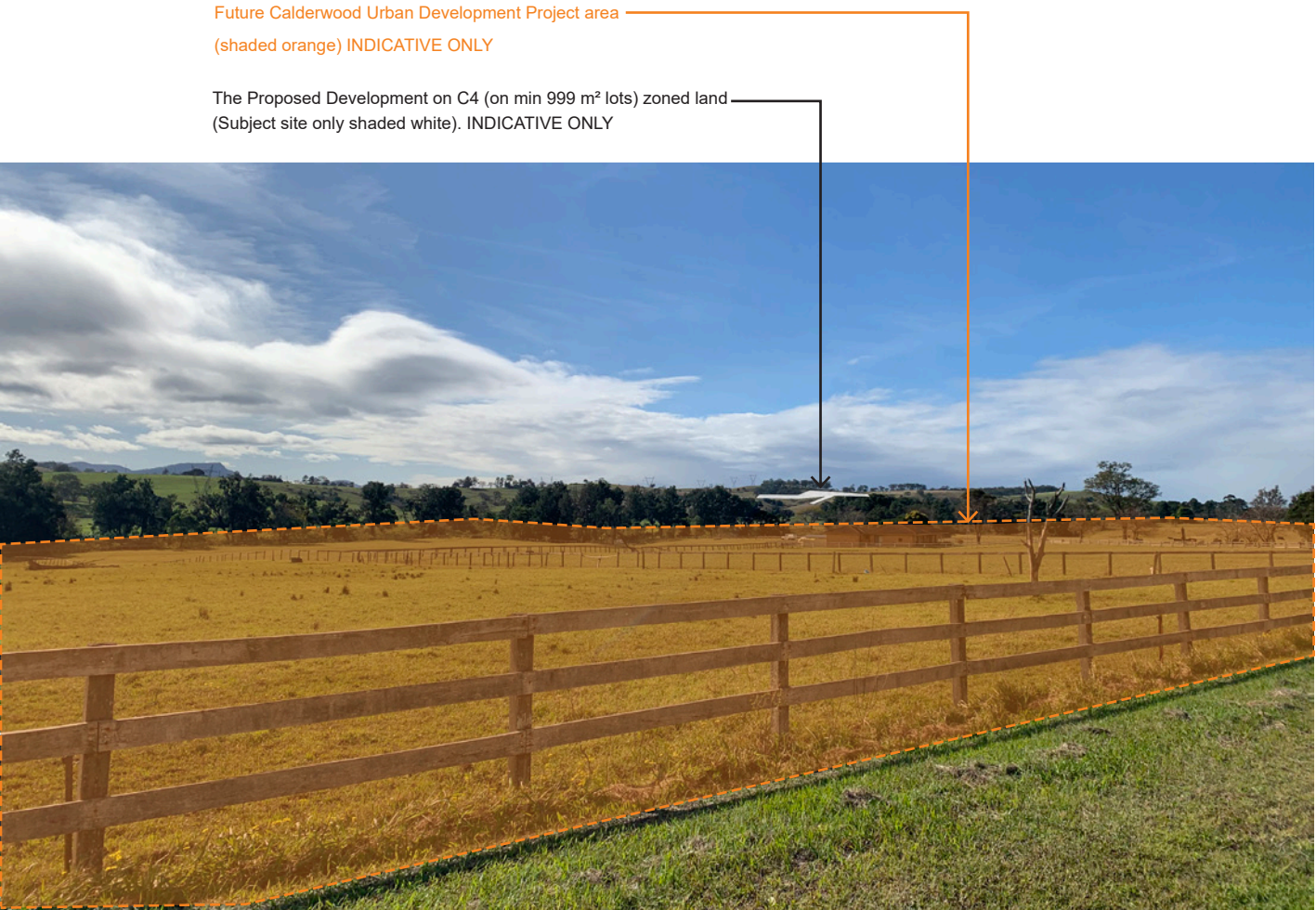


Extent of Subject Site on C4 zoning with view range) Viewpoint 4 - Photo Only

Viewpoint 4 – 2km south-west of the subject land from Calderwood Rd, Marshall Mount			
Description of view	Visual sensitivity of view	Visual impact of development on C4 lots (4,999 m² v 999 m²)	Rating*
The viewpoint is taken from Calderwood Road in an eastbound direction looking north-east towards the subject land. The road verge and timber stock fencing on the boundary can be observed in the foreground leading across the creek flats landscape to green open pasture with no trees. A distinct line of vegetation running across the viewshed demarks the creekline (Marshall Mount Creek) and riparian zone. The view in the midground extends up into the picturesque ascending slopes and hilltops characterised by mostly cleared rural pastures and scattered trees. At the centre-right of view is the electrical transmission lines and corresponding stanchions on the higher slopes. A grouping of trees are also seen on the highest hilltop which are identified as being on the subject land within the C2 zoned land immediately south of the transmission easement. The descending slopes are also observed that represent the change of landform on the subject lands as the slopes descend to the creek flats. To the left of view, in the background is the dominant ridgeline towering much higher in elevation, demarking the Upper Nepean / Illawarra Plateau and scenic Illawarra Escarpment Range.	This viewpoint exhibits very good scenic amenity, enhanced by the picturesque rolling hills, trees, rural landscape, creek flats, and distant ridgeline escarpment range. In the local context, visual sensitivity of this viewpoint is diminished due to the fact the viewshed does not capture any Heritage sites. In the regional context, views to the Illawarra Escarpment Range increases the visual sensitivity. The receptor group would primarily be motorists using this transit route, and to a much lesser extent local landholders and residents. Observation would be limited to glimpses while in motion. Frequency would be moderate but exposure low to moderate considering the 80km/h speed limit. Visual sensitivity therefore is rated as moderately high.	Views to proposed low density (R2) dwellings on the subject lands from this location will not be visible due to topography. Views to the proposed large lot (C4) dwellings (on minimum 999 sqm lots) would be observed on the hilltop where their proposed location is (centre view) but would be limited to a relatively small portion of the viewshed, however they are not expected to be dissimilar to future dwellings on the existing minimum lot size (4,999 sqm). Dwellings and rooftops will be observed on the hilltop but below the corresponding ridgeline. Future development on the Calderwood Urban Development Project area will have a heavy impact on this viewshed, specifically the 'Urban Plaza' LCA (town centre) further diminishing the impacts over the medium to long term. Visual impacts of the proposed development on a reduced lot size would therefore be low.	Low

