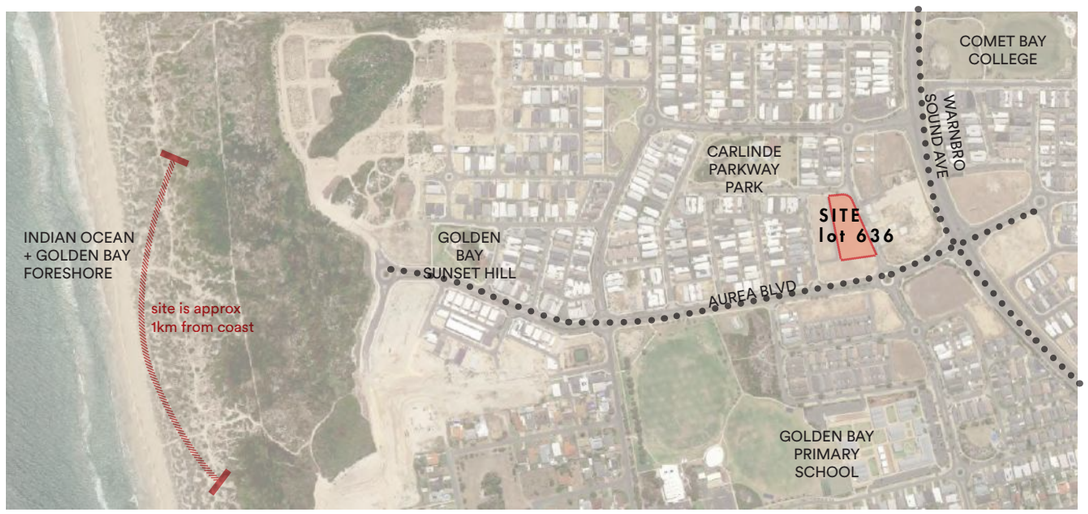
Lot 636 Thundelarra Drive,
Golden Bay, Western Australia

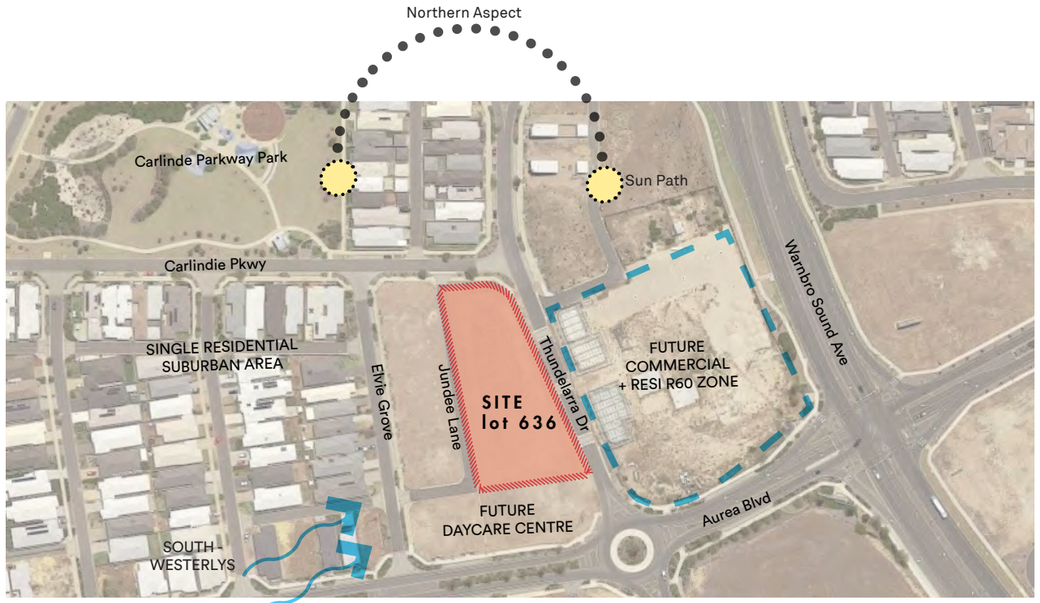
Landscape - Schematic Design
Development Application Submission - REV B (190917)

CAPA
Landscape Design

KLOPPER & DAVIS ARCHITECTS
Architects



CONTEXT PLAN



SITE PLAN

EXISTING COOK ISLAND PINES ALONG THUNDELARRA DR
+ SWALE OF NATIVE MIX

PLANTING MIX CONTINUES INTO AUREA BLVD WITH
COOK ISLAND PINES IN MEDIAN STRIP AND CASUARINA
TREES ALONG VERGE

LOW SINGLE RESIDENTIAL SUBURBAN AREA WEST OF SITE.

COASTAL THEMES

UNIVERSAL ACCESS

SPATIAL VARIATIONS

The landscape character of our project is inspired by the Golden Bay coastal landscape along with considerations of access, spaces reflection for both the public & private, and provision for the locale and community, both large and small groupings. Golden Bay is a coastal suburb 60kms south of Perth enjoying close proximity to the ocean and having defining features informed by the dunal habitat and winds. The coastal landscape has distinct qualities of texture, smell and scale. Landforms become shaped to provide protection from winds.

Each of the landscape areas have been designed and considered for specific functional uses; pool terrace, alfresco, passive and active recreational, gym, community garden, entrance zones, and beautification of circulation spaces.

The planting palette has been selected based foremost upon suitability for the location, selecting indigenous/endemic planting where possible and also the need for ease of maintenance. 'The Golden Bay Design Guidelines' (City of Rockingham) includes a Recommended Plant Species list which has also been consulted and certain species selected from that list. Additionally, some other species have been chosen to supplement the palette, used for specific tasks (climbing or cascading plants for example) or for areas requiring certain needs, ie. shade etc.

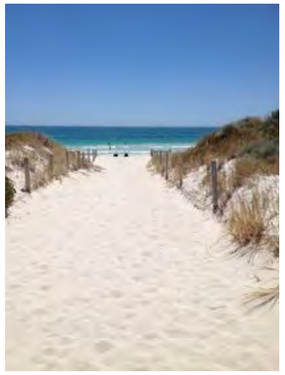
Planting selections are key to ensure sustainable outcomes. Planting selections will based on low water emittance, saline water and soil tolerance and mostly working within a green/silver coastal foliage palette. The landscape to the ground and the perimeter embrace the coastal edge and endemic/native plantings. The social amenity spaces have been sited in more protected areas from the coastal winds with northern solar aspect.

The planting to the ground plane are predominantly native. Exotic plantings will be selected based on:
- availability of trees as mature species
- providing a landscape character that is more appropriate for use.(i.e shade)
- reduced pruning and maintenance requirements. Native trees in particular drop leaves consistently during the year.

Efficient watering systems such as in-line drip irrigation sub-mulch is preferred to all planters.

seaside textures

informal layers



coastal motifs

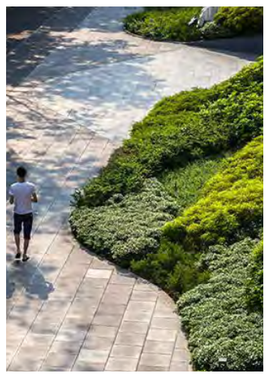
heated aerobic pool

planters at accesible heights

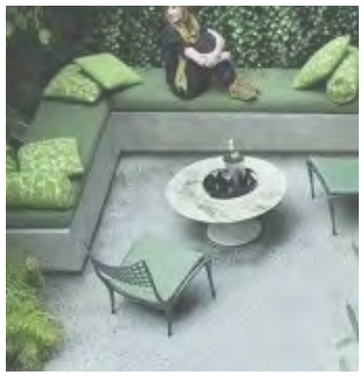
accessible planters on hardstand

variation in materials

gathering spaces



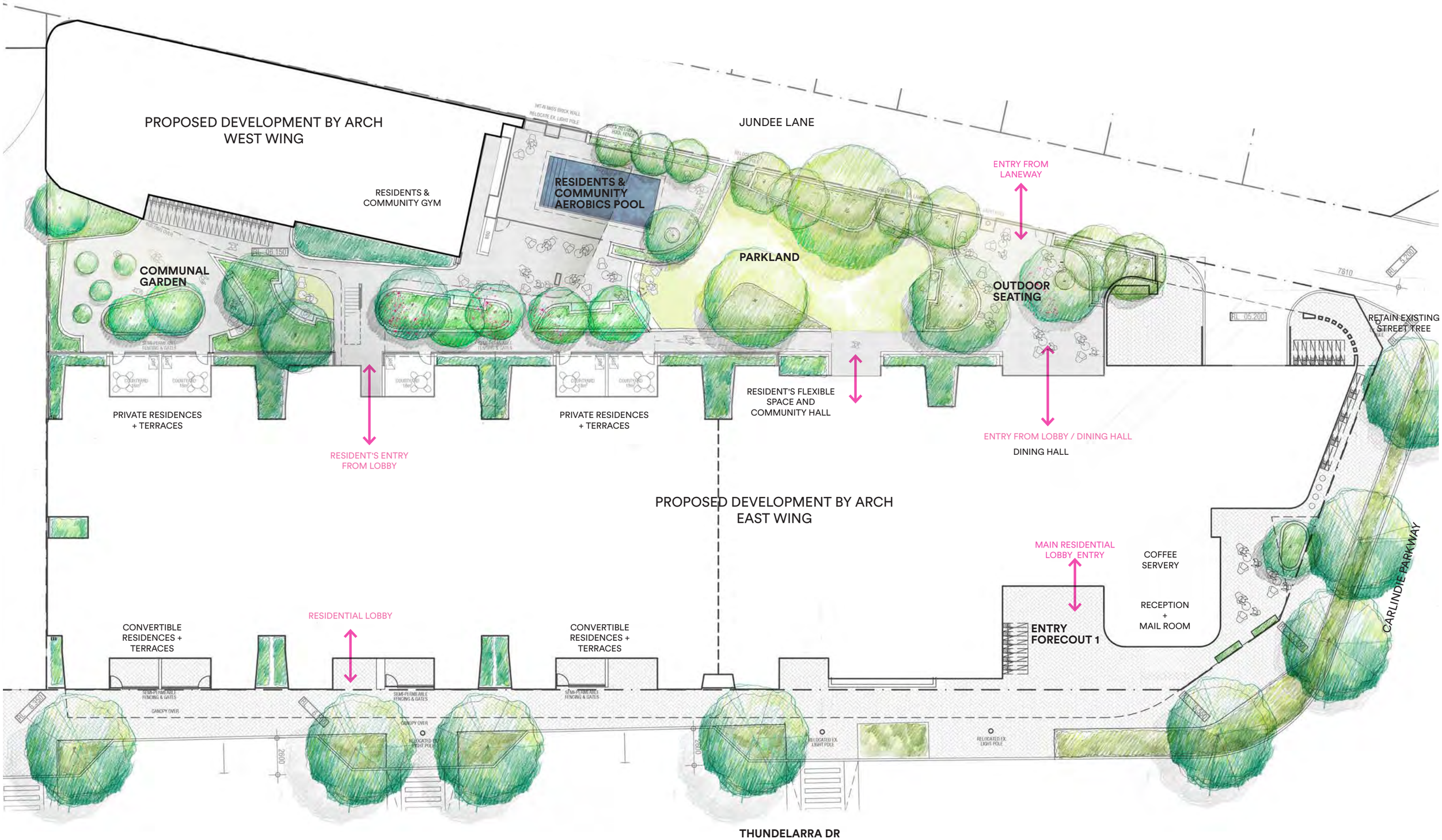
changes in plant scale



space to rest

gardens to care for

parkland



KLOPPER & DAVIS ARCHITECTS

CAPA
Landscape Design


11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5


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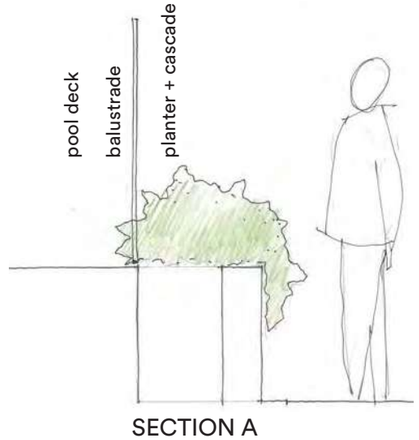
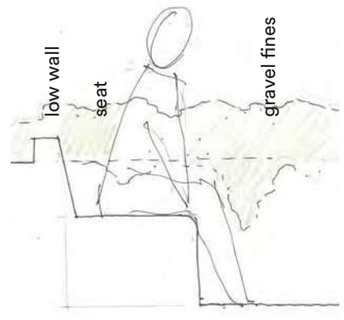
GROUND LEVEL PLAN - PART A

KEY

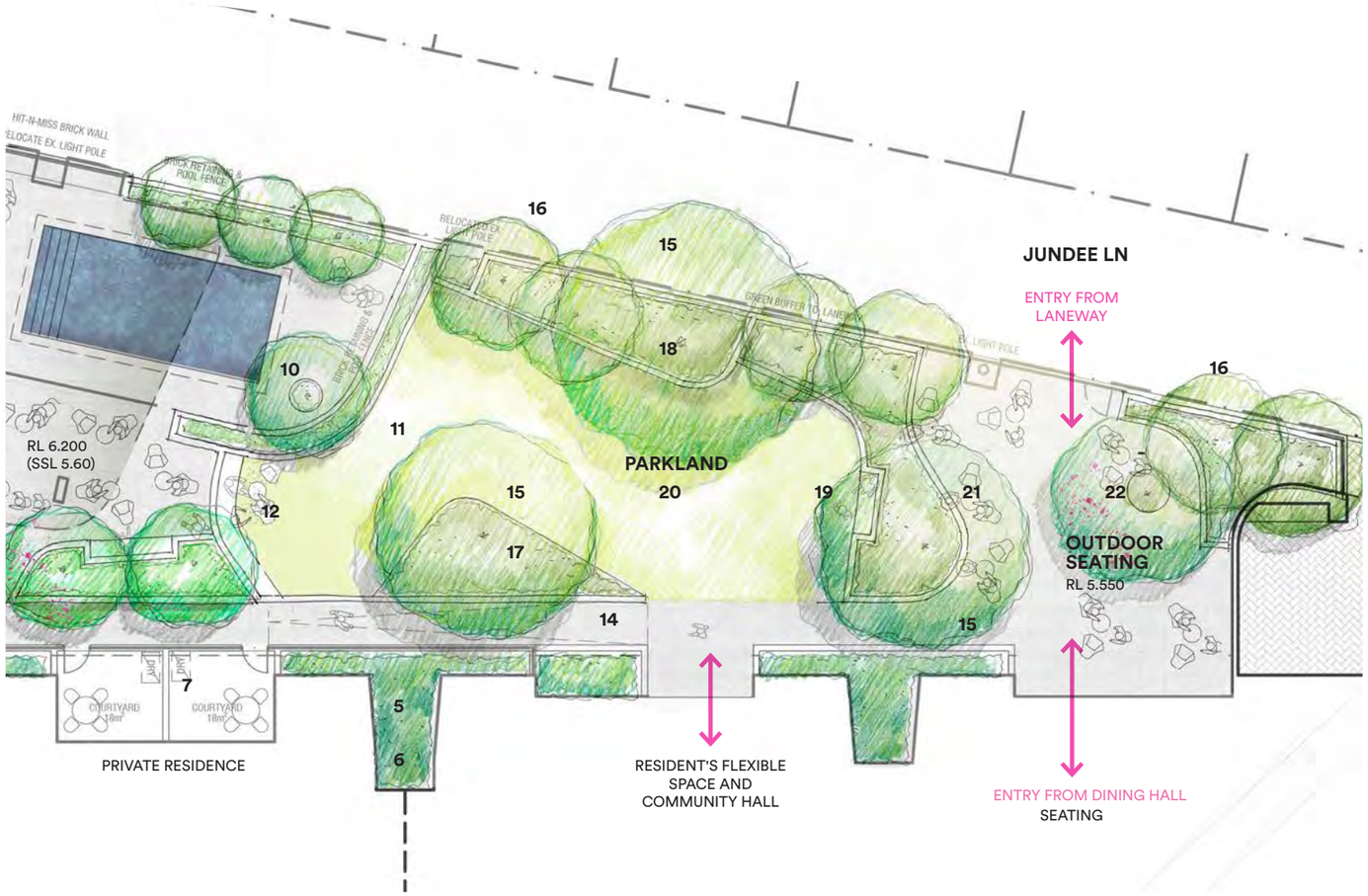
1. **COMMUNAL GARDEN** - Raised, circular concrete planters, universally accessible
2. **CITRUS PLANTER** - Taking advantage of sufficient ambient light, this pairing of Citrus trees will add variety to the garden. Trees in raised planter.
3. **FERNERY**- Shaded fern (raised) garden to separate Parkland zone from a more private Communal Garden. Planter is intended to direct flow of pedestrian traffic away from private residential. 450mm high curved benches on either side to edge of planters
4. **SCREEN PLANTING** - Mixed lush planting to partially screen Gymnasium
5. **RECESS PLANTERS** - Variety of lush shade resistant planting to apartment lightwell alcoves
6. **TRELLIS** - S/S Wire trellis to the front of bedroom windows
7. **PRIVATE PLANTERS** - Metal planters to terraces with hedge to provide privacy from communal space to private terraces
8. **BBQ**- BBQ located outside of pool fence line for family use
9. **BUFFER PLANTER** - Edge planting on boundary to the pool area provides screening to lane
10. **POOL DECK FEATURE TREE -** Feature tree cut-out in Pool Deck to provide shade for sun lounges. A response to the curved pool deck corner.
11. **POOL BALUSTRADE PLANTER** - Retained edge to pool terrace with garden bed of cascade planting to soften edges. Balustrade to run through top of of planter for safety. Refer Section A.
12. **SEAT AREA** - Curved seat with low wall back rest.
13. **FLOWERING TREES -** Tree species with bright pink display of flowers. A visual statement to signify entry from walkway into the shaded resident's court. Integrated bench to planter wall



SECTION A

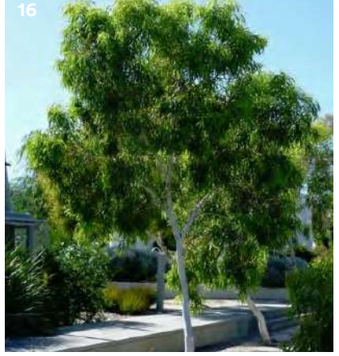


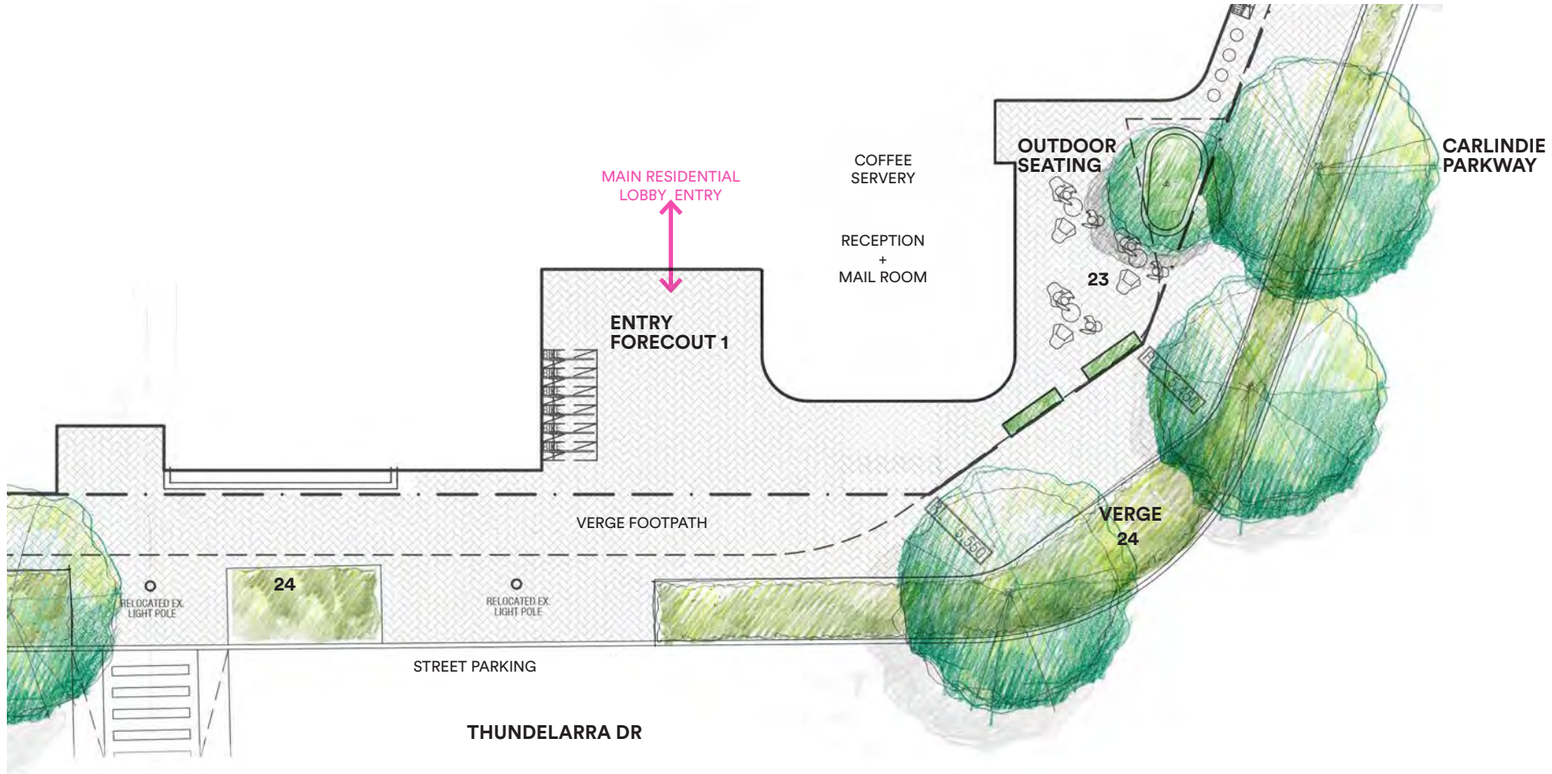
SECTION B



GROUND LEVEL PLAN - PART B

14. **WALKWAY** - 1:20 walkway with kerb (low wall) on one side
15. **LARGE DECIDUOUS TREES** - Gleditsia tricanthos 'Shademaster' provide dappled shade, autumnal interest and allow a sunny aspect in winter
16. **SMALL/MEDIUM NATIVE TREES** - A mix of native trees including Eucaluptus vitrix and Eucalyptus caesia
17. **PARKLAND GROUND PLANTING** - Swale of native planting, informal planting mixes
18. **RAISED PLANTERS** - Swale of native planting, informal planting mixes. Cascade on edge.
19. **FLEXIBLE AREA** - Generous extent of lawn for flexible use of open area. Curved bench with mixed low planting behind.
20. **PARKLAND LAWN** - Hardy variety chosen. Large open extent for flexible outdoor activites.
21. **OUTDOOR SEATING** - Integrated seat on planter edge for loose furniture to be arranged adjacent.
22. **DINING HALL TREE** - Shady feature tree in paving cut-out. Deep green foliage in spring with a beautiful autumn display





GROUND LEVEL PLAN - PART C

23. **CORNER PLANTER** - Low seating height planter with a native tree to provide shade for cafe alfresco.
24. **VERGE PLANTING** - Cook Island pine trees with mixed low native planting to all verge areas. Brick header course to City of Rockingham's requirement.

WALKWAY - 1:20 walkway with kerb (low wall) on one side

RECESS PLANTERS - Variety of lush shade resistant planting to apartment lightwell alcove

PARKLAND GROUND PLANTING - Swale of native planting, informal planting mixes

LARGE DECIDUOUS TREES - Gleditsia tricnathos 'Shademaster' provides dappled shade, autumnal interest and allows a sunny aspect in winter

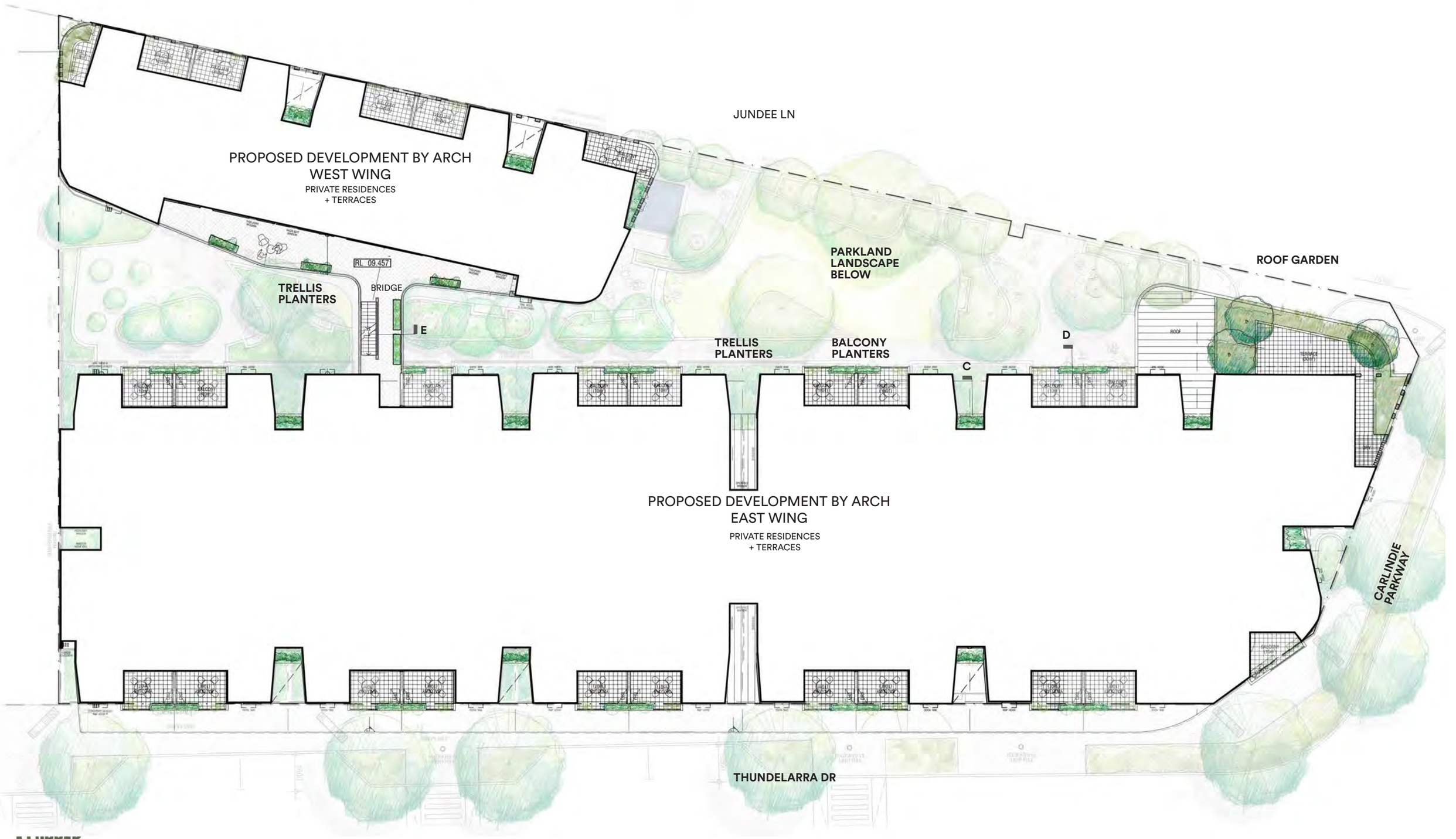
SEAT AREA - Curved seat with low wall back rest.

PARKLAND LAWN - Hardy variety chosen. Large open extent for flexible outdoor activites.

