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# Assessment of Tree Cover for Significant Landscape Overlay – Schedule 7, Ocean Grove

Prepared for:
City of Greater Geelong

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# Document Information

Assessment of Tree Cover for Significant Landscape Overlay – Schedule 7, Ocean Grove

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# Document Control

| Version | Review | Author | Date |
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# Summary

Okologie Consulting was engaged by the City of Greater Geelong to undertake an assessment of tree cover for the area subject to Significant Landscape Overlay – Schedule 7 in Ocean Grove.

Areas of public and private land within established Ocean Grove support remnant coastal vegetation, which contributes to the unique coastal and vegetated character of the township. Council and the local community have identified the ongoing loss of coastal vegetation from development as an important planning consideration.

The aim of the assessment was to review the extent of indigenous and planted native tree cover on public and private land, identify how these values can be preserved and enhanced, and identify appropriate planning measures to better protect the remaining vegetation within development sites.

The field survey was undertaken between 20 and 24 July 2015 for street trees and between 10 and 14 August for private property trees. The assessment criteria for street trees were applied to indigenous canopy tree species greater than three metres tall, and planted native trees greater than five metres tall. Assessment of trees on private property was undertaken from the road reserve and mapped onto aerial photography.

A total of 233 street trees were recorded within the project area, which comprised 114 indigenous trees and 119 planted native trees. This included 35 indigenous street trees and seven planted native trees not previously recorded. The assessment of private property trees identified 1330 trees, consisting of 772 indigenous trees and 558 planted native trees.

The street tree assessment identified that several streets were devoid of indigenous trees, particularly in the northern section of the project area. The loss of indigenous tree cover may be attributed to development and inadequate tree recruitment.

The private property assessment found the majority of trees were indigenous; however, these trees were generally limited to the southern section of the project area and were absent from several areas, which may be attributed to residential development. Several areas within the township do not represent the objective of Significant Landscape Overlay – Schedule 7 as a result of modification from development and loss of indigenous canopy cover, and should be considered for removal from the overlay.

Planted native trees in private property now form a significant component of the landscape character of this part of Ocean Grove. The current Significant Landscape Overlay – Schedule 7 statement of significance does not account for the contribution of planted native to the local landscape. It is recommended that the planning provision recognise the role of the planted native tree canopy within a modified urban landscape.

# 1 Introduction

## 1.1 Project Background

Okologie Consulting was engaged by the City of Greater Geelong (CoGG) to undertake an assessment of tree cover for the area subject to Significant Landscape Overlay – Schedule 7 (SLO7) in Ocean Grove.

Areas of public and private land within established Ocean Grove support remnant coastal vegetation, which contributes to the unique coastal and vegetated character of the township. Council and the local community have identified the ongoing loss of coastal vegetation from ongoing development as an important planning consideration.

The aim of the assessment was to review the extent of indigenous and planted native tree cover on public and private land, identify how these values can be preserved and enhanced, and identify appropriate planning measures to better protect the remaining vegetation within development sites.

Okologie Consulting (2015) has also completed a *Significant Residential Tree Project, Ocean Grove*, which should be reviewed in conjunction with this report.

## 1.2 Objectives

The objectives of the assessment was to:

- Identify the extent of indigenous and planted native tree cover for the SLO7 area.
- Provide guidance for future management and planning controls.

## 1.3 Site Description

The project area comprised the extent of public and private land subject to SLO7, which extends from Asbury Street West and The Parade to the north, Tuckfield Street to the east, The Esplanade and private property to the south and Peer Crescent and Wallington Road to the west (Figure 1).

The project area occurs within the Otway Plain bioregion, the Corangamite Catchment Management Authority boundary and the City of Greater Geelong municipality (DELWP 2015a). It is zoned General Residential Zone – Schedule 2 and Residential Growth Zone – Schedule 3 under the Greater Geelong Planning Scheme (DELWP 2015b).

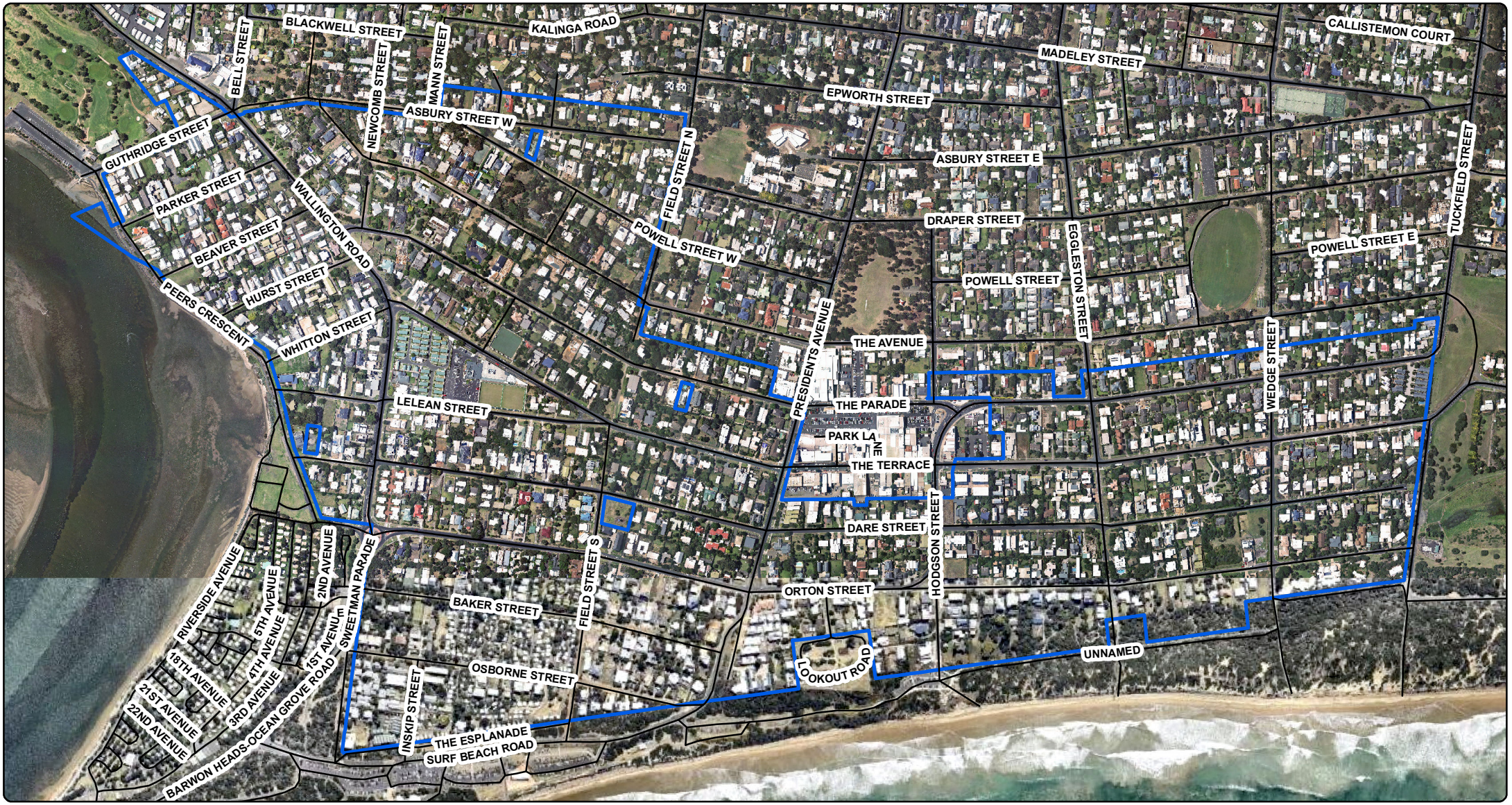
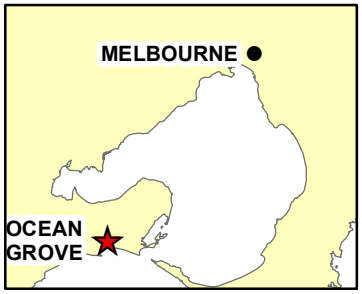



**Figure 1**
SLO7 Project Area
Ocean Grove

**Legend**

SLO7 Boundary




N

0 70 140 280
Metres

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# 2 Methodology

## 2.1 Desktop Assessment

The desktop assessment included review of existing CoGG tree data (i.e. tree location, species, height and age), and to establish an overview of the tree values throughout the project area. GIS layers from the existing CoGG tree data were overlaid onto aerial photography to allow confirmation and ground-truthing during the field assessment. The Biodiversity Interactive Map (DELWP 2015a) was also reviewed to determine the modelled extent of Ecological Vegetation Classes (EVCs), threatened species and vegetation communities across the site.

## 2.2 Survey Methods

The field survey was undertaken between 20 and 24 July 2015 for street trees and between 10 and 14 August for private property trees. The assessment of street trees involved recording the point location using a Trimble Juno differential GPS (accuracy ± one metre post processing), with TerraSync field software, and processed in ArcGIS. GIS layers from the existing CoGG tree data were entered onto the Trimble unit and the fields were updated according to the assessment criteria. The point location of any trees not previously identified by CoGG was also recorded.