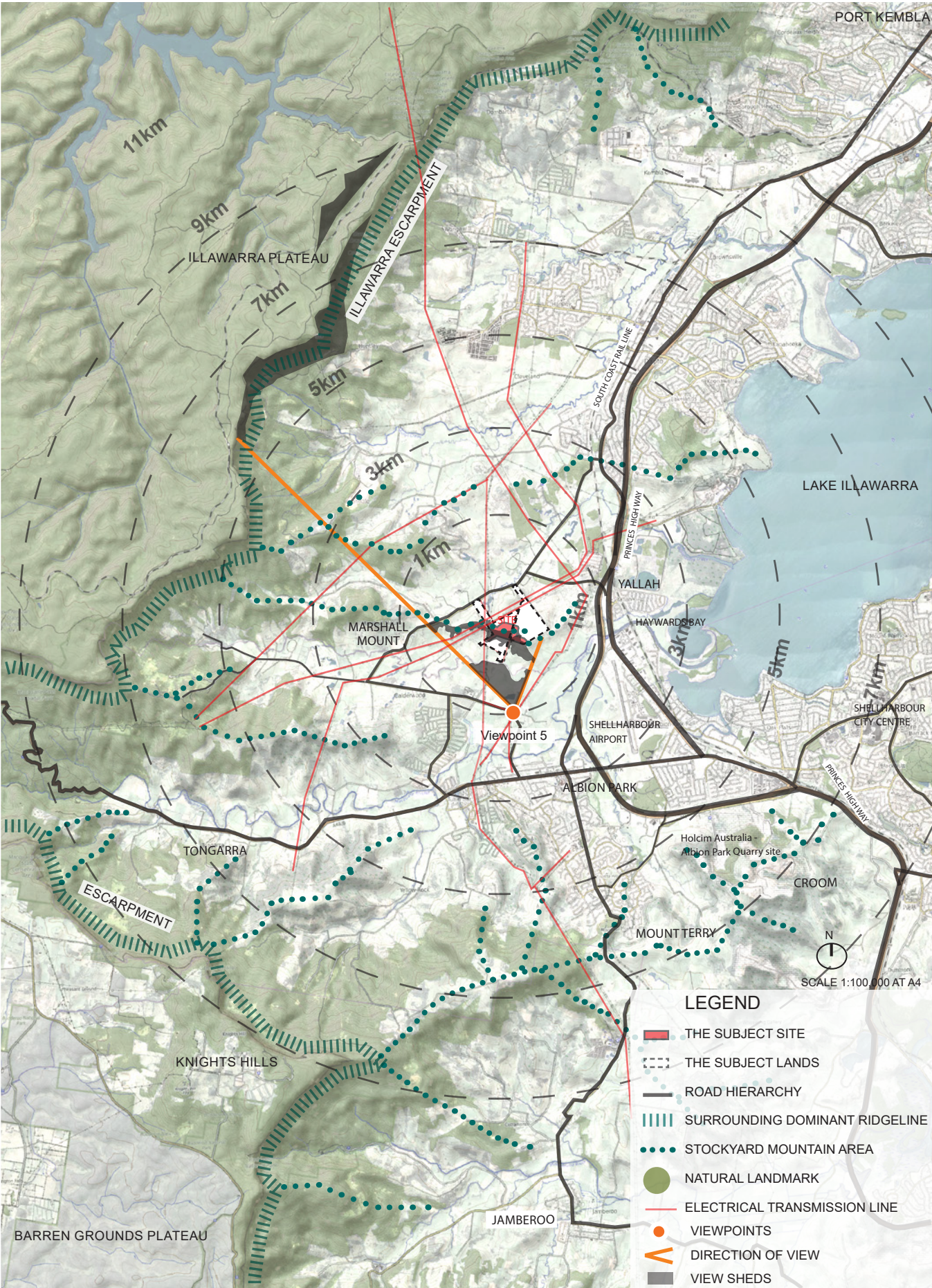
*Visual Impact Rating - refer to definitions

Table 3.5 Viewpoint 06 Assessment Table



Viewpoint 4 - Visual Representation

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Viewpoint 5 - Photo Only

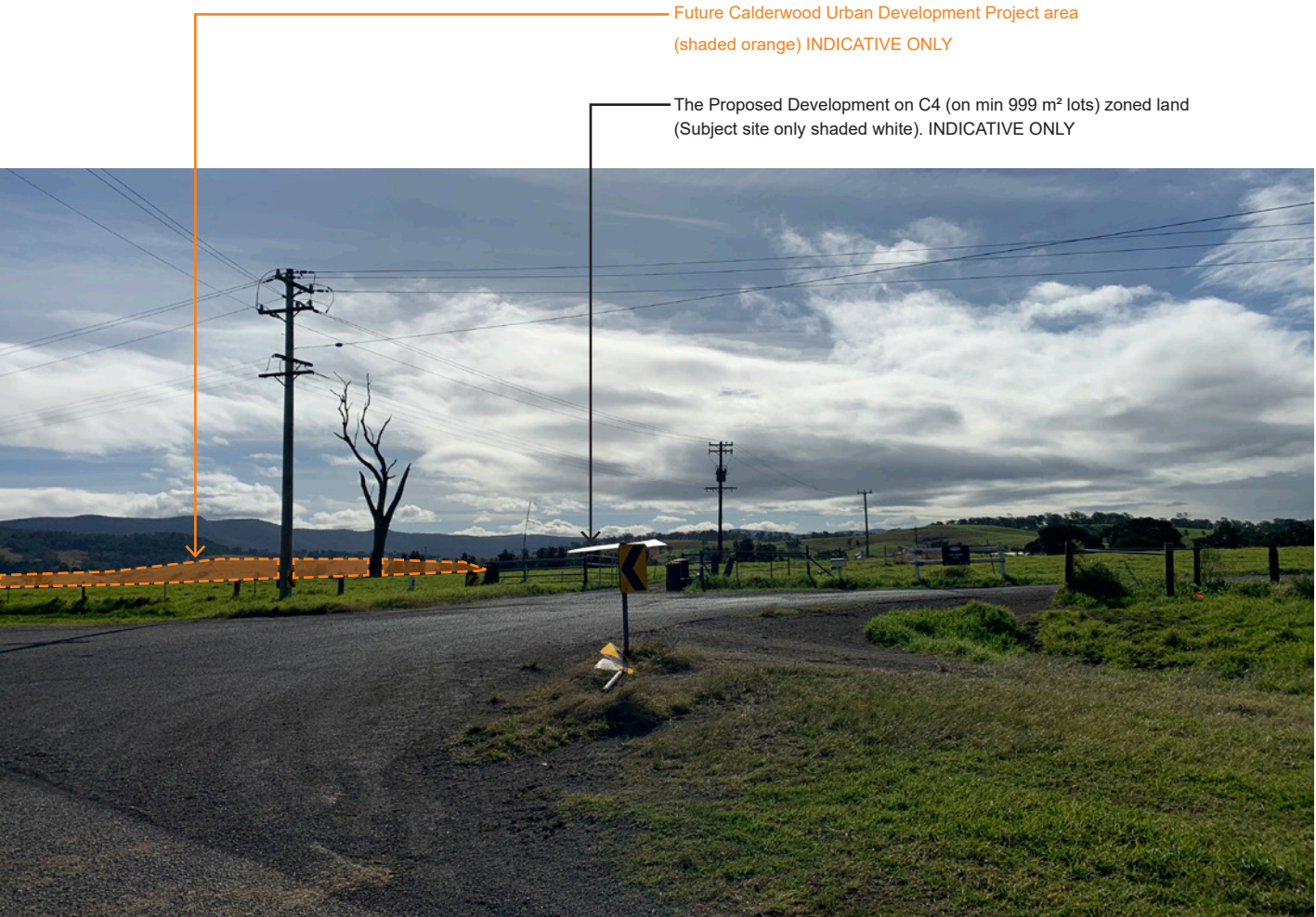
Viewpoint 5 – 1km south of the subject land from Tait Dairy / Calderwood Rd, Marshall Mount