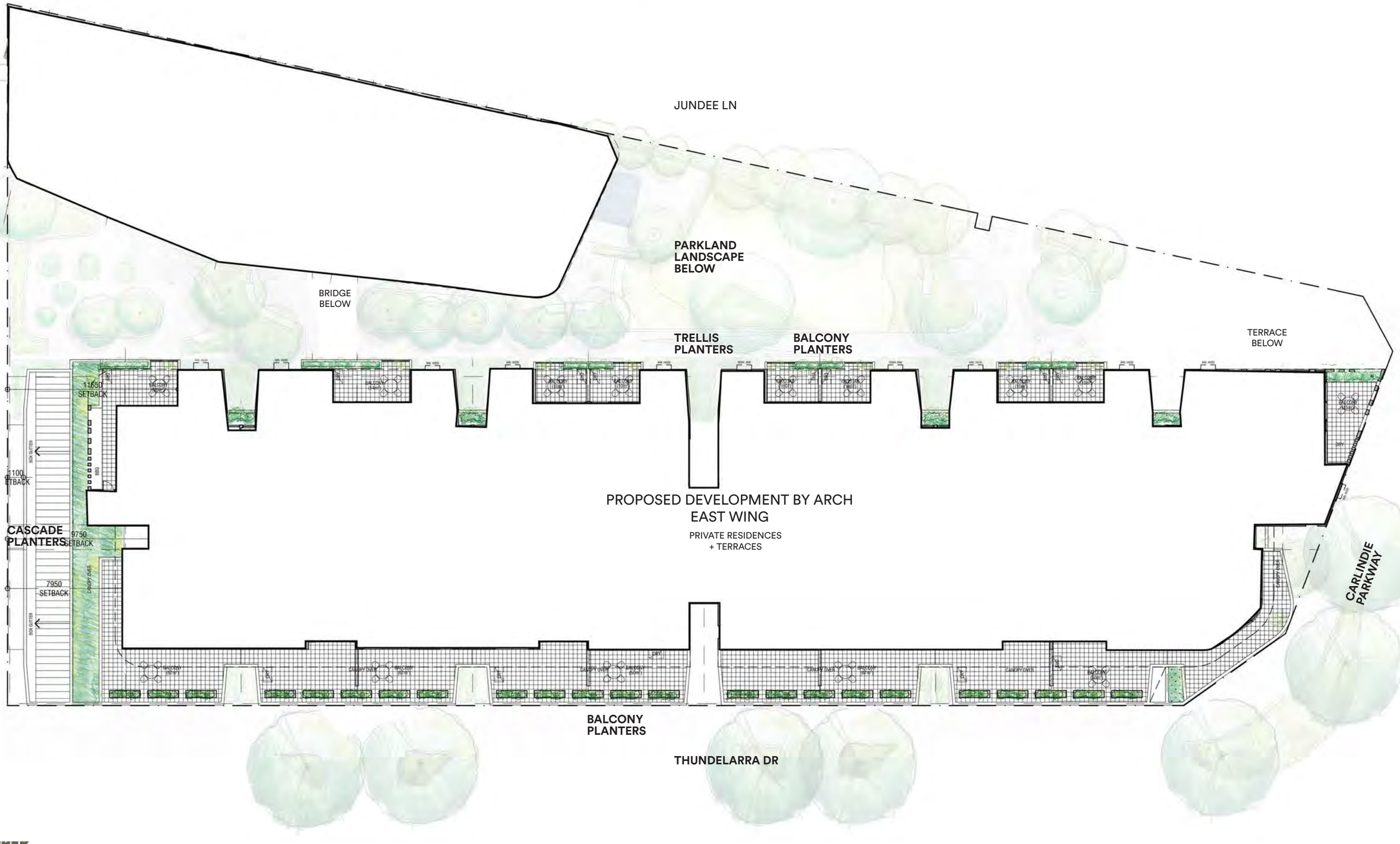
POOL BALUSTRADE PLANTER - Retained edge to pool terrace with garden bed of cascade planting to soften edges. Balustrade to run through top of of planter for safety.

LANDSCAPE - OVERALL PLAN

LEVEL 1




JUNDEE LN
PARKLAND LANDSCAPE BELOW
RL 12.457
BRIDGE BELOW
TRELLIS PLANTERS
BALCONY PLANTERS
TERRACE BELOW
PROPOSED DEVELOPMENT BY ARCH
EAST WING
PRIVATE RESIDENCES
+ TERRACES
CASCADE PLANTERS
CARLINDIE PARKWAY
BALCONY PLANTERS
THUNDELARRA DR


JUNDEE LN
PARKLAND LANDSCAPE BELOW
BRIDGE BELOW
TRELLIS PLANTERS
BALCONY PLANTERS
TERRACE BELOW
1165D SETBACK
1100 SETBACK
CASCADE PLANTERS
9750 SETBACK
7950 SETBACK
PROPOSED DEVELOPMENT BY ARCH
EAST WING
PRIVATE RESIDENCES
+ TERRACES
CARLINDIE PARKWAY
BALCONY PLANTERS
THUNDELARRA DR

BALCONY CASCADE PLANTING
Hardenbergia comptoniana
Height: 2-3m high, 2m wide

Golden Bay Design Guideline
Recommended Species

Ficus pimula (Creeping Fig)
Height: 3.5m high x 2m wide

Hibbertia scandens
Height: .5-3mm high, 1-5m wide

Golden Bay Design Guideline
Recommended Species

Kennedia nigricans
Height: 6m high x 5m wide

CLIMBERS
Pandorea pandorana 'Wonga Wonga Vine'
Height: 2m + high

ROOF GARDEN TREES
Olea europaea 'Tolley's upright'
Size: 7m high x 4m wide

BALCONY CASCADE PLANTING
Helichrysum petiolare
Size: 30-60cm high x
60cm wide

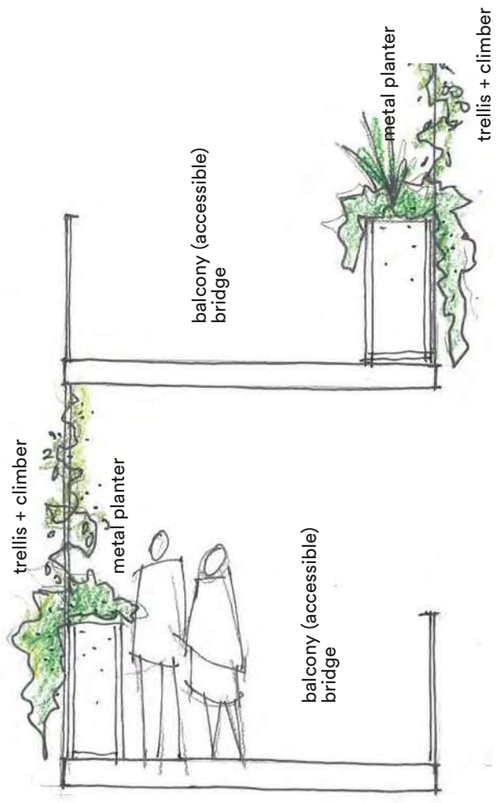
Rosmarinus officinialis Prostrate
Size: 30cm high x 60cm wide

Lomandra tanika
Size: 50cm high x 70cm wide

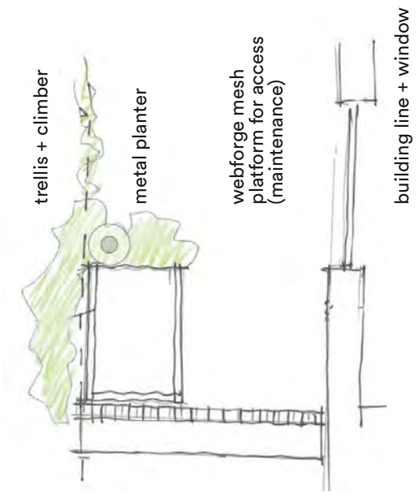
Golden Bay Design Guideline
Recommended Species

Myoporum insulare 'Coastal Carpet'
Height: 20cm high x 1m wide

Casuarina glauca var. 'Cousin It'
Height: 1m wide x 0.15m high

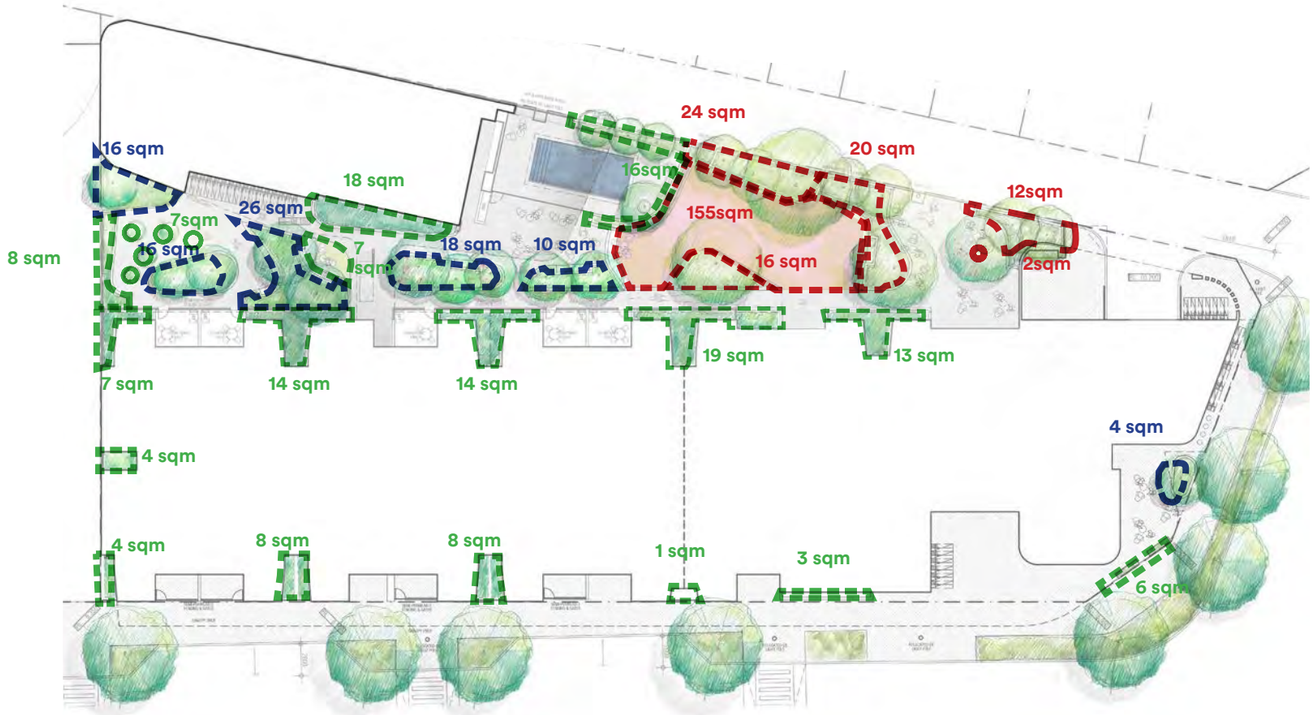


SECTION E



SECTION C

SECTION D



GROUND LEVEL PLAN

LEVEL 1 PLAN

TOTAL LANDSCAPE AREAS KEY

- DEEP SOIL AREAS
- DEEP SOIL AREA (ON SLAB BUT MORE THAN 1M DEEP)
- LANDSCAPE AREA (ON SLAB, LESS THAN 1M DEEP)

Lot area	3431 sqm
WAPC recommended deep soil area (10% of site)	343 sqm
Current deep soil zone	209 sqm (61 % of required amount, therefore an additional 268 sqm required as 'shortfall')
Landscape Area (on slab but more than 1m deep soil depth and can support mature trees)	90 sqm
Landscape Area (on slab and less than 1m soil deep)	146 sqm Ground Floor 86 sqm Level 1 56 sqm Level 2 56 sqm Level 3 108 sqm Level 4
Total Landscape Area	542 sqm (274 sqm more than the required 268 sqm for 'shortfall'
Total landscaping area (including Deep soil zone and planting areas)	751 sqm

The proposed development aims to meet Element Objective O.3.3.3 of the WAPC Guidelines by :

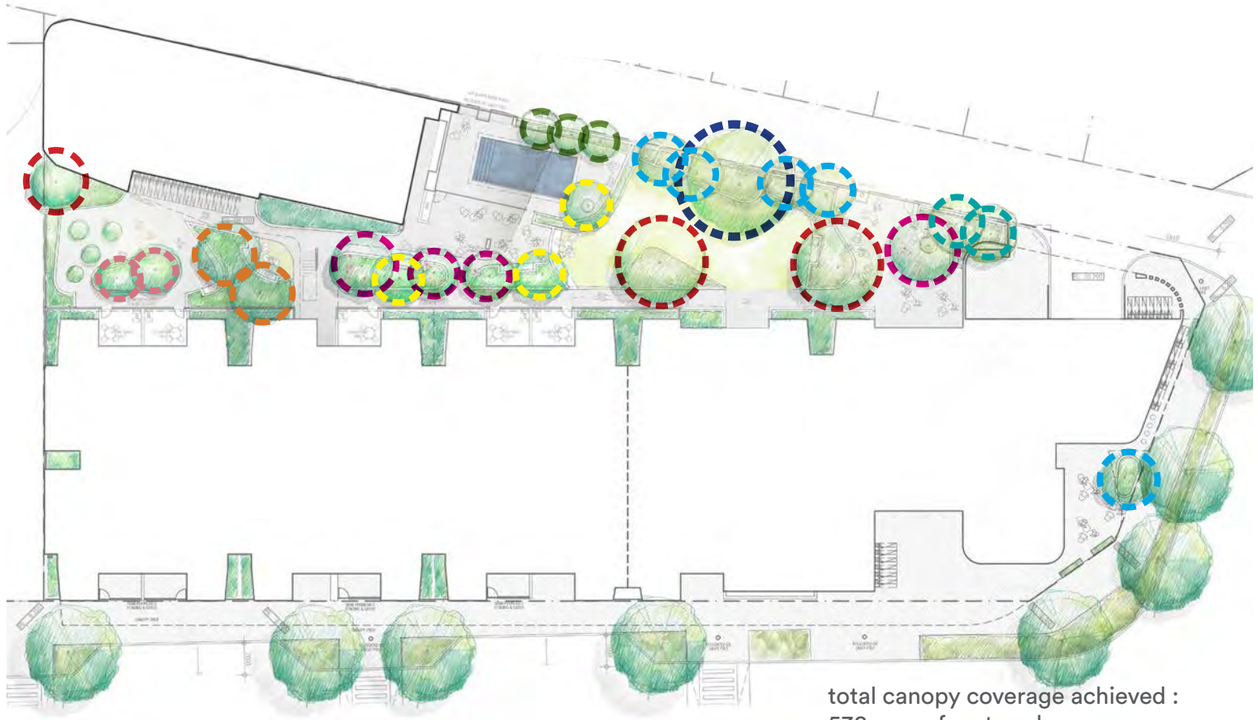
1. Maximising deep soil area where possible (no slab under or roof above)

2. Where the above cannot be met, the proposal aims to maximise additional planter on slab infrastructure to help cater to the mature sizes of the proposed new trees. Planters are generous in area and will achieve a min 1m soil depth. In the next stage, saturated soil weight information will be provided to the Structural Engineer. All planters will be designed to be adequately lined with corflute, drainage cells and geofabric for protection and to aid drainage in the long term. We recommend drip line irrigation (below mulch level) for planters for water efficiency and to prevent evaporation loss.

3. The proposal also seeks to maximise landscape with the use of balcony planters and vertical trellis design. Trellis planting has been carefully considered for the site conditions. All trellis are easily accessible, either via a) walkways or b) maintenance mesh platform (to allow light to filter through).

LANDSCAPE

CANOPY CALCULATIONS + TREES SELECTIONS



GROUND LEVEL PLAN

total canopy coverage achieved :
538 sqm of matured canopy

WAPC recommended requirements for trees for a lot area of 3431sqm is to have 3 large trees and 3 medium trees. That equates to a canopy cover of 530.16sqm. Even though the proposal have only one "large" tree, we have seeked to introduce an increased amount of "small" and "medium" sized trees to compensate. In this sense, adequate measures have been taken to meet O3.3.2 of the guideline as our canopy cover is more than the recommended requirements.

LEVEL 1 PLAN

PARKLAND TREES
Gleditsia triacanthos inermis 'Shademaster'
Size: 8-10m high x 6-8m wide
Flowers: n/a

Golden Bay Design Guideline
Recommended Species

Eucalyptus victrix 'Little Ghost Gum'
Size: 6-8m high x 3-4m wide
Flowers: Cream flowers

Eucalyptus caesia 'Silver Princess'
Size: 6-8m high x 3-5m wide
Flowers: red

FLOWERING TREES
Lagerstroemia indica x fauriei 'Sioux'
Size: 5m high x 4m wide
Flowers: pink

Bauhinia alba 'White hong kong orchid'
Size: 5-6m high x 4m wide
Flowers: white

Pyrus calleryana 'Bradford'
Size: 10m high x 6m wide
Flowers: white

CITRUS TREES
Citrus lemon 'Eureka'
Size: 4m high x 3m wide
Flowers: white

Olea europaea 'Tolley's upright'
Size: 7m high x 4m wide

Golden Bay Design Guideline
Recommended Species

Ulmus parvifolia 'Chinese Elm'
Size: 12m high x 8m wide
Flowers: insignificant

GROUND COVER
Dianella sp. 'Clarity Blue'
Size: 0.5m high x 0.45m wide

Conostylis candicans
Size: 30Cm high x wide
Golden Bay Design Guideline Recommended Species

Eremophila glabra 'Kalbari Carpet
Height: 30cm high x 2m wide
Golden Bay Design Guideline Recommended Species

Myoporum insulare
Height: 20cm high x 1m wide

Myoporum parvifolium 'yareena'
Height: 10cm high x 1m wide

Scaevola crassifolia 'Flat Fred'
Size: 20cm high x 1m wide

Rhagodia baccata 'berry saltbush'
Height: 20cm high x 1m wide

Scaevola anchusifolia prostrate
Size: 20cm high x 1.5m wide

Ficinia nodosa
Size: 80cm high x wide

Cotyledon 'Silver Waves'
Size: 30cm high x 70cm wide
Flowers: pink

Senecio mandraliscae
Height: 0.3-0.6m high x 0.6-0.9m wide

Thymus serphyllum (Creeping Thyme)
Height: 0.10m high x 0.5m wide

Helichrysum petiolare 'Licorice plant'
Size: 30-60cm high x 60cm wide

Westringia fruticosa 'Mundi'
Height: 0.5m high x 1.5m wide

Hemiandra pungens alba - white
Height: 20cm high x 2-3m wide
Golden Bay Design Guideline Recommended Species

Lomandra tanika
Size: 50cm high x wide
Golden Bay Design Guideline Recommended Species

Lomandra confertifolia 'Mist'
Height: 50cm high

Lomandra longifolia x confertifolia subp. pallida. 'Lime Tuff'
Height: 30-50cm high

Grevillea obtusifolia 'gin gin gem'
Size: 50cm high x 1m wide
Flowers: large yellow
Golden Bay Design Guideline Recommended Species

Evovulus hybrid 'Blue my mind'
Size: 30cm high x 60cm wide
Flowers: blue

VERGE TREATMENT - HARDSCAPE/SOFTSCAPE
Brick header course to all paving perimeters.
Low planting to City of Rockingham's requirements to ensure adequate sighlines and continuation of surrounding landscape detail

GROUND FLOOR HARDSTAND
Vulcano Stone - Limestone (Mataka Pty Ltd)
800/400x30mm or Random pattern Sandblasted Tumbled finish $79 per m2 inc gst

SHRUBS
Banksia sceptrum 'Little Xmas Candles'
Size: 1m high x wide
Flowers: large yellow

Eucalyptus albida
Size: 2-5m high x 3-6m wide
Flowers" white

Convolvulus cneorum (Silver Bush)
Height: 1m high x 2m wide
Flower: Large white flowers

Westringia fruticosa
Height: 1.5m high x 1.5m wide

Correa backhouseana 'var. coriacea'
Size: 1m high x wide

Phormium tenax 'Variegatum'
Size: 1m-1.5m high x wide

Phormium cookianum 'Green Dwarf'
Height: 70-80cm high x wide

Ficinia nodosa 'Knotted club rush'
Height: 1m high
Flower: seed pods

Golden Bay Design Guideline
Recommended Species

Juncus kraussii
Height: 1m high

Golden Bay Design Guideline
Recommended Species

Banksia spinulosa 'hair pin'
Size: 70cm high x 50cm wide
Flowers: bronze

Adenanthos cuneatus
Height: 1m high x 2m wide
Flower: red

Atriplex cinerea 'Coastal saltbush'
Height: 1m high x 2m wide
Flowers: yellow

Leucophyta brownii 'Cushion Bush'
Size: 1m high x wide
Flowers: yellow

Golden Bay Design Guideline
Recommended Species

Olearia 'Ghost Town'
Height: 0.5-1m high x 1m wide

Olearia axillaris "Little Smokie"
Height: 1m high x 1m wide

Golden Bay Design Guideline
Recommended Species

Calothamnus quadrifidus
Height: 2.4m high x 2.4m wide

Golden Bay Design Guideline
Recommended Species

Ricinocarpus hybrid 'Pencil Wedding Bush'
Height: 3m high x 1m wide

Ricinocarpus tuberculatus
Size: 2.5m high x 1m wide

Golden Bay Design Guideline
Recommended Species

Coprosma repens
Size: 1-1.8m high x 1m wide
Flowers: small white

Golden Bay Design Guideline
Recommended Species

Melaleuca huegelii 'chenille honey myrtle'
Size: 4m high x 6m wide
Flowers: small white bottlebrush

Golden Bay Design Guideline
Recommended Species

Pittosporum 'Creme de Mint'
Size: 1m high x 50cm wide

Pittospermum tobira 'Miss Muffet'
Size: 1m high x 1.5m wide

Westringia dampieri
Size: 1m high x wide
Flowers: white/pink

Golden Bay Design Guideline
Recommended Species

Strelitzia juncea
Size: 1.2/2m high x 1m wide
Flowers: orange/purple

Golden Bay Design Guideline
Recommended Species

Agave attenuata
Height: 1-1.5m high x 1m wide

Golden Bay Design Guideline
Recommended Species

Rosmarinus officinalis
Size: 1.5m high x 1.5m wide
Flowers: lavender blue

Golden Bay Design Guideline
Recommended Species

Gardenia sp
Size: 1-2m high x wide
Flowers: yellow

SHADED GARDENS
Spathiphyllum 'Sensation'

Raphiolepis indica 'Oriental Pearl'
Size: 1m high x 1m wide

Cycas r evoluta
Size: 1m wide x 1-3m high

Zamia furfuracea
Height: 1.5m wide

Alocasia macrorrhiza
Height: 1-2m

Philodendron 'Little Phil'
Size: 30cm high x wide

Crinum pedunculatum
Height: 1.5 - 2m high + width

CLIMBERS
Pandorea pandorana 'wonga wonga vine'
Height: 2m + high

Apsidistra elatior
Size: 50cm to 1.2m high x 1.5m wide

Philodendron 'Xanadu'
Size: 50cm high x wide

Philodendron 'Rojo Congo'
Size: 3m high x wide

Liriope Muscari 'Monroe White'
Size: 50cm high x wide

Liriope 'Emerald Cascade'
Size: 40cm high x wide

Rhapis excelsa
Size: 3-4m high

Alocasia macrorrhizos
Size: 1.5m high x wide

Arthropodium cirratum
Size: 90cm high x wide

Alpinia caerulea
Size: 2m high x 1m wide

talis
delivering solutions

Assets | Engineering | Environment | Noise | Spatial | Waste

Waste Management Plan

Lot 636 Thundelarra Drive, Golden Bay

Prepared for Seacrest Homes Pty Ltd

September 2019

Project Number: TW19043

DOCUMENT CONTROL

Version	Description	Date	Author	Reviewer
0a	Internal Review	06/05/19	RH	JW
1a	Released to Client	06/05/19	RH	Client
1c	Issued for Development Application	10/06/19	RH	Client
1d	Released to Client	16/09/19	RH	Client

Approval for Release

Name	Position	File Reference
Ronan Cullen	Director and Waste Management Section Leader	TW19043 - Waste Management Plan.1d
Signature		

Executive Summary

Seacrest Homes Pty Ltd is seeking development approval for the proposed commercial development located at Lot 636 Thundelarra Drive, Golden Bay (the Proposal).

To satisfy the conditions of the development application the City of Rockingham (the City) requires the submission of a Waste Management Plan (WMP) that will identify how waste is to be stored and collected from the Proposal. Seacrest Homes Pty Ltd has engaged Talis Consultants (Talis) to prepare this WMP to satisfy those conditions.

A summary of the bin size, numbers, collection frequency and collection method for the Proposal is provided in the below table.

Proposed Waste Collection Summary

Waste Type	Generation (L/week)	Bin Size (L)	Number of Bins	Collection Frequency	Collection
Bin Storage Area					
Refuse	9,923	1,100	5	Twice each week	Private Contractor
Recycling	9,508	1,100	5	Twice each week	Private Contractor

A private contractor will be engaged to service bins directly from the Proposals Bin Storage Area.

The Village Manager will oversee the relevant aspects of waste management at the Proposal.

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1 Introduction

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To satisfy the conditions of the development application the City of Rockingham (the City) requires the submission of a Waste Management Plan (WMP) that will identify how waste is to be stored and collected from the Proposal. Seacrest Homes Pty Ltd has engaged Talis Consultants (Talis) to prepare this WMP to satisfy those conditions.

The Proposal is bordered by Carlindie Parkway to the north, Jundee Lane to the west, Thundelarra Drive to the east and Lot 716 to the south, as shown in Figure 1.

1.1 Objectives and Scope

The objective of this WMP is to outline the equipment and procedures that will be adopted to manage all waste (refuse and recyclables) at the Proposal. Specifically, the WMP demonstrates that the Proposal should be designed to:

- Adequately cater for the anticipated quantities of waste and recyclables to be generated;
- Provide suitable Bin Storage Area including appropriate bins; and
- Allow for efficient collection of bins by appropriate waste collection vehicles.

To achieve the objective, the scope of the WMP comprises:

- Section 2: Waste Generation;
- Section 3: Waste Storage;
- Section 4: Waste Collection;
- Section 5: Waste Management; and
- Section 6: Conclusion.

2 Waste Generation

The following sections show the waste generation rates used and the estimated waste volumes to be generated at the Proposal.

2.1 Proposed Tenancies

The anticipated quantities of refuse and recyclables were based on the number of independent living units and the floor area of the commercial tenants and amenities at the Proposal. The Proposal consists of the following:

- Independent Living Units (ILU) incl. 4 Convertible Units – 101;
- Dining Hall (incl. back of house) – 83m^2;
- Resident Meeting Rooms – 90m^2;
- ILU Amenity Areas (incl. community hall, theatre, arts/crafts room, gym, pool/bbq area, lobby and lounge) - 265m^2; and
- Retail – 140m^2.

2.2 Waste Generation Rates

The anticipated quantities of refuse and recyclables for the Proposal were based upon the City of Melbourne's *Guidelines for Preparing a Waste Management Plan* (2017).

Table 2-1 shows the waste generation rates applied to the proposed tenancies.

Table 2-1: Refuse and Recyclables Generation Rates

Tenancy	Guidelines	Refuse Generation Rate	Recyclables Generation Rate
ILU	City of Melbourne	80L/week	80L/week
Dining Hall (incl. back of house)	City of Melbourne	300L/100m^2/day	200L/100m^2/day
Resident Meeting Rooms	City of Melbourne	10L/100m^2/day	10L/100m^2/day
ILU Amenity Areas	City of Melbourne	10L/100m^2/day	10L/100m^2/day
Retail	City of Melbourne	50L/100m^2/day	50L/100m^2/day

The City of Melbourne's waste generation rates include an "Independent Living" generation rate of 80L/unit/week for refuse and recyclables which was utilised in calculating waste volumes for the ILU.

Talis is of the view that the waste generation rate utilised for the ILUs would encompass all waste generated by the aged care operations, which typically includes shared amenities such as:

- Communal BBQ Area;
- Activity/garden areas;
- Communal lounges;
- Community gym;
- Community theatre;
- Community hall; and
- Resident Meeting rooms.

However, an 'office' generation rate has been applied to these amenities to ensure the proposal has adequate capacity for waste storage.

As medical waste is highly dependent on the nature and scale of medical practices undertaken there are currently no medical/clinical waste generation rates available within published waste management guidelines. Therefore, medical waste has not been included within this waste generation assessment. Facilities such as this typically manage medical waste in-situ so storage space is not required within the Bin Storage Area. However, space to accommodate small scale medical wastes have been allowed for within an on-site medical room & storage, should this be required in the future.

2.3 Waste Generation Volumes

Waste generation is estimated by volume in litres (L) as this is generally the influencing factor when considering bin size, numbers and storage space required.

2.3.1 Waste Generation

Waste generation volumes in litres per week (L/week) of refuse and recyclables adopted for this waste assessment are shown Table 2-2. It is anticipated that the Proposal will generate 9,848L of refuse and 9,548L of recyclables each week.

Table 2-2: Estimated Waste Generation

Proposals Tenancies	Number of Units/ Floor Area (m^2)	Waste Generation Rate (L/week)	Waste Generation (L/Week)
Refuse			
Independent Living Units	101	80	8,080
Dining Hall (incl. back of house)	83	300	1,245
Resident Meeting Rooms	90	10	45
ILU Amenity Areas	265	10	133
Retail	140	50	420
		Total	**9,923**
Recyclables			
Independent Living Units	101	80	8,080
Dining Hall (incl. back of house)	83	200	830
Resident Meeting Rooms	90	10	45
ILU Amenity Areas	265	10	133
Retail	140	50	420
		Total	**9,508**

3 Waste Storage

To promote positive recycling behaviours and maximise diversion from landfill:

- Two bins will be located within each ILU for the separate disposal of refuse and recycling. Waste materials will be placed in these bins and transferred by the resident, staff/cleaners or the Village Manager, to the Bin Storage Area and placed in the appropriate bins. Contents of the refuse and recyclables bins in the ILU amenity areas including the community hall, theatre, arts/crafts room, gym, lobby and lounge will be transferred by staff/cleaners or the Village Manager directly to the Bin Storage Area for disposal in the appropriate bins.

- Retail tenancies and the Dining Hall will also be required to have a minimum of two bins to facilitate the separate disposal of refuse and recyclables within their tenancy. The contents of these bins will be transferred by staff/cleaners, or their authorised representative, to the Bin Storage Area and be deposited into the appropriate bins.