The assessment of trees on private property was undertaken from the road reserve and identified on recent aerial photographs, and then recorded through ArcGIS post processing. Private property was not accessed during the survey to record the GIS point location of trees.

## 2.3 Assessment Criteria

The assessment criteria for street trees was applied to indigenous canopy tree species >3 metres tall, and planted native trees >5 metres tall. Indigenous trees were canopy tree species from Coastal Dune Scrub (EVC 160), Coastal Alkaline Scrub (EVC 858) and Grassy Woodland (EVC 175) in the Otway Plain bioregion (DELWP 2015a).

The survey also recorded the following parameters of street trees:

- Origin (indigenous or planted native);
- Tree species (botanical and common name);
- Conservation status (Endangered, Vulnerable or Rare in Victoria); and,
- Age (young, semi-mature, mature).

Scientific and common names of tree species followed the Australian Plant Census (ANBG 2015). Street trees were also identified according to *Permitted clearing of native vegetation – Biodiversity assessment guidelines* (the Guidelines), which classifies native vegetation as a *remnant patch* or *scattered tree* under the following criteria.

A remnant patch of native vegetation (measure in hectares) is either:

- An area of native vegetation[1], with or without trees, where at least 25 per cent of the total perennial understorey plant cover is native plants.
- An area with three or more indigenous canopy trees where the tree canopy cover is at least 20 per cent.

Scattered tree

- An indigenous canopy tree[2] that does not form part of a remnant patch (DEPI 2013a).

## 2.4 Private Property Trees

The criteria for assessing trees on private property were modified to account for the limitations associated with site access and the ability to observe trees in detail. Trees were identified as either indigenous or planted natives and were not identified to genus or species level.

## 2.5 Limitations

The survey was limited to indigenous and planted native that met the assessment criteria outlined above. The significance criteria were based on an objective assessment of scientific information and review of relevant documents.

Private property was not accessed during the survey, and trees that were not visible from the road reserve were interpreted from review of aerial photography and typical floristic characteristics, which limited the ability to identify trees to genus or species level or observe potential issues with tree health, structure and hazard in detail. However, the survey methodology was considered adequate to meet the objectives of this assessment.

[1] An area of native vegetation is defined as *continuous and unbroken native vegetation*. A break in remnant patch will occur where the definition of remnant patch has not been met for a continuous width of at least 10 metres (DEPI 2013a).

[2] DEPI defines a scattered tree as 'A canopy tree is a mature tree that is greater than three metres in height and is normally found in the upper layer of a vegetation type' (DEPI 2013c).

The information outlined in this report relies on the accuracy of ecological database information, GIS layers and spatial imagery at the time of the assessment. To minimise potential errors, the most current available data was obtained from relevant sources.

# 3 Results

## 3.1 Ecological Values

The Biodiversity Interactive Map modelling for the Otway Plains bioregion indicates the pre-1750 EVC mapping for the project area would have predominantly comprised of Grassy Woodland (EVC 175), with Coastal Dune Scrub (EVC 160) and Coastal Alkaline Scrub (EVC 858) within the southern section. Extant (2005) mapping shows a sparse cover of Grassy Woodland and a modified cover of Coastal Dune Scrub and Coastal Alkaline Scrub (DELWP 2015a).

Remnant vegetation within the project area was attributed to Grassy Woodland, Coastal Dune Scrub and Coastal Alkaline Scrub based on floristic, life form and ecological characteristics.

Indigenous trees in areas to the south associated with Coastal Dune Scrub and Coastal Alkaline Scrub comprised of Coast Tea-tree *Leptospermum laevigatum*, Coast Beard-heath *Leucopogon parviflorus*, Coast Wirilda *Acacia uncifolia*, and Moonah *Melaleuca lanceolata* subsp*. lanceolata*. Elevated areas on hills and slopes associated with Grassy Woodland included Bellarine Yellow-gum *Eucalyptus leucoxylon* subsp*. bellarinensis* and Manna Gum *Eucalyptus viminalis*.

Planted native species included Yellow-gum *Eucalyptus leucoxylon*, Sugar Gum *Eucalyptus cladocalyx*, Southern Mahogany *Eucalyptus botryoides*, Bushy Yate *Eucalyptus lehmannii*, Tuart *Eucalyptus gomphocephala*, Red Flowering Gum *Corymbia ficifolia*, Bracelet Honey-myrtle *Melaleuca armillaris* and Coast Banksia *Banksia integrifolia*.

## 3.2 Threatened Species and Communities

The Biodiversity Interactive Map identifies that areas of Grassy Woodland and Coastal Alkaline Scrub correlate with Coastal Moonah Woodland floristic community (number 460), listed as Threatened under the *Flora and Fauna Guarantee Act 1988* (FFG Act). Two threatened flora species, Bellarine Yellow-gum and Coast Wirilda were recorded during the survey. Bellarine Yellow-gum is listed as Endangered in Victoria and Threatened under the FFG Act, and Coast Wirilda is listed as Rare in Victoria (DEPI 2014).

## 3.3 Street Tree Values

A total of 233 street trees were recorded within the project area, which comprised 114 indigenous trees and 119 planted native trees. This included 35 indigenous street trees and seven planted native trees not previously recorded (Figures 2a-2j). The assessment

of private property trees identified 1330 trees, consisting of 772 indigenous trees and 558 planted native trees (Figures 3a-3j).

The street tree survey results identified the majority of indigenous trees were Coast Tea-tree (75%). The remaining indigenous species comprised of Bellarine Yellow-gum (13%), Coast Beard-heath (8%), Manna Gum (<1%) and Moonah (<1%). The majority of indigenous trees were mature (67%) and of low conservation significance (84%), with 14% of high conservation significance and 1% of moderate conservation significance. No indigenous native trees supported hollows for fauna habitat.

## 3.4 Comparative Analysis and Discussion

The street tree assessment identified several streets were devoid of indigenous trees, particularly in the northern section of the project area. The loss of indigenous tree cover may be attributed to development and inadequate recruitment of mature trees. Planted native trees were more common than indigenous trees in most streets, which has changed the coastal character of the streetscape. The survey identified the project area is comprised of several precincts that support indigenous and planted native trees on public and private land, including remnant Bellarine Yellow-gum trees. Several precincts have been identified to support future planning decisions (Figure 2).

The private property assessment found the majority of trees were indigenous; however, these trees were generally limited to the southern section of the project area and were absent from several areas, which may be attributed to residential development. The current provision under SLO7 allows an exemption for the removal of indigenous vegetation of less than 4 metres in height, with a single trunk circumference of less than 0.5 metres measured 1 metre above the ground (DELWP 2015b). The issue with this exemption is that the form and habit of mature Coast Tea-tree can often be less than the height and trunk circumference threshold, which is likely to have contributed to the loss of this species cover in the SLO7 area.

Bellarine Yellow-gum is endemic to the Bellarine Peninsula and the pockets of the project area support individual scattered trees. Clearing for residential development and inadequate regeneration are two of the key threats to this species. Future management of the Bellarine Yellow-gum population within the SLO7 area should seek to retain individual trees and consider the replacement of senescent mature trees through ongoing planting. The current provision for SLO7 does not identify the protection of the local Bellarine Yellow-gum population.

Planted native species in private property now form a significant component of the landscape character in the SLO7 area, which has resulted from modification from development and loss of indigenous canopy cover. The current SLO7 statement of significance does not account for the contribution of planted native to the local landscape. Future planning provisions need to recognise the role of the planted native tree canopy within a modified urban landscape.

# Ocean Grove Tree Study - Potential precincts


## Legend

Existing SLO7

**Street trees**

**Origin**

- Indigenous
- Planted Native

**SLO7 - private property vegetation**

**origin**

- Indigenous
- Planted Native

**Potential precincts**

- Demonstrates SLO7 characteristics - tree protection and planning controls to limit impact of development recommended
- Dispersed mature vegetation - tree protection recommended

# 4 Tree Management Requirements

## 4.1 Tree Management

The management of indigenous and planted native trees as arboricultural assets is a necessary management technique in retaining trees in healthy sound condition. All trees should be managed to meet the requirements of *AS 4373—2007 Pruning of Amenity Trees* (Standards Australia 2007). Management of public trees should be undertaken to reduce the risk to public safety, mitigate potential damage to property, provide clearances around services and utility lines, manage tree health, and tree or branch failure resulting from severe storms or other damaging activity.

It is recommended that all tree works should be undertaken by a qualified level 3 arborist, as per the guidelines of Australian Standard *AS 4373—2007 Pruning of Amenity Trees* (Standards Australia 2009).

## 4.2 Tree Protection Zones

When designing and planning for development in the vicinity of trees on public and private land, the guidance of *AS4970-2009 Protection of Trees on Development Sites* should be implemented in all site planning (Standards Australia 2009).

