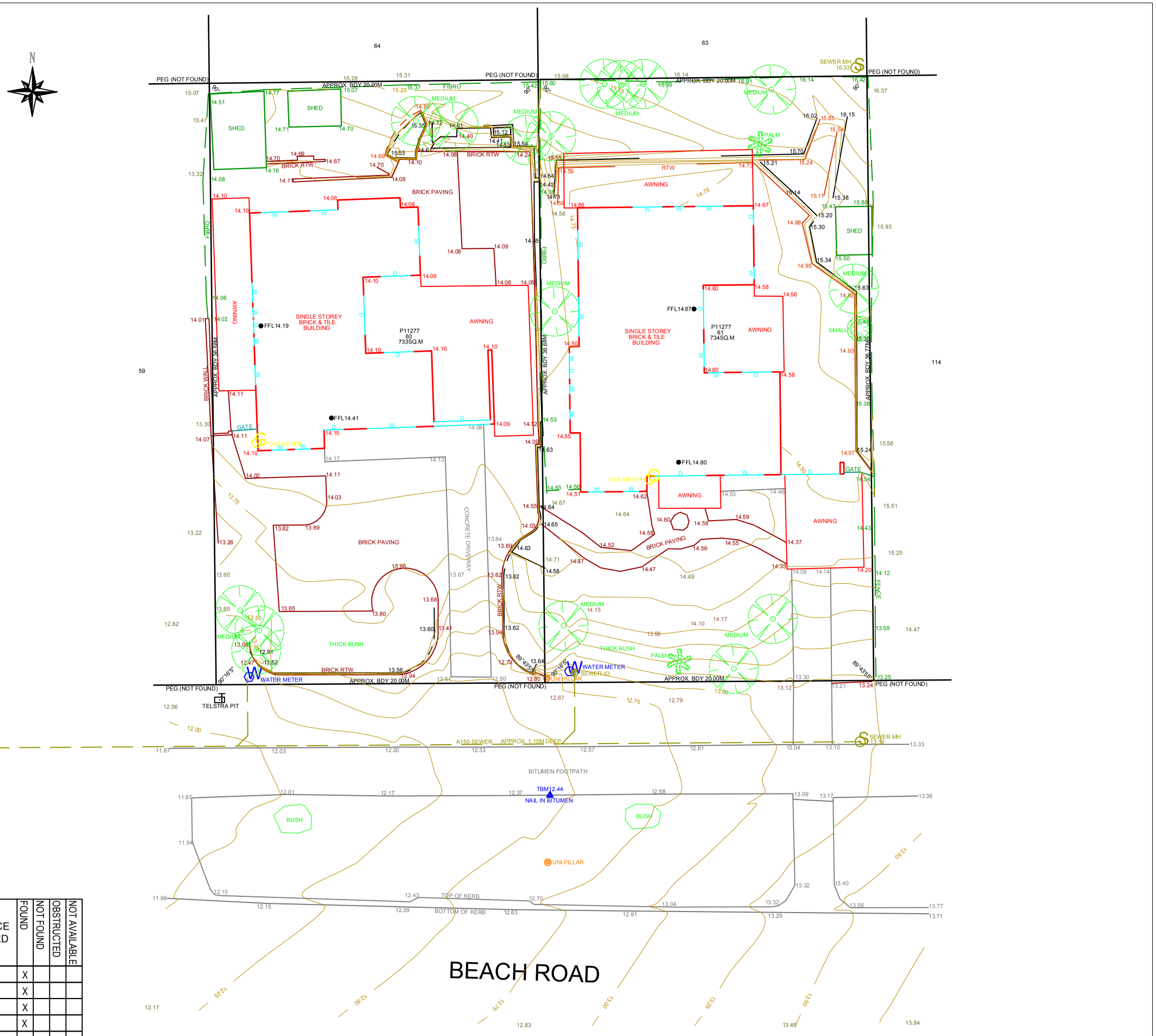
City of Joondalup	DISCLAIMER: While every care is taken to ensure the accuracy of this data, the City of Joondalup makes no representations or warranties about its accuracy, completeness or suitability for any particular purpose and disclaims all liability for all expenses, losses, damages and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.	549 Beach Road	9/08/2021 1:1129	N

ATTACHMENT 2



SERVICE RECORD	FOUND	NOT FOUND	OBSTRUCTED	NOT AVAILABLE
WATER	X			
SEWER	X			
GAS	X			
COMMS	X			
POWER U/G	X			
O/H				X

CALL "DIAL BEFORE YOU DIG" FOR CONFIRMATION

WARNING!
BOUNDARY RE-ESTABLISHMENT SURVEY REQUIRED TO CONFIRM LOT BOUNDARIES AND DIMENSIONS

NOTE:
SMALL TREE: TRUNK <200MM DIAMETER
MEDIUM TREE: TRUNK 200MM-500MM DIAMETER
LARGE TREE: TRUNK >500MM DIAMETER

0 5 10 METERS
SCALE 1: 250 @ A3

Geomatics Australia
ABN 20 808 737 401
matt@geomaticsaustralia.com.au
www.geomaticsaustralia.com.au
PH 0428 896 600

DISCLAIMER

The content of this plan is current and correct as of the date stated within the revision panel.
The boundaries shown on the plan were not re-established as part of the survey, therefore the plan does not guarantee their accuracy.
Existing easements, encumbrances or interests are not depicted and a title search is recommended to obtain the information.
Re-establishment of the cadastral boundaries is recommended for proposed works on or near the boundary.
Service information to be confirmed with the relevant authorities.
For underground services ring "Dial Before you Dig" for confirmation.

REV	COMMENT	DATE	CHK
0	ISSUE FOR USE	22/07/19	SL

PROJECT

547 & 549 BEACH ROAD, DUNCRAIG FEATURE SURVEY

CLIENT

Fulfil The Dream
Perth's Property Development and Lifestyle Specialists

SURVEYED	DRAFTED
MJK 16/07/19	MJK 22/07/19

DATUM	GRID	LOT NO.
AHD (SMH)	LOCAL	60 & 61

PLAN/DIAGRAM	CERT. OF TITLE
P11277	1413-915 & 1413-916

FILE REFERENCE
PRECAL
DBYD

FILE NAME
541-FTD-C01-133-001_0.dwg

1:1

Survey

1 of 11

PROJECT ADDRESS: LOT 61,#549 BEACH ROAD DUNCRAIG, WA, 6023

CLIENT: Kish & Budara

DRAWN: DT

Rev.	Date	Notes
1	06.07.20	Concept Design
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Sun Study - 9am

Sun Study - 10am

Sun Study - 11am

Sun Study - 12pm

Sun Study - 1pm

Sun Study - 2pm

Sun Study - 3pm

Sun Study - 4pm

Cross Ventilation
1:300

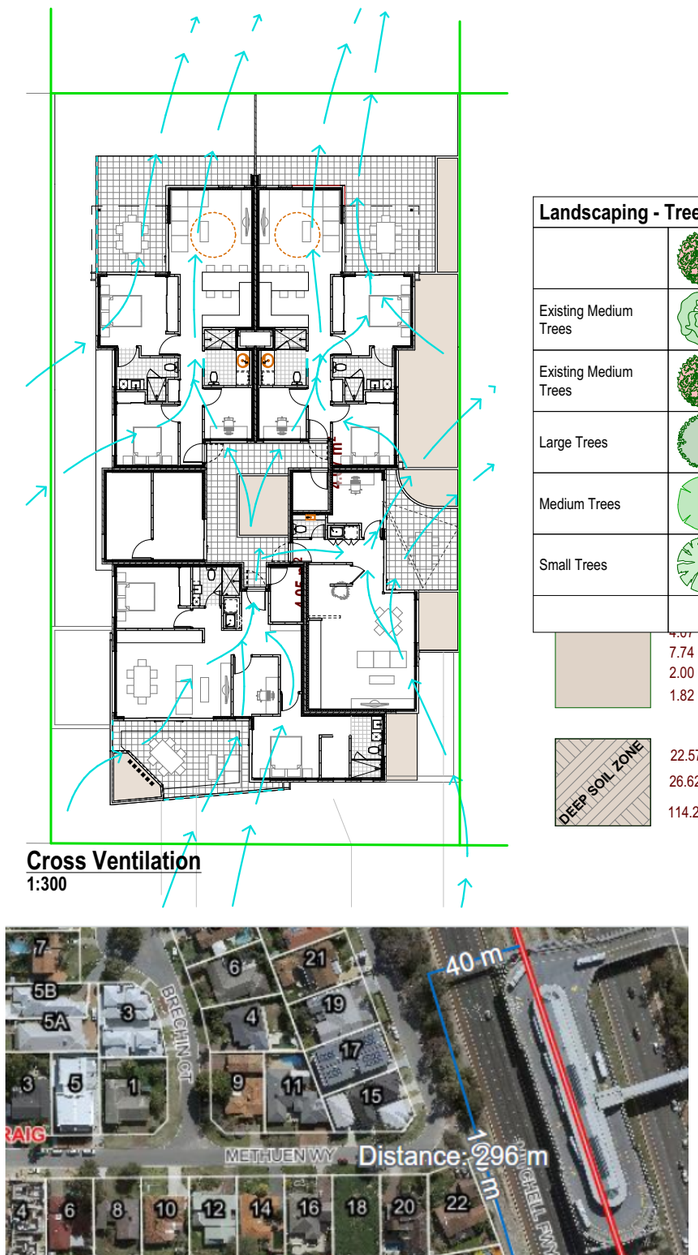
Landscaping - Trees			
			2
Existing Medium Trees		Pencil Pines	4
Existing Medium Trees		Red Bottlebrush	2
Large Trees		Jacaranda or Birch	3
Medium Trees		Hibiscus/Acacia/Red Bottlebrush	7
Small Trees		Grevillea/Willow Myrtle/Hibiscus/Golden Cane	13
			31