3.1 Bin Storage Area

Refuse and recyclable materials generated within the Proposal will be collected in the bins located in the Bin Storage Area shown in Figure 2.

3.1.1 Bin Sizes

Table 3-1 gives the typical dimensions of standard bins sizes. It should be noted that these bin dimensions are approximate and can vary slightly between suppliers.

Table 3-1: Typical Bin Dimensions

Dimensions	Bin Sizes			
	240L	360L	660L	1,000L
Depth (mm)	730	848	780	1,070
Width (mm)	585	680	1,260	1,240
Height (mm)	1,060	1,100	1,200	1,300

Reference: SULO Bin Specification Data Sheets

3.1.2 Bin Storage Area Size

To ensure sufficient area is available for storage of the bins, the amount of bins required for the Bin Storage Area was modelled utilising the bin sizes in Table 3-1, assuming collection of refuse and recyclables twice each week from the Proposal.

Table 3-2: Bin Requirements for Bin Storage Area

Waste Stream	Waste Generation (L/week)	Number of Bins Required			
		240L	360L	660L	1,100L
Refuse	9,923	21	14	8	5
Recycling	9,508	20	14	8	5

Based on the results shown in Table 3-2 the Bin Storage Area has been sized to accommodate:

- Five 1,100L refuse bins; and

- Five 1,100L recyclable bins.

The configuration of these bins within the Bin Storage Area is shown in Figure 2. It is worth noting that the number of bins and corresponding placement of bins shown in Figure 2 represents the maximum requirements assuming two collections each week of refuse and recyclables. Increased collection frequencies would reduce the required number of bins.

3.1.3 Bin Storage Area Design

The design of the Bin Storage Area will take into consideration:

- Smooth impervious floor sloped to a drain connected to the sewer system;
- Taps for washing of bins and Bin Storage Area;
- Adequate aisle width for easy manoeuvring of bins;
- Doors to the Bin Storage Area should be self-closing and vermin proof;
- Doors to the Bin Storage Area must be wide enough to fit bins through;
- Ventilated to a suitable standard;
- Appropriate signage that identifies what items are and are not accepted in the refuse and recyclable bins, any hazards or potential dangers, and any relevant points of contact for the waste system;
- Undercover where possible and be designed to not permit stormwater to enter into the drain;
- Located behind the building setback line;
- Bins not to be visible from the property boundary or areas trafficable by the public; and
- Bins are reasonably secured from theft and vandalism.

Bin numbers and storage space within the Bin Storage Area will be monitored by the Village Manager during the operation of the Proposal to ensure that the number of bins and collection frequency is sufficient.

4 Waste Collection

A private contractor will service the Proposal by providing 1,100L bins for consolidation of refuse and recyclables.

The private contractor will collect refuse and recycling twice each week directly from the Proposal's Bin Storage Area.

The private contractors rear loader waste collection vehicle will travel down Jundee Lane and stop directly alongside the Bin Storage Area. The private contractor's waste collection staff will ferry bins between the Bin Storage Area and the rear loader for servicing. Once servicing is complete the private contractor's rear loader waste collection vehicle will travel along Jundee Lane and egress in forward gear. The private contractor will be provided with key/PIN code access to the Bin Storage Area to facilitate servicing, if required.

Talis is aware that waste service providers, including the City, currently utilise Jundee Lane to collect residential waste. Therefore, the above servicing method will preserve the amenity of the area and to surrounding neighbours. In addition to this, the location of the Bin Storage Area on Jundee Lane is hidden from the public's view as it faces the rear of residential blocks, improving the overall aesthetics of the area.

The ability of the private contractor's waste collection vehicle to access the Bin Storage Area from Jundee Lane will be assessed by a traffic engineers and included within their Traffic Impact Assessment.

4.1 Bulk Waste and Greenwaste Collection

No bulky waste collection service will be provided by the City for this Proposal. Instead bulk waste materials will be removed from the Proposal as they are generated. An area for the temporary holding of bulky wastes has been allocated for the Proposal on the Ground Floor and is shown in Figure 2. In addition, the Café tenancy also has a dedicated store in the basement level which could be utilised for the temporary storage of bulky/speciality wastes.

The Village Manager will liaise with residents and staff on procedures for bulky waste disposal within the Proposal. The Village Manager will monitor the accumulation of bulky waste and will organise for its disposal at the appropriate facility, as required. In addition, each ILU has an allocated storage room of 3-5m^2, in accordance with the Design WA Guidelines, which can be utilised for the temporary holding of bulky wastes.

Greenwaste collection services will be provided by external contractors, as required. Typically, this will service the landscaped areas, green buffers and community gardens. The Village Manager will liaise with service providers to ensure an efficient and effective service is maintained.

In the future, the Proposal may allow for the provision of equipment to process organic wastes which can be distributed and recycled on the communal vegetable gardens as a form of compost. The exact type, size and capacity of the equipment may be adjusted, based on the Proposal's future waste composition. The use of such technology could assist to reduce bin capacity required by reducing waste volumes through treatment. The future of this system will be dependent on the product quality and demand within the Proposal.

4.2 Specialty Wastes

Adequate space will be allocated throughout the Proposal for placement of cabinets/containers for collection and storage of specialty wastes that are unable to be disposed of within the bins. Specialty wastes may include items such as:

- Clothing;
- Batteries;
- E-wastes;
- Used cooking oil;
- White goods/appliances;
- Cleaning chemicals; and
- Light globes.

These specialty wastes will be removed from the Proposal as sufficient volumes have been accumulated to warrant disposal. Specialty waste collection will be monitored by the Village Manager who will organise their transport to the appropriate waste facility, as required.

Sanitary wastes will be collected in situ. A suitably qualified sanitary waste collection and disposal provider will be engaged to determine storage and collection requirements.

4.3 Controlled Medical Waste

The volume of medical waste generated at the Proposal will be dependent on the nature and scale of the medical practises undertaken at the Facility. Appropriate containers will be placed in all locations where particular categories of medical waste may be generated. Instructions on separation and identification of medical wastes will be posted at each waste collection point to remind staff of procedures. Suitably qualified service providers will be engaged to determine storage and collection requirements.

The following points are indicative of minimum requirements for Environmental Best Practice relating to controlled medical wastes and should be considered within the Proposal:

- Ensuring all clinical and related waste is properly contained;
- Ensuring staff are aware of their individual responsibilities for waste management and provide appropriate education and training to ensure correct procedures are adhered to;
- Employing all relevant measures are taken to reduce risk to staff, the community and the environment; and
- All waste containers should meet the Australian Standards and are to be of the appropriate colour, have suitable symbol/wording for the waste types to be deposited into that container.

5 Waste Management

The Village Manager will be engaged to complete the following tasks:

- Monitoring and maintenance of bins, any waste equipment and the Bin Storage Area;
- Cleaning of bins and Bin Storage Area when required;
- Monitor bulk/greenwaste management and assist residents/staff with its removal, as required;
- Ensure all residents/tenants/staff at the Proposal are made aware of this WMP and their responsibilities thereunder;
- Monitor resident behaviour and identify requirements for further education and/or signage;
- Regularly engage with residents/tenants/staff to develop opportunities to reduce waste volumes and increase resource recovery; and
- Regularly engage with all private waste contractors to ensure an efficient and effective waste service is maintained.

6 Conclusion

As demonstrated within this WMP, the Proposal provides a sufficiently large Bin Storage Area for refuse and recyclables, based on the anticipated waste generation rates and a suitable configuration of bins. This indicates that a satisfactorily designed Bin Storage Area has been provided and collection of refuse and recycling bins can be completed from the Proposal.

The above is achieved using:

- Five 1,100L refuse bins, collect twice each week; and
- Five 1,100L recycling bins, collected twice each week.

A private contractor will be engaged to service bins directly from the Proposals Bin Storage Area.

The Village Manager will oversee the relevant aspects of waste management at the Proposal.

Figures

Figure 1: Locality Plan

Figure 2: Bin Storage Area & Bulk Waste Storage

P PO Box 454, Leederville WA 6903 | A Level 1 660 Newcastle St, Leederville WA 6007 | T 1300 251 070 | W www.talisconsultants.com.au

LEGEND

- Site Boundary
- Cadastre

LOCALITY

0 6 12 18 24 30 km

LOCALITY
Lot 636 Thunderlarra Drive
Golden Bay WA 6174

Seacrest Homes Pty Ltd

N
0 6 12 18 24 metres
Coordinate System: GDA 1994 MGA Zone 50
Projection: Transverse Mercator, Datum: GDA 1994
Scale @ A3:1:600

Prepared:	F Walker	Date:	6/05/2019
Checked:	J Wroe	Project No:	TW19043
Reviewed:	R Hayton	Revision:	A

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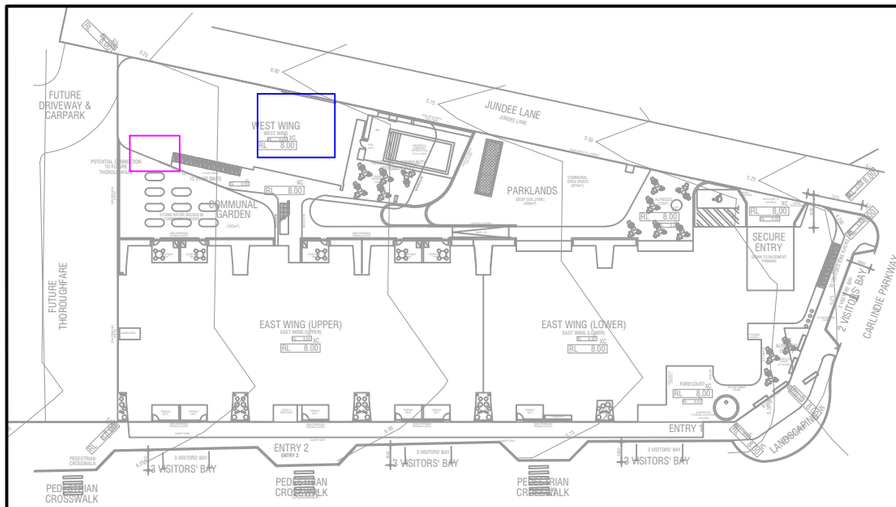
Figure 01

6,4 2,250

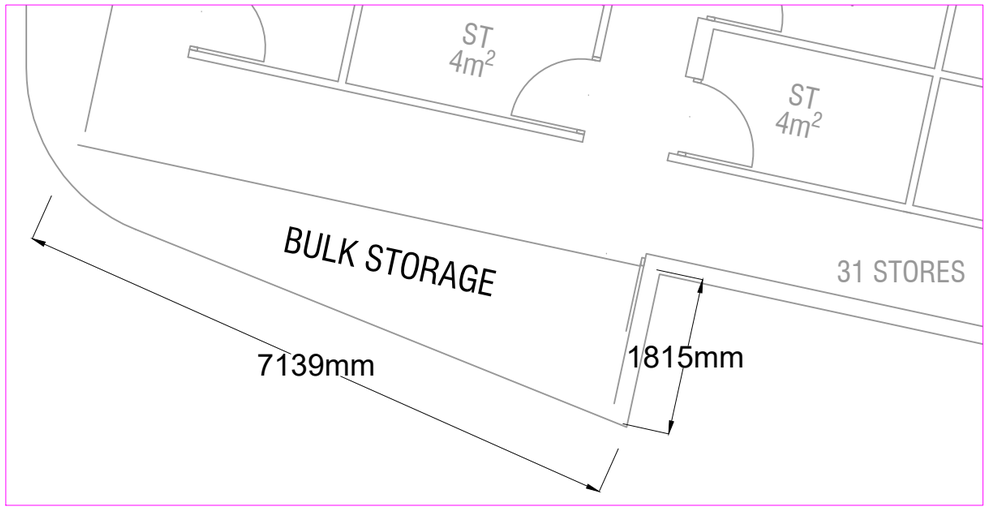
Data source: Roads - Main Roads WA, 2018. Imagery - Landgate, 2019

Document Path: \\server\talis\SECTIONS\Waste\PROJECTS\TW2019\TW19043 - Lot 636 Thunderlarra Drive, Golden Bay WMP\GIS\Maps\TW19043_01_Locality_RevA.mxd

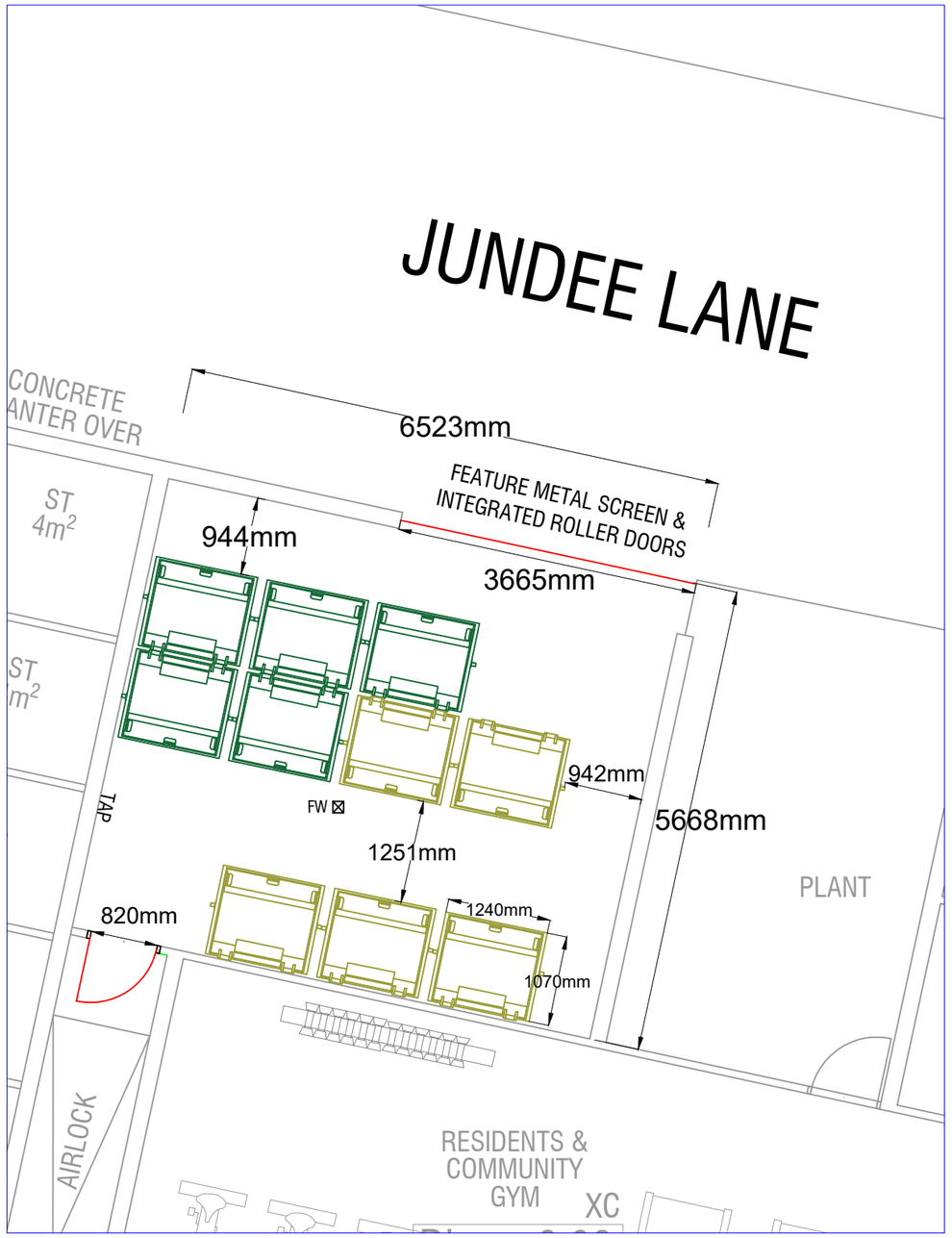


GROUND FLOOR PLAN

BULK WASTE STORAGE



BIN STORAGE AREA



Legend:

Bin Storage Area

- 5 x 1,100L refuse (1240mm x 1070mm)
- 5 x 1,100L recycling (1240mm x 1070mm)

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Client: Seacrest Homes Pty Ltd

NOTES

1. This drawing is the property of Talis Consultants Pty Ltd. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent.
2. All levels refer to Australian Height Datum.
3. DO NOT SCALE, use figured dimensions only, if in doubt please contact Talis Consultants.

No.	Date	Drawn / Chkd	Amendment / Issue	App.
B	07/06/19	RH / JW	SECOND ISSUE	JW
A	03/05/19	RH / JW	FIRST ISSUE	JW

Project: Lot 636 Thunderlarra Drive, Golden Bay

Title: Bin Storage Area & Bulk Waste Storage

Drawn by:	RH	Job No:	TW19043
Checked by:	JW	File No:	TW19043DWG001
Approved by:	JW	Fig. No: 002	Rev: B
Scale:	NTS		
Date:	07/06/19		

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SEACREST HOMES

LOT 636 THUNDELARRA DRIVE, GOLDEN BAY

PROPOSED INDEPENDENT LIVING DEVELOPMENT

TRAFFIC STATEMENT

SEPTEMBER 2019

Riley Consulting (WA) Pty Ltd

PO BOX Z5578

Perth WA 6831

0413 607 779 Mobile

Issued on	17 September 2019	Amendments	Date
Version	V2A	1a text edits	11/6/19
		V2 Changes for CoR	13-09-19
Reference	1021	V2A minor text eedits	17-09-19

CONTENTS

1. EXECUTIVE SUMMARY

1.1. Riley Consulting has been commissioned through Klopper & Davies Architects to consider the traffic and transport impacts of a proposed lifestyle facility at Golden bay. The key findings of the traffic review are:

1.1.1. The site is currently vacant.

1.1.2. The proposed development of 101 lifestyle units with associated facilities and 2 retail tenancies is forecast to generate 346 vehicle movements per day. During the peak periods, 37 vehicle movements are forecast.

1.1.3. The level of traffic generated by the proposed development requires a traffic statement to be provided under the WAPC *Transport Assessment Guidelines for Developments*.

1.1.4. The level of generated traffic is considered to have no material traffic impact under the WAPC *Transport Assessment Guidelines for Developments*.

1.1.5. Access to the basement car park is provided from Jundee Lane.

1.1.6. Car parking for 100 vehicles is required by the City of Rockingham's Town Planning Scheme. A total of 98 on-site parking bays are provided resulting in a shortfall of 2 bays. On street parking available within 250 metres is noted to provide 326 bays (of which 200 are located in the shopping centre car park). Further, additional resident parking can be provided by using stackers should the demand arise.

2. CHECKLIST

Item	Comments/Proposals
Proposed development	
proposed land uses	Lifestyle village with 101 units +2 retail tenancies
existing land uses	Vacant
context with surrounds	In new suburb adjacent to activity centre
Vehicular access and parking	
access arrangements	Access from Jundee Lane
public, private, disabled parking set down / pick up	On-site
Service vehicles	
access arrangements	On-site
rubbish collection and emergency vehicle access	Bin area accessed from Jundee lane
Hours of operation (non-residential only)	Retail 9am-5pm typical
Traffic volumes	
daily or peak traffic volumes	346 vehicles per day 37 peak movements
type of vehicles (eg cars, trucks)	Predominantly cars
Traffic management on frontage streets	
Public transport access	
nearest bus stops/train stations	Within 400m
pedestrian/cycle links to bus stops/train station	Already provided
Pedestrian access/facilities	
existing pedestrian facilities within the development (if any)	N/A
proposed pedestrian facilities within development	Accessible access provided
existing pedestrian facilities on surrounding roads	As per Liveable Neighbourhoods
proposals to improve pedestrian access	N/A
Cycle access/facilities	
existing cycle facilities within the development (if any)	N/A
proposed cycle facilities within development	As per City requirements
existing cycle facilities on surrounding roads	As per LN
proposals to improve cycle access	None
Site specific issues	None
Safety issues	None

3. THE LOCAL ROAD NETWORK

3.1. The subject site is located at Lot 636 Thundelarra Drive, Golden Bay. It is located approximately 15km south of Rockingham town centre and 12km north of Mandurah town centre.

3.2. The site is located to the corner of Thundelarra Drive, Carlindie Parkway and Jundee Lane. Figure 1 shows the location of the subject site and Figure 2 shows an aerial image.

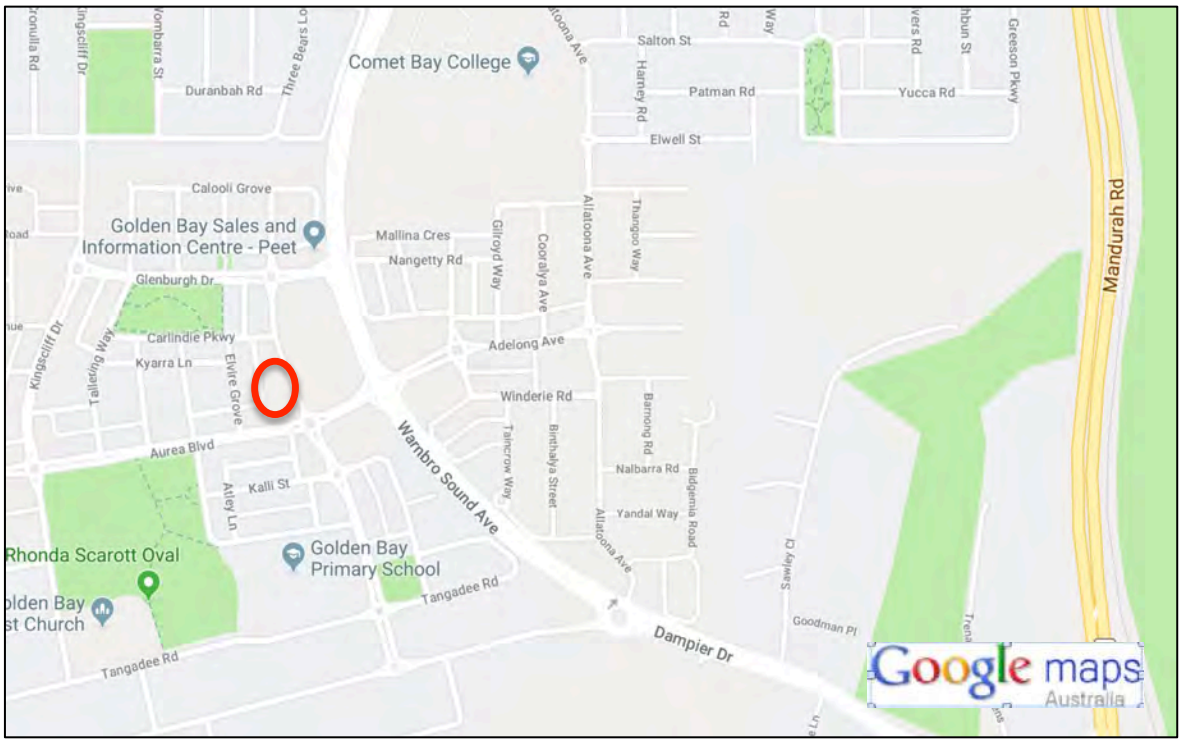


Figure 1 Subject Site Location

Figure 2 Aerial Imagery (site area indicative – refer to DA)

3.3. The local road network is discussed below. The blanket 50kph residential speed limit applies to all local roads.

Thundelarra Drive

3.4. Thundelarra Drive is constructed as a two lane road with a pavement width of about 7.5 metres. Parking bays and footpaths are provided to both sides of the road.

3.5. Discussions with the City of Rockingham have identified that no current traffic data is available for the local area. As Golden Bay is a newer suburb still under construction, traffic demands would not have reached ultimate levels.

3.6. The structure plan road hierarchy is attached at Appendix A with an extract for the structure plan traffic forecasts prepared by Transcore.

3.7. The structure plan identifies Thundelarra Drive as a neighbourhood connector type B, suitable for daily traffic demands up to 3,000vpd under Liveable Neighbourhoods.

3.8. The structure plan traffic report forecasts 2,300 vehicles per day (vpd) using Thundelarra Drive. However the structure plan traffic report identifies the village centre to provide 4,700m^2 of floor space generating 3,740vpd. It is considered

that access to the village centre was expected from Warnbro Sound Avenue or Aurea Boulevard, which appears to be no longer the case.

3.9. Given that access to the village centre is only to be taken from Thundelarra Drive, it is considered that a neighbourhood connector type would be more suited to this street.

3.10. Its intersections with Aurea Boulevard and Glenburgh Drive are controlled by roundabouts.

Jundee Lane

3.11. Jundee Lane is a north south laneway running parallel to Thundelarra Drive. It will provide access to the proposed development and will service the rear of approximately 12 lots. Excluding the proposed development it would be expected to carry about 96vpd.

Carlinde Parkway

3.12. Carlinde Parkway is identified as an access street type B, suited to traffic demands up to 3,000vpd. It is constructed with a pavement of 6 metres with indented parking and a footpath to both sides.

3.13. The structure plan does not show traffic forecast for Carlindie Parkway. Based on the number of dwellings taking access and its limited connectivity it would be expected to carry up to 320vpd.

Aurea Boulevard

3.14. Aurea Boulevard is located to the south of the subject site and is classified as an integrator B between Thundelarra Drive and Warnbro Sound Avenue. West of Thundelarra Drive it is classified as a neighbourhood connector type A. A daily demand of 15,000vpd and 7,000vpd respectively applies to Aurea Boulevard under Liveable Neighbourhoods.

3.15. Aurea Boulevard provides district level access to Warnbro Sound Avenue. The structure plan traffic report forecasts 9,400vpd approaching Warnbro Sound Avenue and 4,800vpd to the west of Thundelarra Drive.

Glenburgh Drive

3.16. Glenburgh Drive is classified as a neighbourhood connector type A. A daily demand of 7,000vpd applies to Glenburgh Drive under Liveable Neighbourhoods. It is constructed as a boulevard style road with two road pavements and a 2m median.

3.17. Glenburgh Drive provides district level access to Warnbro Sound Avenue. The structure plan traffic report forecasts 6,900 vpd approaching Warnbro Sound Avenue.

Other Developments

3.18. As indicated the land opposite the subject site has been identified as a village centre with access taken to Thundelarra Drive. As indicated in the structure plan traffic report the forecast traffic generation of this centre would result in Thunderarra Drive operating in a manner contrary to its classification in the structure plan road hierarchy. On this basis a classification of neighbourhood connector type A should be applied. The constructed pavement would have ample capacity to cater for the forecast traffic volumes.

4. PROPOSED DEVELOPMENT

4.1. The land is presently vacant.

4.2. It is proposed to develop 101 Independent living units with associated facilities (dining hall and residents meeting lounge) and 2 small commercial tenancies. The expected accommodation comprises:

- 1 bed 49 Units
- 2 bed 40 Units
- 3 bed 12 Units
- Retail tenancies 140m^2 GFA

4.3. It is understood that the retail component is provided at the request of the City of Rockingham.

4.4. Figure 3 shows the development concept plan used for this traffic report.

Figure 3 Development Plan (refer to DA for detail)

5. DAILY TRAFFIC VOLUMES AND VEHICLE TYPES

5.1. The proposed development is considered in regard to the proposed land uses of independent living and retail.

Independent Living

5.2. The RTA *Guide to Traffic Generating Developments* suggests that housing for the aged and disabled person can be expected to generate 1 to 2 trips per dwelling per day with 10% of the daily demand occurring in the traditional peak hours.

5.3. The proposed development of independent living would suggest a more active resident base and reference to the Director General South Australia – *Land Use Traffic Generation Guidelines* suggests retirement villages can be expected to generate between 1.5 to 3 trips per dwelling

5.4. Traffic counts undertaken by Riley Consulting in 2004 of a lifestyle village in Joondalup showed a daily trip rate of 3.1 trips per dwelling per day, indicating that the South Australian guide is more reflective of the proposed development.

5.5. Of note, the RTA guide suggests higher density units can be expected to generate 2.5 to 2.9 trips per unit per day, with medium density units generating 4 to 5 trips per day, which would include work and school trips.

5.6. The trip generation is therefore based on the South Australian Guide trip rate and on the basis of 101 units, the forecast daily traffic flow will be (101 x 3) 303 vehicle movements per day. During the peak periods a generation of up to 31 movements could occur.

Retail Tenancies

5.7. There are no Australian sources that identify the trip generation for small shops. Reference to the WAPC *Transport Impact Assessment Guidelines Volume 2 Planning Schemes, Structure Plans and Activity Centre Plans* suggests a trip rate for non-food retail of 1.25 trips per 100m^2 during the morning peak and 4 trips per 100m^2 in the evening peak. No daily data is provided, but retail tropically generates 13% of the daily demand during the evening peak (supermarkets). The WAPC trip rates therefore suggest about 31 trips per 100m^2 per day[1].

5.8. The two tenancies are small and are unlikely to attract a significant traffic generator in their own right. It would be expected that a real estate agent or similar would be attracted to the tenancies (which would generate 10 trips per 100m^2 based on commercial land use trip rates).

5.9. On the basis of the WAPC interpolated trip rate of 31 trips per 100m^2, the two tenancies of 140m^2 could generate 43 movements per day with 2 am trips and 6 pm trips.