Description of view	Visual sensitivity of view	Visual impact of development on C4 lots (4,999 m ² v 999 m ²)	Rating*
The viewpoint is taken from Calderwood Road at the Tait Dairy Farm travelling in a west-bound direction as the road veers left, and looking north towards the subject land. The road verge and Diary lead-in driveway can be observed in the foreground. Low voltage power lines interrupt the views. The topography obscures views to the lower lying lands associated with the creekline however the view captures the tops of riparian vegetation and the upper portion of hilltops (descending slopes) where the subject lands are located. These are characterised by mostly cleared rural pastures and scattered trees. The electrical transmission lines and corresponding stanchions on the higher slopes are identified there. A grouping of trees are also seen on the highest hilltop which are identified as being on the subject land within the C2 zoned land immediately south of the transmission easement. From the left to centre of view, in the background is the dominant ridgeline higher in elevation, demarking the Upper Nepean / Illawarra Plateau and scenic Illawarra Escarpment Range.	This viewpoint exhibits very good scenic amenity, enhanced by the picturesque rolling hills, trees, rural landscape, creek flats, and distant ridgeline escarpment range. In the local context, visual sensitivity of this viewpoint is diminished due to the fact the viewshed does not capture any Heritage sites. In the regional context, views to the Illawarra Escarpment Range increases the visual sensitivity. The receptor group would primarily be motorists using this transit route, and to a much lesser extent local landholders and residents. Observation would be limited to glimpses while in motion. Frequency would be moderate but exposure low to moderate considering the 80km/h speed limit. Visual sensitivity therefore is rated as moderately high.	Views to proposed low density (R2) dwellings on the subject lands from this location will not be visible due to topography. Views to the proposed large lot (C4) dwellings (on minimum 999 sqm lots) would be observed on the hilltop where their proposed location is (centre view) but would be limited to a relatively small portion of the viewshed, however they are not expected to be dissimilar to future dwellings on the existing minimum lot size (4,999 sqm). Dwellings and rooftops will be observed likely on the corresponding ridgeline. Future development on the Calderwood Urban Development Project area will also be captured in the viewshed further diminishing the impacts over the medium to long term. Visual impacts of the proposed development on a reduced lot size would therefore be low.	Low

*Visual Impact Rating - refer to definitions

Table 3.6 Viewpoint 07 Assessment Table

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Future Calderwood Urban Development Project area
(shaded orange) INDICATIVE ONLY

The Proposed Development on C4 (on min 999 m² lots) zoned land
(Subject site only shaded white). INDICATIVE ONLY

Viewpoint 5 - Visual Representation

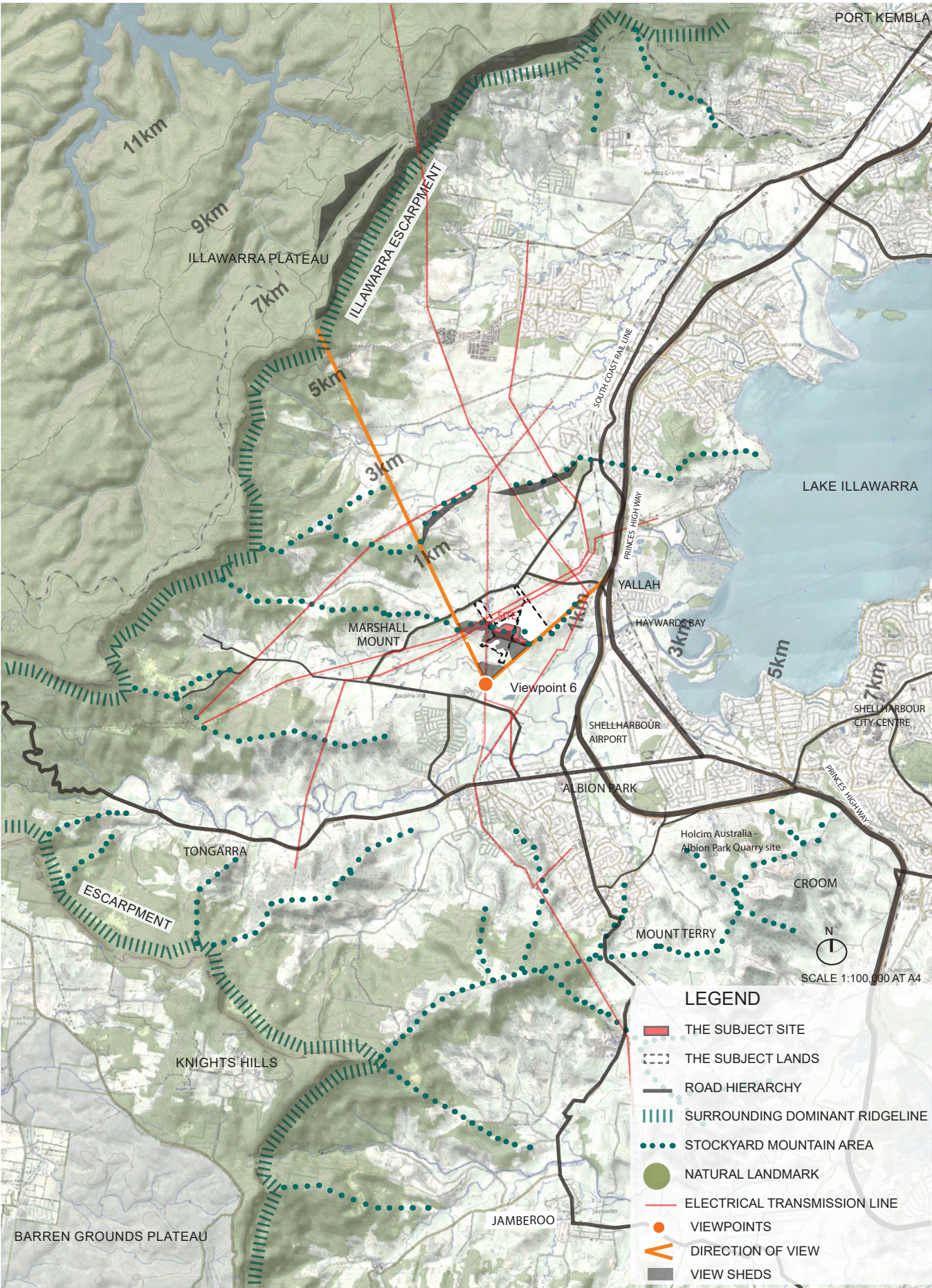


Figure 3.8: Viewpoint 6 - View shed plan (Nearmap, viewed, 2022)