7.74 m²
2.00 m²
1.82 m²

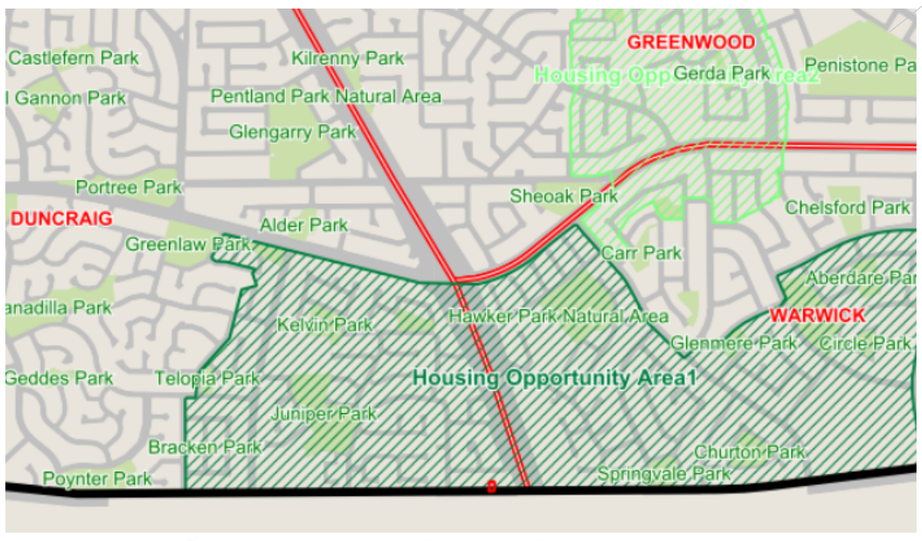
TOTAL:
15.63m2

DEEP SOIL ZONE
22.57 m²
26.62 m²
114.22 m²

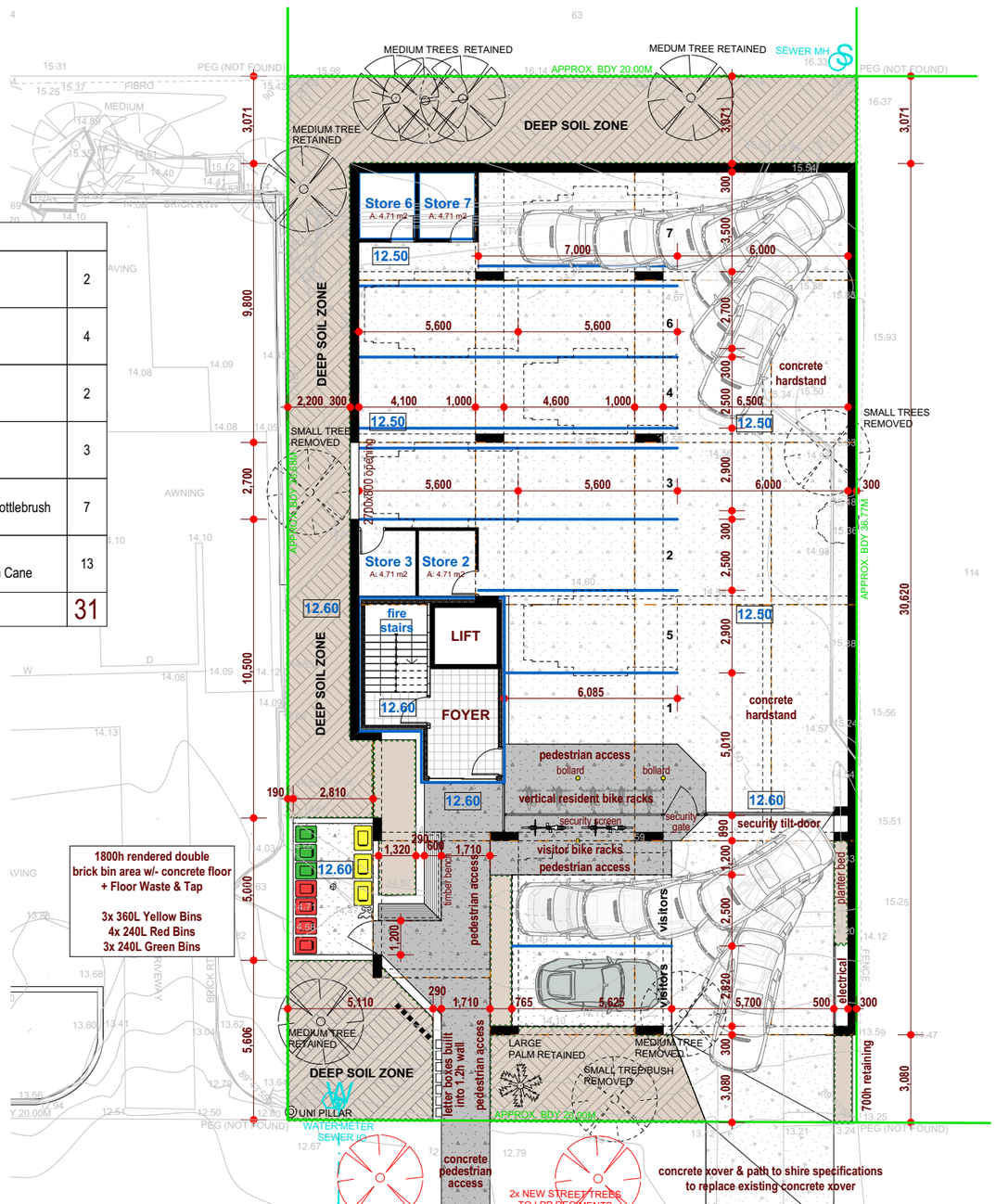
TOTAL:
163.41m2



Distance to Train Station



Housing Opportunity Area Map



Site Area = 734m2
Plot Ratio = 84%

AREAS - Ground Floor		
Apt #		Area (m2)
2	Store 2	4.71
3	Store 3	4.71
6	Store 6	4.71
7	Store 7	4.71
Common	Basement Carpark	366.35
Common	Visitors Carpark & Entry	96.03
Common	Foyer	29.26
		510.48 m²

AREA - PLOT RATIO

Apt #	Apartment Type	Area (m2)
1	2x2 w/- Study	87.42
2	2x2 w/- Study - Ground	57.26
2	2x2 w/- Study - Upper	43.61
3	2x2 w/- Study	85.18
4	2x2 w/- Study	83.77
5	2x2 w/- Study	87.42
6	2x2 w/- Study	85.18
7	2x2 w/- Study	83.80
		613.64 m²