5.10. Table 1 shows the forecast traffic generation.

Table 1 Forecast Traffic Generation

Use	Weekday	AM Peak	PM Peak
101 living Units	303	31	31
Retail tenancies	43	2	6
Total	**346**	**33**	**37**

5.11. Based on the peak traffic generation of 37 vehicle movements, a traffic statement is required under the WAPC guidelines.

[1] The ITE Trip Generation suggests 42.94 trips per 1,000^{ft2} for a small shopping centre, indicating that the small shop trip rate is perhaps a little high.

Distribution

5.12. Traffic using the basement car park can only access the site from Jundee Lane. As the access is located close to Carlinde Parkway, it is considered unlikely that development traffic would head south on the lane.

5.13. It is expected that residents using cars would primarily travel outside of the local area and predominantly access Warnbro Sound Avenue and Mandurah Road. Whilst the beach is located to the west and would attract summer trips, typically there would be little demand to head west. On this basis the living units trips are primarily distributed 50% north and 50% south via Warnbro Sound Avenue. During the peak periods there will be a mixture of residents departing and staff arriving and vice versa. A split of 60% arrive and 40% depart is used for the morning peak and the reverse for the evening peak.

5.14. The retail tenancies will attract movements external to the site and can be expected to be equally drawn from all directions. During the morning peak 70% of vehicles would arrive and 30% depart. The reverse would be expected in the pm peak.

5.15. A traffic plan is attached at Appendix B.

6. TRAFFIC IMPACT

6.1. Reference to the WAPC *Transport Assessment Guidelines for Developments* states that:

"As a general guide, an increase in traffic of less than 10% of capacity would not normally be likely to have a material impact on any particular section of road, but increases over 10% may. All sections of road with an increase greater than 10% of capacity should therefore be included in the analysis. For ease of assessment, an increase of 100 vehicles per hour for any lane can be considered as equating to around 10% of capacity. Therefore any section of road where traffic would increase flows by more than 100 vehicles per hour for any lane should be included in the analysis. An intersection may be considered materially affected if flows on any leg increase by more than 10% or any individual movement by more than 20%".

6.2. Table 2 considers the traffic impact of the development based on the generated daily traffic demands.

Table 2 Daily Traffic Impacts

Approach	Flow	Capacity*	Development	% Capacity
Carlinde Parkway	320	3,000 (LN)	+346*	11.5%
Thundelarra Drive north	2,300	7,000 (LN)	+175	2.4%
Thundelarra Drive south	2,300[#1]	7,000 (LN)	+173	2.4%
Aurea Boulevard east	9,400	15,000 (LN)	+134	1.3%
Aurea Boulevard west	4,800	7,000 (LN)	+42	<1%
Glenburgh Drive east	6,900	7,000 (LN)	+138	1.9%
Glenburgh Drive west	5,400	7,000 (LN)	+37	<1%
Warnbro Sound Ave N	24,300	40,000	+138	<1%
Warnbro Sound Ave S	24,300	40,000	+134	<1%

*Maximum with all traffic accessing car park
[#1] Flow could be higher if local centre only accessing Thundelarra Drive

6.3. Table 2 indicates the proposed development can be expected to increase local traffic by less than 3% of any affected roads capacity, except Carlindie Parkway. Based on the WAPC *Transport Assessment Guidelines for Developments,* the proposed development would be deemed to have no material traffic impact to the surrounding road network, except Carlinde Parkway.

Material Impact

6.4. As indicated by Table 2 Carlindie Parkway is shown to experience traffic increases equal to 11.5% of the residential amenity threshold and thus a material impact is identified under the WAC guidelines.

6.5. The forecast traffic demand of the proposed development at 346 vehicle movements is added to the expected residential traffic demand of 320 movements per day. In the longer term Carlindie Parkway is forecast to carry about 666vpd, which is well below the Liveable Neighbourhoods residential amenity threshold of 3,000vpd.

6.6. It should be noted that the forecast traffic demand will only affect 1 residential lot which has a fence facing Carlindie Parkway. Therefore no impact to residential amenity would be experienced.

6.7. As the residential amenity threshold is not exceeded, residential amenity will not be adversely impacted by the proposed development. The proposed development can be considered to have no material negative impact to Carlindie Parkway.

6.8. Further the increase assumes all traffic will access the basement car park. As has been indicated some visitors could be expected to park on street, which could reduce the demand to Carlindie Parkway.

6.9. It is noted that Thundelarra Drive is shown to experience no material traffic impact as a result of the proposed development. However, it is noted from the structure plan that local centre traffic has not been fully accounted. With the local centre likely to generate close to 5,000vpd, it would be expected that Thundelarra Drive would be classified a neighbourhood connector. Ample capacity will exist within the constructed road pavement to cater for the forecast traffic movements generated locally.

Long-term Impacts

6.10. The traffic demands used in this report are taken from the structure plan traffic report that considers the ultimate development of the Golden Bay suburb. The suburb is approximately 70% developed and it will be about 6 to 12 years before full build out would be expected.

6.11. As the assessment is based on long term traffic forecasts, no long term assessment is warranted.

Peak Hour Traffic Impacts

6.12. The maximum traffic increase forecast to any traffic lane during any peak period of activity is about 70% of the peak generation of 37 vehicle movements, at the site access.

6.13. If the forecast increase to any traffic lane on the local road network is assumed to be 37 vehicles., reference to the WAPC guidelines suggest that no material impact would normally be expected where an increase to any traffic lane is less than 100 vehicles in any peak period. The increase of 37 vehicles is therefore considered to be of no material traffic impact.

6.14. In regards to the operation of Carlindie Parkway during the peak it can be expected that up to 60 vehicles may exit to access Thundelarra Drive. Based on the forecast traffic demands Thundelarra Drive could carry 230 two way movements. Reference to Austroads Table 4.1 (last published in 2011) suggests with the level of traffic demands expected on the major and minor roads, uninterrupted flow conditions will exist. Sidra analysis will therefore demonstrate very good Levels of Service can be expected (Sidra would not normally be provided with a traffic statement).

7. VEHICLE ACCESS

7.1. Access to the car park of the proposed development is to be taken from Jundee Lane as per *Liveable Neighbourhoods* recommendations.

7.2. Figure 3 shows the site concept plan

7.3. The access is located at least 6m from the corner radius tangent of Jundee Lane and therefore meets the spacing requirements of AS2890.1.

7.4. Visibility to the south (looking down Jundee lane) is greater than the minimum requirement of 35 metres (desirable 55m) set out in AS2890.1 for a street operating at 40kph. However, looking back to Carlindie Parkway, visibility is restricted by the proposed building.

7.5. To ensure safe access to the site, it is recommended that the building be either set back or a visually permeable façade is used to provide visibility to the corner radius tangent in Carlinde Parkway. The proposed visibility splay is shown in Figure 4.

7.6. Access to the car park is set back from Jundee Lane by 6 metres to provide unobstructed use of Jundee Lane.

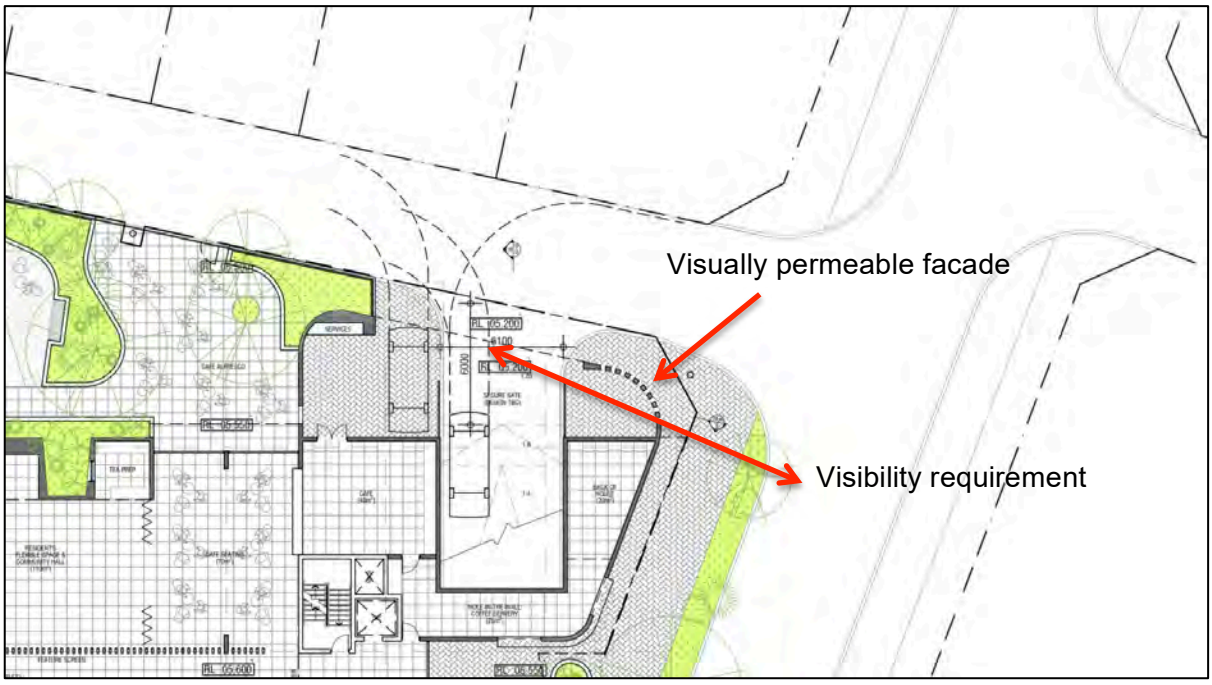


Figure 4 Proposed Access Visibility

8. PARKING

8.1. Car parking for the proposed development should ideally meet the numbers set out in the City of Rockingham's Town Planning Scheme.

8.2. For residential land uses reference is made to the design WA codes (SPP7.3), which require a minimum of 0.75 bays per 1 bed dwelling and 1 bay per 2+ bed

dwelling when located in an activity centre or close to high frequency public transport. It is understood that the village centre is recognised as an activity centre, so under the codes the subject site is in Location A.

8.3. The architect has advise that the current yield shows:

49 x 1 bed units = 36.75 bays (37)

40 x 2 bed units = 40 bays

12 x 3 bed units = 12 bays

8.4. With the current composition of units 89 parking bays would be required.

8.5. However, the policy allows that for development of more than 20 units, motorcycle parking at a rate 1 bay per 10 car bays is to be provided. For every 5 motorcycle bays provided 1 car bay may be omitted. There are 15 motorcycle bays provided, which reduces the resident car parking requirement to (89-3) 86 bays

8.6. Further there is a requirement that 12 visitor bays are to be provided. It is common that visitor bays in a mixed-use development may be used by daytime commercial uses.

8.7. Retail or shop uses are required to provide 6 bays per 100m^2 of floor area. With 140m^2 of floor area 8 bays would be required.

8.8. In total the City of Rockingham's Town Planning Scheme would require that (86 residential + 12 visitor + 8 retail) 106 parking bays should be provided.

8.9. As the visitor parking (12 bays) may be accommodated by the on-site commercial bays, 8 visitor bays can be reciprocal use. Therefore only 4 visitor bays need to be provided.

8.10. The car parking requirement will be (86 resident, 4 visitor and 8 retail) 98 parking bays to be provided to cater for the proposed development.

8.11. Reference to the architects plan indicates that 86 residential bays plus 12 commercial bays are provided in the basement car park. In total 98 bays are provided on site.

8.12. The number of car parking bays provided meets the car parking requirement.

Local Area Parking

8.13. Parking along the frontage of the property is shown to provide 4 bays to Thundelarra Drive and can be expected to be more convenient for visitors, particularly at night when there is little local commercial activity.

8.14. It is noted that the basement car park has the ability to provide an additional 20 bays by using stackers for residents use should the demand ever occur.

Car Park Operation

8.15. The entry gate for the car park allows a 6 metre stopping area within the property boundary so that vehicles do not need to wait in Jundee Lane.

8.16. It is expected that a sliding gate will be used to control access on to and out of the basement parking area. Although no specific technical data is available it would be expected that the gate would travel at more than 0.5 metres per second (walking speed is 1.2m/s). With an access width of 6 metres, the gate would require about 12 seconds to fully open. Allowing for a delay in starting, analysis of the car park access is made based on a 20 second dwell time.

8.17. The MMM queuing theory is used to determine what queue length may occur. With a 20 second dwell time, 180 gate events can occur in any given hour. Also it is shown that during peak periods 37 movements are expected.

8.18. Using the above data, the queuing model shows that the average number of cars in the system will be 0.26 (less than 1 vehicle). The waiting time is calculated to be 25 seconds.

8.19. The queuing theory forecasts that no queuing vehicles would be expected to obstruct Jundee Lane.

8.20. Visitor access to the car park is permitted and residents would be able to buzz their visitors in. The frequency of visitor arrivals would be low and would be expected outside of peak times. Based on the peak hour operation of the access gate, queuing to Jundee lane would not be anticipated should visitors require more than a minute to access the car park.

8.21. A preliminary car park management plan prepared by the operator is attached at Appendix D.

9. PROVISION FOR SERVICE VEHICLES

9.1. It would be expected that transit van type vehicles would service the proposed land use and can be accommodated in the loading bay provided off Jundee Lane.

9.2. Refuse collection will be made from Jundee Lane with vehicles able to enter from Carlindie Parkway and exit to Elvire Grove.

10. HOURS OF OPERATION

10.1. The living units will be accessible 24 hours per day every day for residents. However, activity during darkness is forecast to be minimal.

10.2. The retail tenancies would typically operate between 8am and 5pm.

11. TRAFFIC MANAGEMENT OF FRONTAGE STREETS

11.1. Traffic generated by the proposed development will take access directly to Jundee Lane before accessing the local road network.

11.2. Golden Bay is a new suburb with all roads designed to current standards and the *Liveable Neighbourhoods* planning code. There should be no requirement to apply traffic management.

11.3. The level of traffic generated is shown to cause no material traffic impact and no traffic management would therefore be deemed required as a result of the proposed development.

12. PUBLIC TRANSPORT ACCESS

12.1. Figure 5 shows the public transport routes in the locality of Golden Bay

12.2. Bus route 558 provides a connection between Mandurah and Rockingham. It operates on a half hourly basis throughout the day with additional services provided during the peak hour.

12.3. Bus stops located on Warnbro Sound Avenue are within 400 metres of the subject site.

Figure 5 Public Transport

13. PEDESTRIAN AND CYCLE ACCESS

13.1. Golden Bay is a new suburb designed in accordance with Liveable neighbourhoods principles. All streets will be provided with at least 1 footpath. Thundelarra Drive will be provided with a footpath to both sides.

13.2. Figure 6 reproduces the structure plan pedestrian and cycle network (source Transcore).

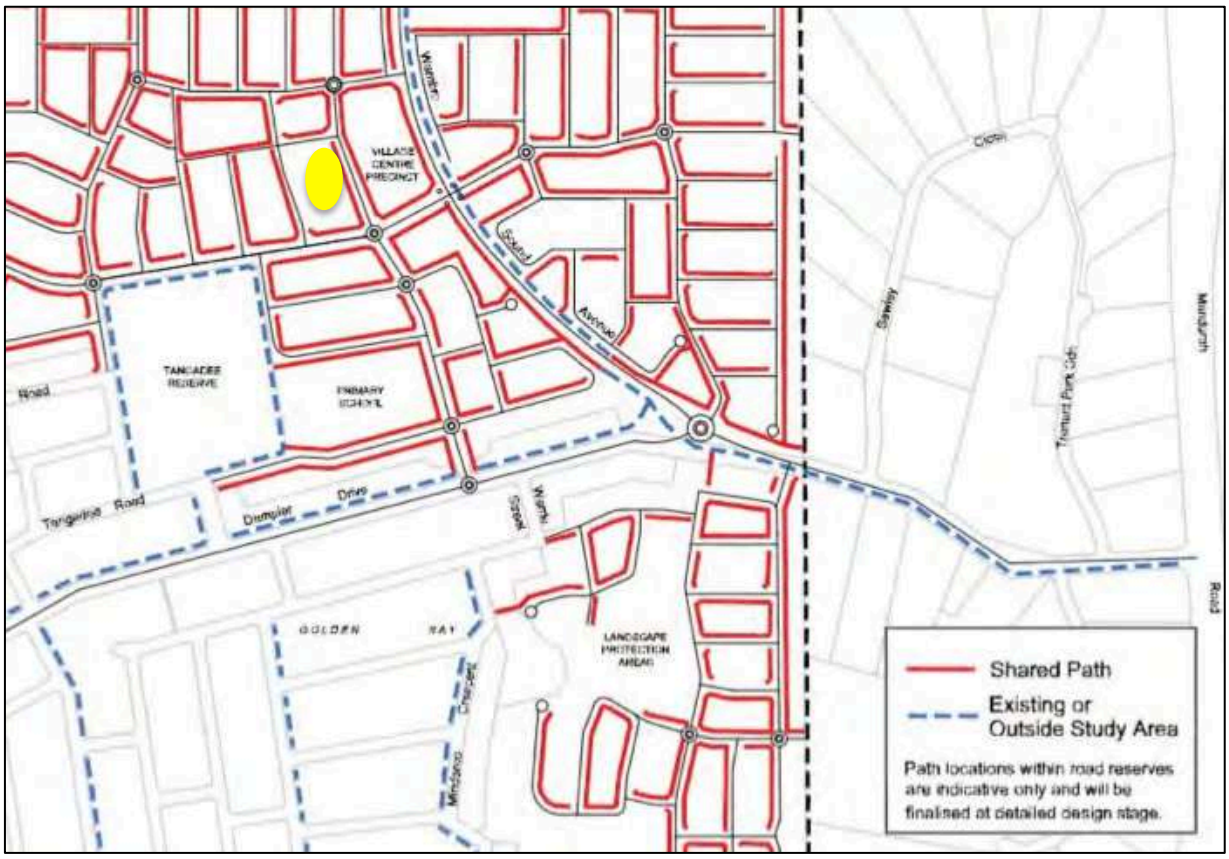


Figure 6 **Structure Plan Pedestrian and Cyclist Network** (source Transcore)

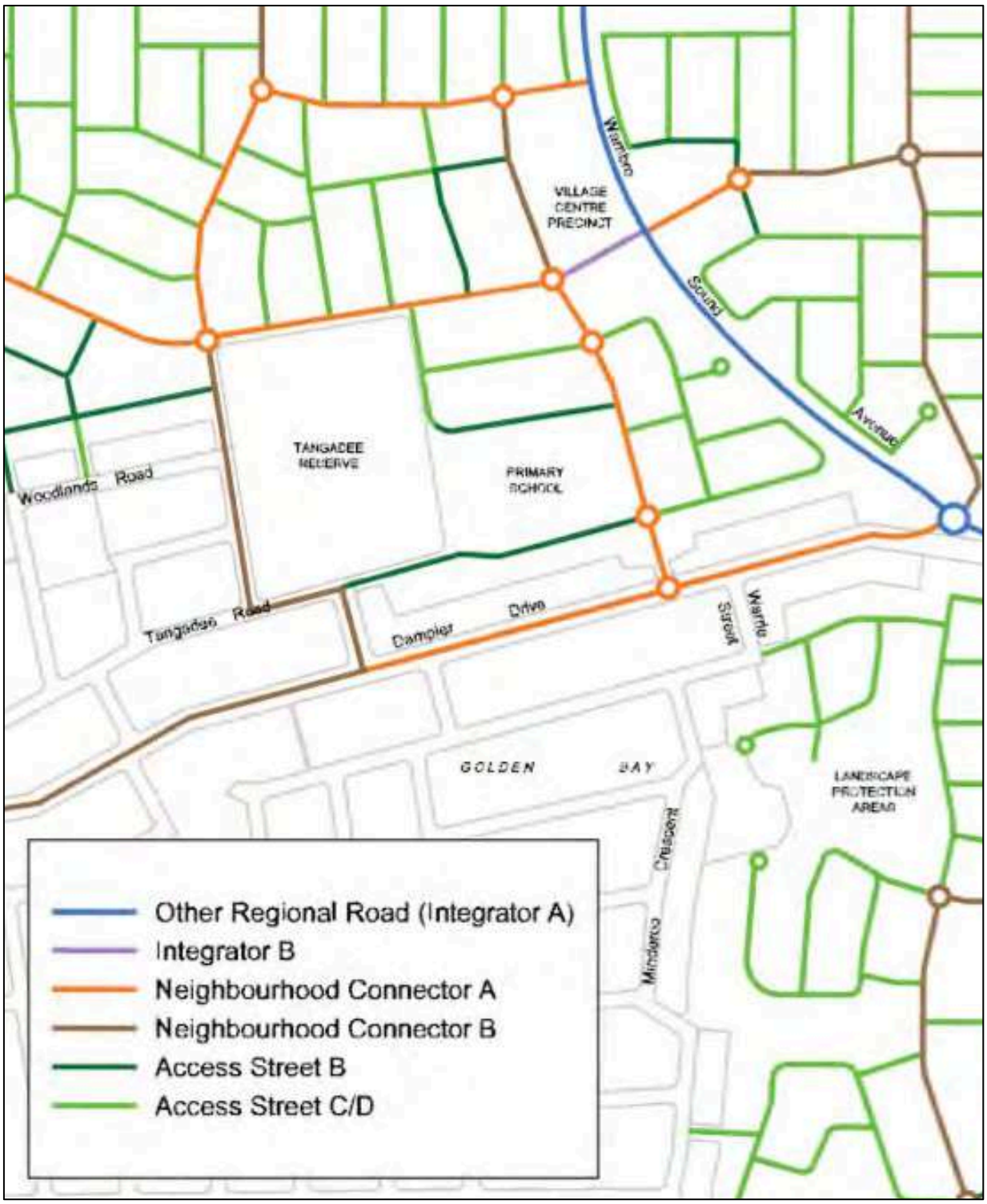
14. SITE SPECIFIC ISSUES

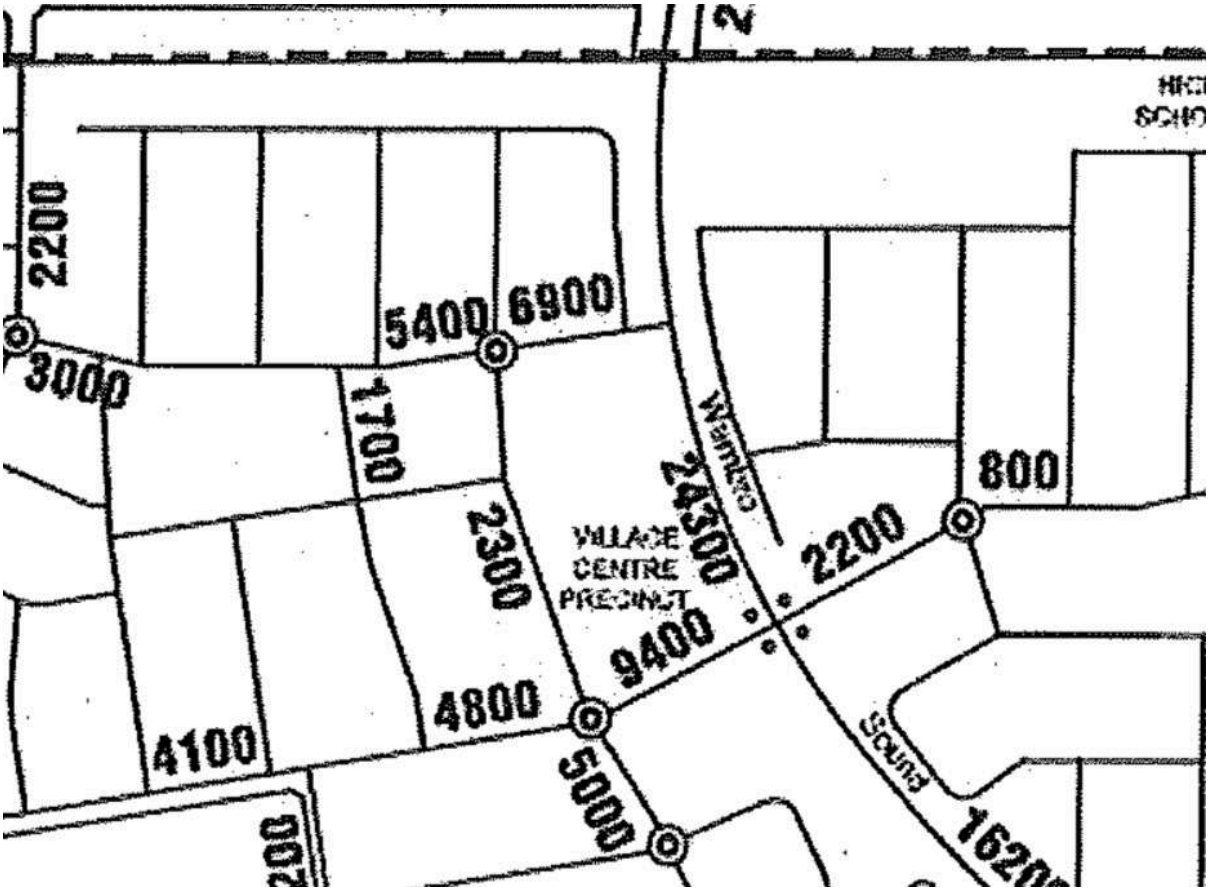
14.1. There are no site specific traffic issues that are raised through the assessment of the subject site.

15. SAFETY ISSUES

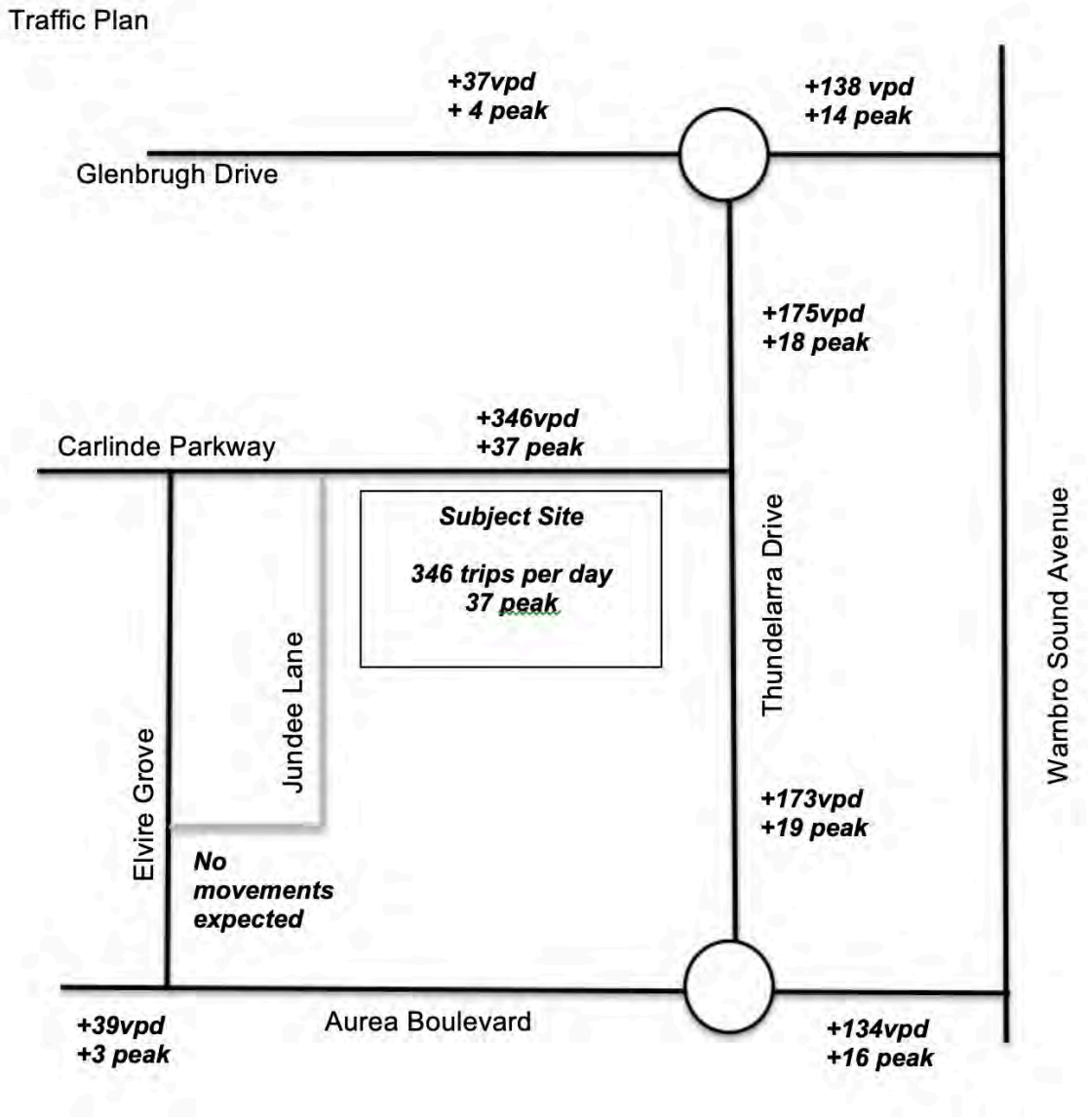
15.1. There are no road safety issues that are raised through the assessment of the subject site.

