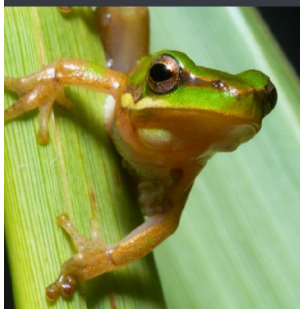


VISUAL IMPACT ASSESSMENT

225 Terranora Road, Terranora

Prepared for Wrenn Pty Ltd
By Planit Consulting

November 2017



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Terms & Abbreviations

Aesthetic	A general term referring to visual appearance and its human perception.
Baseline conditions	Description of the existing situation in the area of interest.
Cross Section	A vertical view drawn at right angles to the control line, showing the existing ground and various elements that make up the landscape.
Enhancement	Landscape improvement through restoration, reconstruction or creation
Fauna	Refers to animals, both individually and collectively.
Flora	Refers to plants, both individually and collectively.
KVP	Key Vantage Point, A location selected for Investigation based on desktop analysis Referenced as KVP1, KVP2 etc
Landscape	A holistic term that encompasses visual, ecological and cultural values of the physical landscape.
Landscape Character	The distinct & recognizable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement. It creates the particular sense of place of different areas of the landscape.
Landscape Effects	Change on the elements, characteristics, character and qualities of the landscape as a result of development. These effects can be positive or negative.
Landscape Factor	A circumstance of influence contributing to the impression of a landscape (scale, enclosure elevation)
Landscape Resource	The Combination of elements that contribute to landscape context, character & value.
Landscape Sensitivity	The extent to which a landscape can accept change of a particular type and scale without unacceptable adverse effects on its character.
Native Plants	Plant species that are indigenous to the local area, or to Australia.
Nature	All aspects of nature, including but not limited to: <ul style="list-style-type: none"> a. ecosystems and their constituent parts b. all natural and physical resources c. natural dynamic processes, and d. the characteristics of places, however large or small, that contribute to their biological diversity and integrity, or their intrinsic or scientific value
PSH	Proposed Structure Heights. The maximum height of the proposed structures proposed within the subjects site AVG 74.00 – 76.00 AHD 9.0m above ground level of 65.0m – 67.0m
Scenic Amenity	A measure of the relative contribution of each place in the landscape to the collective appreciation of open space as viewed from places that are important to the public
Screen Planting	The intentional use of landscape planting to visually screen adjoining uses and structure or views of these.
Visual Amenity	The degree of positive or negative factors associated with viewing a particular structure or proposal.
Visual Catchment	Visual catchments are areas bound by a shared viewing exposure from a particular vantage point or location on the ground plane.
Visualization	Computer stimulation, photomontage or other technique to illustrate the appearance of a development.
Visual Effect	Change in the appearance of the landscape as a result of development. This can be positive (ie. Beneficial or an improvement) or negative (ie. Adverse or a detraction).
VIA	Visual Impact Assessment
VCP	Visual Catchment Plan
VCA VC	Visual Catchment Area, Referenced as VC1, VC2 etc
The Site / Subject Site	225 Terranora Road, Terranora or Lot 16 DP 856265

1.0 Introduction

Planit Consulting has been commissioned by Wrenn Pty Ltd to prepare and submit a Visual Impact Assessment to accompany a request for a Planning Proposal at 225 Terranora Road, Terranora. The planning proposal request relates to land known as 225 Terranora Road, Terranora or Lot 16 DP 856265.

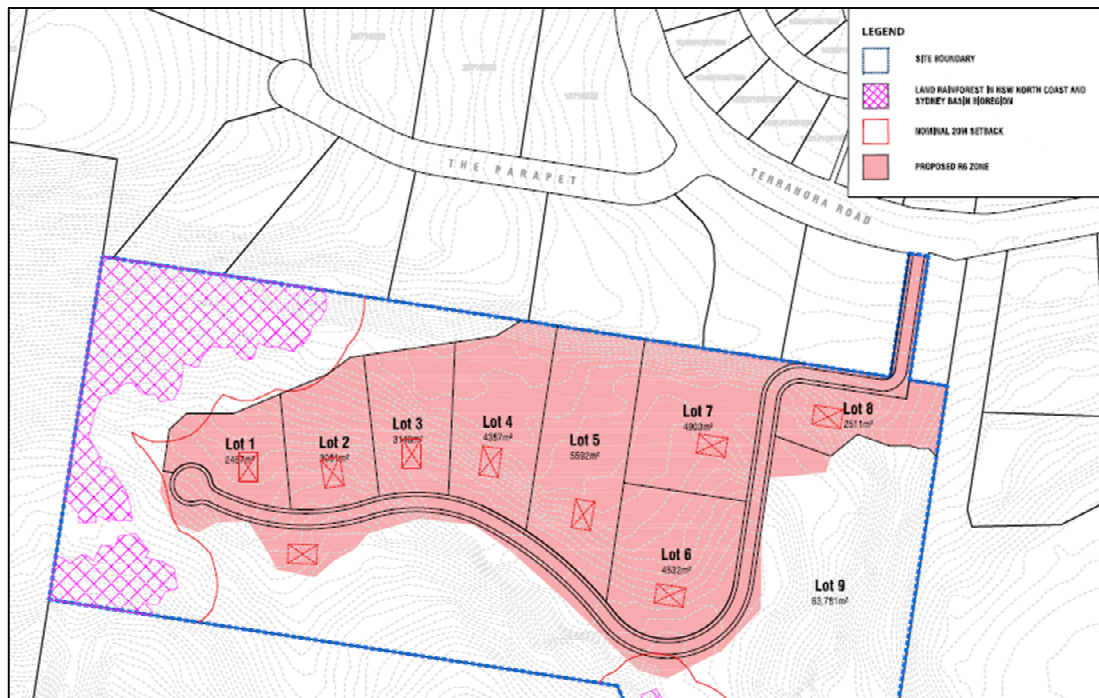
This report has been prepared with particular reference to the items raised in Tweed Shire Council (TSC) Planning Committee Meeting of Thursday the 17th of November 2017. A number of items raised regarding the scenic amenity of the site (and its surrounds) and the potential for the proposed development to have a significant impact on the visual amenity of the Shire and not be sympathetic to or in consonance with the established character of the region will be investigated.

2.0 The Proposal

The above referenced planning proposal seeks to rezone the land at 225 Terranora Road, Terranora or Lot 16 DP 856265 to permit large lot residential development on the cleared northern portion of the site (4,000m² lots). A concept subdivision layout has been prepared to inform how the site can be developed considering the site attributes and surrounding characteristics (Extract Plan 1.0 – Refer also Attachment 01). The concept layout includes a proposed community title subdivision which utilizes a direct road connection off Terranora Road. A single internal roadway provides access to nine (9) residential allotments, each with a minimum lot size of 4,000m².

The residue land will be retained within one allotment that will be managed under a community title arrangement. This will ensure the land which will remain zoned for environmental and rural purposes will not be fragmented and perpetually protected and managed.

This concept plan will be further refined following more detailed site investigations at development application stage.



Plan 1.0 Concept Layout Plan – Extract refer Attachment 01

3.0 Limitations and Assumptions of Study

This report examines the current landscape and visual amenity of the study area through site inspections and through review of existing reports and studies including the Tweed Shire Scenic Landscape Evaluation Report prepared by Catherine Brouwer Landscape Architect November 1995 and Tweed LEPs.

A field inspection of the study location and identified area of interest including areas nominated by TSC for investigation was conducted to determine amenity values and potential visual impacts. This inspection exercise was to gain familiarity with the location and its landscape character and amenity values.

Whilst various data and information sources were utilized in association with this report, various data limitations are present in such documents. As such, these limitations would also be transferrable to the information within this current report. Global Mapper R15 based on Digital Elevation Model (DEM) The Digital Elevation Model (DEM) Grid LiDAR 2015 has been utilised for all topographic and viewshed mapping included within this report.

This report has been prepared to accompany an initial planning proposal and as such the proposed development works exist as conceptual only. The potential for architectural form and landscape design to mitigate potential visual impacts of the development will not be addressed in detail within this report. The building heights used within this visual assessment have been based on the proposed heights of the dwellings as detailed within the planning proposal prepared by Planit Consulting. A 9.0m maximum building height provision is equivalent to the existing maximum building height requirements for the adjoining residential land to the north, east and west.

In this way, although Planit Consulting has taken every precaution in the report preparation process to ensure data accuracy, Planit Consulting makes no representations or warranties about report suitability, accuracy or completeness for any particular purpose and disclaim all responsibility and all liability for all expenses, losses, damages and costs which may be incurred as a result of data being inaccurate or incomplete in any way and for any reason.

4.0 Objectives & Methodology

The objective of this report is to assess the potential impact of the proposed changes to the subject site and its surrounds in context with the scenic amenity of the local region. Key visual catchment zones will be identified through both topographic and photographic studies. The potential visual impact of the proposal on the identified catchments will be assessed and evaluated against recognized visual assessment principals.

To determine any potential visual impacts it is necessary to define the visual catchment of the site. This has been undertaken utilizing the following GIS Mapping Programs and associated data resources;

- Visual Catchment Boundary Plan - Generated using Global Mapper R15 and AutoCad and based on Digital Elevation Model (DEM) The Digital Elevation Model (DEM) Grid LiDAR 2015
- Visual Catchment Isometric Analysis Plans - Generated using Global Mapper R15 and AutoCad and based on Digital Elevation Model (DEM) The Digital Elevation Model (DEM) Grid LiDAR 2015 / SRTM Elevation Data
- Cross Sectional Analysis – 4 Key Vantage Points - Generated using Global Mapper R15 and AutoCad and based on Digital Elevation Model (DEM) The Digital Elevation Model (DEM) Grid LiDAR 2015 / SRTM Elevation Data

This mapping has been used to identify Key Vantage Points (KVP) based on a number of criteria a) Proximity to subject site b) Location along primary vehicular or pedestrian networks c) Areas of elevated topography (Refer Section 8.0 Viewshed Analysis) d) areas as identified by TSC as areas with likely high visual exposure to the subject site.