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Site plan 1:200

MULTI-RES APARTMENTS

2 of 11

CLIENT:
Kish & Budara

PROJECT ADDRESS:
LOT 61,#549 BEACH ROAD
DUNCRAIG, WA, 6023

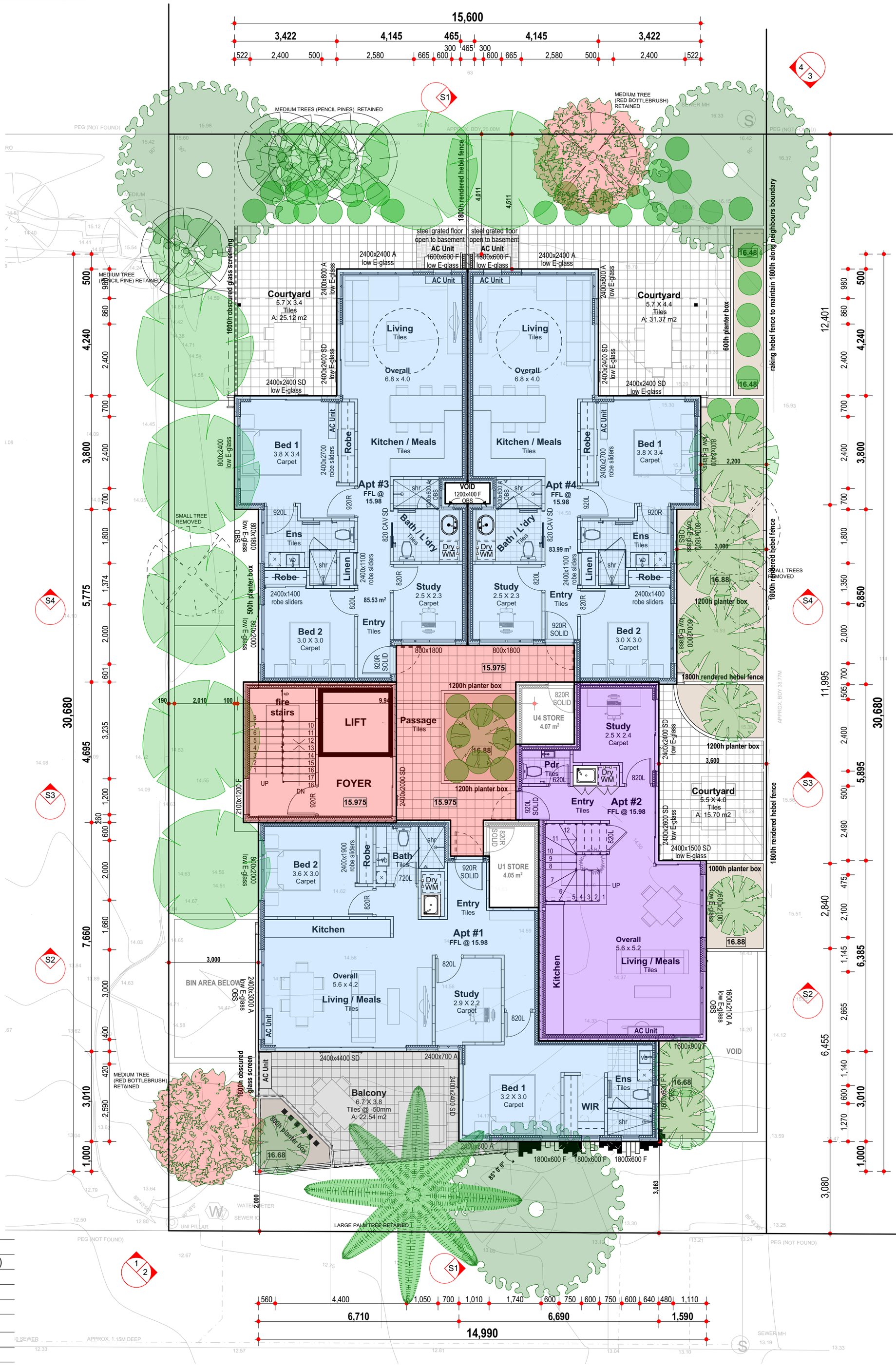
DRAWN:
DT

Landscaping - Trees			
Existing Medium Trees		Pencil Pines	4
Existing Medium Trees		Red Bottlebrush	2
Large Trees		Jacaranda or Birch	3
Medium Trees		Hibiscus/Acacia/Red Bottlebrush	7
Small Trees		Grevillea/Willow Myrtle/Hibiscus/Golden Cane	13
			29

Landscaping - Soil Area

6.97 m²
5.58 m²
29.27 m²
5.42 m²
4.95 m²
3.89 m²

TOTAL: 56.08m2



AREAS - First Floor		
Apt #		Area (m2)
1	2x2 w/- Study	87.42
1	Balcony	26.87
1	Store 1	5.07
		119.36 m²
2	2x2 w/- Study - Ground	57.26
2	Courtyard	21.22
		78.48 m²
3	2x2 w/- Study	85.18
3	Courtyard	49.68
		134.86 m²
4	2x2 w/- Study	83.77
4	Courtyard	68.94
4	Store 4	4.07
		156.78 m²
Common	Egress	27.09
Common	Foyer	24.01
		51.10 m²
		540.58 m²

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First Floor Plan

1:100

MULTI-RES APARTMENTS

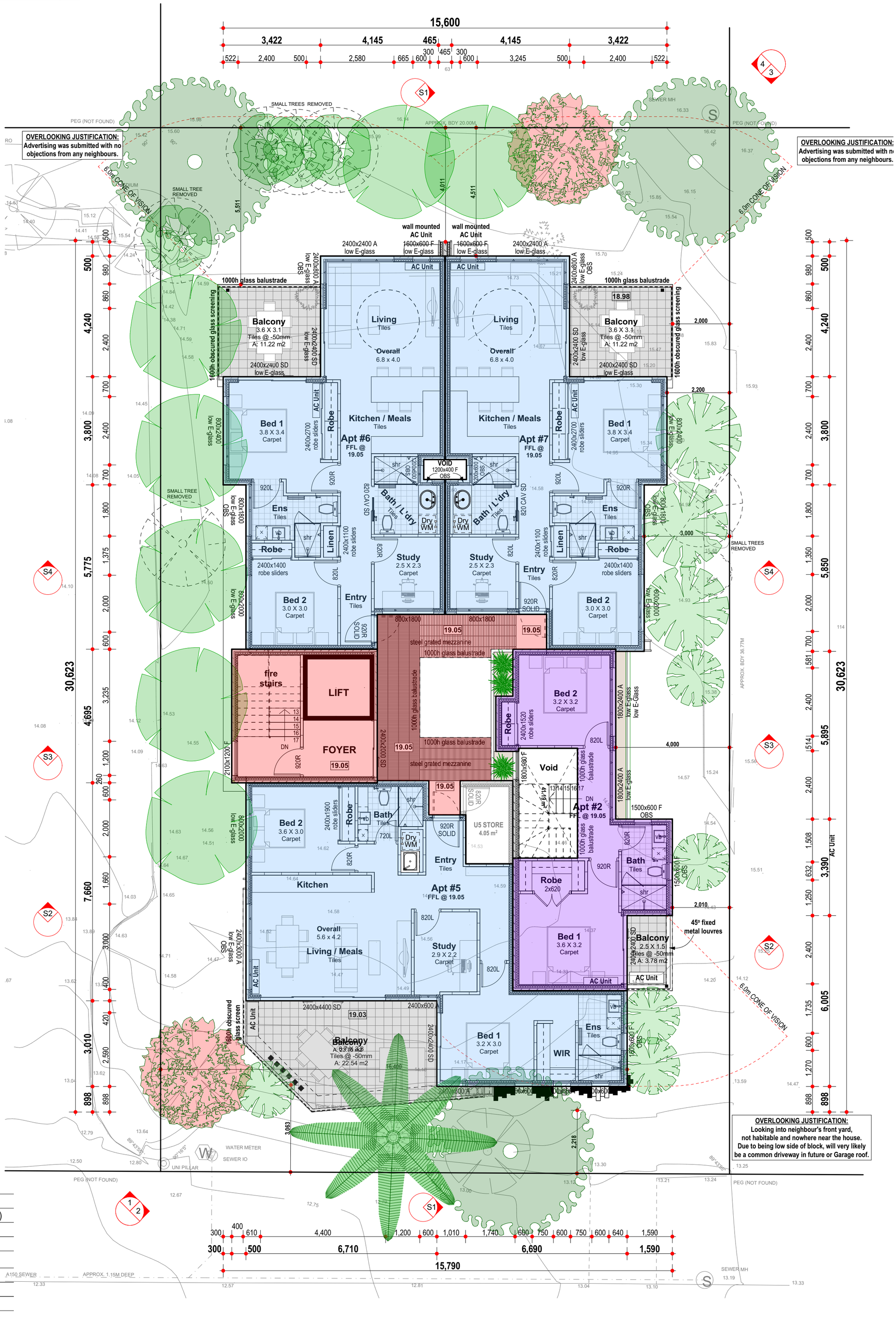
3 of 11

CLIENT: Kish & Budara

PROJECT ADDRESS: LOT 61,#549 BEACH ROAD DUNCRAIG, WA, 6023

DRAWN: DT

Landscaping - Trees			
Existing Medium Trees		Pencil Pines	4
Existing Medium Trees		Red Bottlebrush	2
Large Trees		Jacaranda or Birch	3
Medium Trees		Hibiscus/Acacia/Red Bottlebrush	7
Small Trees		Grevillea/Willow Myrtle/Hibiscus/Golden Cane	13
			29



AREAS - 2nd Floor		
Apt #		Area (m2)
2	2x2 w/- Study - Upper	43.61
2	Balcony	4.20
		47.81 m²
5	2x2 w/- Study	87.42
5	Balcony	23.70
5	Store 5	5.07
		116.19 m²
6	2x2 w/- Study	85.18
6	Balcony	11.74
		96.92 m²
7	2x2 w/- Study	83.80
7	Balcony	11.74
		95.54 m²
Common	Foyer	24.02
Common	Egress	20.08
		44.10 m²
		400.56 m²