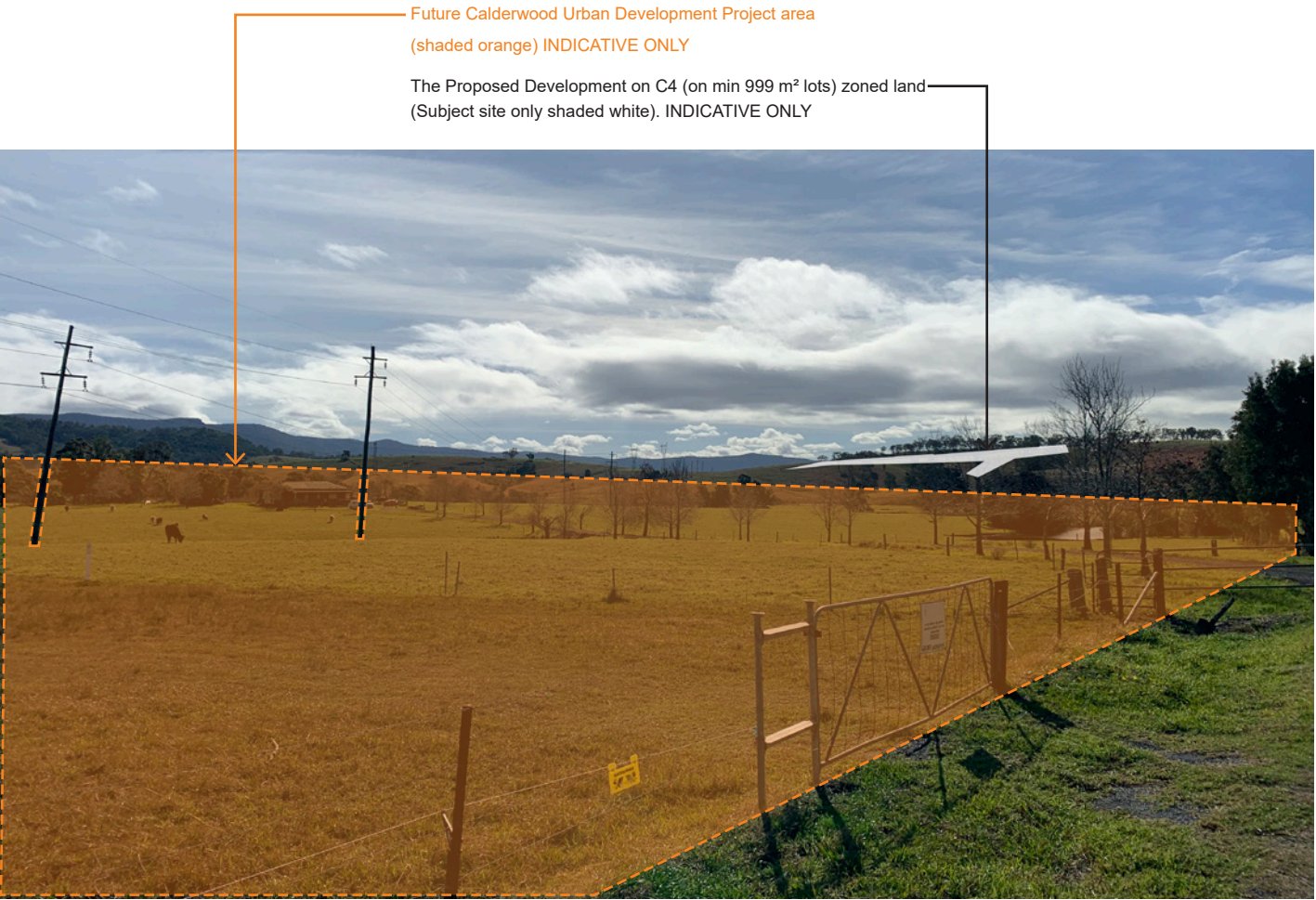
Viewpoint 6 - Photo Only

Viewpoint 6 – 400m south of the subject land from Calderwood Christian School / Cattle Road			
Description of view	Visual sensitivity of view	Visual impact of development on C4 lots (4,999 m ² v 999 m ²)	Rating*
The viewpoint is taken from Calderwood Road in an eastbound direction looking north-east towards the subject land. The road verge and timber stock fencing on the boundary can be observed in the foreground leading across the creek flats landscape to green open pasture with no trees. Low voltage power lines interrupt the views. A distinct line of vegetation running across the viewshed demarks the creekline (Marshall Mount Creek) and riparian zone. The view in the midground extends up into the picturesque ascending slopes and hilltops characterised by mostly cleared rural pastures and scattered trees. At the centre-right of view is the electrical transmission lines and corresponding stanchions on the higher slopes. A grouping of trees are also seen on the highest hilltop which are identified as being on the subject land within the C2 zoned land immediately south of the transmission easement. The descending slopes are also observed that represent the change of landform on the subject lands as the slopes descend to the creek flats. To the left of view, in the background is the dominant ridgeline towering much higher in elevation, demarking the Upper Nepean / Illawarra Plateau and scenic <i>Illawarra Escarpment Range</i> .	This viewpoint exhibits very good scenic amenity, enhanced by the picturesque rolling hills, trees, rural landscape, creek flats, and distant ridgeline escarpment range. In the local context, visual sensitivity of this viewpoint is diminished due to the fact the viewshed does not capture any Heritage sites. In the regional context, views to the <i>Illawarra Escarpment Range</i> increases the visual sensitivity. The receptor group would primarily be school students, staff, and parents frequenting the school, but also the local landowners. Frequency would be moderate with exposure being moderate also. Visual sensitivity therefore is rated as moderate.	Views to proposed low density (R2) dwellings on the subject lands from this location will not be visible due to topography. Views to the proposed large lot (C4) dwellings (on minimum 999 sqm lots) would be observed on the hilltop where their proposed location is (centre view) but would be limited to a relatively small portion of the viewshed. Dwellings and rooftops will be observed on the hilltop but below the corresponding ridgeline however they are not expected to be too dissimilar to future dwellings on the existing minimum lot size (4,999 sqm). Visual impacts of the proposed development on a reduced lot size would therefore be low.	Low