Particular emphasis has been placed on areas of existing residential development within a close proximity to the subject site and areas determined to be located within the visual catchment resulting from the proposed site development. Verification of these KVP's was made through site inspections and photographs have been recorded where relevant to investigate any potential visual impact of the subject sites proposed development works.

A qualitative assessment of visual impacts forms the second component of the assessment. The significance of impacts has been evaluated using a combination of landscape impacts and visual impacts, as defined below.

4.1 Landscape Impact

Landscape impacts refer to the relative capacity of the landscape to accommodate changes to the physical landscape of the type and scale proposed that would occur as a direct result of the proposed development, through the introduction of new features or loss/modification of existing features.

Impacts have been assessed from identified viewpoints (Key Vantage Points) and consider (through professional judgement) the scale of change including:

- The extent to which the change (modification, removal and / or addition) of landscape features alters the existing landscape character visible to each Key Vantage Point;
- The extent of area from which the effect is evident;
- The duration of the effect (short/medium/long term, permanent/temporary);
- The physical state (or condition) of the landscape and its intactness from visual, functional, and ecological perspective. This includes consideration of the condition of landscape elements (eg. groups of features within the soft landscape including roadside planting, open space, recreational facilities, creek lines, tree, bush blocks), or features (eg. prominent eye-catching elements such as a distinctive building and/or its setting, significant mature specimen tree, lookout point, etc) and their contribution to landscape character. Individual features and elements make up the character of a place and influence how the landscape is experienced

Definitions used to describe this assessment are detailed in Table 1.00

Table 1.0 Assessment of Landscape Impact (Source: Landscape Institute and Institute for Environmental Management and Assessment, 2002)

Landscape impact	Definition
Large	A substantial / obvious change to the landscape due to total loss of, or change to, elements, features or characteristics of the landscape. Would cause a landscape to be permanently changed and its quality diminished.
Moderate	Discernible changes in the landscape due to partial loss of, or change to the elements, features or characteristics of the landscape. May be partly mitigated. The change would be out of scale with the landscape, and at odds with the local pattern and landform and will leave an adverse impact on a landscape of recognised quality.
Small	Minor loss or alteration to one or more key landscape elements, features, or characteristics, or the introduction of elements that may be visible but may not be uncharacteristic within the existing landscape.
Negligible	Almost imperceptible or no change in the view as there is little or no loss of / or change to the elements, features or characteristics of the landscape. The existing landscape quality is maintained but be slightly at odds to the scale, landform and pattern of the landscape.

4.2 Visual Impact

Visual impacts arise from changes in available views of the landscape that occur as a result of the development. Visual impact is determined through the subjective assessment of sensitivity of the visual receptors (i.e. residents, outdoor recreational users) and the magnitude (scale) of the change in view. Sensitivity is dependent upon receptors' location; the importance of their view; their activity (i.e. working, recreational, or travelling through); expectations; available view; and the extent of screening of this view.

Factors that have been considered in assessing the response of receptors to changes in the visual amenity include:

- Interest in the visual environment and their distance/angle of view to the source of the impact;
- The extent of screening/filtering of the view;
- Magnitude of change in the view (i.e. loss/addition of features that change the view's composition);
- Integration of changes within the existing view (form, mass, height, colour and texture);
- Duration of the effect (temporary/permanent, intermittent/continuous)

Receptor sensitivity definitions used to describe this assessment have been outlined in Table 2.0.

Table 2.0 Assessment of Receptor Sensitivity (Source: Landscape Institute and Institute for Environmental Management and Assessment, 2002)

Sensitivity	Definition
High	Occupiers of residential properties with long viewing periods, within close proximity to the proposed development
	Users of outdoor recreational area including nature reserves, and nature based recreation (walking, horse riding trails, water based activities such as swimming and fishing) where their attention is focused, in part, on the landscape and its amenity
	Communities that place value upon the landscape and enjoyment of views of their landscape setting
Medium	Outdoor workers who have a key focus on their work who may also have intermittent views of the Project Area
	Outdoor recreation users (i.e. sporting activities) where their attention is focused predominately on the activity being undertaken
	Occupiers of residential properties with long viewing periods, at a distance from or screened from the Project Area
Low	Road users in motor vehicles, trains or on transport routes that are passing through or adjacent to the study area and therefore have short term views
	Viewers indoor at their place of work
Negligible	Viewers from locations where there is screening by vegetation or structures where only occasional screened views are available and viewing times are short
	Road users in motor vehicles, trains or on transport routes that are passing through/adjacent to the study area and have partially screened views and short viewing times

4.3 Significance of Impact

For the purposes of this assessment, predicted impacts as a direct result of the project have been described according to their significance, which is a function of the magnitude of the impact and the sensitivity of the receptor as detailed in Table 3.0.

Table 3.0 Significance of Impact

		Landscape Impact			
		Large	Moderate	Small	Negligible
Visual Sensitivity	High	Major Significance	High Significance	Moderate Significance	Minor Significance
	Medium	High Significance	Moderate Significance	Minor Significance	Not Significant
	Low	Moderate Significance	Minor Significance	Not Significant	Not Significant
	Negligible	Minor Significance	Not Significant	Not Significant	Not Significant

5.0 Site Location & Study Area

The site has a total area of 10.04 hectares and is located adjacent to the existing residential area of Banora Point, approximately 3.5km south-west of the Tweed Heads South commercial centre. The site fronts Terranora Road and large lot residential land to the north, north east and north west, Old Ferry Road and the Tweed River to the south and rural residential land to the east and west.

The site is predominantly vacant with only a rural shed being located on the land. The northern portion of the site comprises cleared grassland and this rural shed. The cleared portion of the site was previously used as a quarry. The remaining parts of the site are densely vegetated.

The land is undulating, with a general north-east to south-east slope ranging from 100 – 300 with some isolated steeper sections. The dense vegetation covers the steeper / hill face portion of the site.

A 10m wide lot handle linking with Terranora Road provides vehicle access to the site and the existing shed.

The study area / area of investigation for this landscape and visual impact assessment is identified as 2.5km from the central point of the site as illustrated in Fig 1.0 and is primarily located to the south of the subject site. This area of investigation was determined through topographic study and through the identification of the KVP's being investigated as part of this report. The confines of this area of investigation will be further explained throughout this report through the investigation of each identified KVP.



Fig. 1.0 Site Context Plan 01 | Study Area

6.0 Building | Structure Heights

The potential visual impact of the proposed development will be largely determined by the heights of the proposed structures within the site, the site's topography, and the resultant viewsheds. These Proposed Structure Heights (PSH) represent approximate height levels only, for the purposes of cross sectional analysis and viewshed analysis.

The building heights used within this visual assessment have been based on the proposed heights of the dwellings as detailed within the planning proposal prepared by Planit Consulting. A 9.0m maximum building height provision is equivalent to the existing maximum building height requirements for the adjoining residential land to the north, east and west.

Based on these assumptions the following PSH's have been calculated and form the basis for the analysis contained within this report.

Proposed Structure Heights (PSH):

- AVG 74.00 – 76.00 AHD | 9.0m above ground level of 65.0m – 67.0m

This PSH height data (buildings heights up to 9.0m based on Digital Elevation Model (DEM) The Digital Elevation Model (DEM) Grid LiDAR 2015 / SRTM Elevation Data) has been used to establish the potential visual impact on the surrounding visual catchment areas (VC's) and will be referenced throughout this report when investigating key vantage points surrounding the subject site.

7.0 Visual Catchment Areas | Site Topography

Visual catchments are areas bound by a shared viewing exposure from a particular vantage point or location on the ground plane. Visual catchment areas are defined largely by topography, the height of a particular point on the ground plane, relative to the surrounding area.

This is illustrated in Figure 2.0 below.