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Second Floor Plan

1:100

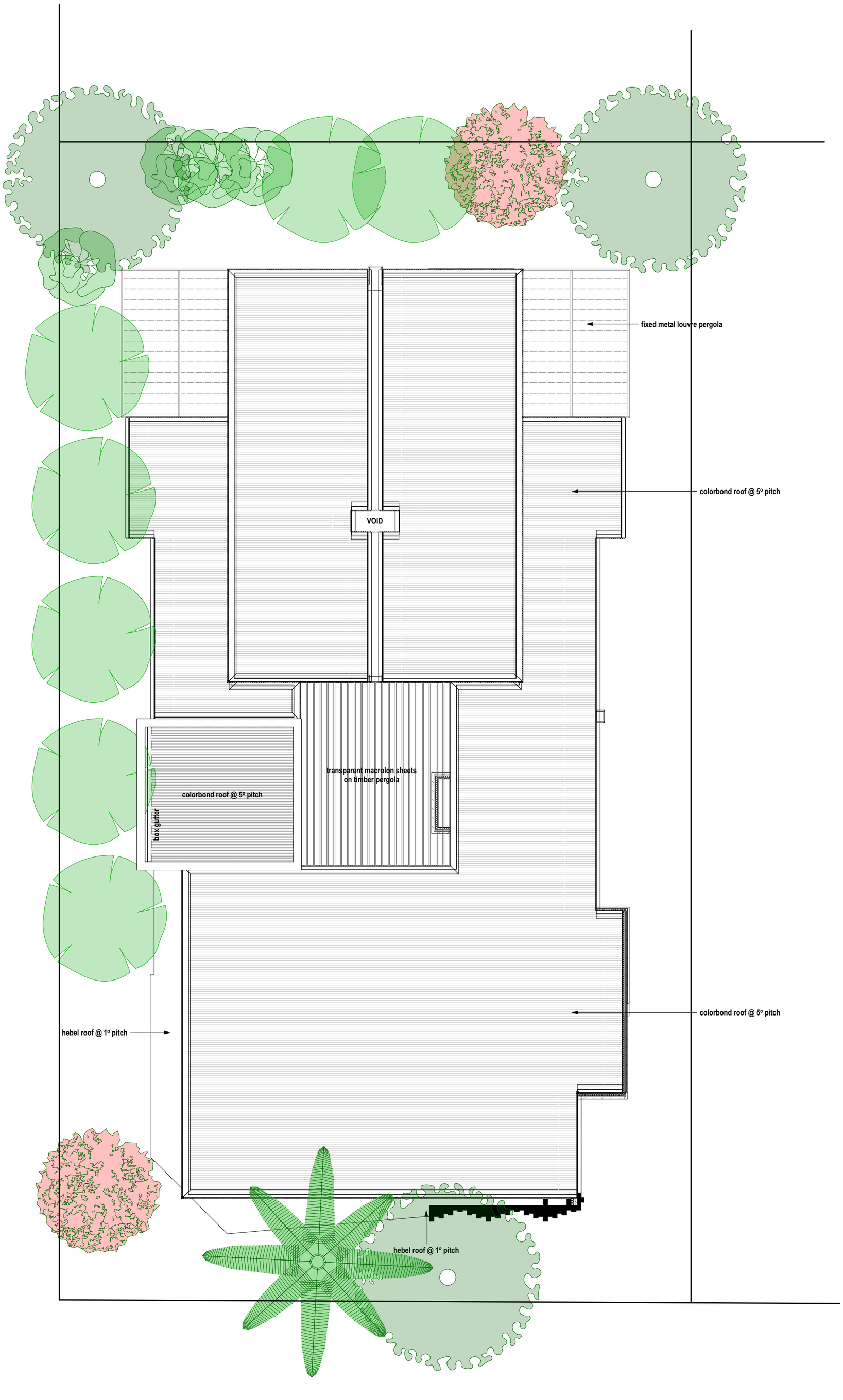
MULTI-RES APARTMENTS

4 of 11

CLIENT:
Kish & Budara

PROJECT ADDRESS:
LOT 61,#549 BEACH ROAD
DUNCRAIG, WA, 6023

DRAWN:
DT



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Roof Plan

1:100

MULTI-RES APARTMENTS

CLIENT:
Kish & Budara

PROJECT ADDRESS:
LOT 61,#549 BEACH ROAD
DUNCRAIG, WA, 6023

DRAWN:
DT

ELEVATION 1
1:100

ELEVATION 2
1:100

ELEVATION 3
1:100

ELEVATION 4
1:100

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Elevations 1:100

MULTI-RES APARTMENTS

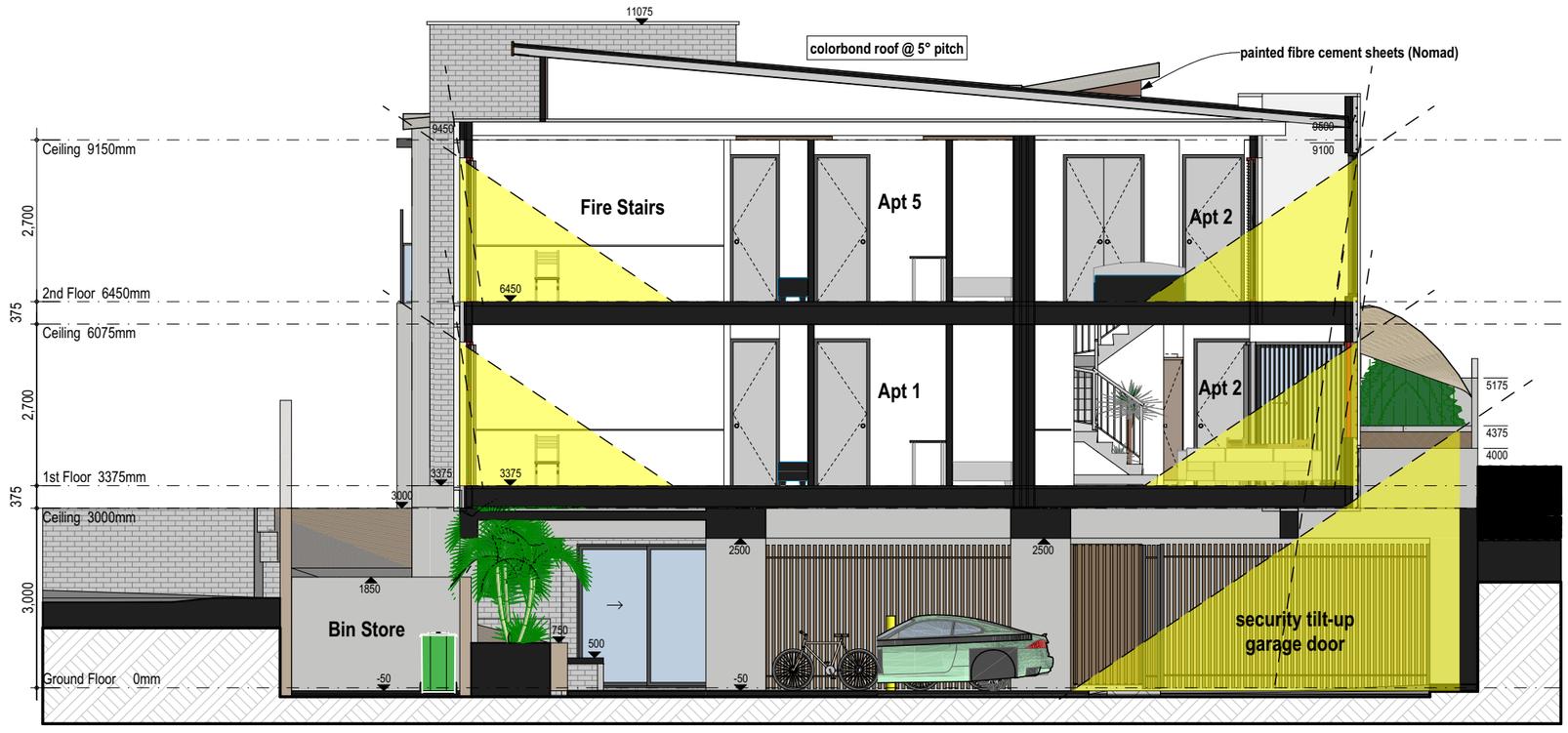
6 of 11