It is recommended the responsible authority request a level 5 arborist assessment for development proposals on how individual significant trees can be protected through Tree Protection Zones (TPZs) (Appendix 2), and management measures on public and private land.

## 4.3 Considerations for Development Near Trees

Standards Australia has adopted a process for the best practice of the management of trees in and around development sites (Standards Australia 2009). *AS4970-2009 Protection of Trees on Development Sites* recommends that a level 5 arborist assess each tree within and around a development site, establish the Tree Protection Zone (TPZ) and provide management of trees on and adjoining development sites. Encroachment into the TPZ from development is sometimes unavoidable; however, mitigation measures can assist in avoiding impacts resulting in unnecessary damage or loss (Appendix 3).

It is recommended the responsible authority request tree surveys by a level 5 arborist for established trees on proposed future development sites to manage tree impacts.

# 5 Statement of Significance

*Ocean Grove is a growing coastal township located on a hillside extending to a popular ocean surf beach. Areas of public and private land within established Ocean Grove supports remnant coastal vegetation, which contributes to the unique coastal and vegetated character of the township.*

*Planted native species on public and private land now forms a significant component of the landscape character in the local area, which has resulted from modification from development and loss of indigenous vegetation.*

*Council and the local community have identified the ongoing loss of canopy trees and the vulnerability of the landscape character of the township from residential development as an important planning consideration.*

*The topography of Ocean Grove has encouraged development that seeks to maximise views. Part of the landscape character of Ocean Grove that is valued by the local community is the ability to view the ocean and/or the Barwon River from numerous points in public areas and from private dwellings. Respect for the sharing of views, rather than necessarily the retention of all existing views, is an important consideration. The balance between rooftops and vegetation when viewed from a distance is a key characteristic of the township. While rooftops are visible, the buildings are separated by coastal species.*

*Landscape elements of particular importance in Ocean Grove include the retention of the remnant indigenous and planted native tree canopy, allocation for the adequate replacement of mature trees, and building height that does not dominate the streetscape and long distance views.*

# 6 Conclusion

A total of 233 street trees were recorded within the project area, which comprised 114 indigenous trees and 119 planted native trees. This included 35 indigenous street trees and seven planted native trees not previously recorded. The assessment of private property trees identified 1330 trees, consisting of 772 indigenous trees and 558 planted native trees.

The street tree assessment identified several streets were devoid of indigenous trees, particularly in the northern section of the SLO7 area. The loss of indigenous tree cover may be attributed to development and inadequate recruitment of mature trees. Planted native trees were more common than indigenous trees in most streets, which has changed the coastal character of the streetscape.

The assessment of trees in private property found the majority of trees were indigenous; however, these trees were generally limited to the southern section of the SLO7 area and were absent from several areas, which may be attributed to residential development. Several areas within the township do not represent SLO7 as a result of modification from development and loss of indigenous canopy cover, and should be considered for removal from the overlay. The current provision for SLO7 does not identify the protection of the local Bellarine Yellow-gum population.

Planted native species in private property forms a significant component of the landscape character in the SLO7 area. The current SLO7 statement of significance does not account for the contribution of planted native to the local landscape. Future planning provisions need to recognise the role of the planted native tree canopy within a modified urban landscape.

## 6.1 Recommendations

It is recommended the responsible authority:

- Review SLO7 to include planted native canopy trees as part of the coastal character.
- Review the extent of SLO7 based on precincts that support indigenous and planted native trees on public and private land, and consider use of a Vegetation Protection Overlay for significant trees on public and private property.
- Include permit triggers for vegetation removal with thresholds for indigenous vegetation over 3 metres tall, planted native trees over 5 metres tall, and all Bellarine Yellow-gum trees.
- Ensure best practice management of indigenous and planted native trees in and around development sites, which includes retention where practicable and protection of existing trees, and allocation of space for the adequate replacement of mature canopy trees.

# 7 References

ANBG 2015. Australian Plant Census. Australian National Botanic Gardens http://www.anbg.gov.au/cpbr/databases/apni-search-full.html

Australian Standard AS4970-2009. *Protection of trees on development sites*. Standards Australia 2009.

Australian Standard AS4373-2007. *Pruning of Amenity Trees*. Standards Australia 2007.

DEPI 2013a. *Permitted clearing of native vegetation: Biodiversity Assessment Guidelines*. Department of Environment and Primary Industries.

DEPI 2013b. *Permitted clearing of native vegetation - Defining and classifying native vegetation, Fact sheet*. Department of Environment and Primary Industries.

DEPI 2014. Advisory list of rare or threatened plants in Victoria – 2014. Department of Environment and Primary Industries.

DELWP 2015a. Biodiversity Interactive Map. Department of Environment, Land, Water and Planning: www.depi.vic.gov.au

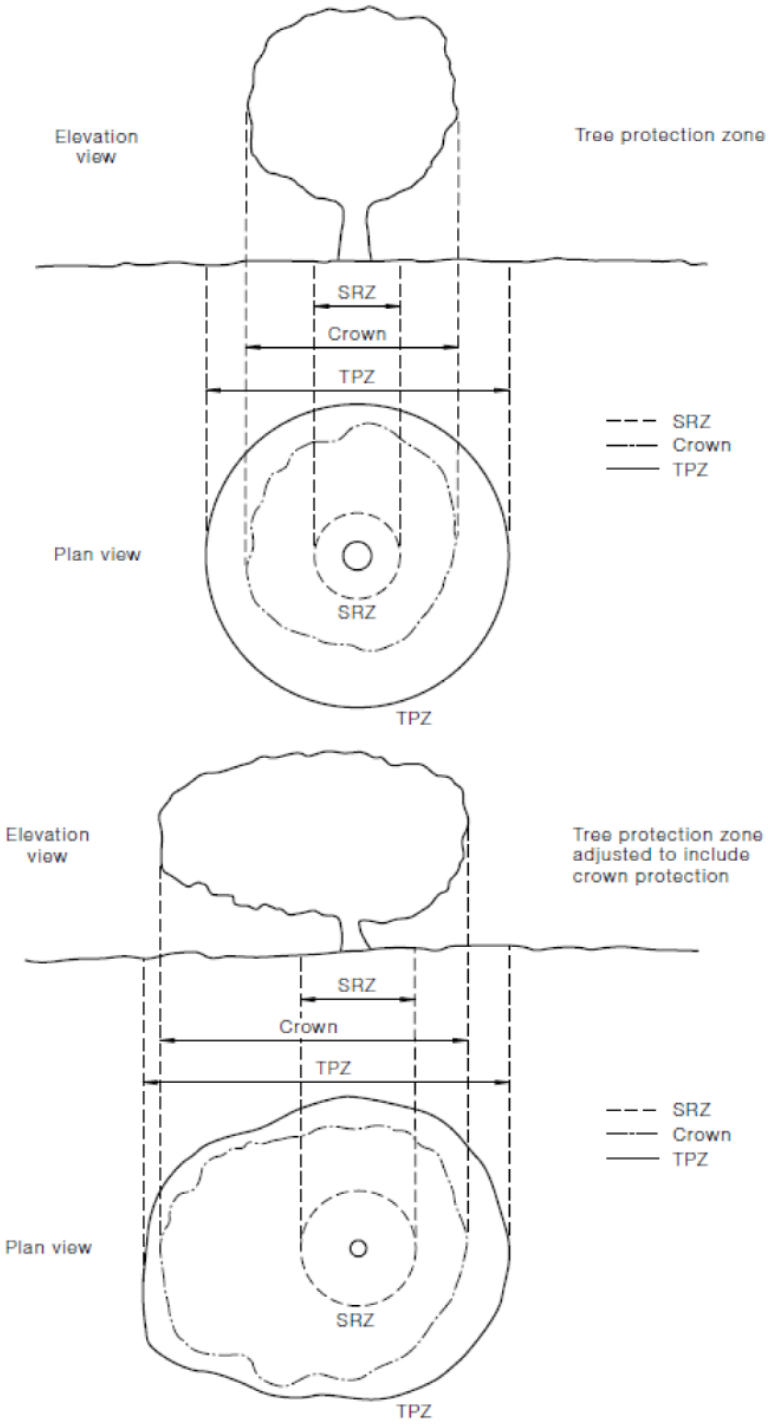
DELWP 2015b. Planning Schemes Online. Department of Environment, Land, Water and Planning: http://planningschemes.dpcd.vic.gov.au

DPCD 1999. *Vegetation Protection in Urban Areas*. Victoria Planning Provisions Practice Note. Department of Planning and Community Development.

Okologie Consulting 2015. Significant Residential Tree Project, Ocean Grove. Report prepared by Okologie Consulting for City of Greater Geelong.

# Appendices

## Appendix 1 – Tree Protection Zone




NOTE: Refer to Clause 3.2 for calculation of TPZ.