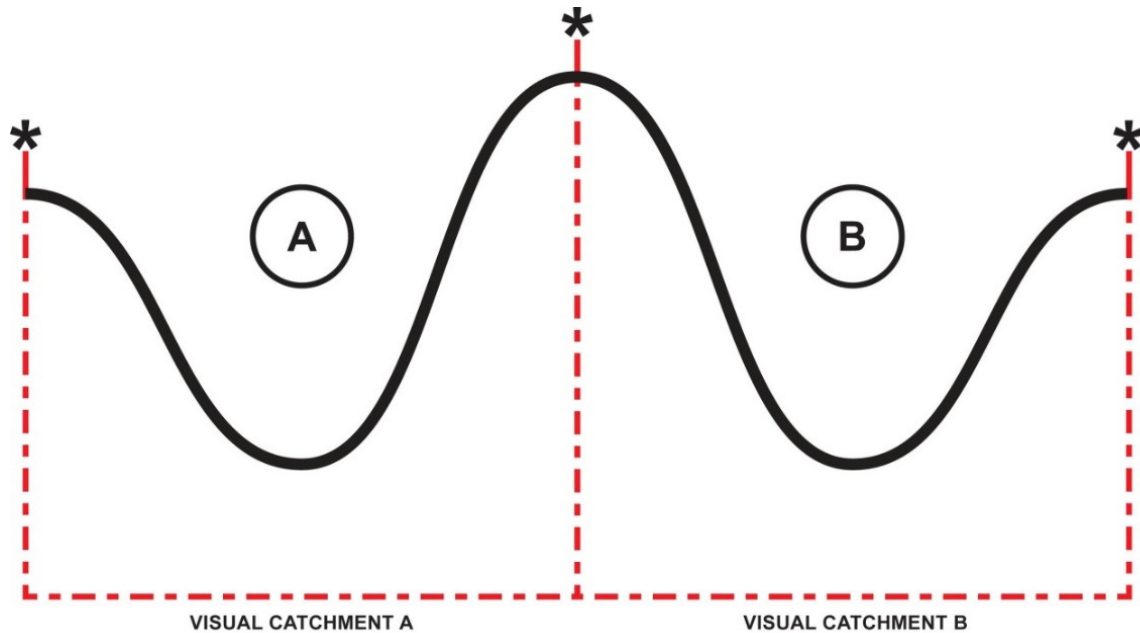
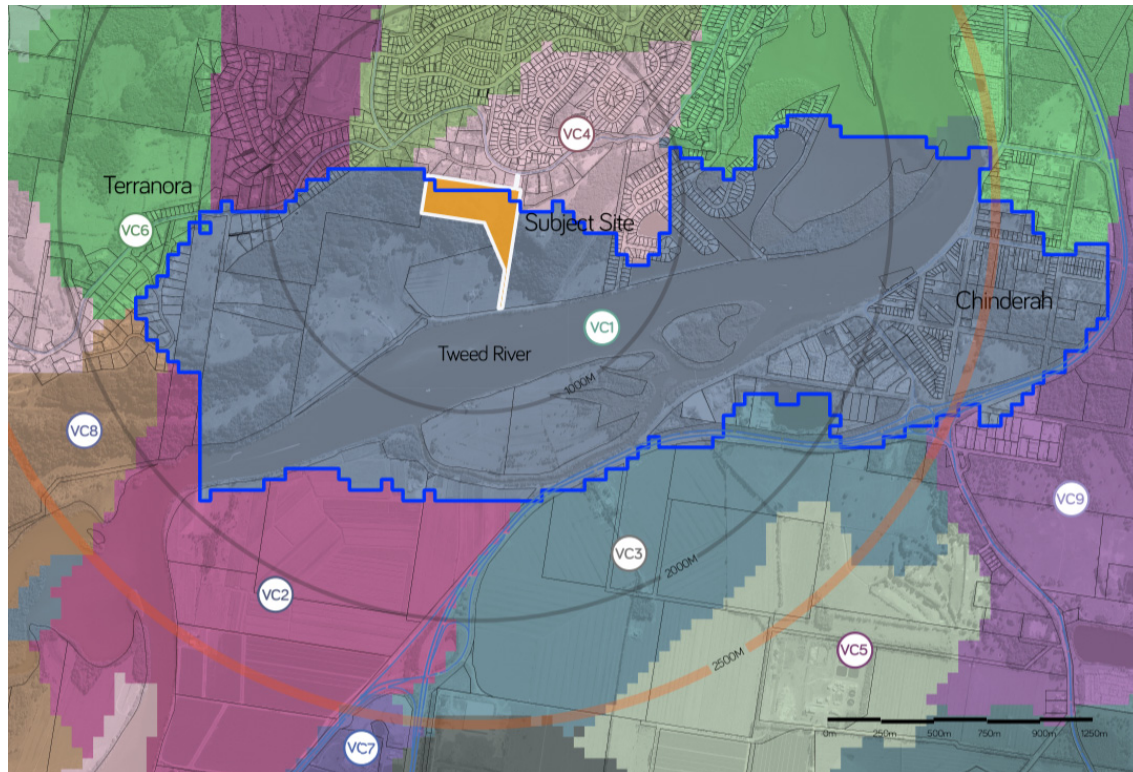


Fig 2.0: Visual Catchment Graph

This cross-sectional view illustrates two distinct Visual Catchments 'A' and 'B'. A particular land-use or structure that exist within Visual Catchment Area A is likely to be contained within the confines of Visual Catchment Zone A. Further, its impact may be visually obscured (or its impact lessened) from Visual Catchment B by the central rise in topography. The dominant ridgelines form the extents of a visual catchment (illustrated as an '*' on the above diagram).

This methodology for establishing visual catchment boundaries has been applied over the study area identified in section 5.0 of this report. An excerpt of this Visual Catchment Plan is included Fig 3.0.



KEY

 Visual Catchment Areas / VC Reference Number

 VCA 1 Boundary

Fig 3.0: Visual Catchment Plan

The Visual Catchment Plan (refer to Figure 3.0) provides a base that will aid in determining the potential visual impact or exposure that the proposed development will have to surrounding view catchments. The various visual catchments determined through topographic analysis are illustrated by the contrasting coloured catchment zones surrounding the subject site. Nine (9) prominent Visual Catchment Boundaries have been identified and are referenced throughout this report (VC 1 to VC 9). Refer to Fig. 8.0 Key Vantage Point Reference Plan.

As illustrated in the Visual Catchment Plan, the subject site is located predominately within a single visual catchment (VC 1) with a clearly defined visual catchment area (illustrated by blue line). The boundaries of this VC are defined by the prominent ridgelines (R1, R2 & R3) which act to limit views of the subject site from areas outside this visual catchment.

The location of these ridgelines and the resultant Visual Catchment Area are more clearly illustrated through isometric topographic modelling. This approach is illustrated in Figure 4.0 and 5.0; for ease of reference the boundary of VC 1 is illustrated. Note vertical exaggeration has been applied for illustrative purposes.

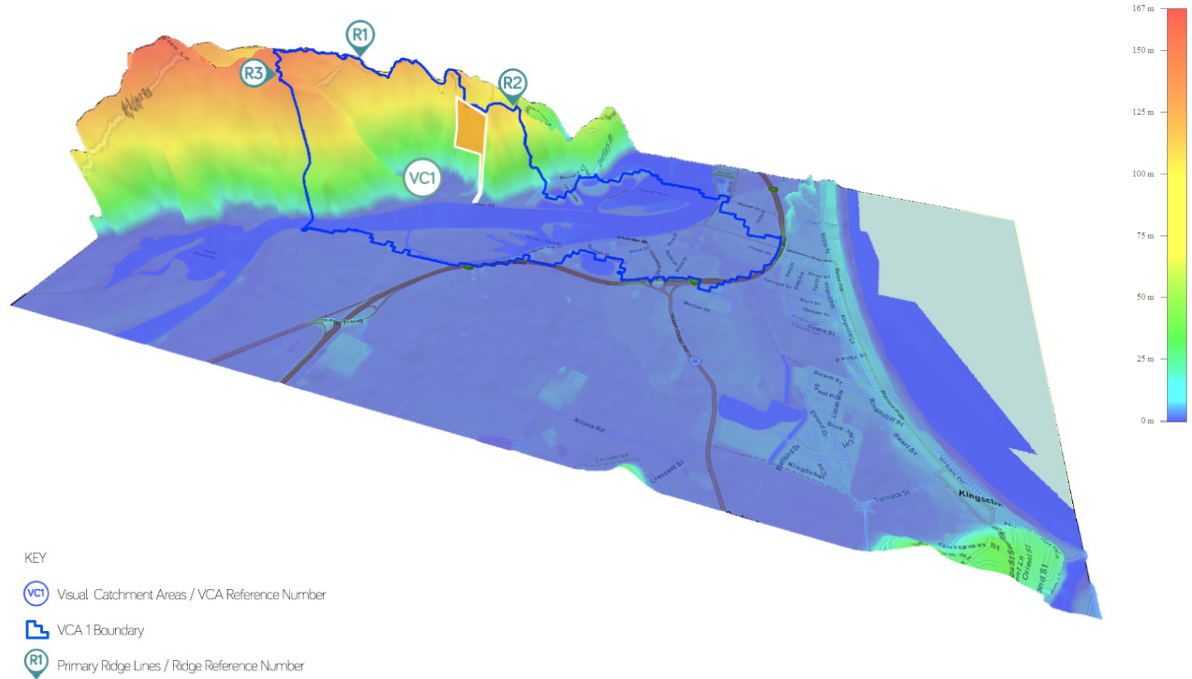


Fig. 4.0 Visual Catchment Area – Isometric 3D, Topographic Overlay

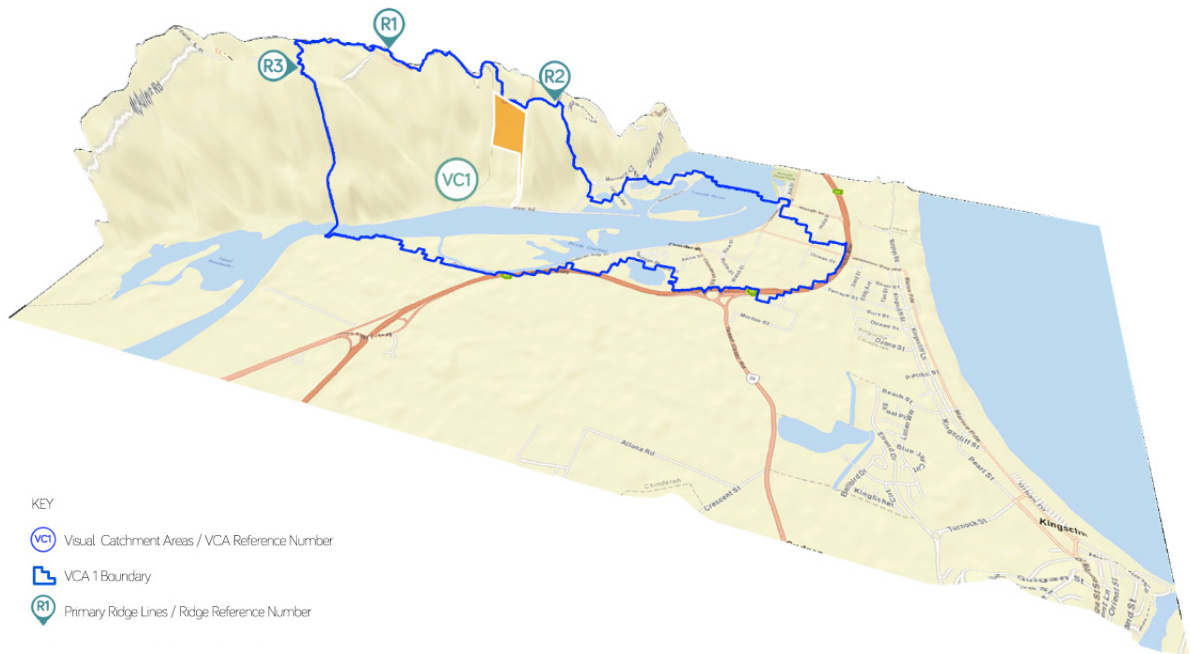


Fig. 5.0 Visual Catchment Area – Isometric 3D, Street Map Overlay

8.0 Viewshed Analysis

As detailed in section 6.0 of this report, the proposed structure height (PSH) within the subject site will be restricted to 9.0m for the development. This height data has been used to generate a viewshed analysis of the proposed structures within the subject site. The view shed analysis uses loaded elevation grid data with a user-specified transmitter location, height, and radius. With reference to Plan 1.0 Concept Layout Plan, transmitter locations have been constrained to within the proposed RD5 Zone only. Areas within the selected radius that have a clear line of sight to the transmitter are colored with a user-specified color (Orange - Refer Fig 6.0). The Digital Elevation Model (DEM) Grid LiDAR 2015 has been used to determine the potential viewshed for these structures.