CLIENT: Kish & Budara

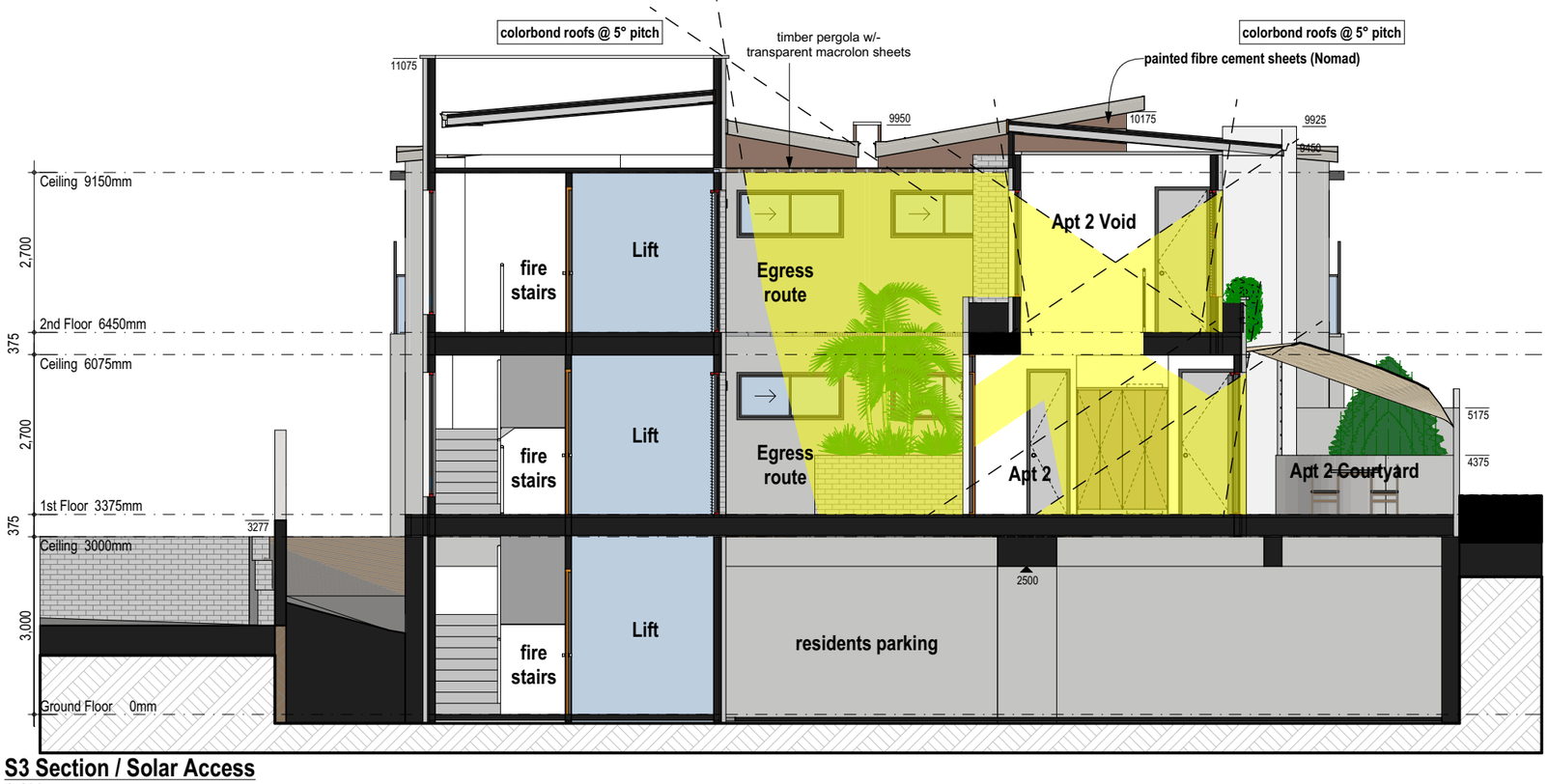
PROJECT ADDRESS: LOT 61,#549 BEACH ROAD DUNCRAIG, WA, 6023

DRAWN: DT

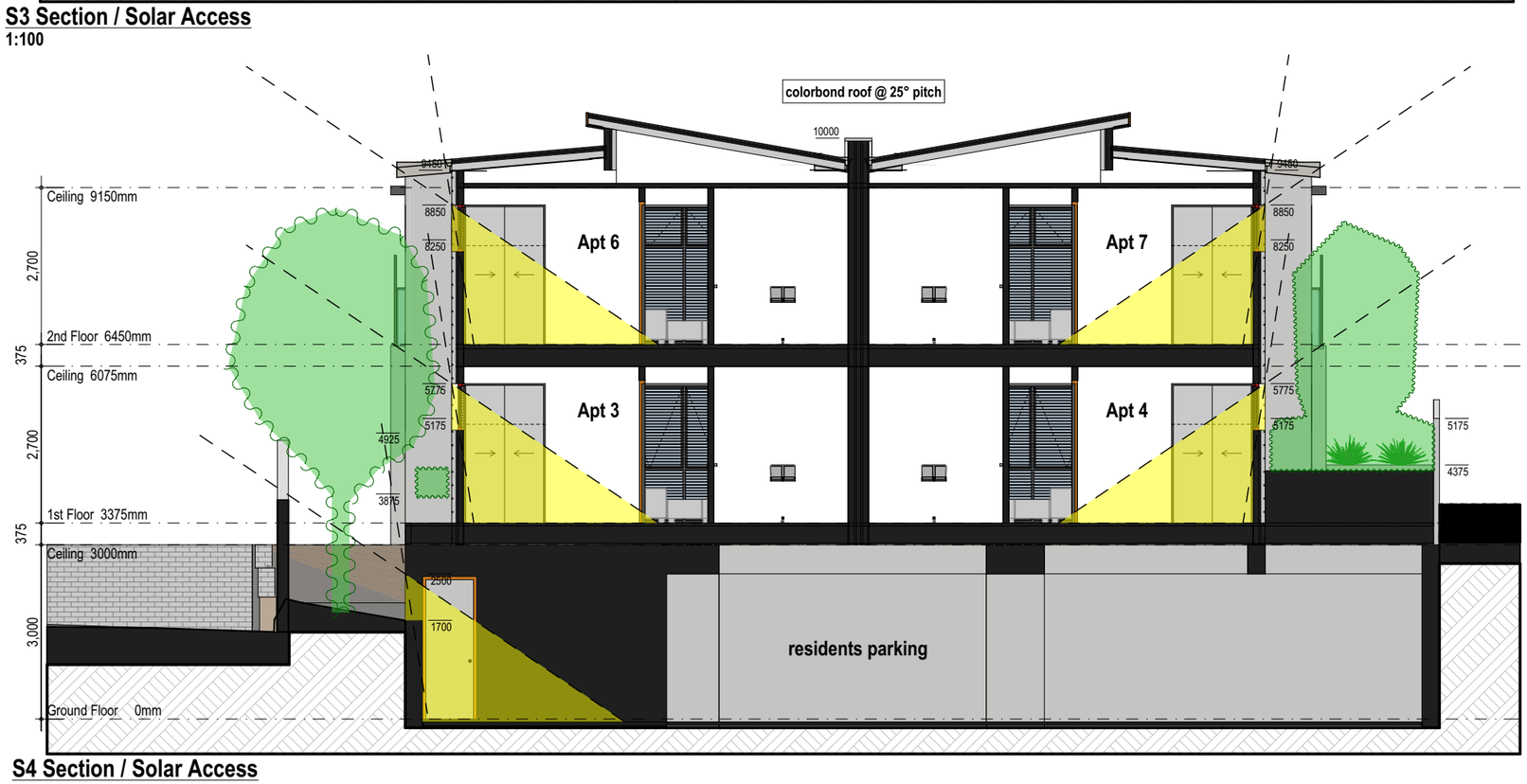
S1 Section / Solar Access
1:100



S2 Section / Solar Access
1:100



S3 Section / Solar Access
1:100



S4 Section / Solar Access
1:100

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Sections / Solar Access 1:100

MULTI-RES APARTMENTS

7 of 11

CLIENT: Kish & Budara

PROJECT ADDRESS: LOT 61,#549 BEACH ROAD DUNCRAIG, WA, 6023

DRAWN: DT

Perspective - Front
1:0.96

Perpective - Rear
1:1.31

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9	02/04/23	DA Amend - More Info on Plans