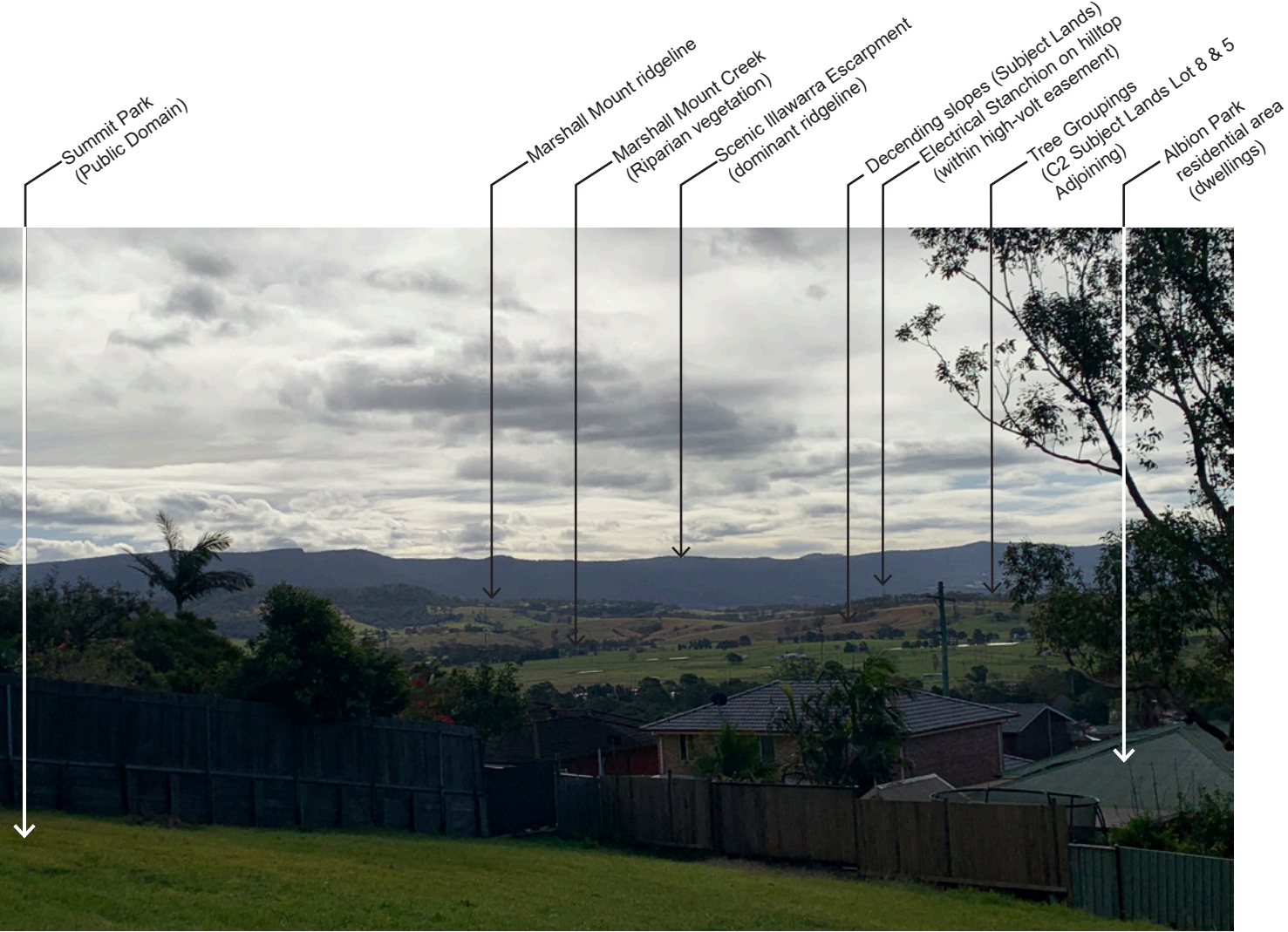
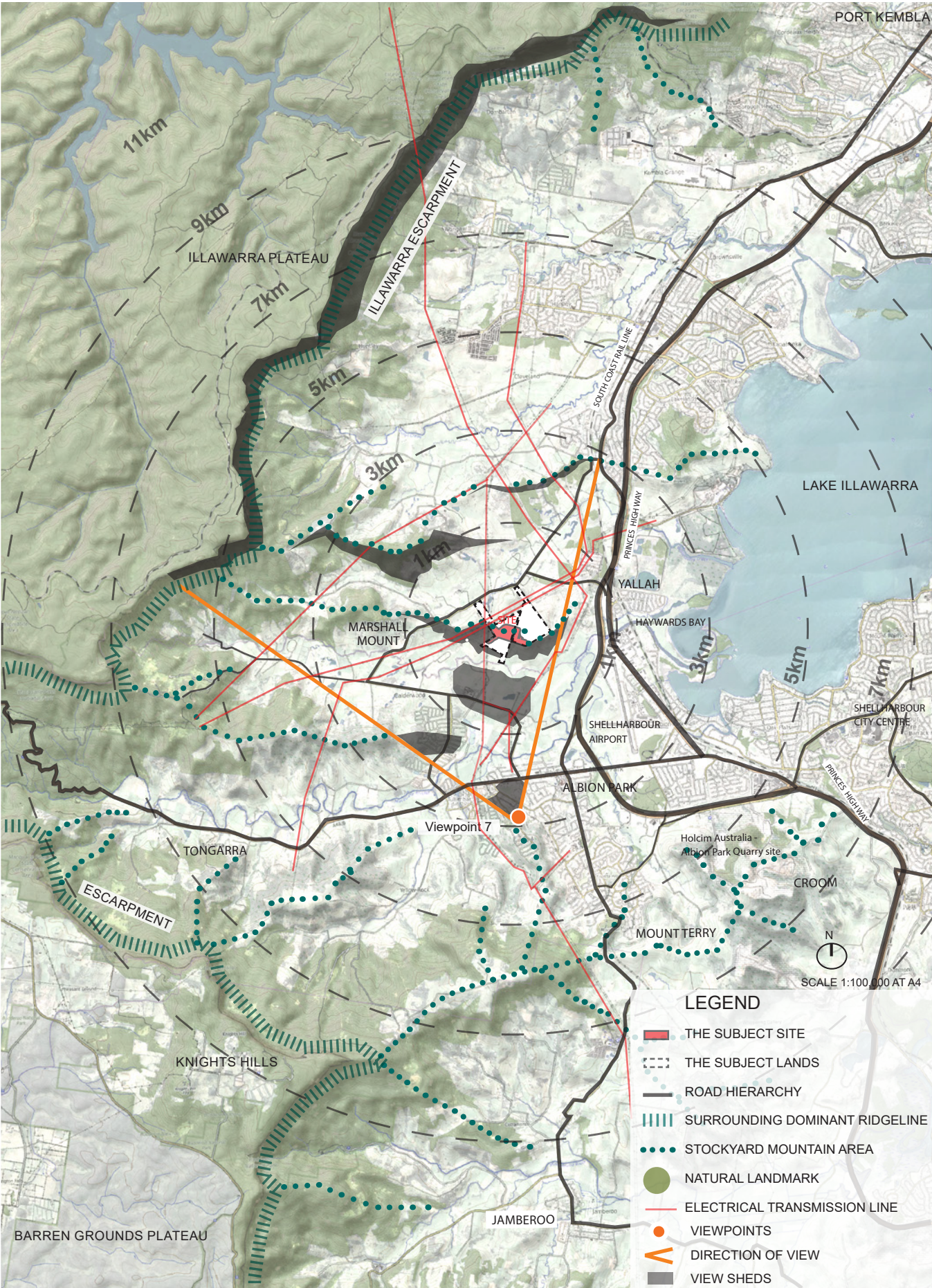
*Visual Impact Rating - refer to definitions

Table 3.7 Viewpoint 08 Assessment Table

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Viewpoint 6 - Visual Representation



Viewpoint 7 - Photo Only

Extent of Subject Site on C4 zoning with view range)

Viewpoint 7 – 2.8km south of the subject lands from Summit Park, Albion Park			
Description of view	Visual sensitivity of view	Visual impact of development on C4 lots (4,999 m ² v 999 m ²)	Rating*
The viewpoint is taken from Summit Park, a local community park high on the hilltop within the Albion Park (west) suburban area. The viewpoint is looking north towards the subject land with commanding views across the landscape. The grassed park and adjoining residential lots and their fences can be seen in the foreground, as well as some vegetation in the immediate context. Sightlines then open up dramatically over the landscape, including the subject land, and Marshall Mount Creek flats, characterised by picturesque rolling hills, dams, grazing paddocks, and tree groupings. At the centre-right of view is a single stanchion observed high on the Marshall Mount ridgeline corresponding to the electrical transmission lines in very close proximity to the subject site. The descending slopes are also observed that represent the change of landform on the subject lands as the slopes descend to the creek flats. In the background spanning the entire viewshed from left to right is the dominant ridgeline towering much higher in elevation, demarking the Upper Nepean / Illawarra Plateau and scenic Illawarra Escarpment Range.	This viewpoint exhibits excellent scenic amenity, enhanced by the picturesque rolling hills, trees, rural landscape, creek flats, and most significantly, the distant ridgeline escarpment range. In the local context, visual sensitivity of this viewpoint is diminished due to the fact the viewshed does not capture any discernible Heritage sites. In the regional context, views to the Illawarra Escarpment Range increases the visual sensitivity. The receptor group would primarily be park users and those from the immediate locality. Frequency would be moderate with exposure being moderate. Visual sensitivity therefore is rated as moderately high.	Views to proposed low density (R2) dwellings on the subject lands from this location will not be visible due to topography. Views to the proposed large lot (C4) dwellings (on minimum 999 sqm lots) would be observed on the hilltop where their proposed location is (centre view) but would be limited to a very small portion of the viewshed and from the distant observed, diminishing the overall visual impact. Visual impacts are further reduced by the fact residential dwellings are captured in the viewshed. Dwellings are also not expected to be too dissimilar to future dwellings on the existing minimum lot size (4,999 sqm). Visual impacts of the proposed development on a reduced lot size would be likely be negligible, and at worse low and therefore rated as low.	Low

*Visual Impact Rating - refer to definitions

Table 3.8 Viewpoint 07 Assessment Table

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Future Calderwood Urban Development Project area
included town centre (shaded orange) INDICATIVE ONLY

The Proposed Development on C4 (on min 999 m² lots) zoned land
(Subject site only shaded white). INDICATIVE ONLY