This is illustrated graphically in Fig 6.0

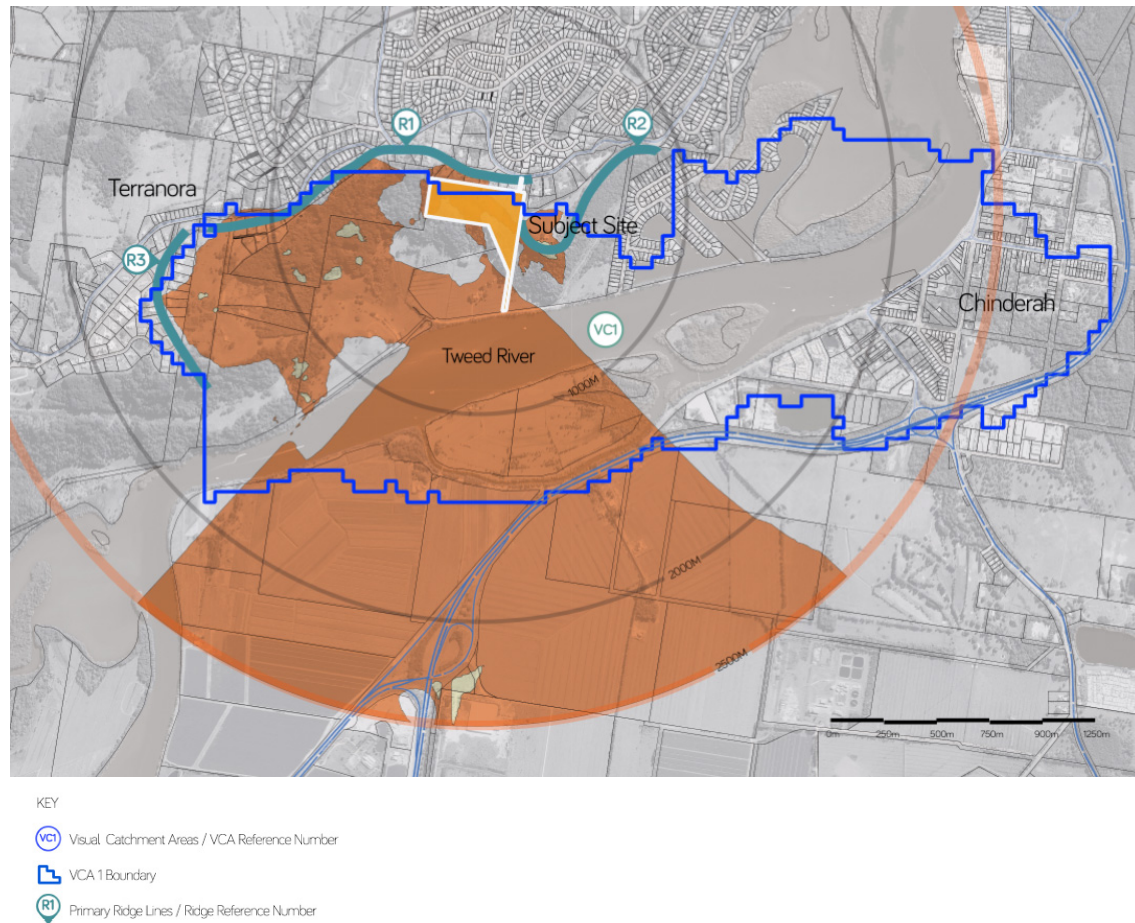


Fig. 6.0 Viewshed Analysis

As illustrated in Fig 6.0, the viewshed of the PSH within the subject site is concentrated to the south and west of the subject site. Prominent ridgelines (R1, R2 & R3) act to contain the viewshed primarily within the VC1 catchment. The view shed analysis indicates that views of the subject site will be visible beyond VC1 further to the south extending into VC2 and VC3 at a distance of 1.37km (refer Fig 3.0: Visual Catchment Plan). The viewshed also extends to the west of the site terminating at R3 associated with Nassau Avenue and the eastern most portion of Sunny Crest Drive at a distance from the subject site of approximately 1.45km.

The viewshed analysis is more clearly demonstrated through isometric topographic modelling. This approach is illustrated in Figure 7.0; for ease of reference the boundary of VC 1 is illustrated. Note vertical exaggeration has been applied for illustrative purposes.

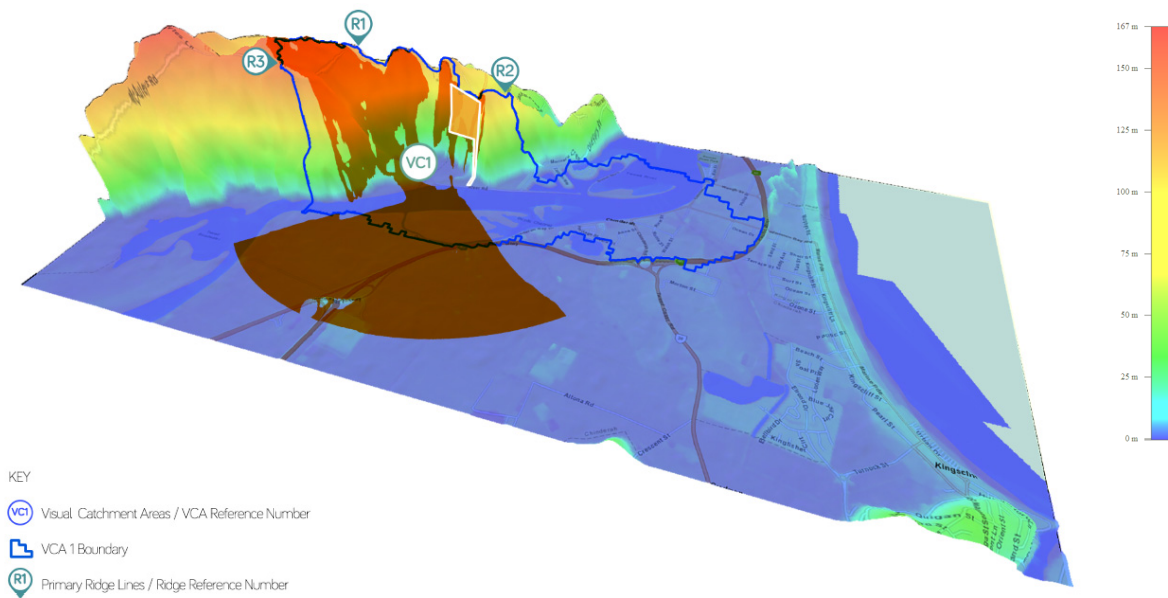


Fig. 7.0 Viewshed Analysis Isometric

9.0 Key Vantage Points

Within the established investigation area, four (4) key vantage points have been selected for further investigation. These vantage points have been selected based on several factors including:

- 1) Proximity to subject site
- 2) Location along primary vehicular or pedestrian networks
- 3) Areas of elevated topography (based on findings within the Viewshed Analysis)
- 4) Photographic and site investigation
- 5) Land use (existing residential areas)
- 6) Public use areas (foreshores, parks, boat ramps etc)
- 7) Area identified by TSC as being of likely impact

Verification of these Key Vantage Points (KVP) was made through site inspections and photographs have been recorded where relevant to provide a representation of typical views from each KVP toward the subject site. Topographic cross sections from each KVP location to the subject site have been generated using (DEM) Grid LiDAR 2015 / SRTM Elevation Data.

Fig.8.0 illustrates the location of the four (4) KVP's identified for further investigation. These are numbered 1 to 4 on this plan with the orange dashed line that extends from each of these KVP's to the subject site representing the distance measurement line as well as the path used to create the cross sectional transect that is included within the KVP analysis section 9.1.