Perspectives 1 1:100, 1:1

MULTI-RES APARTMENTS

8 of 11

CLIENT:
Kish & Budara

PROJECT ADDRESS:
LOT 61,#549 BEACH ROAD
DUNCRAIG, WA, 6023

DRAWN:
DT

Perpective - West Elevation
1:1.17

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Perspectives 2 1:100, 1:1

MULTI-RES APARTMENTS

CLIENT:
Kish & Budara

PROJECT ADDRESS:
LOT 61,#549 BEACH ROAD
DUNCRAIG, WA, 6023

DRAWN:
DT

Perspective - Entry
1:1.22

Perspective - Mezz Apt
1:1.54

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Perspectives 3 1:100, 1:1

MULTI-RES APARTMENTS

CLIENT:
Kish & Budara

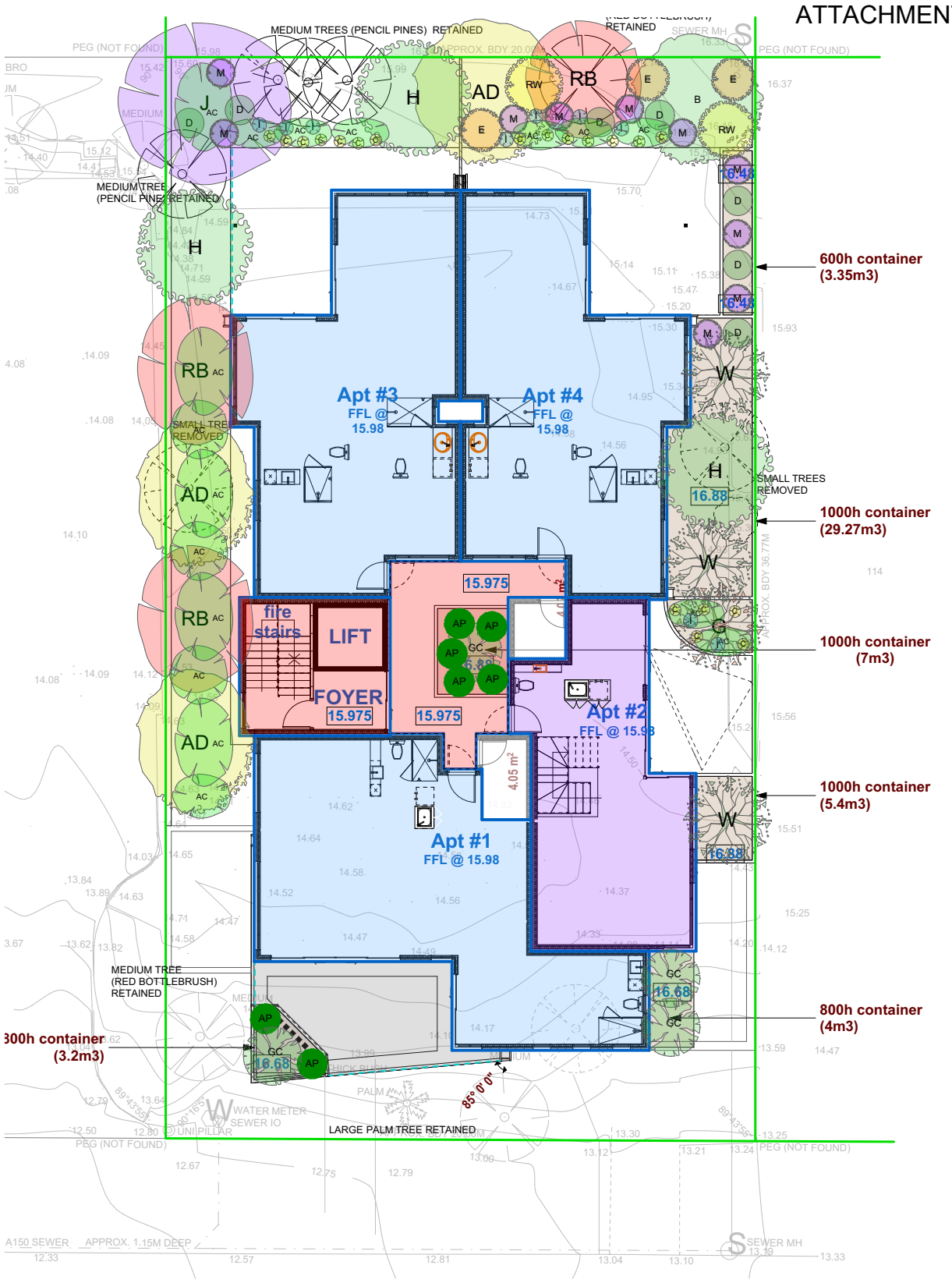
PROJECT ADDRESS:
LOT 61,#549 BEACH ROAD
DUNCRAIG, WA, 6023

DRAWN:
DT

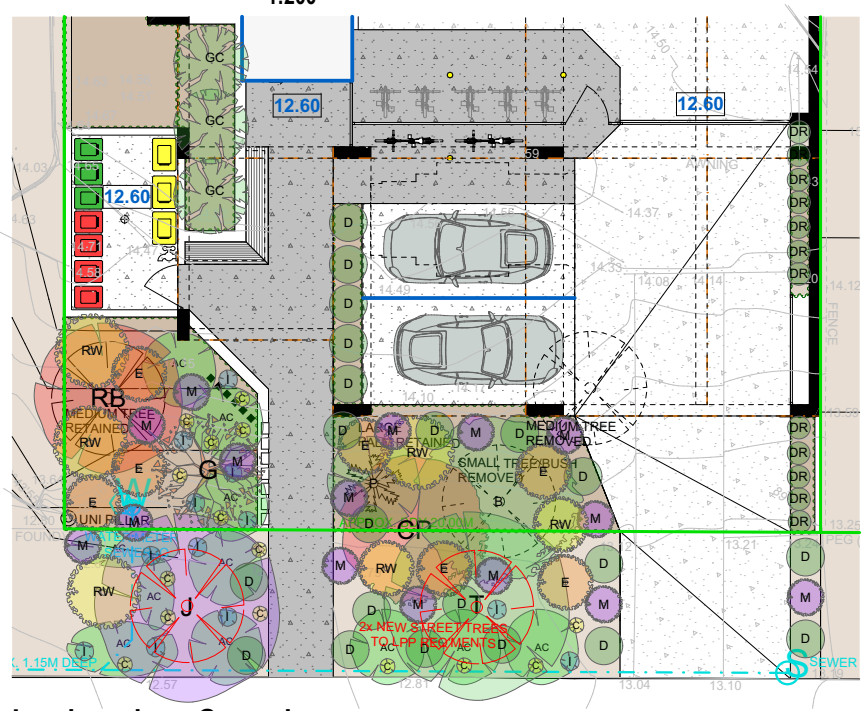
ATTACHMENT 4

Landscaping New - 2nd Floor				
AC	Australian Crawl	scaevola aemula	ground cover	4
AP	Areca Palm	Dypsis lutescens	1m wide, 2m tall	6

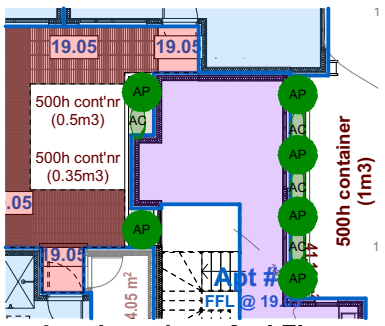
Landscaping Retained - 1st Floor				
RB	Red Bottlebrush	Callistemon citrinus	5m high, 5m wide Tree (SMALL)	1
Landscaping New - 1st Floor				
G	Grevillea	Grevillea Banksii	2-3m high x 2-3m wide (SMALL)	1
B	Birch	Betula	10-15m Tree x 4m wide	1
J	Jacaranda	mimosifolia	8m high x 6-8m wide (MEDIUM)	1
RB	Red Bottlebrush	Callistemon viminalis	8m high, 6m wide Tree (MEDIUM)	2
RW	Prickly Moses	Acacia cochlearis	2m high shrub	2
H	Hibiscus	Hibiscus tiliaceus	8m high shrub/tree x 3-5m wide	3
E	Red Cabbage Tree	Eremaea pauciflora	up to 2m shrub	3
AD	Mimosa	Acacia dealbata	5-8m high tree (SMALL TO MEDIUM)	3
W	Willow Myrtle	Agonis flexuosa	4-5m high x 3-4m wide (SMALL)	3
GC	Golden Cane	Golden Cane Palm	3-5m high x 2-3m wide	4
D	Dianella	Dianella tasmanica	1m succulent	7
AP	Areca Palm	Dypsis lutescens	1m wide, 2m tall	7
I	Morning Iris	Orthrosanthus laxus	500mm shrub	9
M	Melaleuca	Melaleuca trichophylla	up to 1m shrub	10
AC	Australian Crawl	Grevillea Hybrid	Groundcover Perennial	17
C	Grey Cottonheads	Conostylis candicans	400mm perenial	19



Landscaping - 1st Floor
1:200



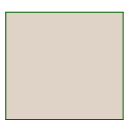
Landscaping - Ground
1:200



Landscaping - 2nd Floor
1:200

Landscaping Retained - Ground				
P	Palm Tree	Palm Tree	10m high x 5m wide (MEDIUM)	1
RB	Red Bottlebrush	Callistemon viminalis	8m high, 6m wide Tree (MEDIUM)	1
Landscaping New - Ground				
CP	Cherry Plum	Prunus cerasifera 'Pissardi'	5-7m high, 3-6m wide tree (SMALL)	1
G	Grevillea	Grevillea Banksii	2-3m high x 2-3m wide (SMALL)	1
B	Birch	Betula	10-15m Tree x 4m wide	1
J	Jacaranda	mimosifolia	8m high x 6-8m wide 9m (MEDIUM)	1
T	Tuckeroo	Cupaniopsis anacardioides	8m high x 4-6m wide (MEDIUM)	1
GC	Golden Cane	Golden Cane Palm	3-5m high x 2-3m wide	3
RW	Prickly Moses	Acacia cochlearis	2m high shrub	6
E	Eremaea	Eremaea pauciflora	up to 2m shrub	7
AC	Australian Crawl	Grevillea Hybrid	Groundcover Perennial	11
I	Morning Iris	Orthrosanthus laxus	500mm shrub	12
DR	Flax Lily	Dianella Revoluta / Perenial Herb	1m high x 0.5m wide	12
C	Grey Cottonheads	Conostylis candicans	400mm perenial	15
M	Melaleuca	Melaleuca trichophylla	up to 1m shrub	15
D	Dianella	Dianella tasmanica	1m succulent	21