Viewpoint 7 - Visual Representation

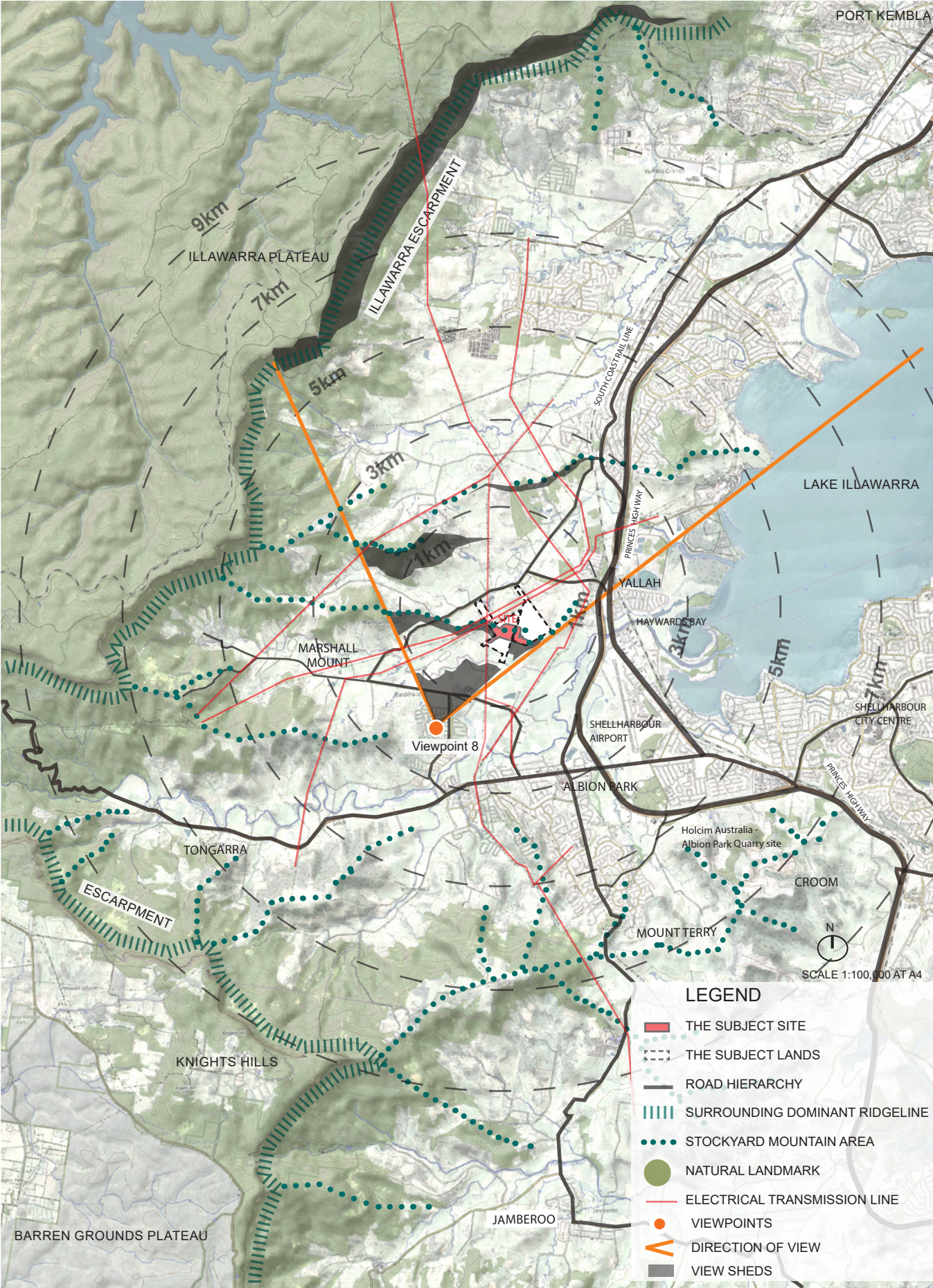


Figure 3.10: Viewpoint 8 - View shed plan (Nearmap, viewed , 2022)



Viewpoint 8 - Photo Only

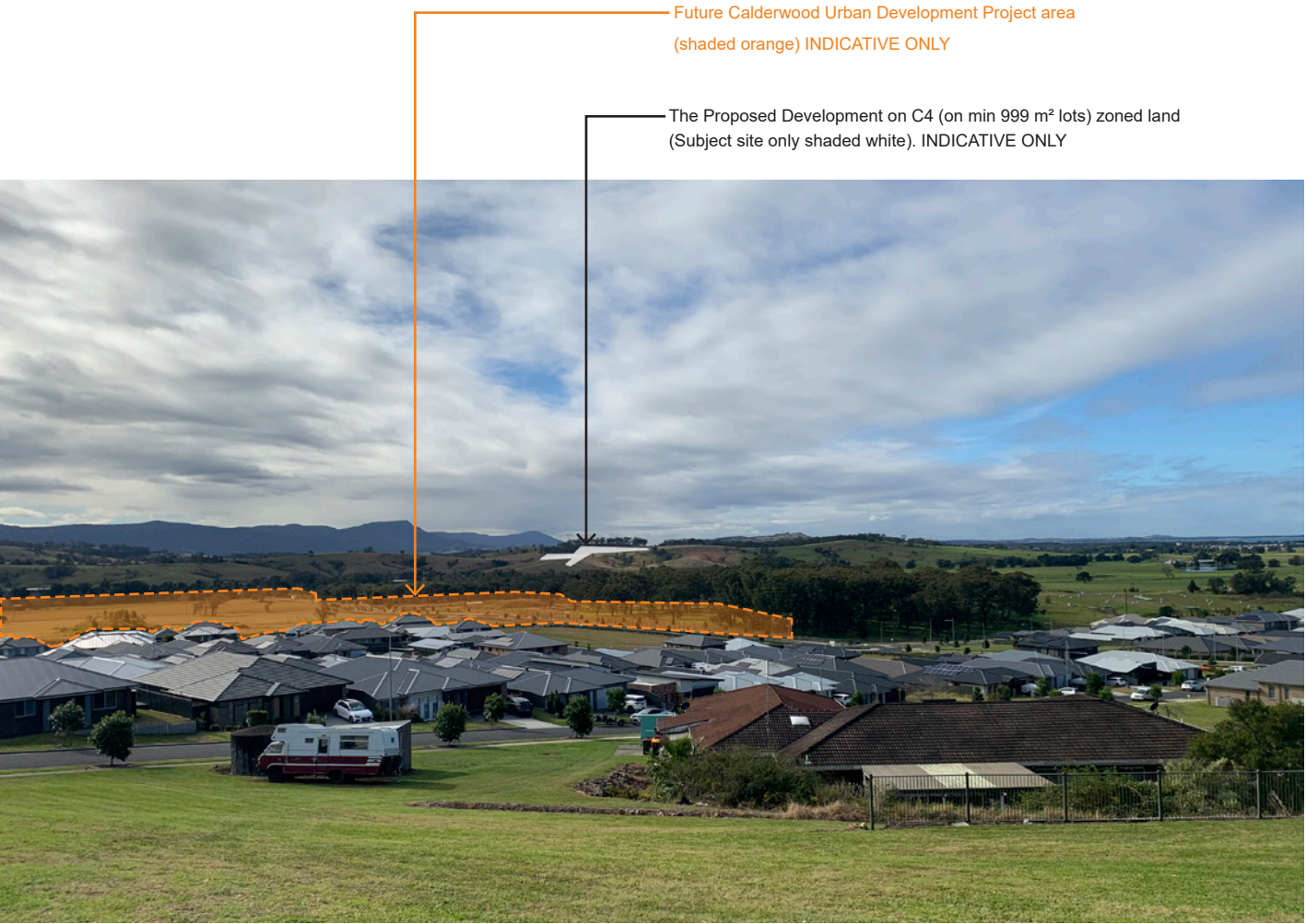
Extent of Subject Site on C4 zoning withi veiw range)