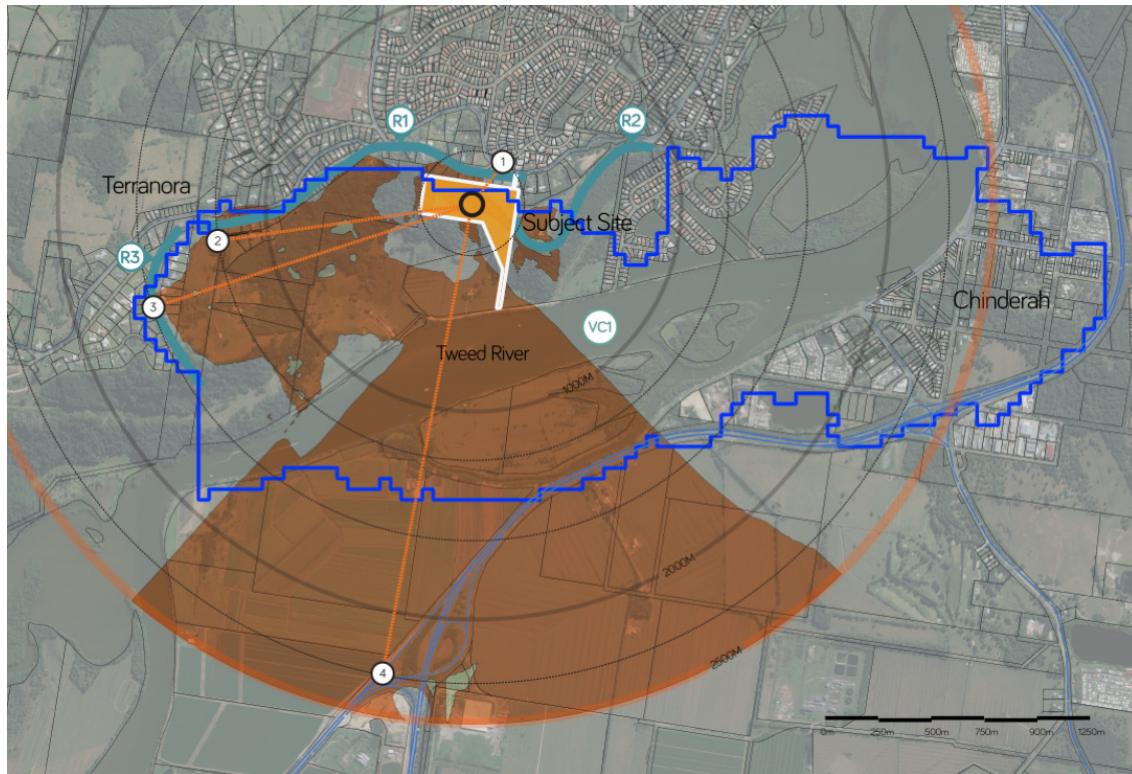


Fig. 8.0 Key Vantage Point Reference Plan

KEY

- (VCI) Visual Catchment Areas / VCA Reference Number
- [] VCA 1 Boundary
- (R1) Primary Ridge Lines / Ridge Reference Number

1. Terranora Road

VP Location Coordinates: 28°14'3.12"S | 153°31'58.58"E
Approx RL Elevation (Grid LiDAR 2015 / SRTM Elevation Data.): 68.92m
Approx Distance from Subject Area (centre point): 145m

2. Winchelsea Way

VP Location Coordinates: 28°14'13.37"S | 153°31'9.87"E
Approx RL Elevation (Grid LiDAR 2015 / SRTM Elevation Data.): 115m
Approx Distance from Subject Area (centre point): 1.23km

3. Sunny Crest Drive & Nassau Avenue

VP Location Coordinates: 28°14'22.39"S | 153°30'58.04"E
Approx RL Elevation (Grid LiDAR 2015 / SRTM Elevation Data.): 144m
Approx Distance from Subject Area (centre point): 1.57km

4. Tweed Valley Way & Pacific Motorway

VP Location Coordinates: 28°15'12.30"S | 153°31'43.82"E
Approx RL Elevation (Grid LiDAR 2015 / SRTM Elevation Data.): 1.44m
Approx Distance from Subject Area (centre point): 2.28km

9.1 Key Vantage Points Analysis

9.1 Key Vantage Point 1 | Terranora Road

Key Vantage Point 1 is located to the immediate north of 227 Terranora Road along its northern side. KVP1 was selected based on its close proximity to the subject site (89.0m from the sites northern border), its raised elevation (68.92 AHD) and its residential nature. As part of KVP1 analysis, the immediate surrounds have also been assessed including residential lots to the north and south of Terranora Road as well as residential lots located to the north and south of The Parapet.

1. Terranora Road

VP Location Coordinates: 28°14'3.12"S | 153°31'58.58"E
Approx RL Elevation (Grid LiDAR 2015 / SRTM Elevation Data.): 68.92m
Approx Distance from Subject Area (centre point): 145m



Image 3.0. Aerial Context View (Base Source Google Earth)

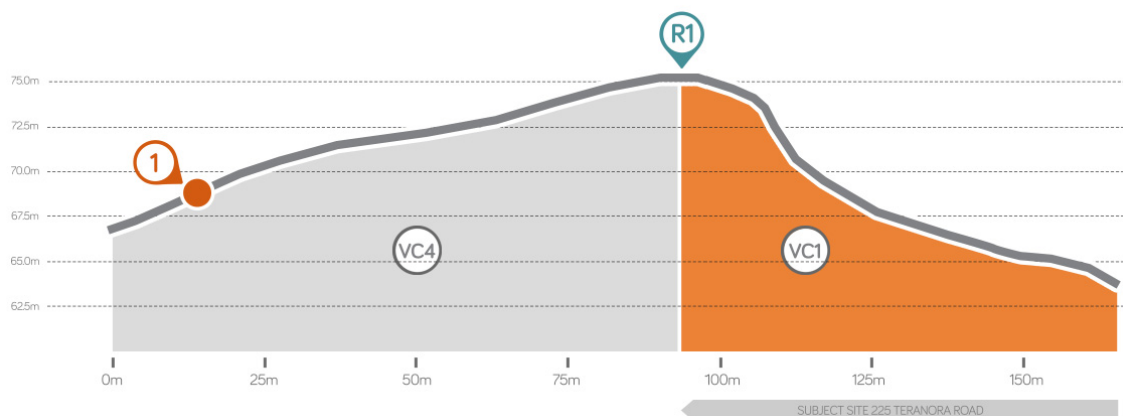


Fig 9.0. Cross Section - Vantage Point 1 | Vertical exaggeration applied refer to scale reference



Image 1.0. Site Image - Vantage Point 1 viewing south from Terranora Road towards Ridgeline 1 and the subject site



Image 2.0. Site Image – View from The Parapet located west of KVP1 at a raised elevation of 82.6AHD viewing east toward KVP1

Vantage Point 01 Analysis

- Key Vantage Point 1 is located along Terranora Road in close proximity to the subject site (89.0m north of the subject sites primary northern border). KVP1 sits at an elevation of 68.92 AHD. It is separated from the subject site by prominent ridgeline R1 which reaches a maximum height of 76.10m at this location (refer to cross sectional analysis Fig 9.0).
- Ridgeline 1 (R1) forms the prominent Viewshed Boundary that separates VC 1 (containing the subject site) and the VC of KVP1 which is located in VC4 (refer to Fig 3.0 Visual Catchment Plan). As per Fig 6.0 Viewshed Analysis, R1 and R2 act to contain the projected viewshed to the south and south-west of the subject site.
- Fig 9.0 Cross Sectional Analysis illustrates the role that R1 plays in defining the border between VC1 (subject site) and VC4 (KVP1) with this prominent ridgeline screening any potential views of the subject site from Terranora Road.
- With reference to Image 1.0, the dwellings on the southern side of Terranora Road are located to the immediate north of R1 at an average raised elevation of 76.10 AHD. For the purposes of this report these lots (223 Terranora Road, 227 Terranora Road, 12 The Parapet) will be referred to as 'the existing neighboring lots'.

- The existing neighboring lots are located on the northern facing slope of R1 resulting in their primary viewing aspect being orientated to the north and north-east. This northerly facing aspect is also illustrated in Image 2.0 which shows the northerly orientation of these dwellings with R1 located to the rear (south) of these lots/dwellings with the open space areas of these lots sloping at a 5.86% grade toward the north (toward the left in Image 2.0).
- R2 is also visible from KVP1 at an average height of 102.8 AHD at the location referenced on Image 1.0. and Image 2.0. The raised elevation of R2 (102.8 AHD) above that of R1 (76.10 AHD) reduces the potential views from the existing neighboring lots toward due east. This containment of the viewshed by R1 and R2 is illustrated in Fig 6.0 Viewshed Analysis.
- The existing dwelling lots have secondary views toward the south and south-west (toward / across the subject site) by virtue of their raised elevation along R1. These views would be considered secondary to the ocean views toward the north-east with R2 limiting views to the east and to a lesser extent the south-east. The raised elevation of these existing neighboring lots (AVG 76.10 AHD) places the average eyeline viewing elevation at 77.85AHD (175.2cm above average AHD elevation). This vantage point is higher than AVG 74.00–76.00 AHD PSH of the subject site (refer Section 6.0 Building | Structure Heights).
- Existing vegetation to the rear (south) of number 8, 9 and 10 The Parapet would greatly reduce any potential views of the proposed dwellings (PSH) within the subject site. These lots sit at an increased elevation due to R1 increasing in elevation as it extends to the west. Number 8 The Parapet sits at elevation 92.8AHD. Number 9 The Parapet sits at elevation 86.2AHD. Number 10 The Parapet sits at elevation 78.4AHD. This raised elevation will reduce any potential impact of the PSH on views to the south and south-east from these dwellings.
- Lots located on the northern side of The Parapet (1,2 and 3 The Parapet) are located on the northern side of R1. Views to the south and south-east (towards the subject site) are screened by the existing dwellings located on the southern side of The Parapet. Nil views of the subject site or the PSH will be visible from these dwellings (1,2 and 3 The Parapet).
- The residential areas located to the north of Teranora Road (with access along Buncrana Terrace) are located at a lower elevation than Teranora Road and take advantage of views to the north and east. Teranora Road at KVP1 is at height 68.92AHD with residential areas to the north at average height 63.5AHD at this location. Nil views of the subject site will be visible from the residential areas to the north of Teranora Road.

Summary | Significance of Impact

As per Vantage Point 01 Analysis, the impact of the proposed development is limited to the existing neighboring lots. Views from KVP1 itself (Teranora Road) are screened from view by R1. The residential dwellings to the north of Teranora Road will have nil views of the subject site. As such, the significance of impact summary will be limited to assessing the impact the proposed development will have on the existing neighboring lots located along the subject sites primary northern border.

With reference to Table 2.0 Assessment of Receptor Sensitivity of the existing lots is considered medium to high. Dwelling occupiers are likely to have long viewing periods across the subject site and are located within close proximity. The sensitivity rating is lessened by these southerly views being considered as secondary to the primary north, north east viewing aspect of these dwelling lots combined with the decreased elevation of the subject site. The

raised elevation of these existing neighboring lots will also considerably lessen the visual impact of the PSH on the existing neighboring lots.