APPENDIX A Structure Plan Road Hierarchy




2200
3000
5400
6900
1700
2300
24300
VILLAGE
CENTRE
PRECINCT
Commercial
800
2200
9400
4800
4100
5000
Sound

APPENDIX B TRAFFIC PLAN



APPENDIX C AUSTROADS Table 4.1

Table 4.1 — Intersection Capacity - Uninterrupted Flow Conditions

Major Road Type[1]	Major Road Flow (vph)[2]	Minor Road Flow (vph)[3]
Two-lane	400	250
	500	200
	650	100
Four-lane	1000	100
	1500	50
	2000	25

Notes:

1. Major road is through road (i.e. has priority).
2. Major road design volumes include through and turning movements.
3. Minor road design volumes include through and turning volumes.

It is noted that the above table is no longer included in Austroads. However, the theory is still relevant.

APPENDIX D PRELIMINARY CAR PARK MANAGEMENT PLAN

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Western Australia, Australia 6009
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email mark.butler@propertyconsultantsaustralia.com.au

15/9/2019

Att Mr S Klopper
Director
Klopper and Davis Architects
270 York Street
Subiaco WA 6008

Dear Mr Klopper,

Re:- Golden Bay Retirement
Traffic Management Plan

PREAMBLE:

Traffic movements within the surrounding streets have been analyzed by a Traffic Engineer (see Appendix). As expected, the results state "the level of generated traffic will have no material impact" on the local traffic network. The following information is to form a preliminary Traffic Management Plan and provide some assurance to the City. We acknowledge that developing and implementing a Traffic Management Plan is important for managing traffic, communicating information regarding access/control and eliminating risks. Following approval, we will work closely with our architect and traffic engineer to further refine the plan.

CONTROLLING ACCESS:

Access to the basement carpark will be via a two-way driveway, controlled by a secure, vehicle gate (which is typical of most developments). Residents will have their own remote controls to access the carpark. Furthermore, the on-site Building Manager will have a remote control. Residential Visitors will have to call their residents or the Building Manager to be "buzzed in" which, again, is typical of most developments. Although we have provided some afterhours visitor bays, it is our experience that most of the residents will not have a car so effectively their visitors will be able to park in their allocated bay.

PARKING MANAGEMENT:

The parking managed by the Building Manager. Appropriate ground markings, signage, lighting and regular input from the Building Manager will ensure the parking runs smoothly. Signage is to be installed as per AS 2890:1 Section 4.3. Further information will be provided at Building Permit Stage. Although we don't believe it will be necessary, and 'policing' will be handled promptly and effectively by both the Building Manager and residents. The Management Plan will be discussed with all residents and may form part of the strata by-laws or something to that effect.

SAFETY & SECURITY:

Safety & security is one of our top priorities. The secure vehicle gate will ensure that only residents, staff and residential visitors will be able to access the carpark. As such, the resident's vehicles and stored goods will be kept safe. Following approval, we will liaise closely with the architect to best accommodate additional security measures such as deterrent signage and video surveillance. It is important to note that given the nature of the development, most of the residents will be home most of the time and thus the residents provide ample passive surveillance. The on-site Building Manager will also manage any safety and security concerns that may arise.

TANDEM BAY USAGE:

As previously mentioned, many of the residents will not drive or will only drive infrequently. We have proposed several tandem bays where the second bay may be used to store a resident's vehicle for a longer period of time, whist the first bay operates as a normal car bay for daily use. The arrangement could easily be managed by the Building Manager.

FUTURE PROOFING:

We have worked closely with our architect to 'future proof' the carpark design. The column spacing and generous head-height clearance means that we could potentially install car-park stackers if needed in the future. This would have no detrimental impact to the streetscape.

Regards

Mark F Butler
CEO

TJ PEACH & ASSOCIATES
HYDRAULIC SERVICES & FIRE PROTECTION CONSULTANCY

STORMWATER MANAGEMENT PLAN

CLIENT:	Seacrest Homes
ARCHITECT:	Klopper & Davis Architects
LOCAL AUTHORITY:	City of Rockingham
PROJECT:	Proposed Independent Living Project Lot 636 (95) Thundelarra Drive Golden Bay WA
REFERENCE:	2018-090
DATE:	17 September 2019

Date	Revision	Author	Reviewed
21/06/2019	A	TJP	TJP
17/09/2019	B	TJP	TJP

1. EXECUTIVE SUMMARY

TJ Peach & Associates have been engaged by Seacrest Homes (Client) to provide hydraulic services consultancy with regards to stormwater management, for the proposed independent living project at Lot 636 (95) Thundelarra Drive, Golden Bay WA.

The site is approximately 3430 square metres in total area and comprises a basement level, ground floor level and first – fourth floor level.

This report outlines the high-level stormwater drainage and disposal concept for the site. As detailed designed is yet to commence, this concept will be reviewed and progressed at design development stage once all structural, architectural and geotechnical details are known.

2. LIMITATIONS

a. This report remains the property of TJ Peach & Associates and may not be reproduced or used without written consent from the author;
b. The report must only be reproduced in full;
c. The report must only be used for the purpose of which it was originally intended and in accordance with the terms and conditions contained within the fee submission for this project;
d. TJ Peach & Associates have exercised professional discretion in determining the areas of compliance and non-compliance, as documented within this report;
e. This report shall be read in conjunction with all other associated reports and information;
f. All recommendations for remedial works shall be validated by a full design and documentation process, prior to any option being adopted;
g. Additional geotechnical investigative works are required at detailed design and documentation phase to confirm groundwater depth and permeability of the sub surface in situ soils.

3. SITE STORMWATER DRAINAGE & DISPOSAL

The site stormwater drainage and disposal system will be designed to cater for events up to and including a 1 in 100 year storm event of 5 minutes duration (173.00mm/hr) for the sizing of the below ground retention system capacity. Available infiltration rates of the in-situ soils will be utilised to demonstrate additional capacity for up to and including a 1 in 100 year storm event of 24 hour duration (6.00mm/hr).

It is proposed that the stormwater catchment will be directed into precast concrete soak wells or modular drainage cell systems installed within the deep planting zone and below the basement floor slab.

Infiltration calculations will be based on future permeability testing to be carried out on site by a Geotechnical Engineer. Infiltration will be calculated based on the base surface area of the drainage structure only and will consider clogging of the geotextile fabric or silting of the ground beneath the drainage structure.

Example:

1. Based on the use of 1800mm diameter x 1200mm effective depth grated concrete soak wells, a minimum of seventeen (17) soak wells would be required;
2. Calculation = 3430m2 x 173mm/hr x 0.00028 x 60 secs x 5 mins / 1000 = 49.84m3 of storage capacity required. 49.84m3 / 3.05m3 = 17 soak wells required;
3. Dependent on the final layout of structural foundations, these soak wells may need be reduced in depth and the quantity of tanks increased to prevent surcharging of shallow pad footings.

The requirements of Design WA guidelines 4.16 Water Management & Conservation have been considered and complied with.

The depth to groundwater has been considered as being relatively shallow. The final depth of the proposed infiltrative system will be subject to further geotechnical investigation on site as part of a detailed design process. This may impact on the selection of the proposed infiltrative system i.e. shallow drainage cells or precast concrete soak wells.

4. RAINWATER HARVESTING & RE-USE SYSTEM

It is proposed that stormwater drainage catchment from the roof only, will be directed into rainwater harvesting tanks installed below the basement floor slab, for treatment and re-use on the landscaped areas of the site. The rainwater harvesting system will comprise the following:

1. Silt trap at inlet to rainwater harvesting tanks;
2. First flush diversion system;
3. Pressure system;
4. Sediment filtration;
5. UV disinfection.

5. ROOF DRAINAGE

The drainage of the metal deck roof system will comprise box gutters with overflow devices and rainwater pipes, sized to cater for a 1 in 100 year storm event of 5 minutes durations (173.00mm/hr), in accordance with AS/NZS3500.3:2015. Drainage from balconies, terraces and walkways will be piped directly to the infiltrative disposal system and will bypass the rainwater harvesting system.

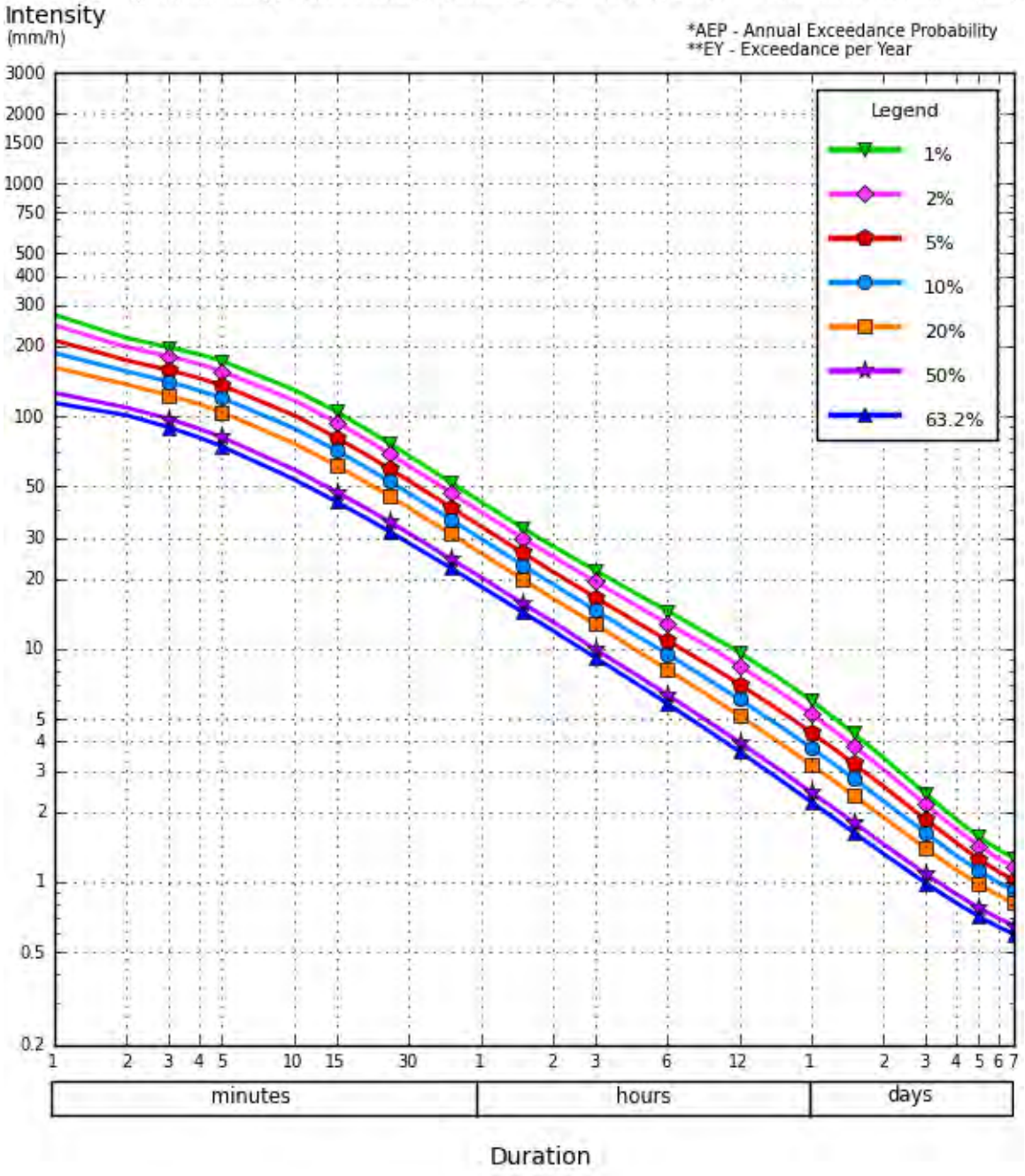
Appendix A – IFD output information. Source: BoM website

Nearest grid cell Latitude: 32.4125 (S) Longitude: 115.7625 (E)

IFD Design Rainfall Intensity (mm/h)

Issued: 21 June 2019

Rainfall intensity in millimetres per hour for Durations, Exceedance per Year (EY), and Annual Exceedance Probabilities (AEP).

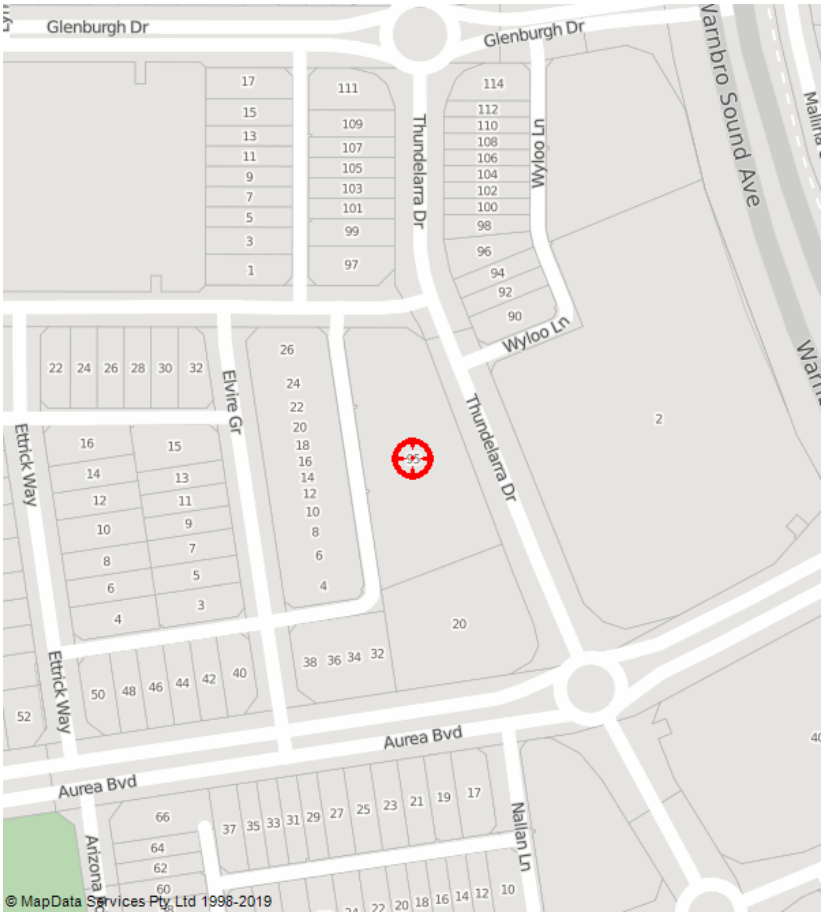


Appendix B – Site Groundwater Information. Source: DoW Perth Groundwater Atlas

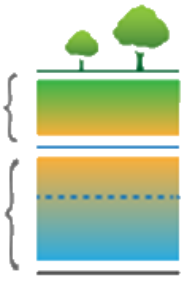
Government of Western Australia
Department of Water

Perth Groundwater Map

95 THUNDELARRA DRIVE GOLDEN BAY 6174



Depth to Groundwater
5.0 metres
Depth of Water
21.0 metres



Depths

Depth from ground level to:

Water table:	5.0 m
Base of Aquifer:	26.0 m

Levels relative to AHD (~sea level):

Natural Surface:	6.0 m
Water table:	1.0 m
Base of Aquifer:	-20.0 m

Water Quality

Groundwater Salinity:	500-1000
Surface Geology Type:	Safety Bay Sand: Aeolian and beach lime sand|Qrs
Iron Staining Risk:	Low risk
Garden Bore Suitability:	Unsuitable
Acid Sulfate Class:	No known risk
Public Drinking Water Source Areas (PDWSA):	N/A

User Comments:

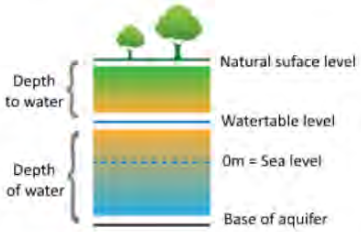
The following comments were entered by the user

Generated from Groundwater Map

Depth to Groundwater

Estimates may fluctuate between 0.5 and 3m due to seasonal variation. Under normal circumstances, a garden bore will be drilled to a depth 10m below the water table. Add 10m to the depth-to-groundwater to estimate the drilling depth. Groundwater level contours are estimated based on recorded groundwater levels measured in May of 2003 (end of summer). Changes in groundwater and natural surface levels can occur over time, and it should be clearly understood that the Department of Water is not in a position to guarantee the accuracy of the data.

The data is not suitable for calculating the depth of water bodies such as rivers or lakes.



For further information, contact the Department of Water Information Line on (08) 6364 6505 or email: wir@water.wa.gov.au

Groundwater Salinity

The salinity of the groundwater below the Perth metropolitan area varies considerably. In general, areas underlain by sand or limestone will have access to groundwater with a quality that is suitable for watering household gardens.

Fresh	0-500 mg/L
Marginal	501-1000 mg/L
Brackish	1001-3000 mg/L
Saline	over 3000 mg/L

Surface Geology Type

Derived from 250k Geology dataset re-classified based on groundwater significance, it is comprised of Tertiary to Quaternary sediments of the Safety Bay Sand, Becher Sand, Tamala Limestone, Bassendean Sand, Gnangara Sand, Guildford Clay, Yoganup Formation and Ascot Formation. It consists of up to 90m sequences of sand, limestone, silt and clay. Similar to the Superficial formations of the Northern Perth Basin, the sand and limestone occurs at the coast, the Bassendean Sand and Gnangara Sands in the central Swan Coastal Plain, and clayey deposits of the Guildford Formation further east at the foot of the Darling and Gingin Scarps. The Gnangara Mound north of the Swan River and the Jandakot Mound south of the Canning River are the main flow systems. There are smaller flow systems such as the Safety Bay, Stake Hill, Swan Helena, Cloverdale, Armadale, Byford and Serpentine mounds in the centre and south.

Iron Staining Risk

Many areas across the Perth metropolitan area are affected by surface staining from groundwater. The map does not include all locations that may have iron staining potential, and as soil strata are highly variable, bores should be checked to confirm the status of local iron staining risk.

The Iron Staining Risk theme is divided into two categories:

- High risk: Areas having an elevated iron / manganese staining risk.
- Low risk: Areas low in iron concentration, away from past or present wetlands with neutral to alkaline pH.

Garden Bore Suitability

The Garden Bore Suitability risk has been assessed as one of two classes:

- Suitable: Use of groundwater for domestic irrigation supported in preference to scheme water.
- Unsuitable: Additional domestic garden bores not supported as water quantity or quality may not be appropriate

To view the Departments policy on Garden Bores, see https://www.water.wa.gov.au/__data/assets/pdf_file/0014/1706/99735.pdf

Acid Sulfate Class

The disturbance risk has been assessed as one of three classes:

- Class 1: High risk of Acid Sulfate Soils occurring within 3m of natural soil surface.
- Class 2: Moderate risk of Acid Sulfate Soils occurring within 3m of natural soil surface
- Class 3: Low risk of Acid Sulfate Soils occurring within 3m of natural surface.

Public Drinking Water

Perth relies heavily upon groundwater resources to provide drinking water to consumers. Accordingly, specific areas are identified for protection in legislation to ensure that Perth can continue to receive safe, good quality drinking water to protect public health for now and into the future at a reasonable cost to consumers.

- Priority 1 **(P1)** areas are defined and managed to ensure there is no degradation of the quality of the drinking water source with the objective of *risk avoidance*.
- Priority 2 **(P2)** areas are defined and managed to maintain or improve the quality of the drinking water source with the objective of *risk minimisation*.
- Priority 3 **(P3)** areas are defined and managed to maintain the quality of the drinking water source for as long as possible with the objective of *risk management*.
- Not assigned. Priority areas have not yet been assigned to this source.
- N/A. Not in a public drinking water source area.

Appendix C – Stormwater Drainage Concept Plans

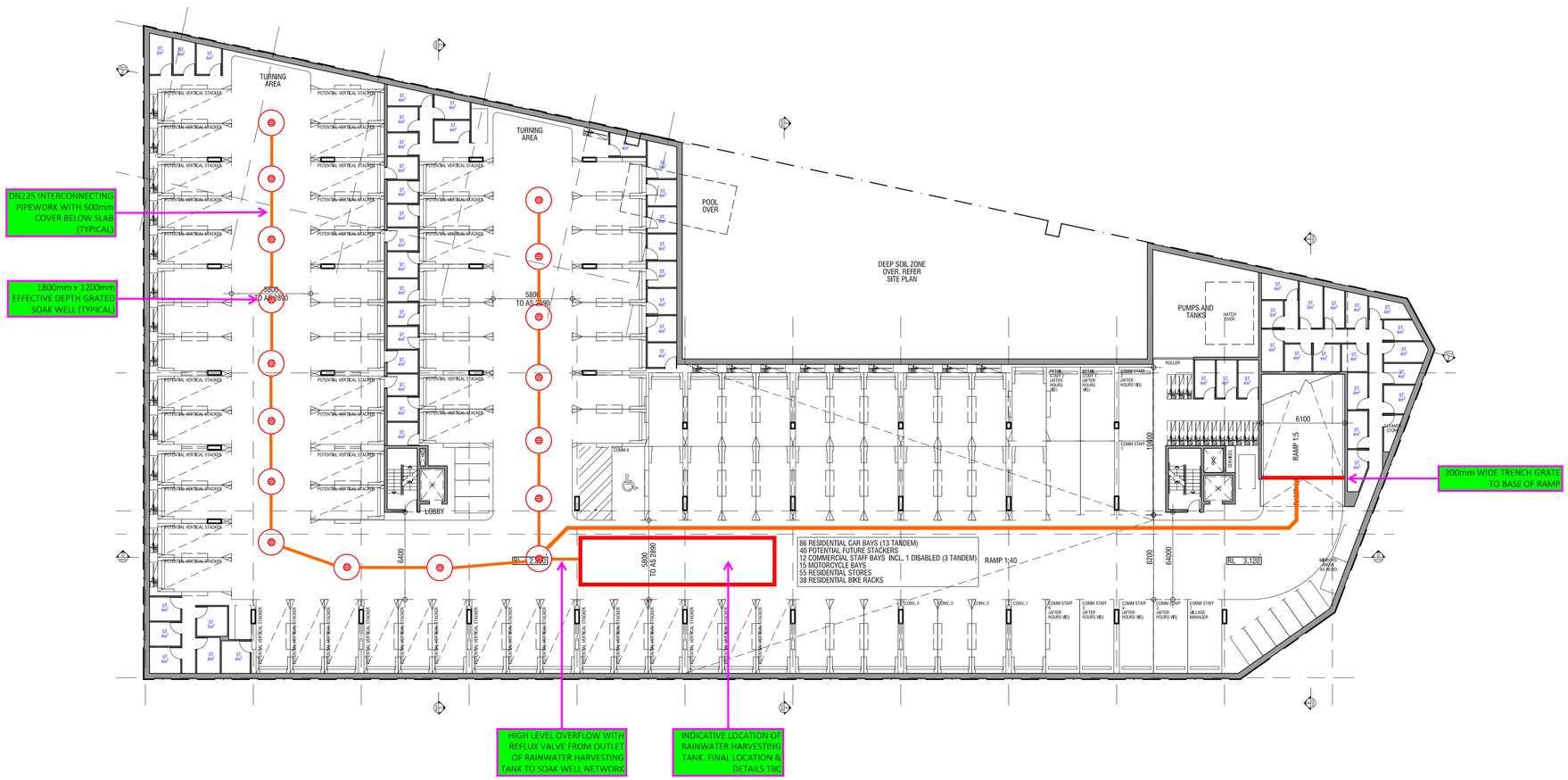
TJ PEACH & ASSOCIATES
HYDRAULIC SERVICES & FIRE PROTECTION CONSULTANCY

Project Reference: 2018-090

Client: Seacrest Homes
Architect: Klopper & Davis Architects

Project: Lot 636 (95) Thundelarra Drive, Golden Bay WA

Drawing: Prelim Stormwater Concept Plan
Revision: A
Date: 21.06.2019



NOTES:

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ISSUE NUMBER			
K	17-09-19	COR FURTHER CLARIFICATION	
J	01-08-19	DEVELOPMENT APPLICATION	
I	12-06-19	DEVELOPMENT APPLICATION DRAFT	
H	29-05-19	ISSUED FOR DRP	
G	08-05-19	ISSUED TO CLIENT PRE-DRP	
F	24-04-19	PRE DA - CLIENT REVIEW 6	
E	18-04-19	CONSULTANT ISSUE	
D	14-02-19	CLIENT REVIEW 5	
C	12-11-18	CLIENT REVIEW 4	

DWG: BASEMENT FLOOR PLAN
STAGE: DEVELOPMENT APPLICATION

PROJECT: **GOLDEN BAY - INDEPENDENT LIVING**
CLIENT: SEACREST HOMES PTY LTD
ADDRESS: LOT 636, THUNDELARRA DRIVE, GOLDEN BAY

DATE: APRIL 2019
SCALE: @A3 1:400 @A1 1:200
JOB#: 1835
DWG: A1 04
ISSUE: K

TJ PEACH & ASSOCIATES
HYDRAULIC SERVICES & FIRE PROTECTION CONSULTANCY

Project Reference: 2018-090

Client: Seacrest Homes
Architect: Klopper & Davis Architects

Project: Lot 636 (95) Thundelarra Drive, Golden Bay WA

Drawing: Prelim Stormwater Concept Plan
Revision: A
Date: 21.06.2019

ON-STREET PARKING
ON-STREET PARKING
ON-STREET PARKING
ON-STREET PARKING
JUNDEE LANE
JUNDEE LANE
CARPARK
WEST WING
RL 6.200
RESIDENTS & COMMUNITY AEROBICS POOL
COMMUNITY GARDEN
46 RESI BIKES
STORM WATER REUSED IN COMMUNITY GARDEN
RL 6.150
PARKLANDS
POSSIBLE AREA FOR RAINWATER HARVESTING TANKS - TBC
LARGE DECIDUOUS TREE
OUTDOOR SEATING (35m²)
RL 5.550
LOADING
RL 5.550
SECURE ENTRY
RL 5.200
RL 65.200
DOWN TO BASEMENT PARKING
PROVIDE CREST AT TOP OF CARPARK RAMP TO PREVENT RUNOFF ENTERING RAMP
RL 5.200
RL 5.200
RL 6.300
OUTDOOR PLAYSCAPE
FUTURE CHILDCARE CENTRE
EAST WING (UPPER)
RL 6.200
PROPOSED INDEPENDENT LIVING DEVELOPMENT
EAST WING (LOWER)
RL 5.600
ENTRY 1
RL 5.550
FORECOURT
ALFRESCO (50m²)
ENTRY 2
RL 6.350
RL 5.450
RL 5.550
80 302
2 VISITORS' BAY
2 VISITORS' BAY
LANDSCAPING
PEDESTRIAN CROSSWALK
PEDESTRIAN CROSSWALK
PEDESTRIAN CROSSWALK
THUNDELARRA DRIVE
ENTRY TO SUPER MARKET & RETAIL STORES
ON-STREET PARKING
ON-STREET PARKING
ON-STREET PARKING
RETAIL
RETAIL
LIQUOR
CARLINDIE PARKWAY

NOTES:

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KLOPPER & DAVIS ARCHITECTS

ISSUE NUMBER		
K	17-09-19	COR FURTHER CLARIFICATION
J	01-08-19	DEVELOPMENT APPLICATION
I	12-06-19	DEVELOPMENT APPLICATION DRAFT
H	29-05-19	ISSUED FOR DRP
G	08-05-19	ISSUED TO CLIENT PRE-DRP
F	24-04-19	PRE DA - CLIENT REVIEW 6
E	18-04-19	CONSULTANT ISSUE
D	14-02-19	CLIENT REVIEW 5
C	12-11-18	CLIENT REVIEW 4

DWG: SITE PLAN
STAGE: DEVELOPMENT APPLICATION

PROJECT: GOLDEN BAY - INDEPENDENT LIVING
CLIENT: SEACREST HOMES PTY LTD
ADDRESS: LOT 636, THUNDELARRA DRIVE, GOLDEN BAY

DATE: APRIL 2019
SCALE: @A3 1:400 @A1 1:200
NORTH
DWG: A1 03
JOB#: 1835
ISSUE: K

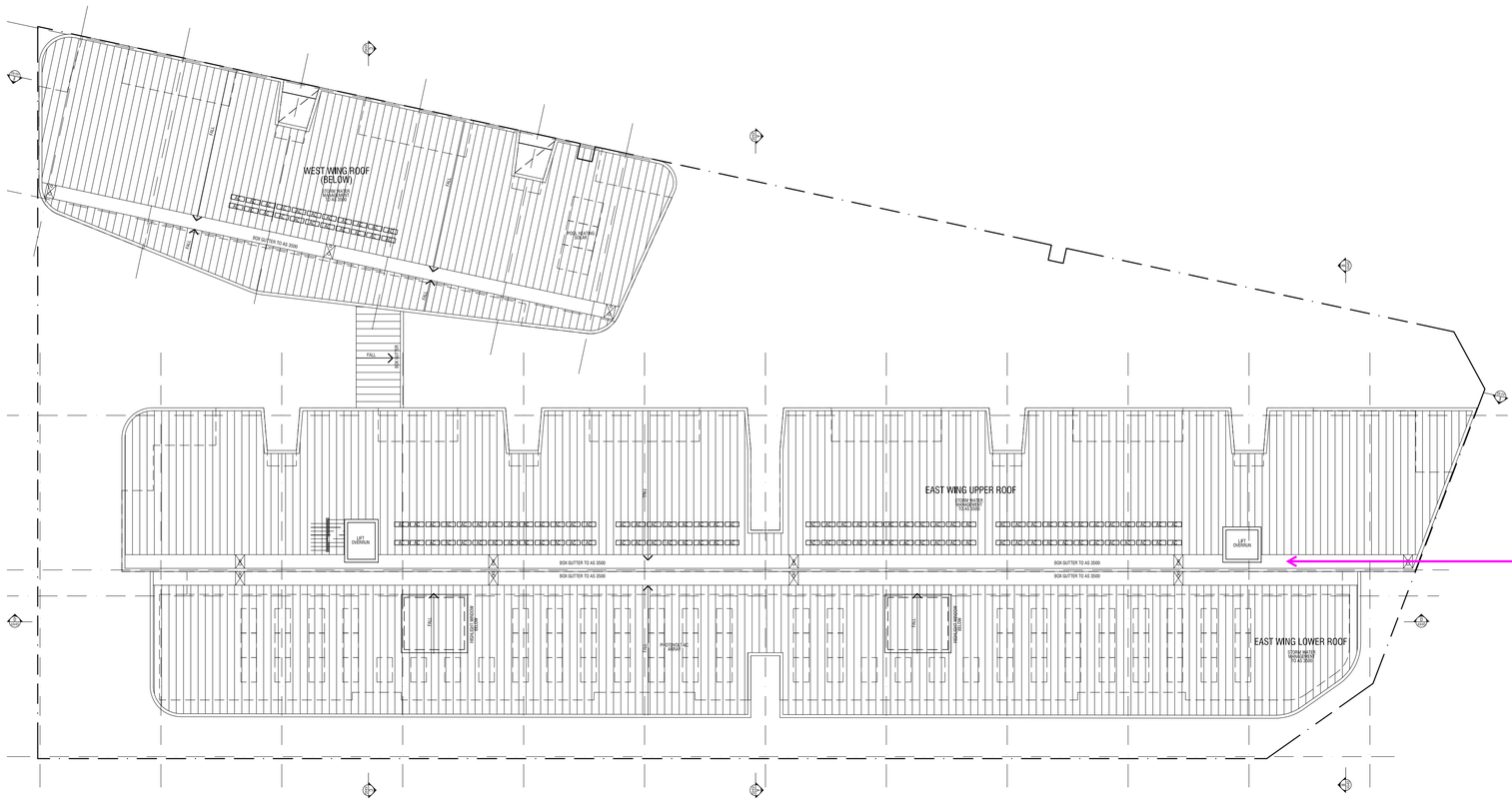
TJ PEACH & ASSOCIATES
HYDRAULIC SERVICES & FIRE PROTECTION CONSULTANCY

Project Reference: 2018-090

Client: Seacrest Homes
Architect: Klopper & Davis Architects

Project: Lot 636 (95) Thundelarra Drive, Golden Bay WA

Drawing: Prelim Stormwater Concept Plan
Revision: A
Date: 21.06.2019



BOX GUTTER DESIGN REQUIREMENTS:
1. MAXIMUM 10m SPACING BETWEEN EXPANSION JOINTS;
2. MAXIMUM 300m2 CATCHMENT PER SECTION OF GUTTER;
3. MINIMUM ONE (1) DN150 RAINWATER PIPE PER SECTION OF BOX GUTTER;
4. MINIMUM ONE (1) DN150 OVERFLOW PIPE PER SECTION OF BOX GUTTER TO DISCHARGE TO ATMOSPHERE;
5. MINIMUM GUTTER SIZE IS 600mm WIDE x 150mm LONG;
6. MINIMUM SUMP DEPTH AT BOX GUTTER LOCATION IS 150mm BELOW BASE OF GUTTER (300mm OVERALL DEPTH AT SUMP LOCATION MIN.);
7. MINIMUM 1:200 FALLS FROM STOP END TO BOX GUTTER SUMP.