FIGURE 2 INDICATIVE TREE PROTECTION ZONE

# Appendix 2 – Tree Protection Zone – Examples of Encroachment

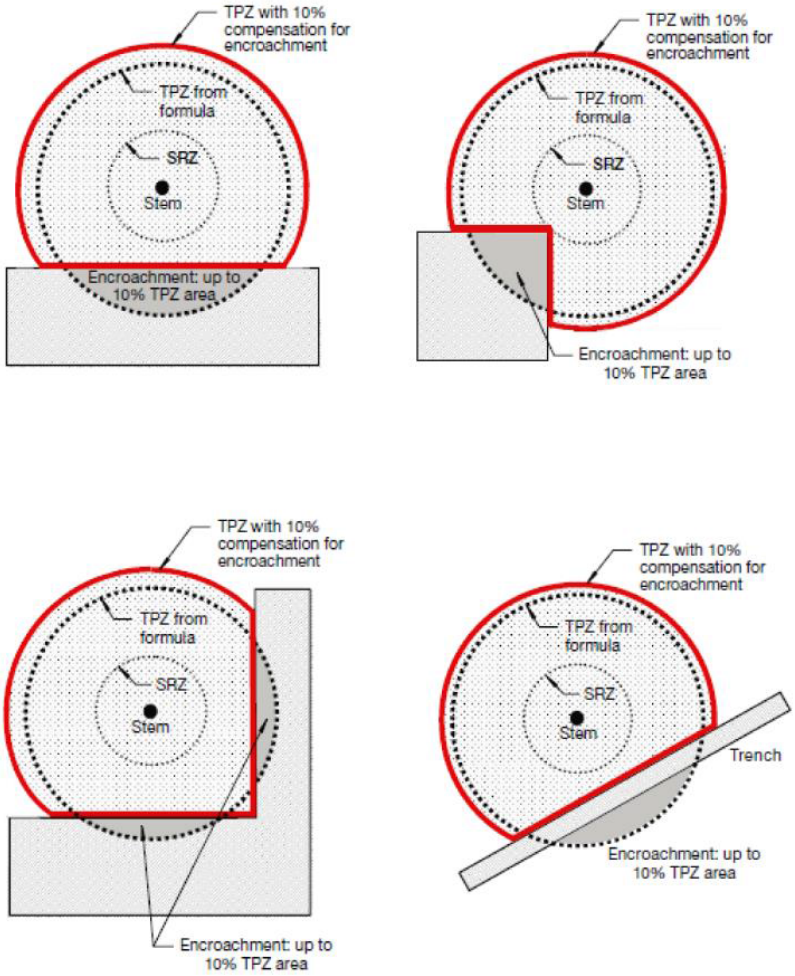


APPENDIX D

ENCROACHMENT INTO TREE PROTECTION ZONE

(Informative)

Encroachment into the tree protection zone (TPZ) is sometimes unavoidable. Figure D1 provides examples of TPZ encroachment by area, to assist in reducing the impact of such incursions.




NOTE: Less than 10% TPZ area and outside SRZ. Any loss of TPZ compensated for elsewhere.

FIGURE D1 EXAMPLES OF MINOR ENCROACHMENT INTO TPZ

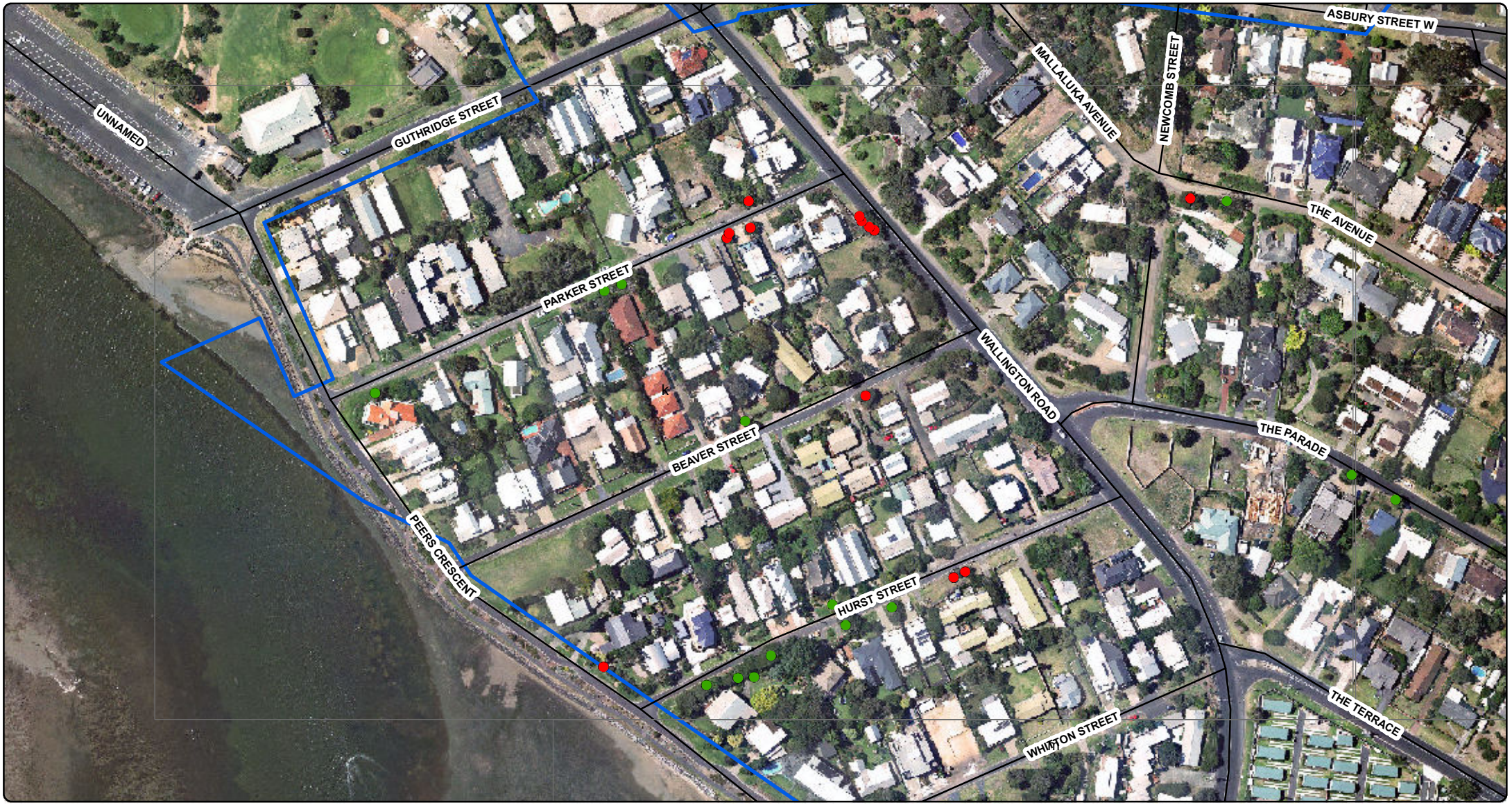
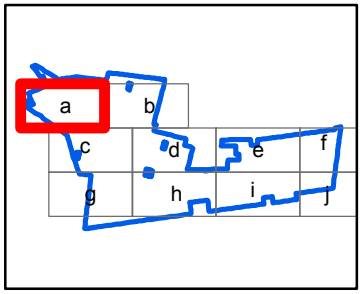



**Figure 2a**
*Street Tree Cover Assessment*
Ocean Grove

**Legend**

- SLO 7
- Indigenous Trees
- Planted Native Trees

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0 20 40 80
Metres

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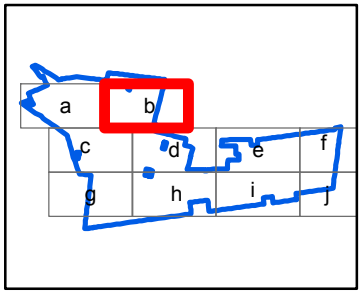
**Figure 2b**
*Street Tree Cover Assessment*
Ocean Grove

**Legend**

- SLO 7
- Indigenous Trees
- Planted Native Trees

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Metres

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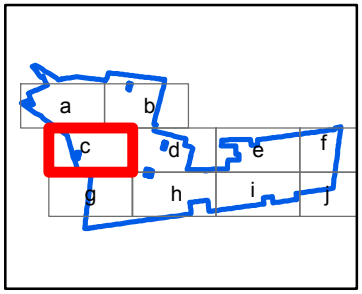
**Figure 2c**
*Street Tree Assessment*
Ocean Grove

**Legend**

- SLO 7
- Indigenous Trees
- Planted Native Trees

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0 20 40 80
Metres

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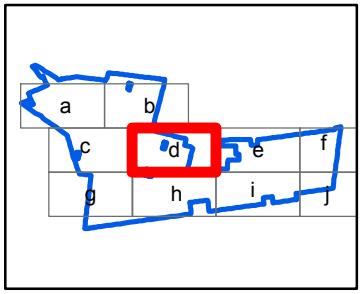
**Figure 2d**
*Street Tree Assessment*
Ocean Grove