The Landscape Impact would be considered small, with minor loss / reduction to southerly viewing corridors. The alteration of the landscape by the proposed development is not considered uncharacteristic within the existing landscape. This is characterized by the recurrent rooflines of dwellings located within large residential allotments. These roof lines continue the length of R1 and are visually broken up by vegetation located within these lots and to the escarpment located to the immediate south.

The significance of the impact of the proposed development to KVP1 is considered to be of moderate to minor significance.

		Landscape Impact			
		Large	Moderate	Small	Negligible
Visual Sensitivity	High	Major Significance	High Significance	Moderate Significance	Minor Significance
	Medium	High Significance	Moderate Significance	Minor Significance	Not Significant
	Low	Moderate Significance	Minor Significance	Not Significant	Not Significant
	Negligible	Minor Significance	Not Significant	Not Significant	Not Significant

9.2 Key Vantage Point 2 | Winchelsea Way

Key Vantage Point 2 is located to the immediate west of 7 Winchelsea Way along its eastern side. KVP 2 was selected based on its relatively close proximity to the subject site (1.23km from the sites western border), its raised elevation (124.50 AHD) and its residential nature. Winchelsea Way was also nominated by TSC as a vantage point requiring additional investigation. As part of KVP2 analysis, the immediate surrounds have also been assessed including residential lots to the north and east of Winchelsea Way as well as residential lots located to the west with access off Nassau Avenue (KVP3).

2. Winchelsea Way

VP Location Coordinates: 28°14'13.37"S | 153°31'9.87"E

Approx RL Elevation (Grid LiDAR 2015 / SRTM Elevation Data.): 124.5m

Approx Distance from Subject Area (centre point): 1.23km



Image 4.0. Aerial Context View (Base Source Google Earth)

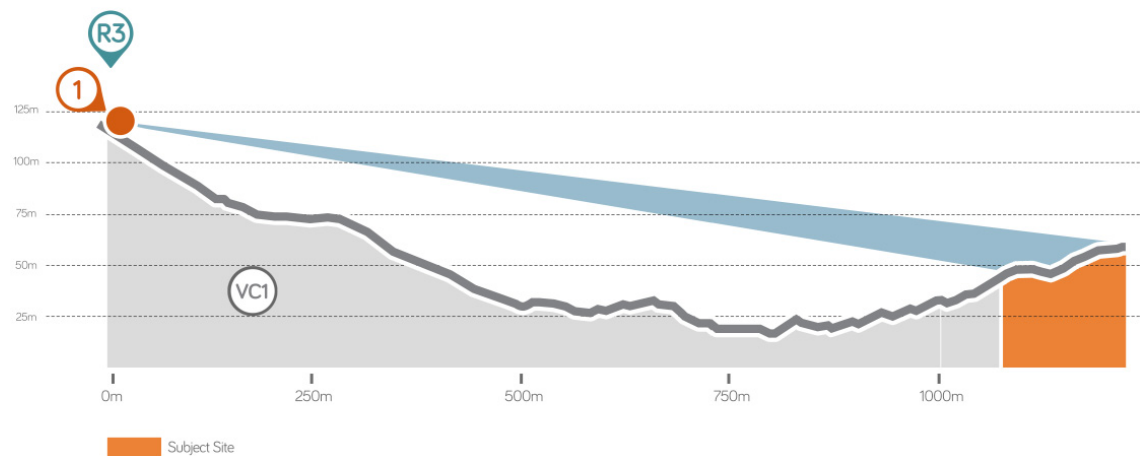


Fig 10.0. Cross-Section - Vantage Point 2 | vertical exaggeration applied refer to scale reference



Image 5.0. Site Image - Vantage Point 2 Viewing east from Winchelsea Way towards Ridgeline 2 and the subject site



Image 6.0. Site Image - Vantage Point 2 Viewing west from Winchelsea Way towards Ridgeline 3 and KVP3



Image 7.0. Site Image – Teranora Road typical dwellings 373-375 Terranora Road

Vantage Point 02 Analysis

- Key Vantage Point 2 is located to the immediate west of 7 Winchelsea Way along its eastern side. KVP 2 is located 1.23km west of the subject sites western border. The KVP sits at an elevation of 124.50 AHD at a height greater than that of the subject site which sits at an average elevation of 65.0 – 67.0AHD with a 74.00–76.00 AHD PSH.

- Ridgeline 1 (R1) forms the prominent Viewshed Boundary that restricts VC 1 along its northern boundary (containing the subject site), R1 is visible in Image 5.0. R1 raises in elevation from AVG 76.10 AHD at KVP1 to 124.50 AHD at KVP2 and generally runs parallel to the immediate south of Terranora Road.
- R2 is also visible from KVP2 at an average height of 102.8 AHD at the location referenced on Image 4.0. The lower elevation of R2 (102.8 AHD) than that of KVP 2 (124.50 AHD) reduces the visual impact R2 has on reducing views to the east from KVP2.
- The raised elevation of R1 and R2 that is located to the rear (east) of the subject site when viewed from KVP2 creates a dense vegetated backdrop to the subject site. With R2 elevation of 102.8 AHD, the PSH of the subject site (74.00–76.00 AHD) will be significantly lower than this visual backdrop.
- As per Fig 3.0 Visual Catchment Plan, KVP2 and the subject site share the same Visual Catchment Boundary both being located within VC1.
- As per Fig 6.0 Viewshed Analysis, views from KVP2 to the subject site were predicted with R1 and R2 acting to contain the projected viewshed to the south and south-west in which KVP2 is located.
- Figure 10.0 Cross Sectional Analysis illustrates the raised elevation of KVP2 (124.50 AHD) compared to that of the subject site. As illustrated in Fig 10.0, a clear line of sight from KVP2 to the subject site is evident. This cross sectional analysis is based on topographic data Digital Elevation Model (DEM) Grid LiDAR 2015 and does not take into consideration the mitigating effect of existing vegetation. As visible in Image 4 and 5, significant existing vegetation is located across the sightline from KVP2 to the subject site.
- Image 5.0 illustrates the typical landscape and urban character created by existing development along the southern side of Terranora Road (R1). This is characterized by the recurrent rooflines of dwellings located within large residential allotments. These roof lines continue the length of R1 and are visually broken up by vegetation located within these lots and to the escarpment located to the immediate south of these lots. These dwellings along Terranora Road are located on the southern (lower) side of R1 with primary views to the south (refer Image 7.0). Rooflines do not exceed the general tree line associated with R1 (Image 5.0). Refer also Image 12.00.
- As per Image 5.0, the subject site is visible from KVP2, however at a distance of 1.23km, the subject site represents a minor portion of the overall visual catchment from KVP2. As per Image 7.0, the primary view orientation of the residential lots located along R1 is not toward the subject site but is to the south and south east.
- As per Image 6.0 there are nil residential lots currently located on the western side of Winchelsea Way. Lots located along Nassau Avenue (KVP3) are visible. These will be examined further in KVP3 analysis.

Summary | Significance of Impact

As per Vantage Point 02 Analysis, the subject site is visible from the elevated position of KVP2. The visual impact of the subject site is reduced by R2 providing a dense vegetated backdrop to the proposed development. The primary view orientation of the existing dwellings located on Winchelsea Way and to Terranora Road along R1 (with potential views of the subject site) are towards the south and south east (not toward the subject site). The subject site represents a minor portion of the overall visual catchment afforded to these existing dwellings. Development on the subject site will be in consonance with the existing landscape and urban character of R1 which is characterized by

the recurrent rooflines of dwellings located within large residential allotments visually broken up by vegetation located within these lots and to the escarpment located to the immediate south.

With reference to Table 2.0 Assessment of Receptor Sensitivity of KVP2 and its surrounds is considered medium. The general public have restricted views from this location whilst dwelling occupiers are likely to have long viewing periods of the subject site however these are located at a distance and orientation that reduces the proportional viewing impact.

The Landscape Impact would be considered small, with minor alteration to the landscape when viewed from this vantage point. The alteration of the landscape by the proposed development is not considered uncharacteristic within the existing landscape.

The significance of the impact of the proposed development to KVP2 is considered to be of minor significance.

		Landscape Impact			
		Large	Moderate	Small	Negligible
Visual Sensitivity	High	Major Significance	High Significance	Moderate Significance	Minor Significance
	Medium	High Significance	Moderate Significance	Minor Significance	Not Significant
	Low	Moderate Significance	Minor Significance	Not Significant	Not Significant
	Negligible	Minor Significance	Not Significant	Not Significant	Not Significant

9.3 Key Vantage Point 3 | Sunnycrest Drive & Nassau Avenue

Key Vantage Point 3 is located to the immediate west of 11 Sunnycrest Drive along its eastern side. KVP 3 was selected based on its relatively close proximity to the subject site (1.57km from the sites western border), its raised elevation (144.00 AHD) and its residential nature. Sunnycrest Drive was also nominated by TSC as a vantage point requiring additional investigation. As part of KVP3 analysis, the immediate surrounds have also been assessed including residential lots to the north and east of Nassau Avenue as well as residential lots located to the west Sunnycrest Drive.