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ISSUE NUMBER			
K	17-09-19	COR FURTHER CLARIFICATION	
J	01-08-19	DEVELOPMENT APPLICATION	
I	12-06-19	DEVELOPMENT APPLICATION DRAFT	
H	29-05-19	ISSUED FOR DRP	
G	08-05-19	ISSUED TO CLIENT PRE-DRP	
F	24-04-19	PRE DA - CLIENT REVIEW 6	
E	18-04-19	CONSULTANT ISSUE	
D	14-02-19	CLIENT REVIEW 5	
C	12-11-18	CLIENT REVIEW 4	

DWG: ROOF PLAN
STAGE: DEVELOPMENT APPLICATION

PROJECT: GOLDEN BAY - INDEPENDENT LIVING
CLIENT: SEACREST HOMES PTY LTD
ADDRESS: LOT 636, THUNDELARRA DRIVE, GOLDEN BAY

DATE: APRIL 2019
SCALE: @A3 1:400 @A1 1:200
JOB#: 1835
DWG: A1 10
ISSUE: K

WOOD & GRIEVE ENGINEERS

NOW PART OF

Stantec

Lot 636 Golden Bay Rockingham

Acoustic Report

Development Application

Prepared for:

Seacrest Homes

Prepared by:

Imran Khan

Project No. 43673

P:\43673\PROJECT DOCUMENTATION\ACOUSTICS\DESIGN\REPORTS\AC-DA-001-43673_GOLDENBAY_001B.DOCX

Date:
16 September 2019

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Revision

REVISION	DATE	COMMENT	APPROVED BY
001	18/06/2019	Draft Issue	**IK**
002	21/06/2019	Issued for Submission	**IK**
003	16/09/2019	Car Park Noise Impact Included	**IK**

Contents

Executive Summary

Wood and Grieve Engineers (WGE) were commissioned by Seacrest Homes to undertake the acoustic design and assessment for the proposed multi-storey mixed-use apartment development located on lot 636 Thundelarra Dr, Golden Bay in Rockingham.

The new development will consist of the following architectural volumes:

- Basement – Carpark, pump and tank room
- Ground – Café, Gym, outdoor pool, storage units, apartments
- Level 1 - 4 – Apartments

The following regulations and standards relevant to this project have been addressed in this report:

- Western Australia Environmental Protection (Noise) Regulations 1997 (EPNR);
- Australian Standard AS2107:2016 – *Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors* (AS2107)*;* and
- National Construction Code 2016, Building Code of Australia - section F.5 (NCC).
- Design WA State Planning Policy 7.3 Residential Design Codes Volume 2 - Apartments

Environmental noise emissions from the proposed development are required to comply with the *WA Environmental Protection (Noise) Regulations 1997*. The most critical noise sensitive receivers have been considered as Lots 641 – 652 along Elvire Grove, with 24 Elvire Gr being considered the closest measurable receiver.

Based on the traffic volumes and proposed layout of the development, a noise intrusion assessment had been carried out in order to ascertain acoustic treatments. Preliminary façade glazing configurations have been selected to meet the recommended design indoor noise criteria stated in the AS2107. Façade elements will be reviewed as the project progressed further into later stages.

The project development has taken into consideration the design strategies described in SPP7.3 to mitigate the noise impact from external sources. Outdoor spaces for community activities have been placed strategically so they are not facing any dominant noise sources. In addition to this, expected noisy areas (café , gym, commercial) within the development have been separated from quieter areas as a strategy to create a buffer between noisy and noise sensitive areas.

Preliminary noise impact due to car park access to the apartment on the nearby noise sensitive receivers has also been considered. Noise emissions from the car park entrance are expected to be compliant to the EPNR criteria. Noise management measures such as use of quiet and fast operating roller gates will be proposed during the design stages.

Acoustic design of partitions during design stages of the project shall be considered to control and reduce noise transfer between apartments. Areas where the acoustic performance of the walls is required to exceed the minimum NCC/BCA requirements will be identified in line with the element objective pathway of SPP7.3.

Noise emissions from the development will require ongoing review to ensure compliance with the EPNR. At this stage no information is available regarding the equipment selection. Once more detailed information has been provided, a thorough noise assessment will be carried out and appropriate mitigation strategies or treatments will be recommended to comply with the EPNR regulations at the nearest noise sensitive receivers.

By addressing the above-mentioned items, the requirements established by the applicable regulations will be complied with at the Building Permit stage.

1. Introduction

Wood and Grieve Engineers (WGE) were commissioned by Seacrest Homes to undertake the acoustic design and assessment for the proposed multi-storey mixed-use apartment development located in Golden bay, Rockingham. The acoustic aspects of the project have been analysed to identify potential issues related to the proposal and recommendations are provided to address them at Development Application stage.

This report identifies the applicable criteria to the project. The following regulations and standards apply to the project;

- Western Australia Environmental Protection (Noise) Regulations 1997 (EPNR);
- Australian Standard AS2107:2016 – *Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors* (AS2107)*;* and
- National Construction Code 2016, Building Code of Australia - section F.5 (NCC).
- Design WA State Planning Policy 7.3 Residential Design Codes Volume 2 - Apartments

1.1 Site Description

The project site is located on lot 636 Thundelarra Dr Golden bay, Rockingham. The project site is situated to the west of Warnbro Sound Ave with Carlindie Parkway to the north and Aurea Boulevard to the south. The surrounding area is largely residential properties, with several recreational parks and fields.

Figure 1 presents the project location in context to the aforementioned locations.

Figure 1: Project site and surrounding areas

Source – Near Maps

1.2 Architectural Volumes

The new development will consist of the following architectural volumes:

- Basement – Carpark, pump and tank room
- Ground – Café, Gym, community hall, outdoor pool, storage units, apartments
- Level 1-4 – Apartments

2. Acoustic Criteria

2.1 Environmental Protection (Noise) Regulation 1997

Environmental noise impacts resulting from the noise emissions from the project are addressed through the Environmental Protection Act 1986, with the regulatory requirements detailed in the Environmental Protection (Noise) Regulations 1997 (EPNR).

The EPNR establishes the maximum permissible noise emission levels (assigned levels) to be received at all adjacent noise-sensitive premises during specific periods of the day as a result of the cumulative noise emissions from all sources proposed for the project site. Compliance to relevant noise limits outlined in the EPNR is compulsory.

The EPNR states noise emissions from any premises are considered not to *significantly contribute to* the noise at a receiver if the noise emissions are 5 dB or below the assigned levels.

In brief, the assigned levels are determined by considering of the amount of commercial and industrial zones, as well as main transport corridors and sporting venues surrounding the noise sensitive premises. The assigned levels apply at premises receiving the noise (noise sensitive receiver) and not to areas within the project site or lot. In addition, the Environmental Protection (Noise) Regulations 1997 identify the following in Schedule 3, clause 2A:

> *"If the land within either of the circles is categorised on the land use map as land in respect of which mixed uses are permitted, the use of that land that results in the highest influencing factor is to be used in the determination of the influencing factor."*

The nearest noise sensitive receivers have been considered as the nearby residential properties. Lots 641 – 652 along Elvire Grove (zoned as residential lots under the current Structure Plan of Golden Bay) have been considered as the nearest noise sensitive receivers to accommodate for any potential future development of residential units. The closest measurable receiver is located at 24 Elvire Gr, Golden bay.

The current City of Rockingham Town Planning Scheme 2 (TPS2) and Local Structure Plan was accessed via the City of Rockingham online mapping system.

Traffic data for roads surrounding the nearest noise sensitive receiver were obtained from Main Roads Western Australia (MRWA) on the 14th June 2019. The available traffic data has been presented in Table 1.

Table 1: Traffic count data (MRWA)

Transport Corridors	EPNR Classification 1)	Average Daily Traffic Volumes					
		2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Warnbro Sound Ave* (West of Mandurah Rd)	Secondary Road	—	7587	—	—	—	—

** No traffic count data available at time of assessment. Dampier Dr (West of mandurah Rd) assumed to be similar in traffic volume.*

1) As defined by the EPNR. Secondary roads have between 6000-15000 vehicles per day. Major roads have greater than 15000 vehicles per day.

2.1.1 Influencing Factor for 24 Elvire Gr

The influencing factor for 24 Elvire Gr results from identifying major roads, commercial and industrial areas for all nearest noise sensitive receivers is 1 dB, as summarized in Table 2.

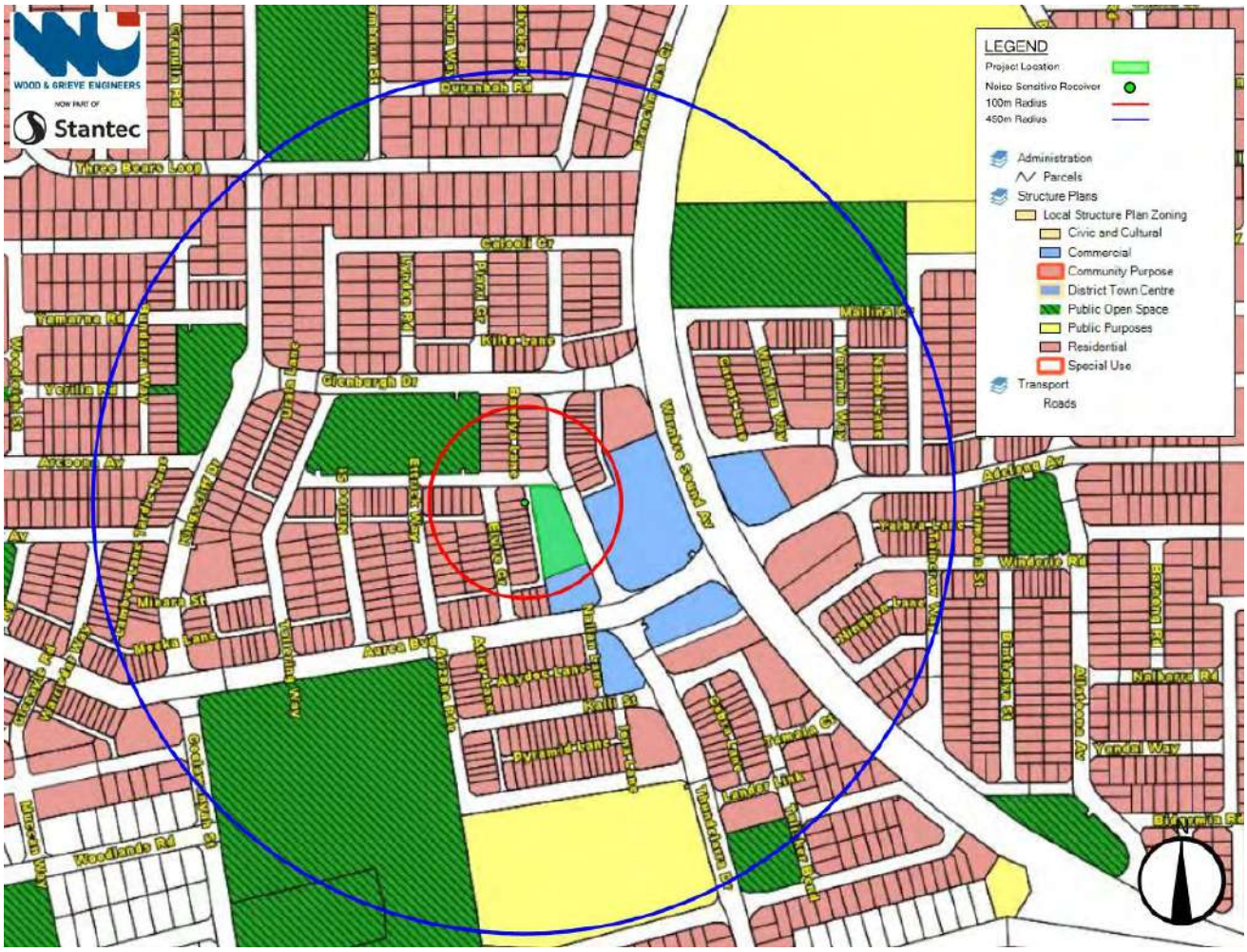
Table 2: Influencing factor (IF) noise sensitive 24 Elvire Gr

Noise Sensitive Premises	Commercial Zones	Industrial Zones	Transport Corridors	Influencing Factor*
24 Elvire Gr	19 % within a 100 m radius 4 % within a 450 m radius	0 % within a 450 m radius	Warnbro Sound Ave (secondary road) within a 450m radius	**1 dB**

Note: Influencing factor has been calculated based on the latest local structure plan which is developed under the guidance of TSP2. The structure plan provides a more defined and current land use zoning.

Figure 2 indicate the land use zones surrounding the nearest noise sensitive receiver.

Figure 2: Zoning map of areas surrounding 24 Elvire Gr



Source: City of Rockingham intramap

2.1.2 Assigned Noise Levels for Nearest Sensitive Receiver

Table 3 summarizes the assigned levels at the nearest noise sensitive premises, which is added to the influencing factor calculated for the receiver detailed in Table 2. It is required that all noise emissions from the development are below the assigned level for all defined periods of the day and at the lot boundary of the receiver or 15m from any associated building. It is noted that the EPNR assigned levels only apply at the premises receiving the noise only and not to noise within the site.

Table 3: Assigned levels for 24 Elvire Gr

Type of premises receiving noise	Time of day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises: Highly sensitive area	0700 to 1900 hours Monday to Saturday	46	56	66
	0900 to 1900 hours Sunday & public holidays	41	51	66
	1900 to 2200 hours all days	41	51	56
	2200 hours on any day to 0700 hours Monday to Saturday, and 0900 hours Sunday & public holidays	36	46	56
Noise sensitive premises: any area other than highly sensitive areas	All Hours	60	75	80
Commercial premises	All Hours	60	75	80
Industrial and utility premises	All Hours	65	80	90

2.1.3 Noise Character Adjustments

Regulation 7 states that the noise character must be "free" of annoying characteristics, namely —

- Tonality, e.g. whining, droning;
- Modulation, e.g. like a siren; and
- Impulsiveness, e.g. banging, thumping.

Regulation 9 (1) establishes the methodology for determining noise characteristics. If these characteristics cannot be reasonably and practicably removed, a series of adjustments to the measured levels are required, indicated in Table 4.

Table 4: Noise character adjustment

Adjustment where noise emission is not music these adjustments are cumulative to a maximum of 15 dB			Adjustment where noise emission is music	
Where tonality is present	**Where modulation is present**	**Where impulsiveness is present**	**Where impulsiveness is not present**	**Where impulsiveness is present**
+ 5 dB	+ 5 dB	+ 10 dB	+ 10 dB	+ 15 dB

2.1.4 Noise Emissions mechanical services

It is important that noise emissions from the site do not present any form of tonality, modulation or impulsiveness (as defined by the EPNR). At this stage no information or data has been given regarding mechanical equipment selection.

Given that data from mechanical plant manufacturers is generally limited to broadband data or in 1/1 octave band value, it is not possible to objectively determine tonality, as it is described in the EPNR. 1/3 octave band data is required yet is typically unavailable.

Therefore, a 5 dB penalty shall be conservatively assigned to the noise criteria when assessing noise emissions from mechanical equipment. In summary, the most stringent criterion at the noise sensitive receiver for night-time criterion L_{A10} 36 dB, becomes L_{A10} 31 dB after a 5 dB correction for tonality, is applied.

2.2 Internal Noise Levels

2.2.1 Australian Standard AS2107

The internal noise level criteria detailed in this section are based on the recommendations provided in the Australian Standard AS 2107:2016 'Acoustics – Recommended design sound levels and reverberation times for building interiors' (AS 2107).

AS2107 provides recommended internal noise levels (defined as the equivalent continuous A-weighted sound pressure level — $L_{Aeq,t}$) for optimising the acoustic amenity in occupied spaces. The level of noise in an enclosed space typically consists of noise from building services and/or noise intrusion due to external sources (e.g. traffic).

The relevant internal noise level criteria have been outlined in Table 5.

Table 5: Recommended internal noise levels from AS2107

Type of occupancy/activity	Recommended design sound level, L_{eq} dB(A)
Residential Buildings – Houses and apartments in suburban areas or near minor roads –	
Sleeping areas (night time)	30 – 35
Living areas	30 – 40
Common areas	45 – 50
Enclosed Carpark	< 65

The internal noise level criteria in AS2107 recommend continuous equivalent (L_{Aeq}) levels for background noise. This document is a common reference for establishing satisfactory goals for quasi-static mechanical and external traffic noise ingress.

2.3 Sound Transmission and Insulation – NCC 2016

The acoustic provisions for inter-tenancy walls in Class 2 buildings are outlined in the National Construction Code of 2016 (NCC 2016). These requirements consist of airborne and impact sound insulation performance parameters, summarised in Table 6.

Table 6: Performance requirements as stated in NCC 2016

Construction	Condition	Deemed-to-Satisfy Requirements	Verification Requirements
Walls	**Airborne Sound Insulation**		
	Between sole-occupancy units	Minimum $R_w + C_{tr}$ 50	Minimum $D_{nT,w} + C_{tr}$ 45
	Between a sole-occupancy unit and a plant room, lift shaft, stairway corridor, public corridor or the like	Minimum R_w 50	Minimum $D_{nT,w}$ 45
	Impact Sound Insulation		
	Between a laundry, kitchen, bathroom or sanitary compartment in a sole-occupancy unit, and a habitable room in an adjoining unit	Discontinuous construction [1)]	As deemed to satisfy
	Between a sole-occupancy unit and a plant room or lift shaft	Discontinuous construction [1)]	As deemed to satisfy
Floors	**Airborne Sound Insulation**		
	Between sole-occupancy units and between sole occupancy unit and lift shaft, stairway or public corridor	Minimum $R_w + C_{tr}$ 50	Minimum $D_{nT,w} + C_{tr}$ 45
	Impact Sound Insulation		
	Between sole-occupancy units and between sole occupancy unit and lift shaft, stairway or public corridor	Maximum $L_{n,w}$ 62	Maximum $L_{nT,w}$ 62
Services	**Airborne Sound Insulation**		
	Between a habitable room (other than a kitchen) in a sole-occupancy unit and a duct, soil, waste or water supply pipe duct (if the duct or pipe is located in a wall or floor cavity and serves or passes through more than one sole-occupancy unit)	Minimum $R_w + C_{tr}$ 40	N/A
	Between a kitchen or non-habitable room in a sole-occupancy unit and a duct, soil, waste or water supply pipe duct (if the duct or pipe is located in a wall or floor cavity and serves or passes through more than one sole-occupancy unit	Minimum $R_w + C_{tr}$ 25	N/A
	If a storm water pipe passes through a sole-occupancy unit (habitable room other than kitchen)	Minimum $R_w + C_{tr}$ 40	N/A
	If a storm water pipe passes through a sole-occupancy unit (kitchen or non-habitable room)	Minimum $R_w + C_{tr}$ 25	N/A

1) For the purposes of this Part, "discontinuous construction" means a wall having a minimum 20 mm cavity between two separate leaves.

- For masonry, where wall ties are required to connect leaves, the ties are of the resilient type; and
- For other than masonry, there is no mechanical linkage between leaves except at the periphery.

3. Noise Survey

Attended noise measurements were undertaken at the project site to establish the existing acoustic environment for use in noise intrusion assessments. Measurements were undertaken on the 21st June 2019. The location of the measurements is presented in Figure 3.

Figure 3: Attended Measurements Locations

3.1 Noise Measurements

3.1.1 Test Methodology

Attended measurements have been conducted using instrumentation equivalent to an integrating sound level meter equipped with one octave and one-third octave band filters, and an omni-directional condenser microphone. All instrumentation meets Type 1 specifications as per ANSI S1.4 and ANSI S1.43.

All sound level meters were calibrated by an authorised NATA (National Association of Testing Authorities) laboratory less than 2 years ago and have successfully passed all AS 1259 and AS/NZS 4476 standards and specifications.

The time constant for the RMS detector were set to a slow response (1 sec) for all measurements on all sound level meters. The sound level meters were calibrated before and after each measurement session using a Type 1 acoustic calibrator. The calibrator was also calibrated less than 2 years ago, and is in compliance with AS IEC 60942-2004.

A complete schedule of all equipment used during for acoustic measurements is provided in Table 7. A copy of calibration certificates for the relevant instrumentation may be provided upon request.

Table 7: Equipment and Calibration Details

Manufacturer / Model	Serial Number
Brüel & Kjær 2250 - Sound Analyser	3002096
Brüel & Kjær 4231 - Calibrator	3005155

3.1.2 Summary of Measurement Results

The noise levels obtained from the attended noise measurements have been provided Table 8.

Table 8: Attended Measured Noise Levels

Reference	Location	Date and Time	$L_{eq,\ 10\ min}$ dB(A)	Spectrum Noise Levels (dB)							
				63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
A1	Warnbro Sound Ave	17/06/2019 11:29 am	**68**	76	78	72	63	61	57	52	48
A2	Aurea Blvd & Thundelarra Dr intersection	17/06/2019 11:36 am	**56**	64	68	56	53	50	47	42	34
A3	Carlindie Pkwy	17/06/2019 11:44 am	**49**	59	53	52	45	45	40	32	25

4. Design Considerations

The proposed project development has taken into account section 4.7 *Managing the impact of noise* of the Design WA development guidelines. The design considerations below address the element objectives and the design guidance (DG 4.7.1 – 4.7.3) provided in SPP7.3.

As per the city of Rockingham's request, the acoustic design is required to address the issues in context of Design WA part 4.7, either via the 'Acceptable Outcome's or 'Element Objective' pathway. It is intended the acoustic design shall choose the 'Element Objective' pathway to manage the impacts of noise on the proposed development.

4.1 Quiet Outdoor Spaces

The major noise sources surrounding the project are situated to the east of the development, namely Warnbro Sound Ave and the expected future retail development.

The private open spaces (community pool and parklands) are expected to be located on the ground floor to the west of the main apartment units. These spaces have been strategically located from the above identified noise sources, to get natural shielding provided by the apartment units. This is shown in below.

In addition to this, the communal parklands and planter units within the project site are to provide potential sheltering from road noise which may reduce the perceived level of noise in habitable areas by acting as a pseudo acoustic barrier. This is in line with the strategies suggested under section 4.7.1.

Figure 4 Parkland and planter unit location

4.2 Segregation of Noisy Areas

The location of expected noisy areas (Community Hall, Café) have been co-located in close proximity with a door to separate the main entrance from apartment units. This is shown in below.

Figure 5: Location of expected noisy areas

Communal areas of high noise activity (gym, plant room, bin storage) have also been located a significant distance away to reduce noise within apartment units.

By clustering and separating expected quieter and noisier areas, noise transmission is reduced throughout the building and between dwellings. This follows closely to the considerations provided under section 4.7.2.

4.2.1 Car Park Entry

The entry to the basement car park is at the North West corner of the proposed development. Figure 6 shows the location of the car park entry.

Figure 6: Car park entry location

In accordance with WA Environmental Protection Noise Regulations, only noise emissions from vehicle movements on the proposed site are assessable against the environmental noise emission criteria specified in Section 2.1.

The noise emissions from vehicle movements around the proposed development accessing the car park should be assessed under the L_{A1} criteria as a conservative approach mainly due to the duration of the car accessing the car park.

The typical sound power or level of the car pass by is circa 70dB(A) and with the nearest noise sensitive receiver (residents along Jundee Lane) at approx. 8 – 10 m from the car park entrance, the predicted noise level from the car accessing the car park will be circa 42- 44dB(A). This is below the criteria L_{A1} at night time and complies with the WA Environmental Protection Noise Regulations.

The roller door to the car park shall be selected to be a smooth/quiet operating door. Generally, it may require a roller door with nylon wheels with ball bearings to reduce the noise from operation of the door.

4.3 Façade Design Considerations

While the proposed development is not near any major rail services or roads, acoustic advice has been provided by WGE to directly address the impact from external noise sources.

Based on the proposed design provided by the architect, acoustic treatments for the façade have been provided in section 5.2 to ensure AS2107 internal noise levels achieved as well as recommendations for roof configuration. This satisfies the design suggestions given in 4.7.3.

Where glazing comprises a significant portion of the façade element for the respective space (e.g. living rooms), the balcony and relative elevation of apartment units (levels 1-4) will provide shielding from road noise sources.

As there is no NCC requirements for façade element performance, proposed recommendations have been given to ensure better than adequate acoustic amenity is experienced by occupants in the apartment units.

5. Noise Intrusion Assessment

This section details the noise intrusion assessment conducted for the project. Proposed external glazing, roof and building envelope configurations have been reviewed with advice provided to satisfy internal noise levels requirements detailed in this report.

5.1 Assessment Methodology

External noise intrusion calculations were undertaken based on the worst case measured external noise levels detailed in this report. Appropriate corrections were applied to the linear spectral noise levels measured to compensate for potential traffic volume increases, sporadic and transient noise events and losses due to flanking transmission.

Calculations have followed the methodology described in British Standard BS EN 12354:2000 *Building Acoustics – Estimation of acoustic performance of buildings from the performance of elements Part 3: Airborne sound insulation against outdoor sound.*

All noise intrusion assessments were undertaken using current sound insulation prediction software (Insul v8.0.12).

5.2 Building Envelope

Calculations were carried out for the most sensitive internal spaces in order determine acoustic treatments and performance of materials required to achieve internal noise level targets.

5.2.1 External Walls

Based on the architectural layouts, it is evident that the building envelope will consist of a combination of solid, glazed and shading elements. The noise intrusion has been calculated for all façade elements, which is relative to their surface area.