**Legend**

- SLO 7
- Indigenous Trees
- Planted Native Trees

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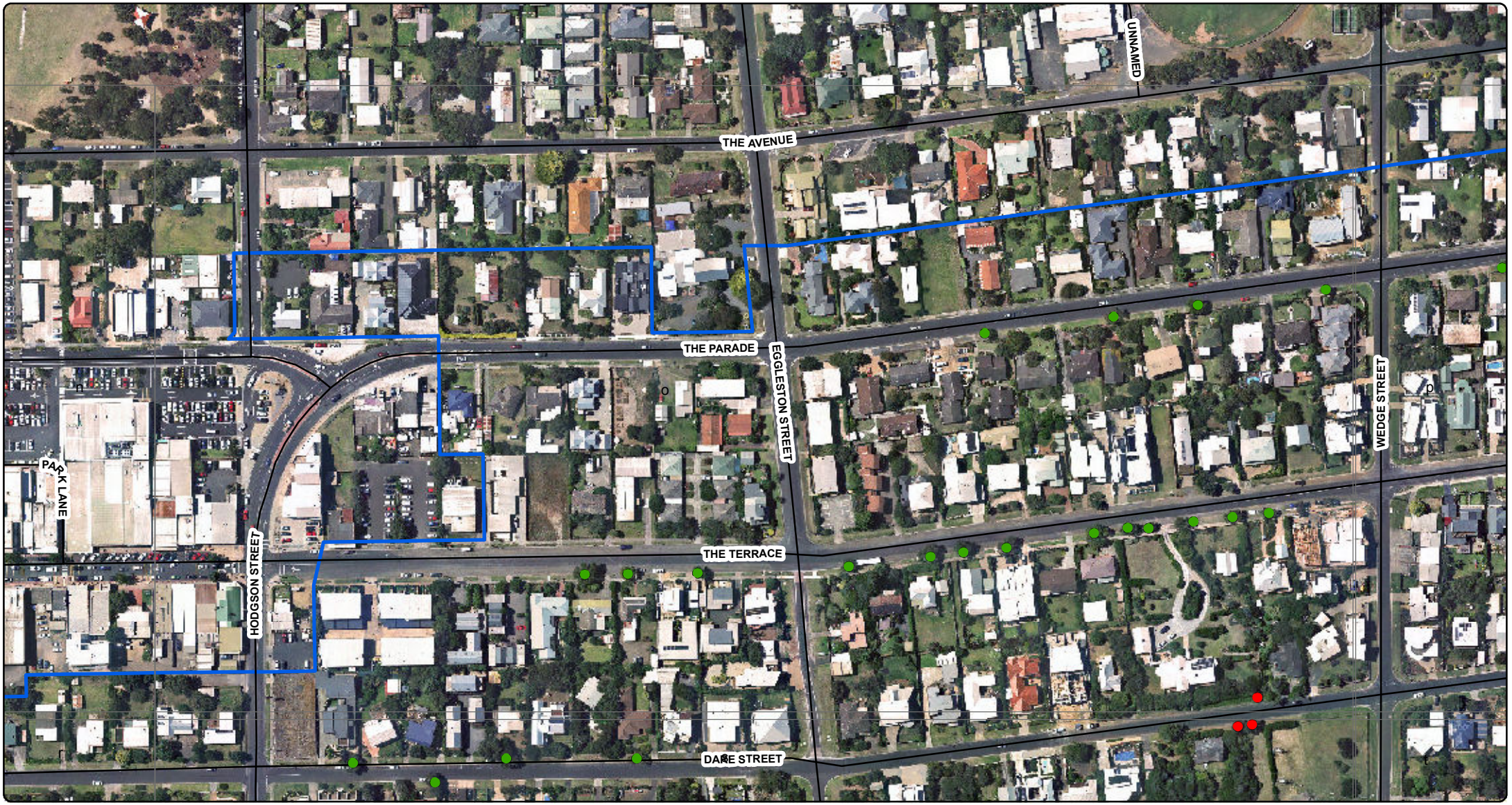
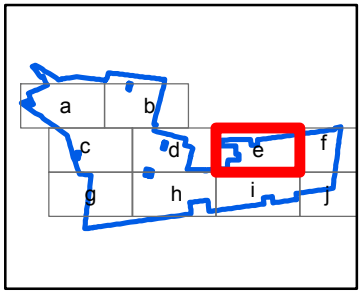



**Figure 2e**
*Street Tree Assessment*
Ocean Grove

**Legend**

- SLO 7
- Indigenous Trees
- Planted Native Trees

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0 20 40 80
Metres

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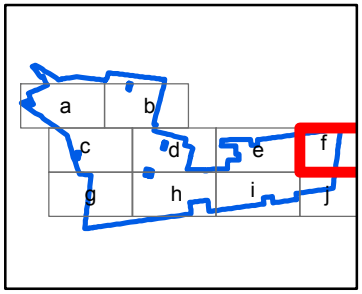
**Figure 2f**
*Street Tree Assessment*
Ocean Grove

**Legend**

- SLO 7
- Indigenous Trees
- Planted Native Trees

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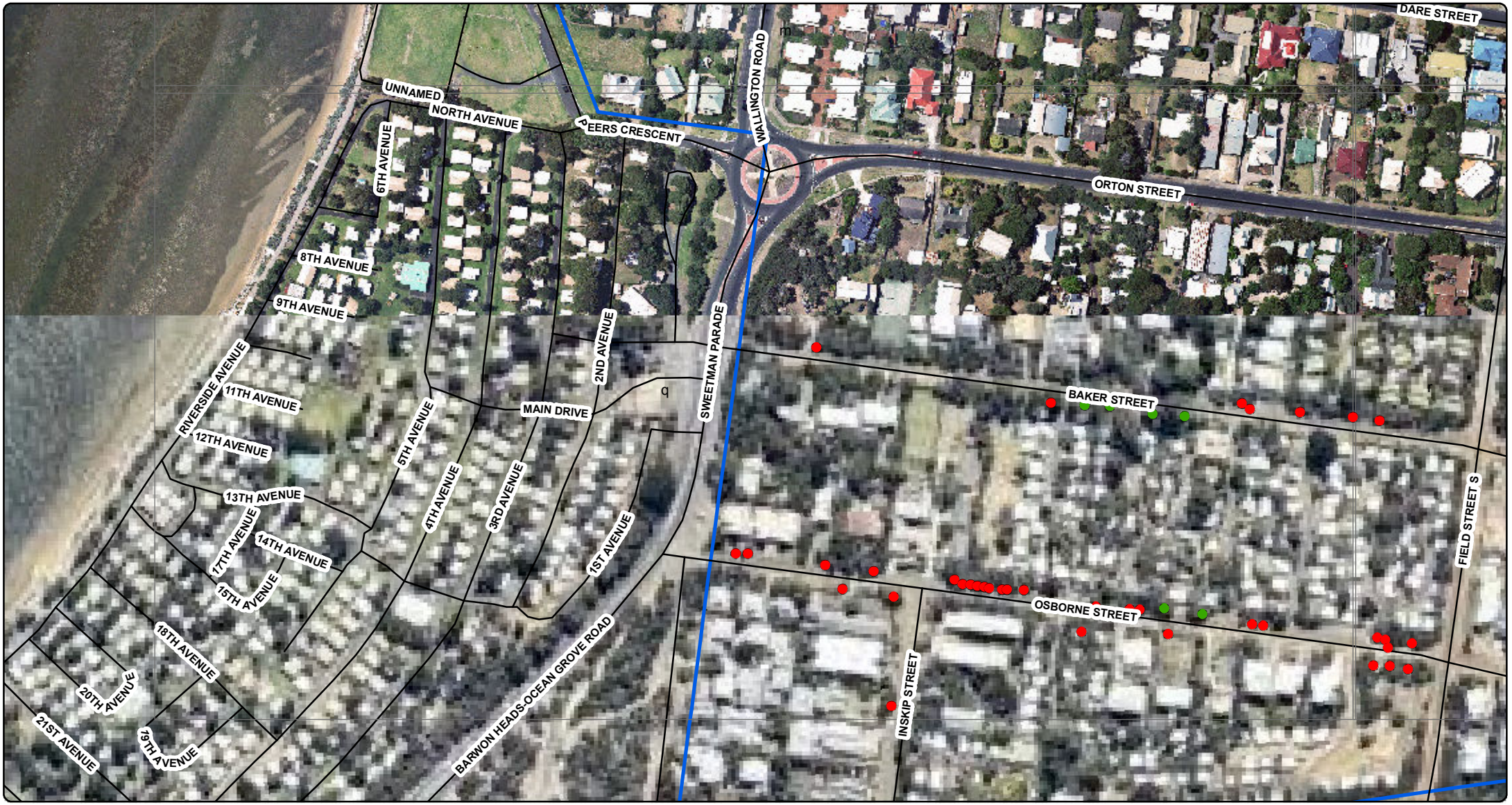
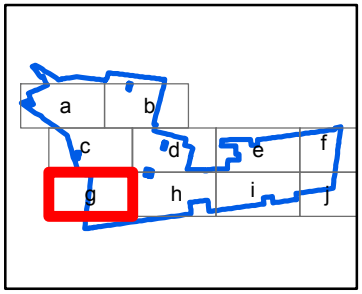