3. Sunny Crest Drive & Nassau Avenue

VP Location Coordinates: 28°14'22.39"S | 153°30'58.04"E

Approx RL Elevation (Grid LiDAR 2015 / SRTM Elevation Data.): 144.5m

Approx Distance from Subject Area (centre point): 1.57km



Image 7.0. Aerial Context View (Base Source Google Earth)

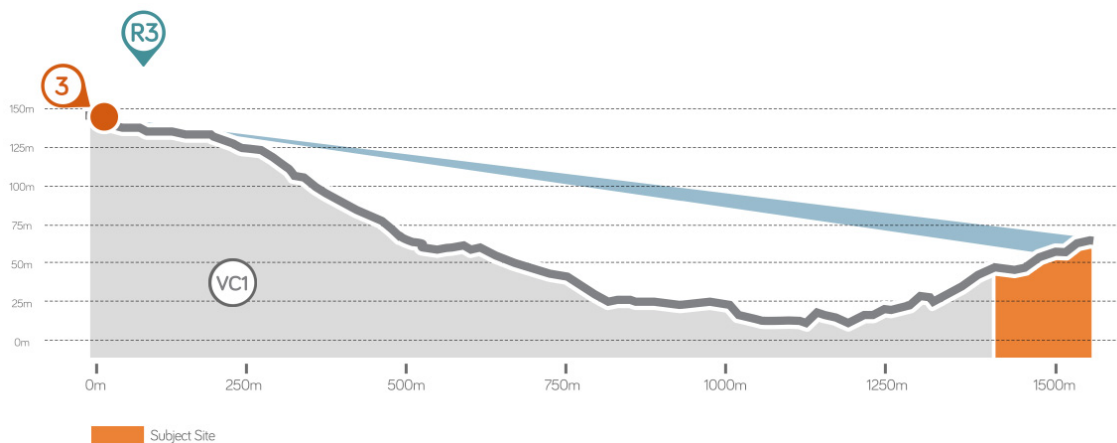


Fig 11.0. Cross Section - Vantage Point 3 | vertical exaggeration applied refer to scale reference



Image 8.0. Site Image – Vantage Point 3 Viewing east from Sunnycrest Drive



Image 9.0. Site Image – 150m east from KVP3 along Sunnycrest Drive

Vantage Point 03 Analysis

- Key Vantage Point 3 is located to the immediate west of 11 Sunnycrest Drive along its eastern side. KVP 3 is located 1.57km west of the subject sites western border. KVP3 sits at an elevation of 144.50 AHD at raised elevation above the subject site which sits at an average elevation of 65.0 – 67.0AHD with a 74.00–76.00 AHD PSH.
- KVP3 shares a similar line of site with that of KVP2 and is located 340m west of KVP2. As per KVP2 analysis Image 6.0, residential dwellings along Nassau Avenue are visible from KVP2.
- R2 is visible from KVP3 at an average height of 102.8 AHD at the location referenced on Image 8.0 and 9.0. The lower elevation of R2 (102.8 AHD) than that of KVP3 (144.50 AHD) reduces the visual impact R2 has on reducing views to the east from KVP3 with a continual ocean horizon visible from this vantage point.
- The raised elevation of R2 that sits to the rear (east) of the subject site when viewed from KVP3 creates a dense vegetated backdrop to the subject site. With R2 elevation of 102.8 AHD, the PSH of the subject site (74.00–76.00 AHD) will be significantly lower than this visual backdrop.
- As per Fig 3.0 Visual Catchment Plan, KVP3 and the subject site share the same Visual Catchment Boundary both being located within VC1. KVP3 is located along R3 that forms the western-most boundary of Visual Catchment 1.

- As per Fig 6.0 Viewshed Analysis, views from KVP3 to the subject site were predicted with R1 and R2 acting to contain the projected viewshed to the south and south-west in which KVP 3 is located.
- Figure 11.0 Cross sectional Analysis illustrates the raised elevation of KVP3 (144.50 AHD) compared to that of the subject site. As illustrated in Fig 11.0, a clear line of sight from KVP3 to the subject site is evident. This cross sectional analysis is based on topographic data Digital Elevation Model (DEM) Grid LiDAR 2015 and does not take into consideration the mitigating effect of existing vegetation or other built structures located within the line of sight. As visible in Image 7.0, significant existing vegetation is located across the sightline from KVP3 to the subject site.
- As illustrated in Image 8.0 and 9.0, the subject site is predominately obscured from the viewing locations available along Nassau Avenue and Sunnycrest Drive (R3). It can be assumed from topographic analysis and inference that the subject site will likely be visible from within the private dwellings located on the eastern side on Nassau Avenue and Sunnycrest Drive, however at a distance of 1.57km, the subject site represents a minor portion of the overall visual catchment from KVP3. As per Image 8.0, the primary view orientation of the residential lots located along R3 is to the south and south east (not toward the subject site).
- As per KVP2 analysis, Image 5.0 illustrates the typical landscape and urban character created by existing development along the southern side of Terranora Road (R1). This is characterized by the recurrent rooflines of dwellings located within large residential allotments. These roof lines continue the length of R1 and are visually broken up by vegetation located within these lots and to the escarpment located to the immediate south of these lots. Any minor views available from KVP3 to the subject site will be in consonance with the existing landscape and urban character of the R1 escarpment. Refer also Image 12.00.

Summary | Significance of Impact

As per Vantage Point 03 Analysis, it can be assumed from topographic analysis and inference that the subject site will likely be visible from the elevated position of KVP3. The visual impact of the subject site is reduced by R2 providing a dense vegetated backdrop to the proposed development as well as the significant stands of existing vegetation that lies between KVP3 and the subject site.

The primary view orientation of the existing dwellings located on Nassau Avenue and Sunnycrest Drive along R3 (with potential views of the subject site) are towards the south and south east. The subject site represents a minor portion of the overall visual catchment afforded to these existing dwellings and is not located with the KVP's primary viewing corridor. Development on the subject site will be in consonance with the existing landscape and urban character of R1 escarpment which is characterized by the recurrent rooflines of dwellings located within large residential allotments visually broken up by vegetation located within these lots and to the escarpment located to the immediate south.

With reference to Table 2.0 Assessment of Receptor Sensitivity of KVP3 is considered medium. The general public have restricted views from this location whilst dwelling occupiers are likely to have long viewing periods of the subject site however these are located at a distance that considerably reduces the proportional viewing impact.

The Landscape Impact would be considered small, with minor alteration to the landscape when viewed from this vantage point. The alteration of the landscape by the proposed development is not considered uncharacteristic within the existing landscape.

The significance of the impact of the proposed development to KVP3 is considered to be of minor significance.

		Landscape Impact			
		Large	Moderate	Small	Negligible
Visual Sensitivity	High	Major Significance	High Significance	Moderate Significance	Minor Significance
	Medium	High Significance	Moderate Significance	Minor Significance	Not Significant
	Low	Moderate Significance	Minor Significance	Not Significant	Not Significant
	Negligible	Minor Significance	Not Significant	Not Significant	Not Significant

9.4 Key Vantage Point 4 | Tweed Valley Way & Pacific Motorway

Key Vantage Point 4 is located approximately 300m west of the junction of Tweed Valley Way and Pacific Motorway. It is located along Tweed Valley Way to the immediate north of the Melaleuca Station Memorial Gardens and Crematorium. KVP 4 was selected based on its location within the identified Viewshed Analysis (Fig 6.0). KVP4 represents one of the only areas available to the public to the south of the subject site with potential views of the subject site. As part of KVP4 analysis, the immediate surrounds have also been assessed including Pacific Motorway to the east of KVP4.

4. Tweed Valley Way & Pacific Motorway

VP Location Coordinates: 28°15'12.30"S | 153°31'43.82"E
Approx RL Elevation (Grid LiDAR 2015 / SRTM Elevation Data.): 1.44m
Approx Distance from Subject Area (centre point): 2.28km



Image 10.0. Aerial Context View (Base Source Google Earth)

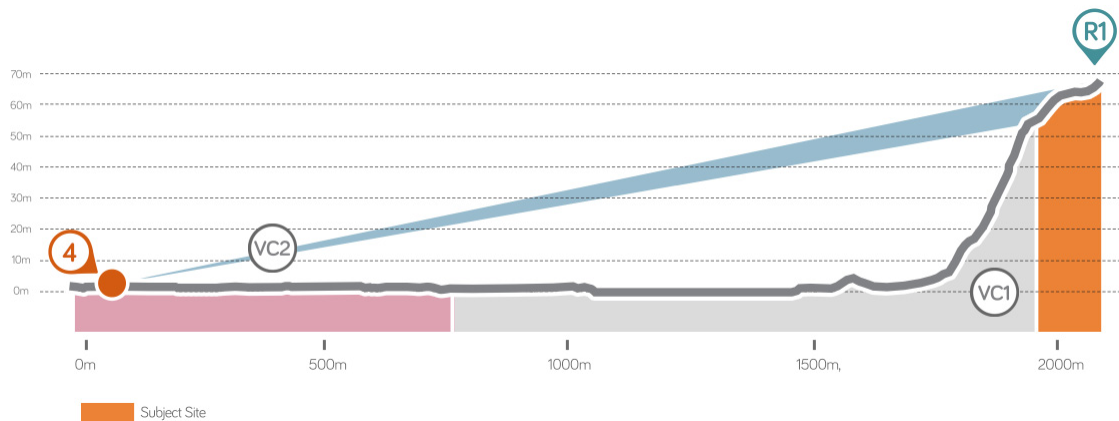


Fig 12.0. Cross-Section - Vantage Point 4 | vertical exaggeration applied refer to scale reference

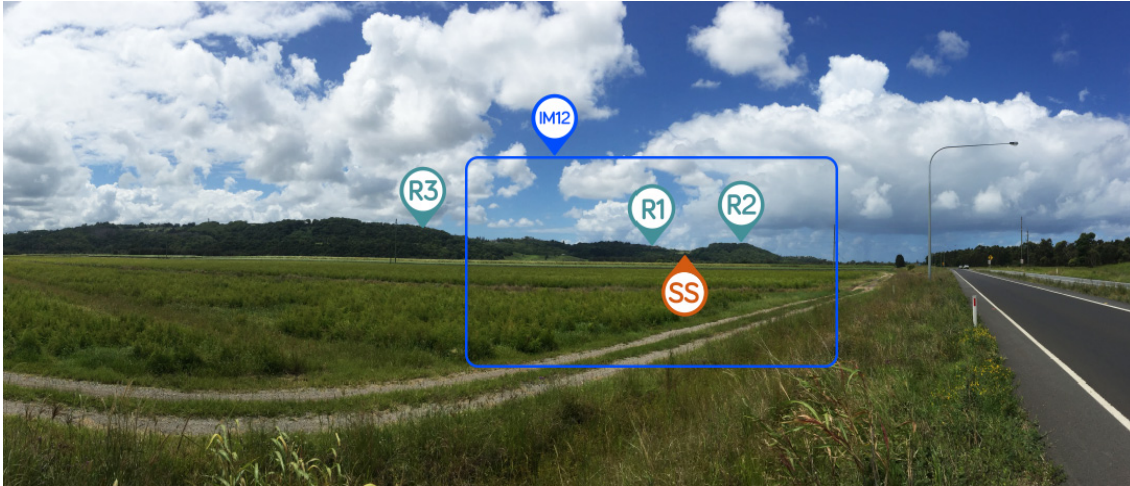


Image 11.0. Site Image - Vantage Point 4 Viewing north from Tweed Valley Way



Image 12.0. Site Image (250% magnification) Viewing north from Tweed Valley Way – Existing residential structures highlighted.