Landscaping GF - Soil Area



4.07 m²
7.74 m²
2.00 m²
1.82 m²

TOTAL: 15.63m2

22.57 m²
26.62 m²
114.22 m²

TOTAL: 163.41m2

Landscaping 1st - Soil Area

6.97 m²
5.58 m²
29.27 m²
5.42 m²
4.95 m²
3.89 m²

TOTAL: 56.08m2

LANDSCAPING CALCULATIONS:

LANDSCAPING GROUND FLOOR:
163.41m2 deep soil zone
15.63m2 in planters/containers

LANDSCAPING 1st FLOOR:
56.08m2 in containers

LANDSCAPING 2nd FLOOR:
1.85m2 in containers

LANDSCAPING OVERALL:
163.41m2 deep soil zone (22.2% of site)
73.56m2 in containers (10% of site)

TOTAL: 236.97m2 (32.2% of site)

SITE AREA - 735M2

PROJECT:	MULTI-RES APARTMENTS
CLIENT:	RICKY HIRSH
ADDRESS:	LOT 61, #549 BEACH ROAD DUNCRAIG, WA, 6023

DA 4	
10/04/2023	
DT	1:200
11 of 11	

39 Furniss Road,
Darch, WA, 6065
21/11/2021

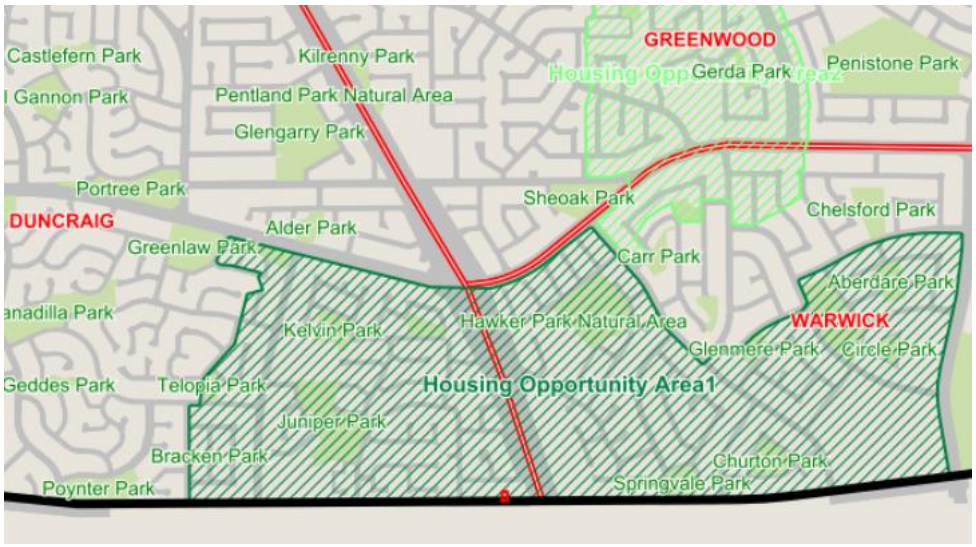
Proposed Multi-Residential – 7x Apartments
#549 Beach Road, Duncraig

Site Analysis:

#549 Beach Rd is situated in a perfect location neighbouring Warwick Train Station and a Daycare Centre, across the road from Carine open space and Caltex Petrol Station, then 850m and 1.5km to Carine Glades and Warwick Grove Shopping Centres respectively. In recognition of the close proximity to all of these services, the WAPC has deemed this location to be a "Housing Opportunity Area" where they intend to further populate, giving potential for more residents to have the benefits of being able to walk and catch public transport in their day to day routines and rid the need to drive everywhere as Perth is so infamously renowned for.

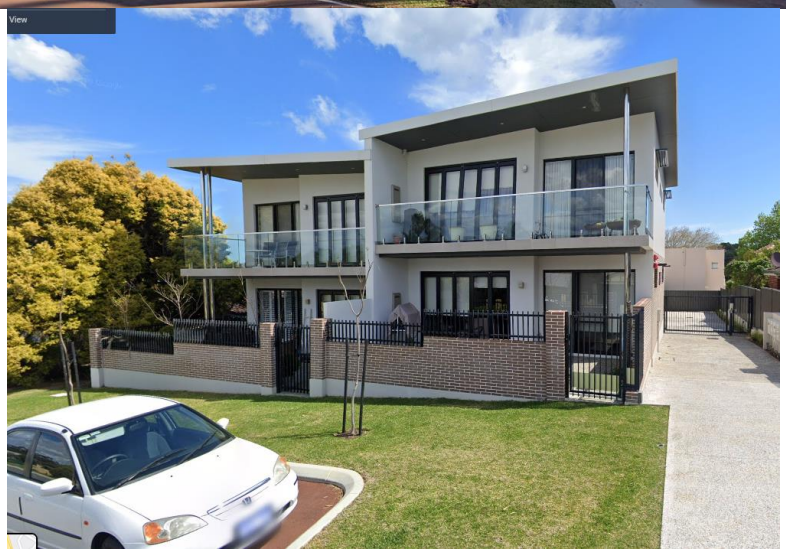
The block is Southern Orientated, meaning the majority of apartments would preferably face towards to rear of the property, however the best views will be gained from the front of the block overlooking Carine Open Space. Special consideration will need to be taken in the orientation of this design as the R-Codes don't favour views over northern aspects, while neighbouring properties aren't yet developed and will require further setbacks, which could further "box in" the layout.

The topography of the property slopes 3m upwards from front to back, along with roughly a 1.5m/2m slope down from right to left. This relatively large slope could actually be advantageous while designing, as 3m is generally a floor to floor dimension.



The Suburb and Demographic - Duncraig is an increasingly wealthy suburb and considered one of the best in the north for families and retirees. It was rated top 10 of Perth's safest suburbs, with the quality of the schools and shops in the area, and the easily accessible public transport. Houses in the area vary from 50 year old brick homes on large blocks of land, 20/30 year old multi-million dollar mansions, and now the increasing demand of modern townhouses and apartments due to the re-zoning and recent HOA.

The Dwellings - #549 Beach Road currently resides as a 60's/70's single storey brick house on a 734m2 lot. There has been little to no work done on it, and it's really an expensive renovation job or a demo-rebuild. It is situated in between 2 houses quite similar in age, but red brick, which in turn will very likely be developed by the next person who buys them.
Two doors up, there's a block of 4x townhouses, (First Picture to follow) and 5-6 houses down the other way there's a block of apartments and another group of townhouses next door to each other. (Photos attached) From there on, towards Carine Glades Shops, there's not another single storey in sight, where the suburb introduces 80's/90's era mansions which showcase the growth and importance of the suburb to the residents who have set themselves up to live for the long haul. Duncraig will not lose this identity with the introduction of the HOA, as the HOA will provide opportunity for the retirees to downsize and remain in the same area, while young families will yet again have the possibility to buy something affordable in a sought after suburb.



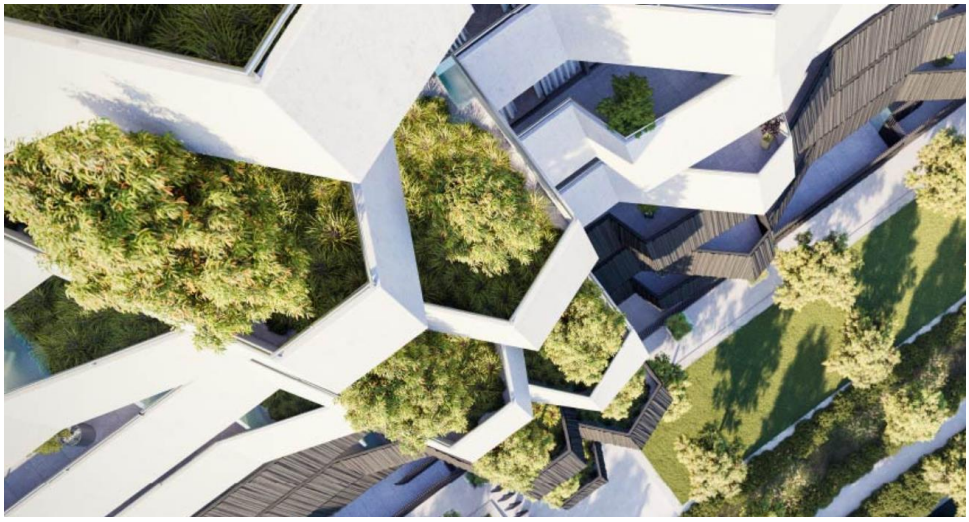
THE VISION:

Fulfil the Dream (FTD) Developments were approached by the owners of the property to help them bring their property up-to-date with the current market. With the HOA now in effect, it was recommended to the clients to build a multi-residential building with apartments that would cater for young families, retirees looking to downsize, and/or young professional couples who need easy access to public transport and bike paths.