**Figure 2g**
*Street Tree Assessment*
Ocean Grove

**Legend**

- SLO 7
- Indigenous Trees
- Planted Native Trees

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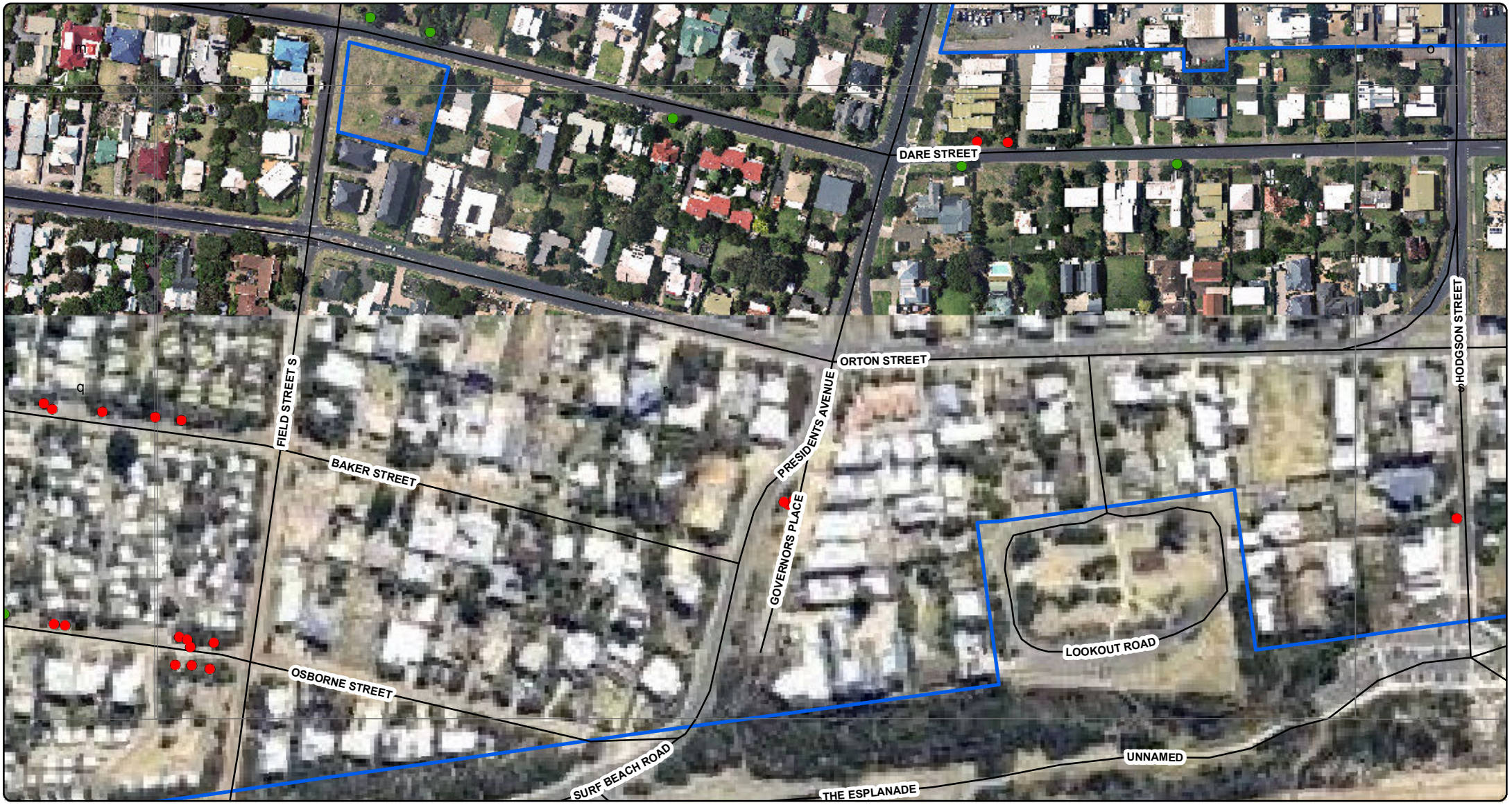
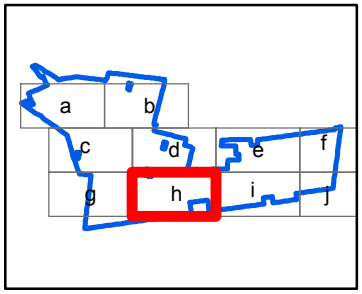



**Figure 2h**
*Street Tree Assessment*
Ocean Grove

**Legend**

- SLO 7
- Indigenous Trees
- Planted Native Trees

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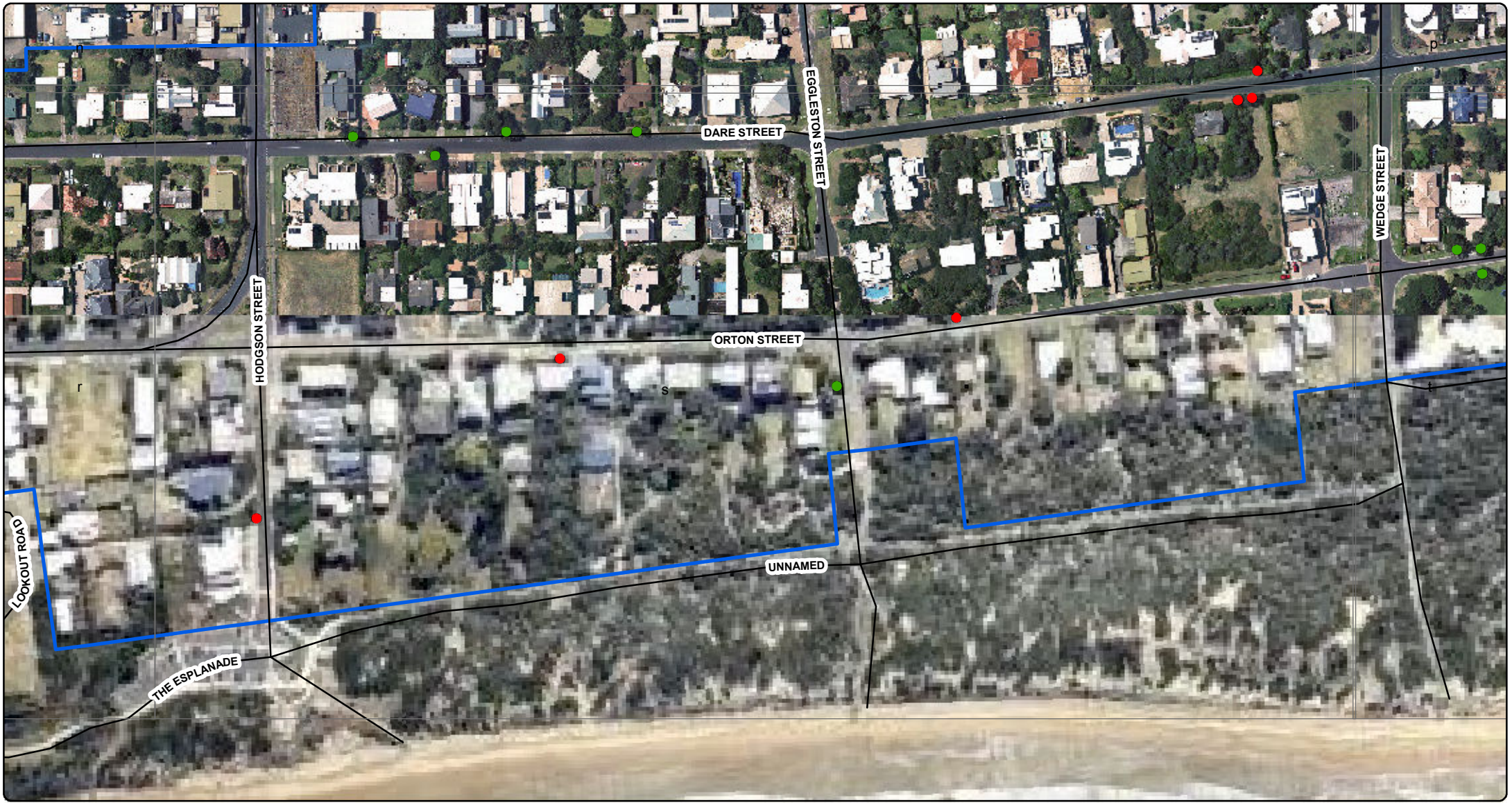
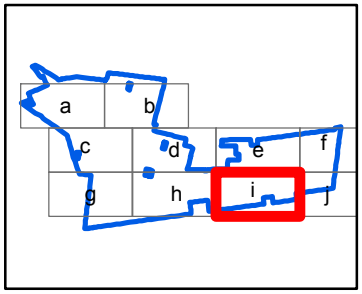