Image 13.0. Site Image – 800m east along Pacific Motorway from Vantage Point 4 Viewing north towards the subject site

Vantage Point 03 Analysis

- Key Vantage Point 4 is located approximately 300m west of the junction of Tweed Valley Way and Pacific Motorway to the immediate north of the Melaleuca Station Memorial Gardens and Crematorium. KVP4 sits at a significantly reduced elevation of 1.44AHD than that of the subject site with an average elevation of 65.0 – 67.0AHD with a 74.00–76.00 AHD PSH.
- KVP4 represents the primary viewing location to the south that is available to the public. The lands to the south of the subject site are dominated by low laying agricultural lands with the Pacific Motorway and Tweed Valley Way the significant features of this region. The closest residential land use located to the south of the subject site are associated with Chinderah Bay Drive. As per Figure 6.0 Viewshed analysis, any potential views from this residential area of the subject site are screened by R2.
- As per Fig 3.0 Visual Catchment Plan, KVP4 and the subject site are not located within the same Visual Catchment Boundary with the subject site located within VC1 and KVP4 located within VC2 to the south of VC1. This is also graphically illustrated in Fig 12.0. Cross-Sectional Analysis. This VCA transition is created by the raised elevation of the Pacific Motorway and Dodds Road which defines the southern boundary of VC1.
- As per Fig 6.0 Viewshed Analysis, views from KVP4 to the subject site were predicted with R1, R2 and R3 acting to contain the projected viewshed to the south and south-west in which KVP4 is located.
- Figure 12.0 Cross Sectional Analysis illustrates the significantly lower elevation of KVP4 (1.44AHD) compared to that of the subject site (65.0 – 67.0AHD). As illustrated in Fig 12.0, a clear line of sight from KVP4 to the subject site is evident. This cross sectional analysis is based on topographic data Digital Elevation Model (DEM) Grid LiDAR 2015 and does not take into consideration the mitigating effect of existing vegetation or other built structures located within the line of sight.
- As per KVP2 analysis, Image 5.0 illustrates the typical landscape and urban character created by existing development along the southern side of Teranora Road (R1). This general character is clearly evident from KVP4. For ease of visual identification, the residential structures visible along R1 and R3 are highlighted in Image 12.0. This image identifies that the R1 and R3 ridgelines (Teranora Road escarpment) is characterized by the recurrent rooflines of dwellings located within large residential allotments. These roof lines continue the length of R1 and R3 and are visually broken up by vegetation located within these lots and to the escarpment located to the immediate south of these lots.
- Any minor views available from KVP4 of the subject site will be in consonance with the existing landscape and urban character of the R1 and R3 escarpment.
- Any views from the Pacific Motorway and Tweed Valley Way to the subject site will be restricted to vehicles travelling northbound for a very brief viewing exposure.
- Views of the subject site from the Pacific Motorway further east (refer Image 13.0) are screened due to significant existing vegetation stands located along the Motorway reserve.

Summary | Significance of Impact

As per Vantage Point 04 Analysis, the subject site is visible from KVP4 due to its elevated nature. The visual impact of the subject site is reduced by R1 and R2 providing a dense vegetated backdrop to the proposed development as well as the significant distance between KVP4 and the subject site.

Development on the subject site will be in consonance with the existing landscape and urban character of R1 and R3 escarpment.

With reference to Table 2.0 Assessment of Receptor Sensitivity of the agricultural lands, Tweed Valley Way and Pacific Motorway is considered negligible. At a considerable distance of 2.28km, the subject site represents a minor portion of the overall visual catchment visible from KVP4 and its surrounds. The Landscape Impact would be considered small, with minor alteration to the landscape when viewed from this vantage point. The alteration of the landscape by the proposed development is not considered uncharacteristic within the existing landscape.

The significance of the impact of the proposed development to KVP4 is considered to be not significant.

		Landscape Impact			
		Large	Moderate	Small	Negligible
Visual Sensitivity	High	Major Significance	High Significance	Moderate Significance	Minor Significance
	Medium	High Significance	Moderate Significance	Minor Significance	Not Significant
	Low	Moderate Significance	Minor Significance	Not Significant	Not Significant
	Negligible	Minor Significance	Not Significant	Not Significant	Not Significant

12.0 Conclusions

- The subject site is located within a single Visual Catchment (VC 1) with a clearly defined visual catchment area (Ref Plan 3.0 Visual Catchment Area Analysis Plan). The boundaries of this VC are defined by prominent ridgelines which act to limit views of the subject site from areas outside this VC. Three (3) ridgelines located within the 2.5km area of investigation have been identified and their influence on the visual containment of the PSH are referenced throughout this report (R1 to R3).
- The viewshed of the proposed structures is concentrated to the south and south-west, of the subject site with Ridge Line 1 (R1) limiting the viewshed to the north and north-east of the subject site (Ref Plan 6.0 Viewshed Analysis). Other significant ridgelines (R2 to R3) are located within the 2.5km area of investigation and have influence on visual catchments creating nine (9) distinct Visual Catchments (Ref plan 3.0 Visual Catchment Plan).
- Four (4) key Vantage Points were investigated to determine the potential visual impact of the Subject Site. These vantage points were selected based on a number of factors as identified within this report and include areas identified by TSC as being areas requiring further investigation. Generally, they represent views from key visual receptors (residents and recreation users) where a potentially significant change in view may occur. Particular emphasis was placed on areas of existing residential development within a close proximity to the subject site and areas determined to be located within the visual catchment resulting from the proposed site development. Verification of these KVP's was made through site inspections and photographs recorded where relevant to investigate any potential visual impact of the subject site.
- Through analysis of the four (4) identified KVP's and through general site investigations the landscape and urban character of the area of investigation has been assessed. This is generally characterized by the recurrent rooflines of dwellings located within large residential allotments. These roof lines continue the length of R1 and extend along R3 and are visually broken up by vegetation located within these lots and to the escarpment located to the immediate south of these lots. The proposed development is considered to be sympathetic and in consonance with this establish regional character and scenic amenity.
- The most significant visual impact identified was to that of KVP1. This vantage point contains the existing neighboring lots located to the immediate north of the subject sites primary northern boundary (223 Terranora Road, 227 Terranora Road, 12 The Parapet). The existing dwelling lots have secondary views toward the south and south-west (toward the Subject Site) by virtue of their raised elevation along R1. These views are considered secondary to the ocean views toward the north-east with R2 limiting views to the east and to a lesser extent the south-east. The significance of the impact of the proposed development to KVP1 was determined to be of moderate to minor significance due to the raised elevation and orientation of these existing neighboring lots.
- The significance of the impact of the proposed development to residential areas associated with KVP2 and KVP3 have both been determined to be of minor significance. This is a result of the primary view orientation of the existing dwellings located on Nassau Avenue and Sunnycrest Drive along R3 (with potential views of the subject site) being towards the south and south east (not directly toward the subject site). The subject site represents a minor portion of the overall visual catchment afforded to these existing dwellings and is not located with the KVP's primary viewing corridor. Development on the subject site will be in consonance with the existing landscape and urban character of R1 escarpment which is characterized by the recurrent rooflines of dwellings located within large residential allotments visually broken up by vegetation located within these lots and to the escarpment located to the immediate south. The creation of large lot residential

dwellings on the cleared northern portion of the site (4,000m² lots) is considered to be a continued application an established residential form.

- The Viewshed Analysis undertaken illustrates the potential for long views from the south due to the raised elevation of the subject site and the large expanse of low laying land to the south. This was investigated through analysis of KVP4. With reference to Table 2.0 Assessment of Receptor Sensitivity, the agricultural lands, Tweed Valley Way and Pacific Motorway was considered of negligible sensitivity. At a considerable distance of 2.28km, the subject site represents a minor portion of the overall visual catchment visible from KVP4 and its surrounds. The Landscape Impact would be considered small, with minor alteration to the landscape when viewed from this vantage point. Any views from the Pacific Motorway and Tweed Valley Way will be restricted to vehicles travelling northbound for a very brief viewing exposure. The alteration of the landscape by the proposed development is not considered uncharacteristic within the existing landscape.
- Architectural and Landscape treatments will be utilized to assist in mitigating any potential adverse visual impact of the proposed subject site development works. Landscape amenity planting should aim to mitigate any potential visual impacts through landscape treatments appropriate to the scale of the development and sympathetic to the established regional landscape treatments. Detailed landscape plans will be developed as part of future development applications.
- The planning proposal seeks to rezone the land to permit large lot residential development on the cleared northern portion of the site (4,000m² lots). The residue land will be retained within one allotment that will be managed under a community title arrangement. This will ensure the land which will remain zoned for environmental and rural purposes will not be fragmented and perpetually protected and managed. This existing site vegetation will assist in maintaining the established landscape and urban character of the escarpment within which the proposed development is located.