Viewpoint 8 – 1.2km south-west of the subject lands from Oak Farm Road, Calderwood			
Description of view	Visual sensitivity of view	Visual impact of development on C4 lots (4,999 m ² v 999 m ²)	Rating*
The viewpoint is taken from Oak Farm Road, an elevated position within the newly developed Calderwood residential area. The viewpoint is looking north-east towards the subject land with an expanse of open space and original dwelling house in the foreground. The elevated position overlooks an expanse of rooftops of low density housing. A distinct line of vegetation running across the viewshed in the midground demarks the creekline (Marshall Mount Creek) and riparian zone on the lower lying lands before the ascending slopes are seen rising up forming a clear ridgeline (Marshall Mount) across the viewshed. These provide picturesque slopes and hilltops characterised by mostly cleared rural pastures and scattered trees. At the centre-right of view is the electrical transmission lines and corresponding stanchions on the higher slopes. A grouping of trees are also seen on the highest hilltop which are identified as being on the subject land within the C2 zoned land immediately south of the transmission easement. In the background right of view is the dominant ridgeline towering much higher in elevation, demarking the Upper Nepean / Illawarra Plateau and scenic Illawarra Escarpment Range. In the background left of view are the lower lying coastal plains including Lake Illawarra.	This viewpoint exhibits excellent scenic amenity, enhanced by the picturesque rolling hills, trees, rural landscape, creek flats, and most significantly, the distant ridgeline escarpment range. In the local context, visual sensitivity of this viewpoint is diminished due to the fact the viewshed does not capture any discernible Heritage sites. In the regional context, views to the Illawarra Escarpment Range, and Lake Illawarra coastal landscape increases the visual sensitivity. The receptor group would primarily be local residents and those from the immediate locality. Frequency would be moderate with exposure being moderate. Visual sensitivity therefore is rated as moderately high.	Views to proposed low density (R2) dwellings on the subject lands from this location will not be visible due to topography. Views to the proposed large lot (C4) dwellings (on minimum 999 sqm lots) would be observed on the hilltop where their proposed location is (centre view) but would be limited to a very small portion of the viewshed and from the distant observed, diminishing the overall visual impact. Dwellings are also not expected to be too dissimilar to future dwellings on the existing minimum lot size (4,999 sqm). Visual impacts of the proposed development on a reduced lot size would be likely be negligible, and at worse low and therefore rated as low.	Low

*Visual Impact Rating - refer to definitions

Table 3.9 Viewpoint 08 Assessment Table

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Future Calderwood Urban Development Project area
(shaded orange) INDICATIVE ONLY

The Proposed Development on C4 (on min 999 m² lots) zoned land
(Subject site only shaded white). INDICATIVE ONLY

Viewpoint 8 - Visual Representation

3.6 Analysis of Selected Viewpoints

- Each viewpoint was rated on;
- Visual Sensitivity of the view
 - Visual Impact of proposed development / development modification of the subject site
- Refer to 3.1 for Definitions of these ratings*

Viewpoints have been separated into two categories based on their proximity and general context to the subject land as follows;

Regional – Approximately 1km, and up to 5km from subject lands, located within the greater regional environment

Localised – Less than 1km from subject lands, located within the immediate local environment

3.6.1 Viewpoints Summary Table

Viewpoint	Description Name	Visual Sensitivity	Visual Impact	Need for Development Control
LOCAL				
Viewpoint 1	Marshall Mount Road, Marshall Mount	Moderate	Nil	No
Viewpoint 2	Old Public School and Hall Heritage sites Marshall Mount	Moderately High	Nil	No
Viewpoint 3	Marshall Mount State Heritage Homestead, Marshall Mount	Moderately High	Low	Yes
Viewpoint 4	Calderwood Rd, Marshall Mount	Moderately High	Low	Yes
Viewpoint 5	Tait Dairy / Calderwood Rd, Marshall Mount	Moderately High	Low	Yes
Viewpoint 6	Calderwood Christian School / Cattle Road, Marshall Mount	Moderate	Low	Yes
REGIONAL				
Viewpoint 7	Summit Park, Albion Park	Moderately High	Low	Yes
Viewpoint 8	Oak Farm Road, Calderwood	Moderately High	Low	Yes

Table 3.10 Viewpoint Analysis Summary Table

3.6.2 Localised Viewpoints 1 – 6

Viewpoints 1 to 6 represent key vantage viewpoints within the immediate locality from 0km up to 1km from the subject lands. Each viewpoint aims to capture any sightlines looking towards the subject site and surrounding landscape. Each viewpoint assesses the visual sensitivity of the viewshed in relation to the landscape character captured. Further, each viewpoint assesses any potential visual impacts of the proposed change in minimum lot size and development both in terms of changes to the landscape character and visual amenity. These viewpoints demonstrate that the subject land would be likely be visible from all viewpoints, with visual sensitivity ranging from moderate to moderately high. Development on the subject site however would only be observed in 4 of the 6 viewpoints. Visual impact of the proposed development within the subject site considering a change in 4,999 sqm lots to 999 sqm lots ranges from nil to low.

Summary Visual Sensitivity of the view – Moderate to Moderately High
Summary Visual Impact of proposed development – **Nil to Low**

Nil definition – No adverse change to the existing visual resource in the landscape, with no viewer response to change in the visual environment ¹⁰.

Low definition - Minor adverse change to the existing visual resource in the landscape, with low viewer response to changes in the visual environment. New development may or may not require mitigation using conventional practices such as architectural design, recessive exterior finishes, building height controls, landscaping ¹⁰.

3.6.3 Regional Viewpoints 7 - 8

Viewpoints 7 to 8 represent key vantage viewpoints from sites in the greater regional environment in a general radial extending from 1km up to 5km from the subject lands. Each viewpoint aims to capture any sightlines looking towards the subject site and surrounding landscape. Each viewpoint assesses the visual sensitivity of the viewshed in relation to the landscape character captured. Further, each viewpoint assesses any potential visual impacts of the proposed change in minimum lot size and development, both in terms of changes to the landscape character and visual amenity. These viewpoints demonstrate that the subject lands are visible from both viewpoints, with visual sensitivity rating moderately high for both. Visual impact of the proposed development within the subject site considering a change in 4,999 sqm lots to 999 sqm lots ranges from nil to low.

Summary Visual Sensitivity of the view – Moderately High
Summary Visual Impact of development of site – **Low**

Low definition - Minor adverse change to the existing visual resource in the landscape, with low viewer response to changes in the visual environment. New development may or may not require mitigation using conventional practices such as architectural design, recessive exterior finishes, building height controls, landscaping ¹⁰.

9. Guidelines for the Visual Impact Assessment of Highway Projects

10. Guidelines for the Visual Impact Assessment of Highway Projects

4 Conclusions

4.1 Key vantage viewpoints within the immediate Locality and Regional context.

The key visual sensitivities are from busy sub-arterial roads, heritage sites, and the open space public domain, where the subject site was visible in a contextual relationship to the scenic rural-coastal and escarpment landscape associated with the regional vernacular. The characterisation of the regional vernacular is that of hilly rural, and sparsely vegetated topography, dramatic escarpments to the west, and low-lying coastal landscape with low density urban development and ocean to the south and east. These were both in a local context (viewpoints 2 to 6) and a regional connect (viewpoints 7 and 8) and rated moderately high. However, the visual survey revealed the visual impact of the proposed development (considering the proposed minimum lot size reduction) from those locations would be either be nil or low, with mitigation possible immediately through planning controls. To a far lesser extent, visual sensitivities came from other, less busy roads and a local school. As determined by the visual survey and analysis, the proposed development will be visible from all viewpoints. For the remaining viewpoint (1), the visual impact from the proposed development was nil, having no meaningful contextual relationship to regional vernacular. Nonetheless, mitigation measures are recommended to address visual impact from all viewpoints, except viewpoints 1 and 2. The key effected receptor group for visual impact identified in this report are motorists. To a lesser extent, pedestrians on local roads, public domain, and the immediate local residents (rural or suburban) were also receptor groups. It is determined from the visual analysis that the C2 zoned lands on both lots are located on the dominant hilltop/s corresponding to the Marshal Mount ridgeline observed from distance. This environmental protection land prevents development encroaching on a visually sensitive ridgeline that would otherwise increase visual impacts to a greater extent.