**Figure 2i**
*Street Tree Assessment*
Ocean Grove

**Legend**

- SLO 7
- Indigenous Trees
- Planted Native Trees

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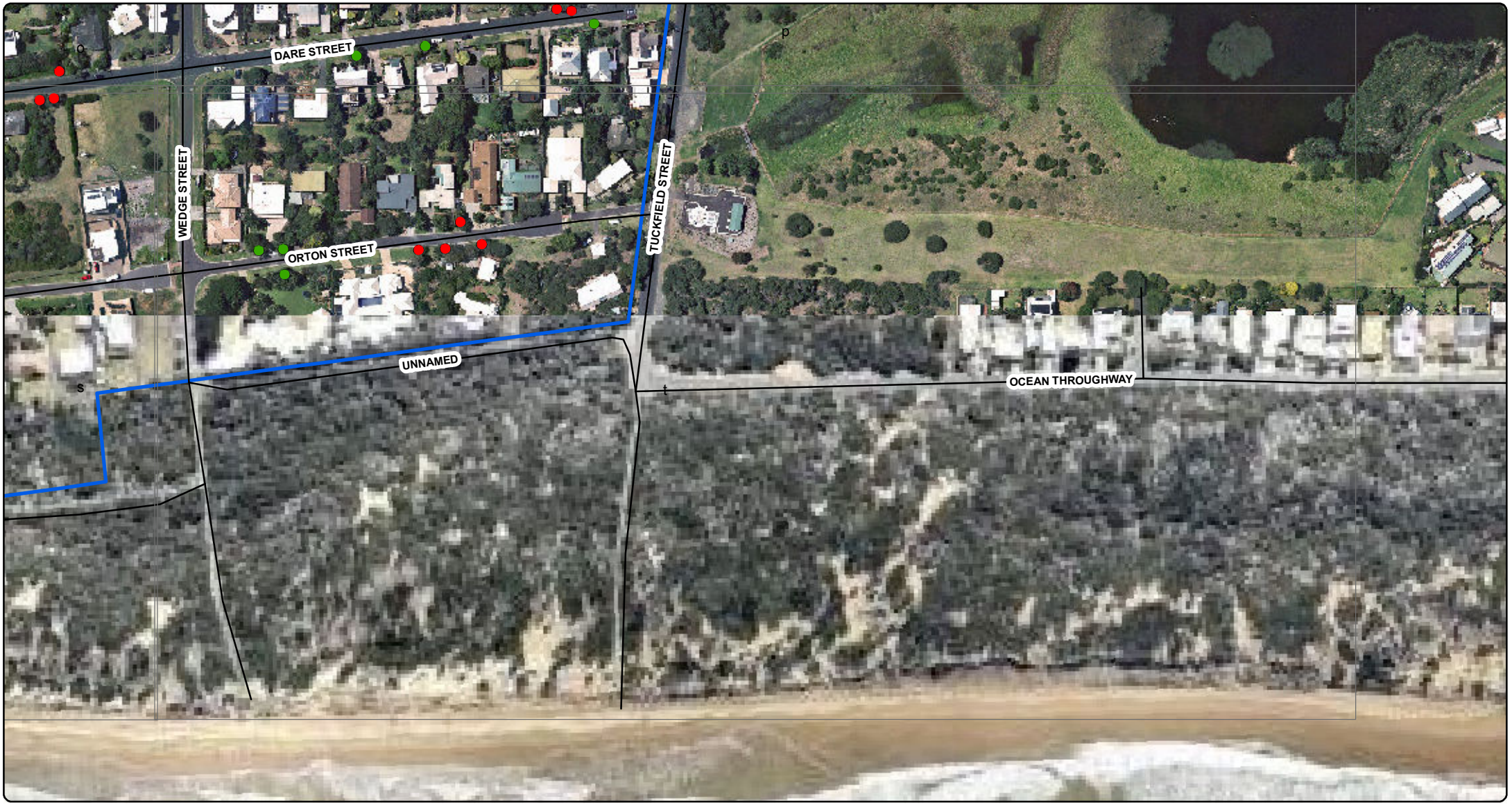
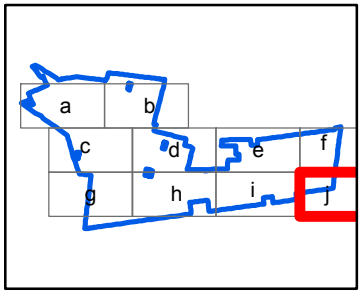



**Figure 2j**
*Street Tree Assessment*
Ocean Grove

**Legend**

- SLO 7
- Indigenous Trees
- Planted Native Trees




N

0 20 40 80
Metres

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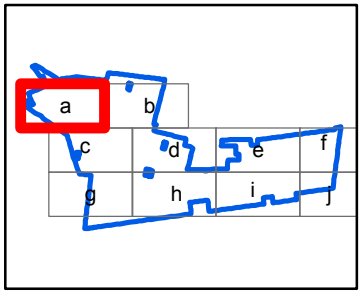
**Figure 3 – Significant Private Property Tree Survey Results**


**Figure 3a**
*Private Property Tree Assessment*
Ocean Grove

**Legend**

**origin**

- Indigenous Trees
- Planted Native Trees

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0 20 40 80
Metres

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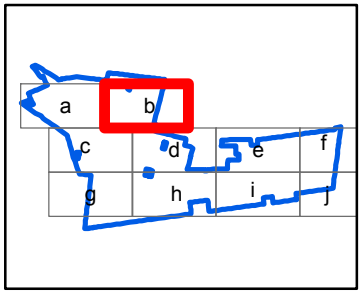
**Figure 3b**
*Private Property Tree Assessment*
Ocean Grove

**Legend**

**origin**

- Indigenous Trees
- Planted Native Trees




N

0 20 40 80
Metres

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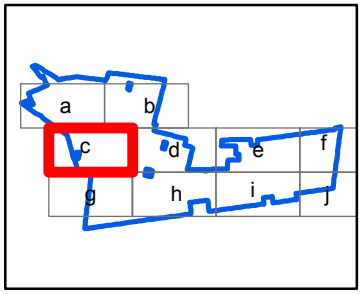
**Figure 3c**
*Private Property Tree Assessment*
Ocean Grove

**Legend**

**origin**

- Indigenous Trees
- Planted Native Trees




N

0 20 40 80
Metres

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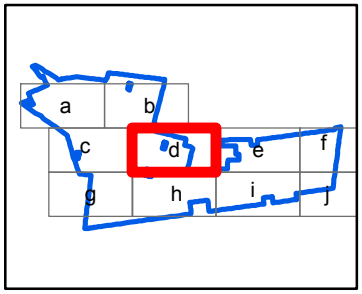
**Figure 3d**
*Private Property Tree Assessment*
Ocean Grove

**Legend**

**origin**

- Indigenous Trees
- Planted Native Trees




N

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Metres

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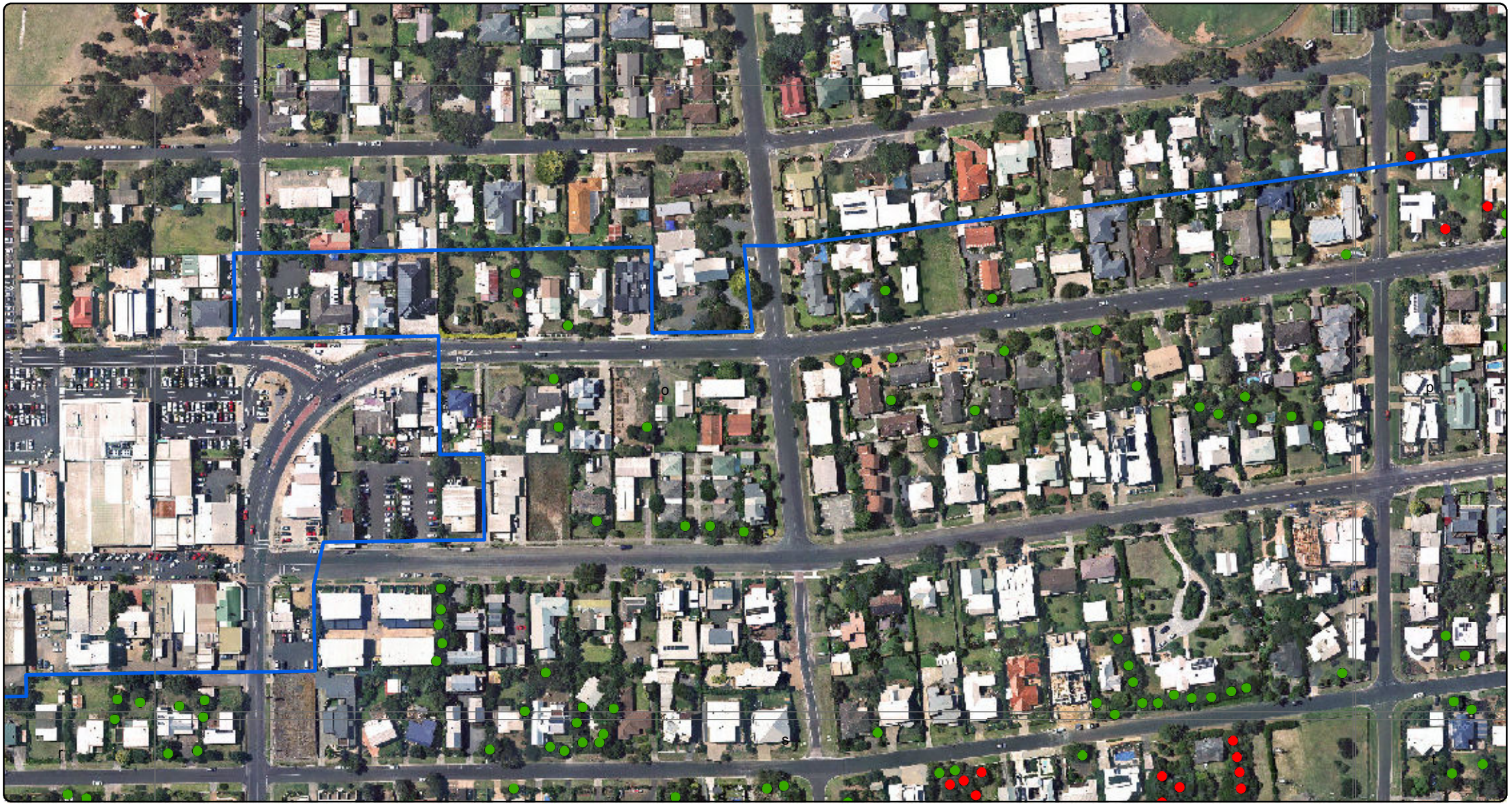
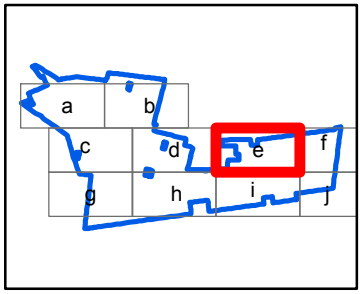