Where solid elements are used as the external wall, the walls are required to achieve $R_W + C_{tr}$ 45 as a minimum to achieve acceptable internal noise levels.

The latest architectural drawings indicate that concrete and brick construction is to be implemented. The following configuration is typical in achieving the recommended performance:

- 120mm thick concrete

Where Brickwork is proposed (ground floor convertible units),

- 150mm thick brickwork

5.2.2 Glazing

Glazing systems and entryway elements typically provide lower airborne sound insulation performance than external walls, forming weak acoustic links in the building envelope.

To satisfy internal noise level design targets, glazed elements located at the façades are determined based on the composite sound reduction index (i.e. the combined sound insulation performance of all façade elements relative to their surface area).

Glazing types for each noise sensitive space located at each façade of the proposed development have been comparatively assessed against the noise levels detailed in this report**.** Table 9 provides the glazing performance and proposed locations required to satisfy internal noise level design targets. The performance ratings outlined in Table 9 are required for compliance to internal noise level design targets and apply to the glazing system as a whole (i.e. frame, seals and window hardware). In addition, the sound reduction performance in each octave band shall be complied with.

Table 9: Glazing Configurations

Location	Glazing Configuration	$R_W + C_{tr}$	Spectrum Sound Transmission Loss (dB)						
			63	125	250	500	1k	2k	4k
All bed room and living rooms	6.38mm laminated glass	**29** (32;-3)	15	19	24	29	33	35	41

To maintain the predicted acoustic amenity, all operable windows must be fitted with good quality seals to minimise transmission of noise through the facade. Very small air gaps can be severely detrimental to the aggregate window/façade performance, resulting in non-compliant internal noise levels.

5.2.3 Recommendations for Glazing

It is important to note that the sound insulation performance for the external façade is applicable to the acoustic performance of the glazing units as a whole (including framing, seals etc.) as opposed to simply the glass panels alone.

The suppliers/manufacturers of the glazing should confirm the sound insulation performance specifications of their proposed glazing system for comparison with the specified acoustic performance.

Glazing Frames and Balcony Sliding Door Sets

The determination of laboratory data (R_W) for standard glazing elements includes the performance of the frame. For a large group of glazing elements, particularly domestic glazing and non-specialist applications with R_W ratings below 37 dB, the sound transmission of the window frame can be considered as equal to that of the glazing panel, (assuming adequate seals) except in the case of sliding window arrangements, which exhibit significantly lower R_W performance ratings due to poor sealing around the sliding mechanism at the frame perimeter.

Special attention must be taken during installation of any sliding door set to ensure they are well fitted with a robust closing mechanism to avoid introducing acoustically weak transmission paths for noise to enter through the façade. If not already installed, balcony door sets and frames should be supplemented with compressible neoprene seals at both jambs, and a continuous double brush seal at the threshold and head to minimise transmission of noise into living areas.

At the junction between the window sub-frame (concrete, cavity brick of lightweight aperture) and glazing frame proper, **ALL** voids must be fully sealed, or the full extent of the sound transmission performance will not be realised. Any voids between concrete and frame must be packed with Rockwool and fully sealed with dense mastic.

5.3 Roof Construction

Whilst it is not a mandatory requirement of the NCC, rain noise intrusion shall be considered with a view of ensuring an adequate level of amenity for occupants. Additionally, roof construction should be adequately design to control external noise intrusion from noise sources identified in this report to satisfactorily provide internal noise levels which are compliant with the criteria established section 2.2.1.

The following roof configuration is expected to achieve the above objectives:

One layer of Colorbond sheet metal or similar (0.42 mm); and

- 75 mm thick high-density Anticon insulation hard-fixed to the underside of roof and over steel purlins;
- Suspended ceiling system; and
- Min. 50 mm thick glasswool insulation (min. 11kg/m^3) one layer of 10 mm standard plasterboard.

5.4 Internal Acoustic Separation

Acoustic design of partitions during design stages of the project shall be considered to control and reduce noise transfer between apartments. In particular the sound insulation shall be considered for the following areas;

- Walls separating apartment to apartment
- Walls separating apartment to common corridor or common space
- Walls that separate lift shaft, plant rooms and service risers.

Areas where the acoustic performance of the walls is required to exceed the minimum NCC/BCA requirements will be identified at a later stage in the project which will be in line with the element objective pathway of SPP7.3.

6. Noise Emission Assessment

Noise emission assessment is required to be carried out to determine the noise impact from the proposed development on the nearest sensitive receivers. Based on the latest architectural drawings, the main noise emitting source from the proposed development has been identified as the item below:

- Basement pump and tank room
- Noise emissions from loading dock serving the café
- Noise emissions from patrons & kitchen extract fan of the cafe
- Roof condenser units

Once more detailed information has been provided, a thorough noise assessment will be carried out and appropriate mitigation strategies or treatments will be recommended to comply with the EPNR regulations at the nearest noise sensitive receivers.

Acoustic mitigation strategies or treatments such as noise barriers, attenuators, acoustic lining, and equipment reselection maybe recommended depending on the noise emission levels.

7. Building Services

7.1 NCC Construction Requirements for Building Services

7.1.1 Summary of Specific Requirements

The NCC makes provision of criteria specific to the placement and function of mechanical building services. To be deemed to satisfy, provisions must be made such that;

i) Services must not be chased into concrete or masonry elements

ii) Access doors/panels required to have a certain $R_w + C_{tr}$ that provides access to a duct, pipe or other service must –

  a) not open into any **habitable** room

  b) be firmly fixed such that the rebate or frame is overlapped by the access panel by not less than 10mm, and be fitted with a sealing gasket along all edges. And be constructed of;

    - wood, particleboard or block board >33mm thick
    - compressed fibre reinforced cement sheeting >9mm thick
    - *Other suitable material with mass per unit area > 24.4 kgm^{-2}*

iii) A water supply pipe must –

  a) Only be installed in the cavity of a discontinuous construction; and

  b) In the case of a pipe that serves only one sole-occupancy unit, not be fixed to the wall leaf on the side adjoining any other sole-occupancy unit, and have a clearance of at least 10mm to the other leaf

iv) Electrical outlets must be offset from each other –

  a) In masonry walling, not less than 100mm; and

  b) In timber or steel framed walling, not less than 300mm

7.2 Hydraulic Services

The noise from hydraulic services is generally attributed to structure-borne rather than an air-borne noise issue. This is caused due to direct coupling of services pipework that allows noise from fluid flow and/or water hammer to transmit through structural elements and radiate noise.

Hydraulic services must not be chased into concrete or masonry elements of sound rated walls. The acoustic performance requirements of service risers and pipe lagging details are provided in this report.

Where hydraulic services are required to be run within party walls, double discontinuous constructions will be required to allow for running of pipes and placement of fittings, as chasing is not allowed per the NCC.

The minimum treatment requirements to comply with NCC requirements have been detailed in the Table 10 below.

Table 10: Minimum Treatment Requirements

Acoustic Performance (Area)	Standard PVC	Acoustic-rated Pipe (Raupiano or equivalent)
$R_w + C_{tr} \geq 40$ (Crossing living areas, including open plan kitchen)	Acoustically lag pipework using Pyrotek 4525C. Min. 50 mm thick glass wool batts (11kg/m^3.) installed to a min distance of 1200 mm either side of pipe.	Min. 50 mm thick glass wool batts (11 kg/m^3.) installed to a min distance of 1200 mm either side of pipe.
$R_w + C_{tr} \geq 25$ (Crossing bathrooms)	Min. 50 mm thick glass wool batts (11kg/m^3.) installed to a min distance of 1200 mm either side of pipe.	No additional treatments required
Basement levels	No additional treatments required	—

7.3 Electrical Services

The following general recommendations are provided for electrical services:

i) It is important that penetrations for electrical services through inter-tenancy walls and corridor walls are not downgrading the acoustic performance. These penetrations should be avoided where possible and switches and outlets should ideally be surface mounted.

ii) If electrical services are not surface mounted, switches and outlets must be offset,

   a) in concrete walls not less than 100 mm; and

   b) in brick walls and stud frame walls, not less than 300 mm. Outlets installed in walls requiring an R_w of 50 and above (party walls, walls to corridors etc.) shall be installed with acoustic/fire rated wall boxes rated R_w 50 or above.

iii) Electrical outlets include general power and telecommunication outlets, television and internet outlets, light switches and wall mounted lights.

iv) Back-to-back electrical outlets are permitted within internal walls only (within the same unit).

v) Services must not be chased into concrete or masonry elements of sound rated walls.

vi) Where electrical services penetrate plant room walls or floors, an inter-tenancy wall or floor/ceiling or a riser shaft wall, the penetration shall be acoustically treated so that it does not degrade the sound isolation rating of the subject partition. All services penetration shall also comply with the NCC.

vii) Penetrations shall be sized for cables and conduits passing through building slabs, plasterboard or masonry walls to allow a uniform clearance of 10 mm around the item and this gap shall be sealed using an approved acoustic sealant.

viii) Fixing of cable, conduit and the like to concrete or masonry elements is permitted provided the cable or conduit is contained in the cavity of a furring channel.

8. Conclusion

Attended measurements have been undertaken on site in order to ascertain the typical ambient noise levels at the project site. Noise impact from the main transport corridors (Warnbro Sound Ave) have been assessed and preliminary treatments have been provided in order to achieve the recommended internal noise levels outlined in AS2107.

The project development has taken into consideration the design strategies described in SPP7.3 to mitigate the noise impact from external sources. Noise sensitive areas such private open spaces for community activities have been placed as far as possible from the external noise sources. In addition to this, expected noisy areas within the development have been separated from quieter areas as a strategy to control internal noise and reduce noise transmission between habitable areas.

Acoustic design of partitions during design stages of the project shall be considered to control and reduce noise transfer between apartments. Areas where the acoustic performance of the walls is required to exceed the minimum NCC/BCA requirements will be identified in line with the element objective pathway of SPP7.3.

Noise emissions from the development will require ongoing review to ensure compliance with the EPNR. At this stage no information is available regarding mechanical equipment selection. Once more detailed information has been provided, a thorough noise assessment will be carried out and appropriate mitigation strategies or treatments will be recommended to comply with the EPNR regulations at the nearest noise sensitive receivers.

By addressing the above-mentioned items, the requirements established by the applicable regulations will be complied with at the Building Permit stage.

Appendix A Glossary of Acoustic Terms

Term	Description
A-weighting	A frequency dependent filter applied to an instrument-measured noise. In its simplest form, the filter is designed to replicate the relative sensitivity to loudness perceived by the human ear.
Acoustic Barrier	Solid walls or partitions, solid fences, earth mounds, earth berms, buildings, etc. used to reduce noise.
Ambient Noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
Background Noise	A term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation, when extraneous noise is removed.
C_{tr}	A standard weighting curve which replicates low frequency noise, such as that from traffic. Often added to $D_{nT,W}$ or R_W to characterise airborne sound insulation performance.
dB	The abbreviation for decibel.
dB(A)	A-weighted sound level in decibels.
$D_{nT,W}$	Similar to D_W, $D_{nT,W}$ is the weighted standardised level difference, which also considers reverberation and background noise level of the receiver room.
D_W	A single number value that represents a field measurement of the weighted level difference between two adjacent spaces separated by a partition. $D_W = L_1 - L_2$ where, L_1 is the average sound pressure level in the source room; and L_2 is the average sound pressure level in the receiver room.
Extraneous Noise	Noise resulting from activities that are not typical of the area. Atypical activities include construction, and traffic generated by holidays period and by special events such as concert or sporting events. Normal daily traffic is not considered to be extraneous.
Flanking Path	The transmission of sound from a source room to a receiving room by paths other than through the separating partition i.e. via the ceiling, unsealed gaps and cracks or ineffective door seals etc.
Frequency	Frequency is synonymous to pitch. Frequency or pitch can be measured on a scale in units of Hertz (Hz). Most noise sources typically comprise of a vast, and often complex, range of frequencies.
L_{A1}	The A-weighted sound pressure level exceeded for 1% of the measurement time period.
L_{A10}	The A-weighted sound pressure level exceeded for 10% of the measurement time period.
L_{A90}	The A-weighted sound pressure level exceeded for 90% of the measurement time period. Typically represents the background noise level of an environment.
L_{Aeq}	The equivalent continuous sound pressure level in dB(A). It is often accompanied by an additional suffix "T", which is indicative of the measurement time period. (e.g. $L_{Aeq,15min}$, symbolising the measurement is evaluated over 15-minutes.)
L_{Amax}	The maximum A-weighted sound pressure level recorded over the measurement period.
Noise Logger	A sound level meter situated at a particular point of interest. The instrument is typically for an extended period in order to ascertain typical noise patterns associated with the measurement position.

Term	Description
Reflection	Sound wave changed in direction of propagation due to a solid object met on its path.
Reverberation	The persistence of a sound within a space, which will naturally decay over time. Most apparent once the source signal has ceased emitting. Reverberation may have effects on speech intelligibility if not adequately controlled. Reverberation time, represented in seconds, can vary depending on the volume and surface finishes of the space.
R_W	A single number value which represents the airborne sound insulation performance of a partition or building element that has been determined under laboratory testing conditions.
Sound Level Meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound Absorption	The ability of a material to absorb sound energy through its conversion into thermal energy.
Sound Power Level (L_W or SWL)	The total sound energy radiated by a source, expressed in Watts. The sound power level is ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power.
Sound Pressure Level (L_P or SPL)	The measured acoustic wave strength in a given environment and at a particular point of interest where the total sound level expressed is relative to a reference pressure, i.e. the threshold of human hearing. Sound pressure level is typically measured using a standard sound level meter with a microphone, expressed in decibels (dB).
T_{mf}	Describe in AS/NZS 2107:2016 as the arithmetic average of the reverberation time in octave bands at 500 Hz & 1000 Hz.

Mr Mitchell Cook
Klopper & Davis Architects
Mitch@kada.com.au

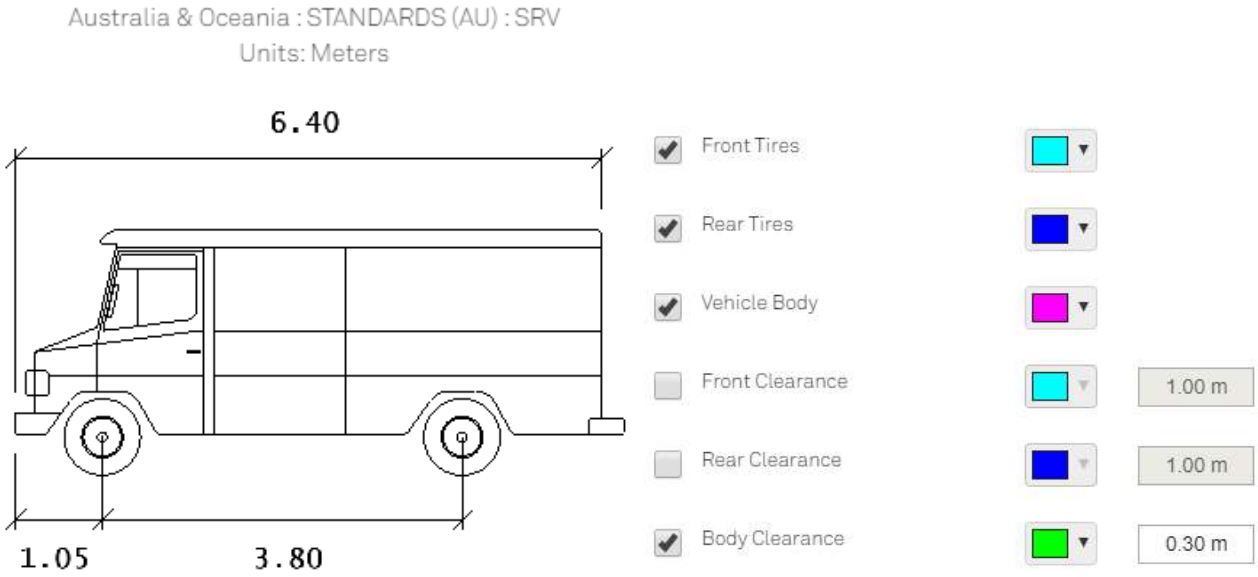
LOT 636 THUNDELARRA DRIVE, GOLDEN BAY
LOADING BAY SWEPT PATH ASSESSMENT

Dear Mitch,

I refer to your email dated 17 September 2019 requesting a swept path assessment of the standard SRV Design Vehicle using the proposed loading bay shown on Klopper & Davis Architects' drawing A105 Issue K for an Independent Living Development at Lot 636 Thundelarra Drive, Golden Bay.

The assessment of the swept path of the SRV Design Vehicle reversing into the loading bay and then driving out in a forward direction towards Carlindie Parkway is shown in Figure 1 on the following page.

The swept path assessment was undertaken using AutoTURN with the following vehicle dimensions and settings:



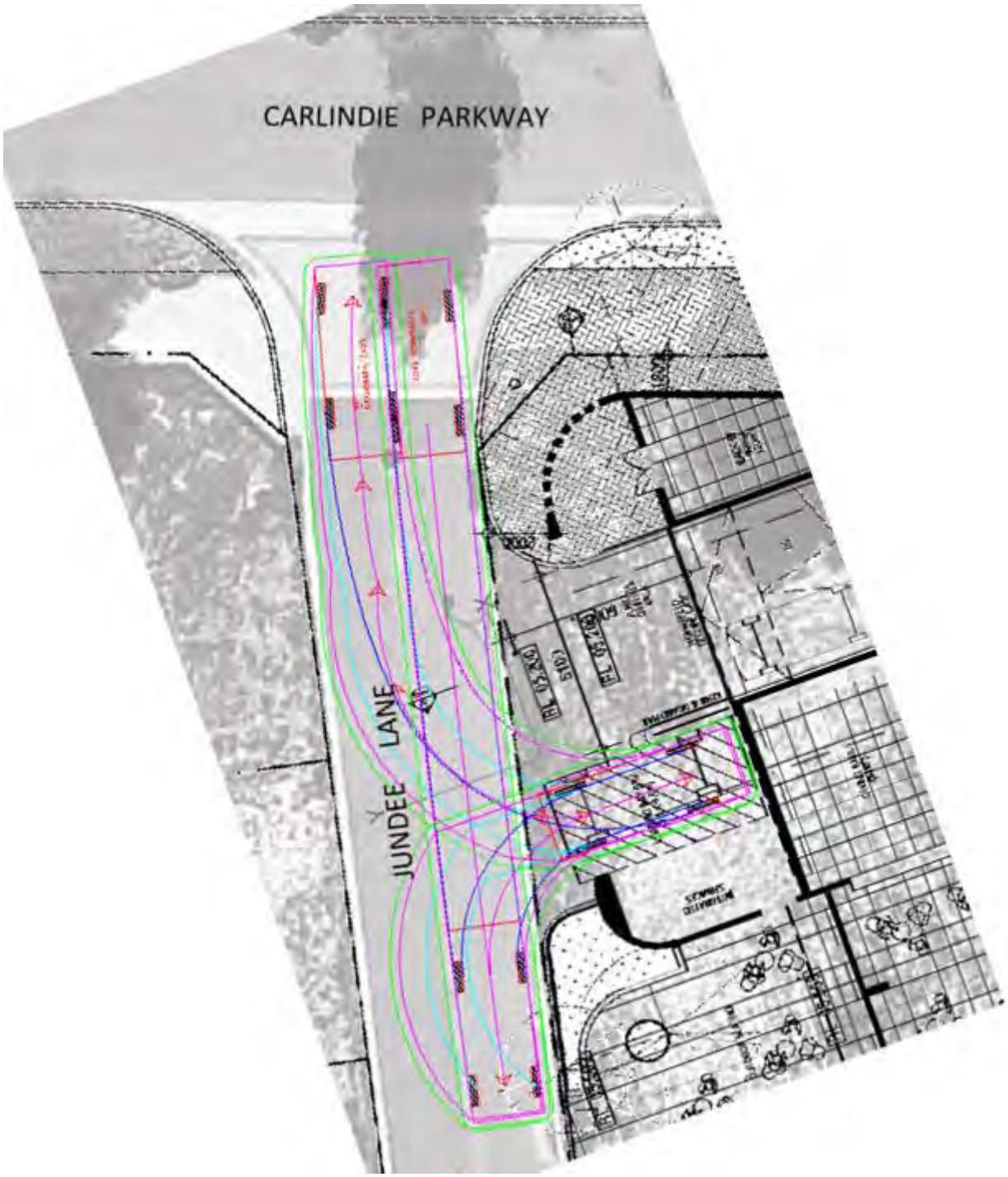


Figure 1 – Swept path of SRV reversing into loading bay and then driving forward out

The swept path assessment indicates that the SRV service vehicle can reverse into and out of the proposed loading bay off Jundee Lane in a single manoeuvre. This loading bay arrangement requires that the service vehicle reverses into the loading bay from Jundee Lane, a low volume laneway. It is understood that there will be a dedicated building manager on-site. It is therefore recommended that the Building Manager acts as a lookout whenever a service vehicle is about to arrive on-site to ensure that the service vehicle reverses safely into the loading bay.

David Wilkins
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Accredited Senior Road Safety Auditor - Crash Investigation Team Leader - Roadworks Traffic Manager
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SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
1. Mrs Lowri Wythers	14 Tambrey Avenue GOLDEN BAY WA 6174 musicwithlowri@gmail.com	please do not do this to the community. We are already struggling with the wrong crowd in the area, we don't need more housing. Everyone I have spoken to is against this idea. We have the secret harbour shopping centre, why are you flooding the area with more unnecessary housing and shops.
2. Ms Tara Vader	14 Calooli Grove GODLEN BAY WA 6174	Great idea.
3. Mrs Rachael Emily McCutcheon	44 Ellendale Street GOLDEN BAY WA 6174	Keep Golden Bay the small coastal relaxed family suburb that it is. It's already been tainted by the dune development. We have an unfinished eye-sore building site. Heaps of empty and overgrown blocks. It's turning into a bloody mess.
4. Mr Doug Kitchingman	17 Mileura Street GOLDEN BAY WA 6174 tlegs@westnet.com.au	Hi, we already have a 1/4 built shopping complex that has been sitting there for 4yrs. now you want to put a 5 story block of units with café, more shops & offices on the bottom floor. the 1 unfinished eyesore shopping complex is bad enough. how many more 5 story units can you squeeze into new Golden Bay. no wonder a lot of Rockingham shire residents think this council has become a joke.
5. Mrs Michelle Tank	8 Boothman Mews GOLDEN BAY WA 6174 Michellentank79@gmail.com	I strongly opposes to this the area has enough retail outlets. I really don't think 5 storey or 4 storey buildings should go ahead it was a seaside area and now it is completely ruined. Completely destroying the dunes was bad enough now you want to put 5 storey buildings in, how about community gardens or more open space where the children can get fresh air and not be stuck on computers.
6. Mrs Sally-Anne Whittington	43 Blue Fin Drive GOLDEN BAY WA 6174 morlaix@iinet.net.au	5-storey's is excessive and totally unnecessary in Golden Bay. 3-storey's for this suburb should be sufficient. 5-storey's will be ruination to the max.
7. Mrs Chelsea Ruwaard	6 Patman Road SECRET HARBOUR WA 6173 Dutch42@bigpond.com	I strongly oppose this multi story development in Golden Bay.
8. The Director Golden Bay Village Pty Ltd	69 Challenge Boulevard WANGARA WA 6065 Mbasso232@gmail.com	This project will assist with extra customers for the shopping centre we intend to construct. We own both properties and hope the Shire will support the Independent Living Apartment Project.
9. Ms Cheyene Taylor	34 Arizona Parade GOLDEN BAY WA 6174 Cheytaylor565@gmail.com	Support

SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
10. Mr Philip Jeffrey	8 Thundelarra Drive GOLDEN BAY WA 6174 Jeffrey_philip@yahoo.com.au	I oppose this proposal given the already high density of the area with no existing hub (the commercial property over the road). A block of flats of this magnitude is not required nor wanted by the local community.
11. Mr Craig Lewington	4 Middalya Road GOLDEN BAY WA 6174 Clewie@hotmail.com	Completely out of scale with the entire coastal strip
12. Ms Katherine J Gardiner	16 Narloo Way GOLDEN BAY WA 6174 katejg70@gmail.com	I oppose the development of this site due to the high rise building being out of place with other residential buildings in the area.
13. Mrs Jacqui Thomspon	18 Sawly Close GOLDEN BAY WA 6174 jacquiunleashed76@gmail.com	I wish to oppose the multi story building as it would , the Layout and density of building will add to the already deflated property prices and coastal feel of our neighbourhood. - loss of neighbourhood character due to height and bulk -affecting local traffic congestion Isn't it zoned commercial?
14. Mrs Felicity Stride	19 Calooli Grove GOLDEN BAY WA 6174 felicity@seeber.id.au	While I support the development of a central community hub including retail and public use facilities, I DO NOT support and building higher than 2 story or mixed residential apartments co-located with retail/commercial units.
15. Mrs Sheiranne Townshend	8 Erlistoun Street GOLDEN BAY WA 6174 gstownshend@aapt.net.au	Oppose this development immensley, this is a Golden Bay not Scarborough or Cottesloe or even Secret Harbour for that matter, this space needs to be kept as close to its natural environment as possible. It is not needed or in the best interests of the community or the environment. Natural dunes and vegetation is what is required. When will someone look past the almighty dollar and leave nature as irs meant to be.
16. Ms Karen Thielemann	6 Tuckey Street GOLDEN BAY WA 6174 skwill@iinet.com.au	Opposed.
17. Mr Reece Park	15 Barnong Road GOLDEN BAY WA 6174 rdpark2000@gmail.com	I approve of the development, it will promote community growth
18. Mrs Vicki Carroll	10 Laurel Turn GOLDEN BAY WA 6174	Totally Oppose the decision completely, I believed it will not compliment the area

SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
19. Mrs Ilona O'Sullivan	13 Harney Road SECRET HARBOUR WA 6173 ilona.osullivan@outlook.com	Oppose
20. Mrs Michelle Crook	19 Hassars Road SECRET HARBOUR WA 6173 Stuandshell@iinet.net.au	Opposed to the construction of 5 storey apartment building
21. Mr Nick Iustini Technicdraw Pty Ltd	2 Yeeda Road GOLDEN BAY WA 6174 nick@techresources.com.au	I would like to lodged my objection to this proposed development. This subdivision already is of a very high density. The land is currently zoned R60 and I would not support any development which did not fully comply with this zoning. In addition this type of development was tried by Homewest in the 60's 70's and 80's and most have now been torn down and rebuilt with lower density housing. This development proposal was designed in the 90's well before the social problems that come with this type of development had fully shown themselves to not work and the demolition of these multi story housing blocks was undertaken. It maybe time to take another look at this whole areas development and assess if this current infill is being maintained to a standard that is expected before further high density housing is thrown into the mix. Especially considering that the R80 coastal precinct on Marillana is still to be developed.
22. Mrs Goodbody	5 Strelley Road GOLDEN BAY WA 6174 ginagoodbody@gmail.com	I am opposed to this development. 5 storeys is too high and does not fit in with our coastal community. There has been enough destruction in this area and we don't need this being built.
23. Mr Nathan Martin	Nathan.l.martin@hotmail.com	The last development has added no value to the community. This doesnt stay true with coastal community feel of golden bay. Keep high density living in the city where its wanted.
24. Ms Monica Hunter	42 Arizona Parade GOLDEN BAY WA 6174	While I support senior housing. I think any commercial intrest would be wasted in this community. Re. other eyesore that has been standing for past 3 years not sold or has any intrest been shown. We have what is needed in this community. A large shopping centre at Secrets and our local shops are enough. We have 5 liquor outlets already. So no high rise here. Thank you. It’s not needed or wanted.
25. Mrs D M Ronchi	5 Piarri Grove GOLDEN BAY WA 6174 Diana.ronchi@westnet.com.au	The plans for the Building and Landscaping look impressive. I feel the development will enhance the already “good community feel” in Golden Bay. It is good to look toward the future with the accommodation for seniors and easy access for their needs with regard to shopping. The development will also add value to the surrounding properties. I am happy for the development to be approved.

SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
26. Mr John Sabin	12 Narloo Way GOLDEN BAY WA 6174 Johnsabin66@hotmail.com	Simply and four storey building has a negative impact on the surroundings dwellings. Therefore this application should be deemed unsuitable for its proposed area.
27. Ms Meegan Hyde-Weir	meegan74@gmail.com	I am vehemently opposed to this proposal. There is absolutely no need for any of this in our community. Haven't we had enough upheaval and damage done with the dunes being taken? Leave it as it is. Nobody needs any of this here.
28. Mrs Dionne Taylor	10 Granby Road SECRET HARBOUR WA 6173 janebelve@hotmail.com	Opposing this development as 5 storeys is not in keeping with our coastal community. No other high buildings in this area = 5 storeys an eyesore.
29. Mrs Leandra Slingee	12 Mileura Street GOLDEN BAY WA 6174 leandra01@gmail.com	I oppose this proposal immensely. The construction of an "over developed" building such as this is not keeping with the coastal, beachside community feel that Golden Bay has always strived to achieve. This building will over populate the suburb and cause massive parking problems in an already dense area. Buildings such as this have also been linked to increases in crime rates and draw unwanted social problems to the neighborhood.
30. Mr Aiden Slinger	12 Mileura Street GOLDEN BAY WA 6174 sling79@hotmail.com	I oppose this development as 5 storeys is in no way suited to the beachside suburb and community feel that Golden Bay has always been known for and which has attracted people to the area as a place to live. I am also concerend with the density of this type of development as there is limited parking for existing residents in the tiny blocks that populate the area. If the building across the street (IGA) is ever finished, the parking and access to the area will be even more of an issue for local residents. This multi storey/flats type of development has no place in a suburban suburb and should not be approved in any way, shape or form.
31. Mr Mathew Haydon	5 Karbar Road GOLDEN BAY WA 6174	I oppose this submission.
32. Mrs Molly Grainger	29 Arcoona Avenue GOLDEN BAY WA 6174 Molly.3.25@hotmail.com	We do not need a high rise. We need a cafe and park. Small shops maybe. A 4/5 story building will look weird and won't serve the community.
33. Mrs Gusti A Dewi	15 Cooralya Avenue GOLDEN BAY WA 6174 apsari.dewi@gmail.com	I'm OPPOSED to the 5 storeys building being built in currently already a high density area. I'm okay with pensioners independent living and shops.

SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
34. Miss Eleanor Murray	72 Three Bears Loop SECRET HARBOUR WA 6173 elzmurray@gmail.com	Don't like it at all. 5 storeys is ridiculous to put in the middle of a small coastal suburb. Absolutely oppose this completely. Would be an eye sore and an awful addition.
35. Miss Margaret Wright	19 Yanrey Street GOLDEN BAY WA 6174 marlance6@hotmail.com	The density in this area is already high. With a primary school around the corner, we do it need over 98 cars added to the traffic area.
36. Mrs Jenefer Wiltschut	33 Lookout Vista SINGLETON WA 6175 Jenh@westnet.com.au	I oppose this development. The height of the proposed building does not fit in aesthetically to the surrounding area, and is likely to cause issues with long term vacancy.
37. Miss Rachael Matkovich	23 Arcoona Avenue GOLDEN BAY WA 6174 Rach.matkovich@gmail.com	Does not suit the "look" or "feel" of the suburb. The building will more than likely stand half empty due to being too large and there us not enough demand for this type of living in the area. It will have a negative impact on our community attracting the type of people who move around a lot and arent intrested in intergrating with current residents. It has also been poorly designed for seniors and has intentionally been designed to draw more low income earners to the area. It will be like dangling a carrot for thugs to damage and graffiti on. I personally could go on and on about why I oppose this building. It needs a complete redesign and needs to be a maximum of 2 storeys. To conclude I feel if this proposal goes ahead it will not only have a negative impact on Golden Bay it will negatively impact the entire City of Rockingham.
38. Mrs Melissa Hunter	15 Bidgemia Road GOLDEN BAY WA 6174	I Appose this application. It's not fitting with area and building height is too high.
39. Mrs Amanda Steenkamp	23 Champlain Road SECRET HARBOUR WA 6173 steenkamp.family@bigpond.com	Not in favour. Already have a project in Golden Bay that hasn't been finished and an eyesore. We don't need more commercial or residential development. Address the current social disruptive issues of the youth in the area first!
40. Mr Jihn Simpson	75 Adelong Avenue GOLDEN BAY WA 6174 Pro-trade@gmail.com	I'm against this build, I bought my home on the basis of coastal living, you don't see high story buildings near coastal all over the place especially at the end of our street.

SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
41. Mrs Carmen Simpson	75 Adelong Avenue GOLDEN BAY WA 6174 Twiggy952@msn.com	5 story buildings are not why we bought our home in Golden bay I bought for the coastal views and thus is not coastal also this would devalue our home in the future as well as have to pass the eye sore everyday. I live on Adelong avenue from my home I would see this. This can not be built I'm strongly against this build.
42. Mrs Toni Lockwood-hall	2 Yaringa Street GOLDEN BAY WA 6171 toni1605@hotmial.com	I oppose the 5 storey development for golden bay.
43. Ms Teresa Ong	5 Indianna Parade SINGLETON WA 6171 Maktess4@bigpond.com	I do not agree with a 5 storey building, but a 4 storey without the commercial development with more information given, I would be willing to support. My concerns, we do not need more retail, with home delivery from stores at Secret Harbour, shops cafes eating area at Secret Harbour. Consulting rooms for what? Medical rooms need chemist, and these one in golden bay and 2 in secret harbour. On the housing, I would like more information on the mix, apartment sizes. Is it a public/private mix or just private apartments. The façade looks very nice.
44. Ms Linda Wood	1/8 Minara Street GOLDEN BAY WA 6174 Lindawood59@mail.com	I think the proposal is a good idea if it actually manages to get finished and gets full occupancey. The so called shopping centre across the road is a total mess with no sign of ever being finished and devalues the area as the entrance to Golden Bay. I do not want to see another unfinished development in the area. I am submitting my objection to the height. 5 storeys is too high for this area. 3 storeys is the current limit for the area and this devepment should not be any taller. The small local laneway would be overwhelmed by the volume of cars that are proposed to be using the carpark if the proposed number of units are built.
45. Mr Vernon Bastian	30 Arizona Parade GOLDEN BAY WA 6174 vbastian@metrocount.com	I am pleased to see this development go ahead. It will add vibrancy and value to the area.
46. Mr Ben & Mrs Deborah Hudson	3 Piarri Grove GOLDEN BAY WA 6174 Deborahhudson73@hotmail.com	Support
47. Mr Jordan Freek & Mr Matthew Weir	101 Thundelarra Drive GOLDEN BAY WA 6174 Glasford1991@hotmail.com	When we pruchased our land we wete informed than the zoning for this land would mean property of no higher than 3 storeys. 5 storey dwelling will be an eye-sore and severly impact our privacy! The proposal also includes the parking parking at the front of my property included in their parking area, meaning my guests won't even be able to park near me!

SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
No.47 – cont…		I believe this will negatively impact the value of my property and it affects the small family vibe of our local community. You are also introducing more traffic to an area in close proximity to a primary school. I will no longer feel safe my child being able to walk to school safely. I feel that this will be just like the IGA/ town square that has commenced and been sitting idle for almost 3 years. Just another money hungry ploy by developers that will sit vacant and does not consider the needs or wants of the community that have built a life here.
48. Mr Damien Thompson	9 Boothman Mews GOLDEN BAY WA 6174 annette_damien@hotmail.com	1. 5 stories not consistent with local coastal layout . 2. No indication if will have govt housing 3. Will impact surrounding houses privacy 4. No proof will stay over 55 5. Impacting our thriving local shopping village .
49. Mrs Victoria Ganfield	12 Kalli Street GOLDEN BAY WA 6174 V-pearson@hotmail.com	I was aware of the proposal for a multi dwelling apartment block on Thundalarra when I bought my property which is located on Kalli street only two homes away from the site. Five stories is far taller than the original proposal and the height and increased number of people living in the building will have many negative impacts; the height of a 5 story building will likely put my entire back yard in the shade, I haven't seen a building over 2stories in the whole of Golden bay (probably not in Singleton or Secret Harbour either except the surf club), it's definitely not in keeping with the aesthetics of the area, with 101 apartments and only 98 car bays there is bound to be intense parking problems, Kalli St street front parking is full in the evenings, this is a street of 2 & 3 bedroom apartments all with their own double garage, the back lane of Kalli Street hasn't even been built on yet and that will increase parking pressure, most dwellings regardless of age of the resident have at least two cars, it's not a suburb you can get by without a car in so there will already be cars spilling out onto the already full street parking and that's without allowing for any visitors. It really is a small plot of land that hasn't allowed for enough space between buildings
50. Ms Chloe N Riddle	8 Thundelarra Drive GOLDEN BAY WA 6174 Chloe.riddle@hotmail.com	I oppose to this current development as it stands right now. I do not think this area needs a 5 storey building it is not keeping with all of the residents around, 3 storeys maximum around this area. I also believe if it is to be a seniors living building this needs to be properly regulated and we do not need any more cafes etc the ones around the area are already struggling to stay open.
51. Mr Paul Masson	30 Glenburgh Drive GOLDEN BAY WA 6174 dennpaul@westnet.com.au	Would have supported if it was just aged care. Would have been good for jobs etc. but not as I understand the units are not aged restricted.

SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
52. Miss Dawn Shepheard	22nd floor 3 Lockhart Road Wanchai HONG KONG dawn@resortique.com	I am the owner of a block of land at 90 Marillana Drive Golden Bay. I have read the above and I would like to lodge my objection to the proposal. The existing sub division proposed is of a high density for the area. The land is already zone R60 and I would not support any development that did not conform to R60 requirements.
53. Ms Dianne Vilkelis	18 Kalli Street GOLDEN BAY WA 6174 dvilkelis@iinet.net.au	The building looks impressive. The idea of a café there locally would be nice. Theres nothing between Mandurah and Rockingham for seniors. So I support the building to go ahead. No objection at all.
54. Mrs Annette Rolt	4 Minderoo Crescent GOLDEN BAY WA 6174 annette@aqwasun.com.au	My concerns for the proposed site are as follows; That an R60 development does not "fit" in a low density housing area. Overall height of 5 storeys does not meet with the Development plans for the area. Parking ratio is less than one space per unit and car parking was inadequate for the commercial aspect Over looking/over shadowing How are the over 55 restrictions going to be enforced. Concern about lack of specialist medical facilities for the over 55 Concern surrounding ground water levels for a subterranean car park Also inadequate street parking in these areas is already of concern due to the small block sizes of 225sqm. These 3 bed homes have to cater for at least 2 cars for parents then 2 cars or more for children who drive & who are staying at home much longer due to housing costs & lack of work. People have to use their garages/carports for entertaining, play areas for small children (that are not old enough to roam the streets) due to no gardens or for storage as the blocks are not built for family living. Sadly street parking in our area is done at risk of having your windows broken & your vehicle ran sacked. There has been a huge shift in the demographic of the area & more policing is required. There are also concerns as to the quality of the development 'flats' tend to look shabby extremely quickly (with washing hanging on balconies, stored items etc - who will police this in the long term? The area is already being call a ghetto due to the lack of care for verges, laneways, crime etc If purpose built for over 55's there needs to be a lot of thought put into the design ie how accessible for mobility scooters etc a community area/garden. With established homes around this site many of the homes have or may want to install solar panels to reduce costs & the carbon footprint yet a 5 storey building would lerally over shadow these properties! Transport is also inadequate for the area. Development strategies seem to be going backwards & are not being designed for healthy community living. Please be mindful this is a coastal village lifestyle area NOT a city centre!

SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
55. Ms Lorna Buchan	30 Lowlands Crescent SECRET HARBOUR WA 6173 aandlbuchan@gmail.com	The development is totally out of keeping with the area. Golden Bay and surrounds has low density housing and we neither need nor want a high rise development in Golden Bay. It is totally out of touch with the current housing and style of the area. The application itself has not enough parking for residents let alone the commercial aspects of the proposal. The overlooking and overshadowing of the existing and future housing has to be considered. How is the over 55 caveat for residents to be policed and monitored? 2 storeys is the maximum height that should be allowed in Golden Bay.
56. Ms Victoria J Pearson	29 Indiana Parade SINGLETON WA 6175 V-pearson@hotmail.com	I was aware of the proposal for a multi dwelling apartment block on Thundalarra when I bought my property which is located on Kalli street only two homes away from the site. Five stories is far taller than the original proposal and the height and increased number of people living in the building will have many negative impacts; the height of a 5 story building will likely put my entire back yard in the shade, I haven't seen a building over 2stories in the whole of Golden bay (probably not in Singleton or Secret Harbour either except the surf club), it's definitely not in keeping with the aesthetics of the area, with 101 apartments and only 98 car bays there is bound to be intense parking problems, Kalli St street front parking is full in the evenings, this is a street of 2 & 3 bedroom apartments all with their own double garage, the back lane of Kalli Street hasn't even been built on yet and that will increase parking pressure, most dwellings regardless of age of the resident have at least two cars, it's not a suburb you can get by without a car in so there will already be cars spilling out onto the already full street parking and that's without allowing for any visitors. It really is a small plot of land that hasn't allowed for enough space between buildings
57. Mr Anthony Murray	11 Majorca Garden SECRET HARBOUR WA 6173	I am against any development that doesn't comply with the current zoning of that block of land." Current zoning is 3 storeys.
58. Mrs Donna Edwards	49 Bluefin Drive GOLDEN BAY WA 6174 doned4@gmail.com	I am against anything that doesn't comply with the zoning of that block of land.
59. Mr David Grey	5 Warrie Street GOLDEN BAY WA 6174 YowieDave@hotmail.com	You allow 1 5 story building and before we know it there will be others then requests for higher buildings. People built homes under the knowledge of a possible 3 story building it is unfair to change the rules now the blocks are all filled. The style of the building is ugly and not in line with everything else in the area. Not enough parking bays so people will park on verges and cause dangerous situations. Very close to a school where again there is not enough parking.

SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
60. Miss Lizanne Dymond	5 Warrie Street GOLDEN BAY WA 6174 Dragonflydream@bigpond.com	There is insufficient parking bays for residents and visitors which means more vehicles parked in inappropriate places. Five storey building is NOT what people in the area signed up for when they bought their land and built houses. Where is the documentation to support that over 55's only will be allowed to live there. No public transport close by for elderly who are allegedly going to live there- not everyone can walk to the main road and stand in the weather, waiting for a bus. a 3 story building is bad enough a 5 story building would also impact on locals and their privacy. I truly hope this does not get through.
61. Mrs Diane (Isobell) Trompp	126 Thundelarra Drive GOLDEN BAY WA 6174 diane.trompp@hotmail.com	I believe that this development is too high in density and height. There is also no guarantee that this will be for seniors. I notice in the application and correspondence that there are only a couple of senior citizens depicted. I would not like to see this development set the precedent for future developments, leading to overcrowding of Golden Bay I am not against developments in general but I think this is to crowded. I would not oppose a smaller development, with the guarantee it is for seniors. Thanks
62. Mr Stuart Reeves	12 Marillana Drive GOLDEN BAY WA 6174 stuart.reeves@fitzroyps.com.au	The planning guidelines have already been overridden by allowing an excess of public housing in this suburb. This will just exacerbate the problems with traffic and cars. Speeding and noisy car traffic has increased markedly along our street since the additional housing has been introduced without traffic calming devices being installed. The units will overshadow the surrounding buildings as well as increase traffic again. I suggest a reduced number of apartments and increase the car parking spaces.
63. Mrs Emma Okely	31 Calooli Grove GOLDEN BAY WA 6174 Emdo@hotmail.co.uk	It has already been proven with the failed and uncompleted IGA development, that the developers, land owners and businesses can not sustain a new development in the area. The unfinished IGA development should either be torn down or completed before a new development is considered. This should include population projections, revenue and a sustainability study.
64. Mrs Leanne Seuren	8 Callawa Street GOLDEN BAY WA 6174 Leeseuren@me.com	I would prefer that this did not go ahead.
65. Mrs Anna-Marie Jackson	9 Yaringa Street GOLDEN BAY WA 6174 Wajackson@tpg.com.au	We strongly oppose the proposed mixed us development for the following reasons: 1. Approval for the area is already set at three storeys. The change to a five storey building in addition to the below ground parking level is totally OUT OF CHARACTER with the existing residential area in Golden Bay. When people bought in this area, they could see from the approved planning that three storeys was the limit for future development here. It is unfair to existing residents to now change the plans to increased heights and densities that would negatively impact on their lives. 2. Five storeys would negatively affect the privacy concerns of surrounding residents. Visual privacy and sound concerns are included. 3. Increasing the plot ratio from 0.8 to 2.16 is a significant increase.

SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
No.65 – cont…		101 lots and the associated cars pose a new set of problems including access from the one entrance on Jundee Lane and Carlindie Parkway and the increased traffic danger for the surrounding residents and their young families. 4. There are not enough parking lots for all the 101 residential lots.Car parking for 144 vehicles is required by the City of Rockingham's Town Planning Scheme. A total of 102 on-site parking bays are provided resulting in a shortfall of 42 bays. The developer depends on bays from surrounding areas which includes a nonexistent abandoned shopping centre and bays from other residential areas. This is inadequate and puts more pressure on the already overcrowded residential areas who do not have enough bays for themselves, let alone any visitors. Try doorknocking and asking the existing local residents what is really going on in this newly developed area instead of just planning from your far away offices. There is no provision for visitor parking, other than use of commercial bays which will only be available after hours. Once again, this is inadequate and will create problems. The shopping centre has been in a state of abandoned partial build for several years now and cannot be relied on. 5.There is no guarantee that all owners will be in the over 55 year age group. Even all the concept photos provided by the developer show young people. That is a contradiction in concept communication. 6.Approval for this high rise, high density living may set a precedent for other lots owned by this developer and others. This is not good for an already overdeveloped Golden Bay, sadly lacking in natural open space which is important for mental health and well being. It is also OUT OF CHARACTER with the surrounding area negatively impacting the more than 1000 residents who already chose to live here. 7.Has any consideration been given to the effect of below ground carpark on the water table estimated at 0.3m - 3m? 8. This is not a retirement village so you cannot say residents will not need a car. Even over 55's need a car for work, medical services and shops especially in hot summers and cold, wet winters. The partially built shopping centre over the road has been abandoned for years and cannot be relied on. Medical services such as hospitals and specialists are not within easy reach with public tranport. Two buses or a bus and train are required to get to Rockingham Hospital, taking almost one hour in travel time.
66. Mr Robert J Zoszak	28 Carlindie Parkway GOLDEN BAY WA 6174 rob_zoszak@yahoo.com.au	I oppose this development on the grounds that it's too big for this suburb and that it is well outside the current maximum height for a Golden Bay building.
67. Ms Kim Sheehy	59 Crystaluna Drive GOLDEN BAY WA 6174	This is not in line with a costal community, not need not wanted.
68. Mr Allan Summers	23 Tallering Way GOLDEN BAY WA 6174 tailoredpages@gmail.com	What is the age requirement to be allowed to live in this complex? Will it be a mixed development. ie 20% public housing 80 % private sales.

SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
69. Ms Leah Zoszak	28 Carlindie Parkway GOLDEN BAY WA 6174 lz496@uowmail.edu.au	I am opposed to the mixed use Thundelarra Dr development on the ground that: 1. A five storey development is significantly out of step with the profile of Golden Bay and any surrounding coastal suburbs. Given the current 3 storey limit of dwellings, residents moving to the area could not have reasonably foreseen that a 5 storey development would be permitted on their quiet streets and thus they purchased their houses under this assumption. 2. Traffic congestion will increase significantly. Sitting close to the primary school, the pressure on local roads during peak periods is already unacceptable. Adding 101 units plus commercial is an unfair burden on the local community who moved to a quiet suburb with a local school. If we wanted congestion we would have moved to Perth. 3. Although the development is proposed as 'seniors' living there is no age requirement for purchase or rental of these properties. It is highly unlikely that seniors will want to live in a 5 storey development outside of a major city (or at all), leaving the development open as a low socioeconomic and youth rental option. On the youth aspect, the local community should not be expected to put up with the noise increase that will eventuate. On the low socioeconomic aspect (which sometimes coexists with youth), I see the need for affordable housing. However, a high density, low cost option like this is not good for the long term wellbeing of residents and the opportunities they will have. Low income individuals deserve to live as part of our community rather than sign posted in a large development. 4. Parking: The plans are deceptive in their estimations of parking requirements. Given this is not seniors living, there are likely to be many more cars looking for parking than estimated. Even if it was seniors living, the plans factor in all of the local community bays as a way of meeting the surplus in their parking requirements without any reference to the existing community who currently use those spaces! Spaces on surrounding streets are in demand at present. Adding 101 apartments will make for a very frustrating and unfair experience for locals. I am not opposed to development in general. We moved to this specific location because the shop was going in nearby. However, this development is not in line with the suburb profile and takes advantage of the local community.
70. Mr Mark Lee	12 Korong Road GOLDEN BAY WA 6174 mlee7@bigpond.net.au	proposed 5 storey building is outside guidelines and would be a blight on the surrounding suburb. Its a multi storey retirement village -how will occupants manage their movement/s. Plot ratio >2. is outside guidelines. How will traffic flow on Jundee Lane with additional 100 vehicles. How will commercial units be occupied when existing proposed "village' is not progressing very well. Why is a large development with big volumes of people/movement being built close to a primary school.
71. Mrs Cheryl Botha	21 Holloways Ridge SECRET HARBOUR WA 6173 cherylbotha1@gmail.com	The Rockingham Council needs to think carefully before aproving another high density development within the Golden Bay, Secret Harbour area. With the current economic downturn there is already the eyesore of the failed Shopping Centre development, in Golden Bay. Then there is the failure or failure to progress, of 2 similar high density developments, in the adjacent suburb of Secret Harbour.

SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
No.71 – cont…		The council has already ignored Secret Harbour Residents concerns over high density development in the Secret Harbour foreshore development over 4 years ago. The Council approved the initial design concept, as they felt the development took the whole zone onto account. This included approving the construction of buildings 2 stories higher than their town planning guidelines! However, the developer is now selling off sections of the area seperatly, as recent adverts on realty searches show. Two other additional high density developments approved by Council, one in the vicinity of the Secret Harbour shopping precinct and a second off Anstey road, have also failed to eventuate. There may be a need for mixed density accommodation in the area. But clearly these types of accommodation are not selling. Please do not approve another high density development that is going to impact negatively on the values of the surrounding Golden Bay residents property values. These residents cannot afford a negative equity environment in their properties . That will ruin financially struggling families!
72. Mr Paul Flannery	3 Strelley Road GOLDEN BAY WA 6174 pflannery@reliancepartners.com.au	I am against such a change to the existing zoning. Developer has no concern for the resulting issues left behind and effect on the suburb & council for the next 50 years. We live in Golden Bay to be away from the inner city type developments. Strong no from my family.
73. Mr Terence J Redmond	18 Mileura Street GOLDEN BAY WA 6174 mileura@gmail.com	Councilor Mark Jones attended the recent meeting of the Golden Bay Progress Association outlining the proposal. I seek clarification on a number of issues. 1. The units are intended for sale to those who are 55 years old and beyond being ambulant. We have a discrimination act. Has the City of Rockingham legal opinion that excluding those under the age of 55 is not an act of discrimination? Could approval of such a scheme be viewed as an act of discrimination.? If an ambulant owner became a dependent, would they continue occupancy or be sold on? 2. When HomesWest initiated the development it was based on 2050 population density projection for Perth. Parks and open spaces were negotiated. There was a corresponding decrease in block sizes as more parks and open space added. Information received from Peet has made us aware that the developers have acquired three sections in all. Any idea what is planned for all of them? 200 units, with say 400 people is well above the 2050 density requirements. 3. The developer has offered to meet with the Progress Association to discuss what they intend. Perhaps you might give consideration to have the City of Rockingham host a public meeting in the Golden Bay Community hall, giving an opportunity for questions and responses from all who will be effected by this proposal. Secret Harbour and Singleton will be impacted as well. I look forward to your response.

SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
74. Ms Kate Williams	9 Pricklybark Street HARRISDALE WA 6112 Katewilliams25@bigpond.com	A. Construction height is greater than the allowable three storey building height. B. My property boundary is Jundee Lane and I don't want additional traffic flow due to an increase in residential units/occupants. Parking impacts are also problematic. C. Very unclear on what "amenties" are 'open' to the public, I think very few.
75. Ms Valerie Thomas	11 Three Bears Loop SECRET HARBOUR WA 6173 vkaye_thomas@yahoo.com.au	I am against any development that doesn't comply with the current zoning of that land.
76. Mr David & Mrs Carlene Lee	42 Ellendale Street GOLDEN BAY WA 6174 dclee83@bigpond.com	I have issues with the development on the following matters. * 5 stories is out of character with the rest of the area and would not be asthetically pleasing. * the public needs more clarification on what is intended by "Individual living". The project has changed away from retirement living and sounds like any person could live there. * how has policing been addressed with an increase in the population in this area. * need more information on the impact to ground water. * where will people park to use the cafe or other businesses * need a guarantee these units will not be used by Department of Housing.
77. Mr Jaye Beeren	44 Aurea Boulevard GOLDEN BAY WA 6174 jayebeeren@hotmail.com	I moved to Golden Bay only 2 years ago and have built my house only choosing to build on this side of Warnbro Sound Avenue (coastal side) because it was proposed it to be less built up and not like a "City Beach" feel. I paid a large amount more just to be 200 metres closer to the beach and not in a house with a common wall. I have souly made decisions to avoid high traffic areas and large complexs or apartments. I would not have chosen my lot knowing it were to become more condensed that it already is. Please don't destroy Golden Bay. Please keep our relaxed community!
78. Ms Karli Shuard	15 Talisker Bend GOLDEN BAY WA 6174 karli.shuard@gmail.com	I am opposed to the suggested 5 storey seniors living apartments. Way to large and not fitting with local surrounds.
79. Mr Paul Wicks	23 Woodlands Road GOLDEN BAY WA 6174 vinovanessa@yahoo.com.au	I am opposed to this development as it's not in keeping with the current suburb profile.

SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
80. Mr Jovin Lim	14 Kalli Street GOLDEN BAY WA 6174	I support this development as more density is required to keep local businesses alive. Higher density will allow cafes/other activities to remain open even on weeknights. More foot traffic increases engagement with community as well as passive surveillance. It is in my opinion, that it is harder for antisocial behavior to occur on say a busy coffee strip, rather than a lone McDonalds that is surrounded by an empty car lot and closed shops on a weeknight. We need HIGHER DENSITY particularly at commercial hubs. Please do not give in to community pressure and lower the density, this will result in the middle of road developments where density isn't high enough to sustain businesses, causing all the residents to stay indoors, resulting in a self fulfilling prophecy of a having a concrete jungle where antisocial behavior can occur.
81. Mrs Vaness Wicks	23 Woodlands Road GOLDEN BAY WA 6174 vinovanessa@yahoo.com.au	I am opposed to the proposed development at Lot 636 Thundelarra Dve, Golden Bay for the following reasons: 1) The proposal says 'seniors living' but on discussing this with the council, there is no age limit rule about who can buy these so it's not really 'seniors living'. 2) I don't think 5 storeys is in keeping with our current coastal community 3) There are no buildings of this height in neighbouring suburbs 4) There is insufficient parking planned for visitors 5) The shopping centre site across the road is still unfinished, the suburb does not need another incomplete development 6) The high density living proposed is far too high for this suburban area and there is much evidence to support this type of dwelling encourages anti social behaviours 7) There are no developments with such high density living in neighbouring suburbs This development poses a great number of risks to the Golden Bay community and it is not supported by members of the community. It would be a great shame for council to permit this to proceed and an even greater shame if it is denied by council and proceeds to appeal and the local council decision is overturned.
82. Mr Ronald Farlow	16 Ellendale Street GOLDEN BAY WA 6174 Randrfarlow@gmail.com	I am against any development that doesn't comply with the current zoning of that block of land.
83. Ms Rebecca Farlow	16 Ellendale Street GOLDEN BAY WA 6174 Gotthatknot@gmail.com	I am against any development that doesn't comply with the current zoning of that block of land.
84. Mr Haydn John Mills	36 Calooli Grove GOLDEN BAY WA 6174 Haydn.mills25@gmail.com	Object

SCHEDULE OF SUBMISSIONS
Proposed Mixed Use Development - Lot 636 Thundelarra Drive, Golden Bay

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
85. Mrs Hermina Bourchier	7 Ellendale Street GOLDEN BAY WA 6174 johnandhermina@aapt.net.au	The height of 5 storeys does not meet with Development Plans for the Area of Golden Bay 5 storeys does not fit well with the surrounding housing area. Parking ratio is less than one space per unit and parking was inadequate for the commercial aspect. Overlooking and over shadowing. How is the over 55 restriction going to be Enforced.
LATE PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
86. Ms Giselle Darsot	18 Tanino Road CRANBOURNE WEST VIC 3977 Giselle_Mckenzie@hotmail.com	1). Lack of parking space will be a dilemma encountered by occupants + visitors of the proposed mixed use development. 2). This will affect the tranquil, peaceful lifestyle of Golden Bay. 3). This development will mimit the use of parks, beaches + other family venues in the area + there will be more activity (people walking around) in a quiet suburb. 4). There will be a huge impact in the reduction of outdoor spaces, amenities like parks + other outdoor family spaces within the proposed mixed use development.
87. Mr Luis Olivenas	30 Christmas Avenue ORELIA WA 6167 luis_molivenas@yahoo.ca	Support – a mixed development would bring more people to live in this new area.
88. Ms Sharon McNeill	13 Bandya Lane GOLDEN BAY WA 6174 Shrnmcneill63@gmail.com	Given the eye sore that sits in front of the proposed development, which I assume the developers have gone over, I welcome some improvement in the area. My concerns lay around the height of the development. I appreciate the developer wanting to maximise the square metre retain on the investment but I feel my privacy will be seriously compromised. A high rise delvelpment will only add to the traffic isues I have witnessed the last few years with the lane way access. The additional traffic, particuarly delivery tracks, will a concern for the safety of park users. I would consider a developemnt of two storeys, but certainly not five.