4.2 Overall

Adverse visual impacts from the proposed large lot residential development are likely to be very limited or dissimilar, even when considering a proposed decrease in minimum lot size resulting in more dwellings on those allotments. The emerging development within the Calderwood Valley (i.e. Urban Development Project) inside both Wollongong and Shellharbour LGA's was determined to have a significant change in viewer resource in the medium to long term, and thus reductions in the overall visual impacts across both local and regional viewsheds. Demonstrated adverse visual resource changes that would prompt a nil to low level of viewer response to visual change in the landscape were determined, varying in severity, however none were rated above low (i.e excluded *moderate*, *moderately- high*, and *high* ratings). Most notably were those viewpoints that have a contextual relationship to the scenic coastal landscape and escarpment associated with the regional vernacular, were limited in severity and frequency of receptor groups. Strategic urban design layout coupled with visual impact mitigation measures such as landscape buffers, built form controls, and building materiality would result in a reduced visual impact on the regional vernacular. The *recommended visual impact mitigation* diagram demonstrates that the proposed large lot residential (C4 zoning) can be successfully developed with 999 sqm minimum lot sizes, without adverse visual impacts, particularly in the medium to long term, should proposed mitigation measures be implemented to reduce the visual impact of the overall development. The mitigation measures proposed can be applied through conventional interventions, as well as specific planning and development controls and covenants as outlined in *Section 5 Recommendations*.

Key characteristics of the subject land identified as being suitable for the proposed development and minimum lot size are;

- Land areas that do not adversely impact on the visual sensitivity of the regional vernacular including the escarpments (Illawarra and other).
- Land that is sparsely vegetated or entirely cleared.
- Landscape that is not subject to adverse flooding or hydrological impacts.
- Landscape that is not subject to impacts from noise, dust, vibration or reduced visual amenity from mining or extractive industry.
- Land that is not impacted by fire threat or can be managed by Asset Protection Zones.
- Land that does not exceed 15% slope.



Figure 4.10 Recommended Visual Impact Mitigation Diagram (Nearmap, viewed 5 Oct, 2021)



5 Recommendations

Where convention mitigation methods are not appropriate site specifically, apply planning and development controls that best mitigate the visual impact of the development.

5.1 Planning and Development Controls

Apply development controls that mitigate the visual impact of the development. A diversity of controls with varying degrees of mitigation measures will have the most effective overall improvement in viewer response and impact reduction.

5.1.1 Building height controls

- Purpose**

To ensure that the finished height of new buildings does not pose an adverse visual impact on the sensitive escarpment landscape, in addition to the existing controls within the DCP and objectives of the LEP. Any height restrictions imposed by Council are subject to their assessment & conditioning when considering *DCP Chapter B6: Development in the Illawarra Escarpment 11.3.2*.
- Controls**
 - Outbuildings and ancillary structures should have a ridge height that does not exceed 4.5 metres above natural ground level.

5.1.2 Dwelling and Construction Materials

- Purpose**

To provide controls for dwellings to ensure a high standard of urban design compatible with the local amenity and character.
- Controls**
 - “External wall cladding to dwellings and outbuildings shall be of face brick masonry, painted timber cladding or other approved materials compatible with the character of the immediate environment.
 - Roof cladding to dwellings and outbuildings should be of Colorbond® or similar sheet metal or other approved material compatible with the local vernacular

5.1.3 Exterior Finishes

- Purpose**

To provide future landowners with a suitable range of colour choices whilst achieving the desired outcome of minimising any adverse impact of new development on the amenity of the area as seen from key vantage points in the public domain in relation to the local vernacular
- Controls**

Dwelling materials and colours for dwellings, utility and ancillary structures shall adopt darker, recessive toned colours such as dark browns, dark greens, dark greys and charcoal and utilise non-reflective surfaces for both wall and roof cladding”

5.1.4 Street Lighting

Purpose

To minimise light spillage to create night-time ‘black belts’, differentiating between developed and undeveloped areas, and to minimise light spillage thereby minimises the impact on light pollution and astronomical observations.

- Controls**
 - Street lights shall have hoods or other appropriate design treatment (e.g. use of low glare street light luminaires) to minimise light spill in order to reduce ambient light haze as much as possible.”
 - Type and style to be considered as they relate to the local vernacular

5.1.5 Fences

- Purpose**
 - To preserve and enhance the qualities and the overall amenity of semi-rural areas whilst recognising the desires, needs and rights of residents to have private open space area.
 - To balance the need to preserve and enhance the qualities and the overall amenity of semi-rural areas and safety to the public by achieving acceptable standards of fence construction.
 - To ensure boundary fencing is of a high quality and constructed using materials and finishes which are consistent with the character of the locality and do not detract from the streetscape.
 - To ensure that fencing has a high ratio of voids to solids to maximise transparency.
 - To permit appropriate fencing for the screening of courtyards and private open space areas.

Controls

Front fences and dividing fences

- Front fences shall be a maximum of 0.9m in height and be of traditional picket, open post and wire, or post and rail construction.
- Dividing fences and returns to dividing fences shall be a maximum of 1.5m in height and be open post and wire or post and rail in construction.
- Mesh (e.g. chicken wire, lamb-proof fencing) may be used on the lower parts of fences to provide security for children and / or pets.
- Front fences and dividing fences shall be erected on the alignment of the common boundary of the land.
- Front fences on corner lots shall be designed to maintain adequate sight line distances for motorists.
- Special feature entrances and special feature front fencing which does not comply with the above may be considered on a case-by-case basis and will be assessed on merit.
- Continuous front and dividing fencing of masonry, paling, painted or unpainted or colorbond sheet metal, fibrous cement or the like in either part or full shall not be used in the construction of a front fence or dividing fence.
- Fences constructed over or adjacent to easements must include appropriate means of access (e.g. gates) to enable the servicing of the easements.
- Fences constructed on land affected by drainage easements, watercourses or drainage waterways shall be designed and constructed so as not to obstruct the free flow of stormwater.

5.1.6 Landscaping

- Purpose**
 1. To encourage the removal of weeds to reduce environmental degradation and allow for landscaping with appropriate native and exotic species.
 2. To encourage the planting of informal groupings of locally indigenous trees, shrubs and other species to help screen new development and blend with remnant woodland canopies.
 3. To enhance local wildlife habitat.

Controls

- Noxious and environmental weeds should be removed by methods approved by Wollongong Council

and other relevant authorities.

- Open space should be planted out with informal groupings of tall, locally indigenous woodland species with locally indigenous understorey species (to blend with woodland canopies).
- Landscaping should respect the semi-rural character of the site by maintaining prominent grassed areas and limiting new landscaping to appropriate areas.
- All dwellings and outbuildings shall be provided with appropriate complementary landscaping to minimise the environmental impact on adjoining premises and the area generally.
- Landscape buffers are to be maintained by a body corporate to ensure maintenance and retention is upheld
- Species for landscaping should be chosen from Wollongong Council's Tree and Landscape Species List.

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