**Figure 3e**
*Private Property Tree Assessment*
Ocean Grove

**Legend**

**origin**

- Indigenous Trees
- Planted Native Trees




N

0 20 40 80
Metres

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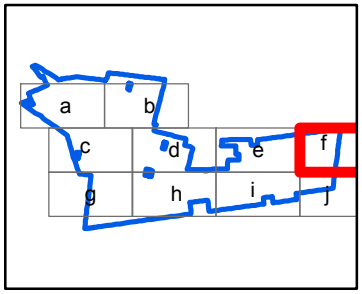
**Figure 3f**
*Private Property Tree Assessment*
Ocean Grove

**Legend**

**origin**

- Indigenous Trees
- Planted Native Trees




N

0 20 40 80
Metres

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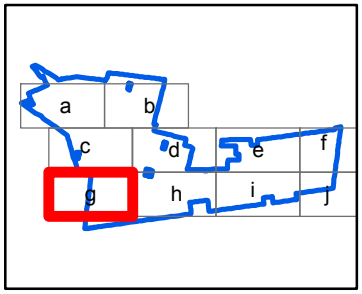
**Figure 3g**
*Private Property Tree Assessment*
Ocean Grove

**Legend**

**origin**

- Indigenous Trees
- Planted Native Trees




N

0 20 40 80
Metres

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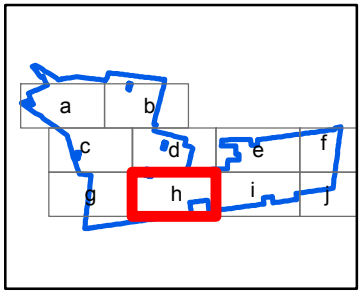
**Figure 3h**
*Private Property Tree Assessment*
Ocean Grove

**Legend**

**origin**

- Indigenous Trees
- Planted Native Trees




N

0 20 40 80
Metres

ÖKOLOGIE CONSULTING

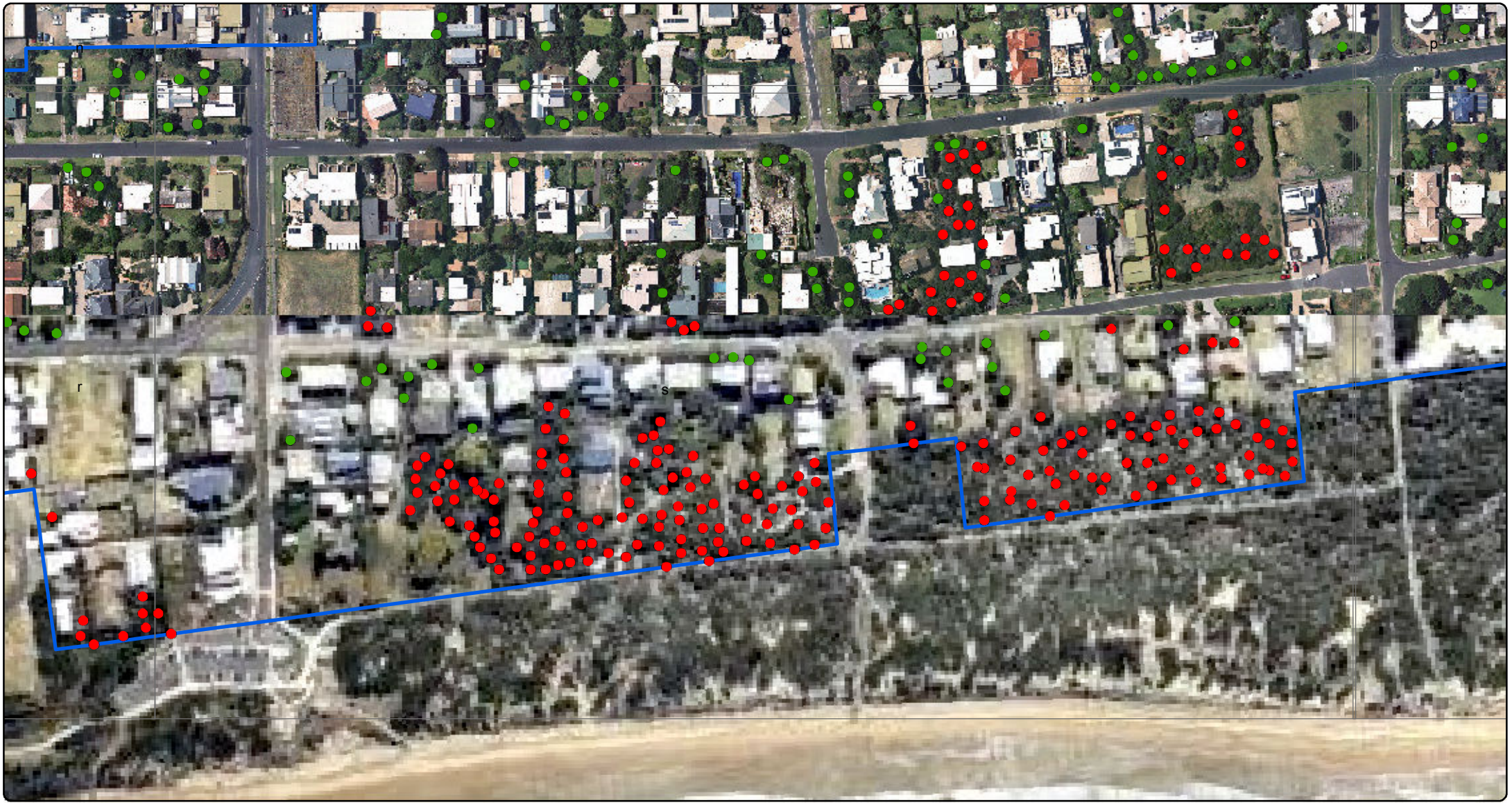
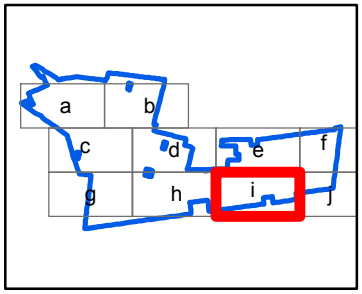



**Figure 3i**
*Private Property Tree Assessment*
Ocean Grove

**Legend**

**origin**

- Indigenous Trees
- Planted Native Trees




N

0 20 40 80
Metres

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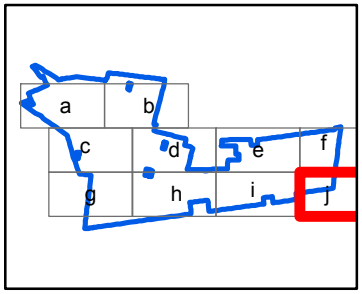
**Figure 3j**
*Private Property Tree Assessment*
Ocean Grove

**Legend**

**origin**

- Indigenous Trees
- Planted Native Trees




N

0 20 40 80
Metres

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