The design was aimed to retain as much of the existing character of the neighbourhood as possible, predominantly through thoughtful selection of landscaping and materials. Having wider setbacks and extensive landscaping wrapping around the entire property would help integrate the building seamlessly into a predominantly R20 area. The landscaping would need to be low maintenance natives which don't sacrifice the canopy cover that Duncraig is well known for. We want this development to compliment the luxurious and leafy side of the neighbourhood, to add character and not look like another typical off-the-plan large development which existing residents believe to be the beginning of the end for their tranquil suburb. This design needs to add to the serenity of the suburb.

Due to the topography of the site and the increasing push for wheelchair access, we will start by levelling the site down to street level which will form a basement carpark while lifting the occupancy units up above the trees to gain views of the large reserve across the road, or north facing units can make re-use of the backyard levels that are already there. Maintaining these front and rear site levels will naturally help the new development blend into the streetscape and surroundings, minimising disturbance to the neighbours properties, security and privacy.

Inspired design - Some inspiration was drawn from different projects such as Eden in Subiaco, The Point in Doncaster (Melbourne) along with various other buildings and landscape design seen throughout my travels. The aim was to give the occupants a very connected indoor to outdoor lifestyle with an un-obstructed leafy outlook from all living areas. We wanted this development to feel more like luxury villas/townhouses than apartments.



L.P.P - Development in Housing Opportunity Areas:

1. Urban Design – Public Domain Interface	• Well landscaped frontage with wide pedestrian and vehicular access provides natural security and screening of any services and parking while also contributing to the streetscape with a blending in effect. • Surveillance is achieved via Balconies and Bedrooms to the 2x Street Facing apartments, while seating is also available at ground level outside the entry in a covered and protected access area. • No blank walls required as the design invites occupants to view the public domain from the safety of their balconies and bedrooms without sacrificing their own privacy.	
2. Urban Design - Multiple Dwellings – Application of Average Site Area	• Site is minimum 20m wide • Site is located within 800m of Train Station therefore the Volume 1 Density code is not applied.	
3. Building Height	• The Building is under the 9m required height for a 2 Storey Residence. The Basement Carpark is 66% underground and therefore disregarded from the count in floor levels. • The length of the verge, deliberately larger setbacks with extra landscaping massively reduces any potential to dominating impact on the streetscape.	
4. Street Setbacks	• The very front point of the balconies along the front elevation start behind the 2m front setback line and the front wall starts at 3m, meaning the entire building has been pushed back 1m further than the requirement. Landscaping in this front setback area gives the verge more depth, along with a wide and inviting pedestrian accessway which isn't gated off greatly adds warmth and amenity to the residents and visitors.	
5. Side and Rear Setbacks	• Basement carpark walls along with planter boxes to the 1st floor have been designed predominantly to match the existing fence heights, no boundary wall exceeds 9m in length and/or 3.5m in height. • Apartments have been setback further than required where possible to allow for larger, better landscaped outdoor living areas and reduce visual impact on neighbours. It was as important, if not more important, for this design to allow its own occupants a comfortable and unobstructed view of their own outdoor living areas and over the public domain where	

	possible, so reduced setbacks with highlight windows were only acceptable if from minor bedrooms and studies.	
6. Resident Parking	• Located at street level behind visually permeable timber-look slats, non-dominant in appearance as very generously setback over 10m from the street, while the deep verge and landscaped front setback area only allows direct view to the slatted security tilt-up door. Resident Parking is only 22.5% visible from the street due to the front elevation being predominantly landscaped. • Manoeuvring space meets the 6m requirement, plus the bays are all 200mm over the required 5.4m depth meaning the manoeuvring area is really increased to 6.4m for each resident parking. Parking bays which were considered to be potentially more problematic were rectified through widening or extended lengths.	
7. Solar Access for Adjoining Sites	• Due to North being orientated at the rear of the block, there is little to no effect on the neighbouring blocks in regards to overshadowing their windows or outdoor living areas. #547 will have a shadow cast over their Garage for 1hr in the morning, while #551 will have a shadow cast over their Garage for a maximum 2hrs in the afternoon (all on June 21st) • At midday June 21st, there is zero shadow cast to either neighbour.	
8. Access and Parking – Resident Parking	• Resident Parking bays exceed the requirement outlined in the R-Codes, with 3 of 7 apartments having an extra bay.	
9. Access and Parking – Crossovers	• At the request of the City, we will replace and widen the existing crossover to the City's specifications.	
10. Tree Canopy and Deep Soil Areas	• The deep soil area alone already meets the 20% minimum requirement for landscaping. The planter containers making up an extra 10% are therefore regarded as a bonus. • Over 50% of the front setback area is landscaped.	
11. Tree Canopy and Deep Soil Areas - Trees	• With 3x new large trees and 1x (Palm) already existing, then a further 6x retained medium trees and 7x additional medium trees, the requirement is more than achieved.	
12. Size and Layout of Dwellings	• Minimum SOU sizes comply with the 2 Bedroom requirements of 67m2, as all SOU's are sitting at over 8m2 even including an additional Bathroom (5m2 allowance) and Study (No specified allowance but 9m2+ left over to each 2x2) • All Bedrooms achieve the minimum square metreage and dimensions. The Studies **do not** meet the minimum dimensions or areas to be recognised as bedrooms under the R-Codes. • Ceiling Heights are 2.7m throughout as per the minimum requirement.	
13. Solar and Daylight Access	• Neighbouring lots are not affected due to geographic orientation. • The development achieves the acceptable outcomes outlined in the R-Codes.	

SPP – 7.0 - Design of Built Environment

1. Context & Character *Good design responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place.*	Duncraig is a very well established and leafy suburb, the houses designed with a more classic style of architecture using more natural colours and materials, generally featuring some 1c face brick, but nothing really too bold and outrageous. To integrate into the neighbourhood, we retained a few of the already established trees to the front and rear of the property then further landscaped these areas. Unlike most of the new developments along the street, we didn't fence the front boundary, instead focussing more on the landscaping to provide the security and amenity to the development. The proposed development has very natural tones of white and cream renders, with a subtle splash of feature materials being timber and recycled brickwork. The roof varies between gable ends and skillions to keep with the modern trend in the area, as seen I the pictures previously of other developments in the neighbourhood. All apartments are 2x2's with an additional study, which will help maintain the demographic of elderly people looking to downsize within the same area, or young families looking to move to a better school catchment area.	
2. Landscape Quality *Good design recognises that together landscape and buildings operate as an integrated and sustainable system, within a broader ecological context.*	Retention of the established trees was a priority during the design, trying to locate the basement carpark where it would least affect the deep soil zones, and stepping the building around any decent canopy coverage. This has been well achieved, as the majority of the existing landscaping areas have remained where they were, not impacting the greenery of the property as you would expect for a multi-dwelling, and exceeding the minimum landscaping requirement by 10%. The retention of these deep soil areas means we could plant more medium and large trees to boost the amenity of the property in a variety of ways, like privacy screening, shading, and offering a much more graceful outlook from living areas.	
3. Built Form and Scale *Good design ensures that the massing and height of development is appropriate to its setting and successfully negotiates between existing built form and the intended future character of the local area.*	Already along Beach Road, there are large bulky mansions, while double storey townhouses and apartments have been built as close to the front boundary as possible with very little relief. While our proposal isn't technically a 3-storey due to the basement being predominantly underground, a few design methods were made used to help it integrate better into the neighbourhood regardless; • Using the topography of the block we incorporated a basement carpark and even dropped it further. The visitors carpark is already 1.6m below the existing natural ground level at 3m from the front boundary, while the apartment courtyards at the rear of the property use the existing levels of the existing backyard, meaning there is no retaining to the rear fenceline, and the development by this point looks like a double storey duplex. • Retaining and adding to the existing landscaping around the property, forcing larger setbacks with larger trees and canopy cover, which in turn screens the side and rear walls along with the basement carpark. • Balconies to the front elevation with subtle tapers and the staggered timber adds a lot of articulation and interest to the front elevation. The Balconies are deep here meaning the residents maintain their privacy in the living rooms from the street and passers by, while the Foyer entry is also very deep into the property, with a long and inviting walkway where visitor's may sit and rest while they wait.	

4. Functionality & Build Quality *Good design meets the needs of users efficiently and effectively, balancing functional requirements to perform well and deliver optimum benefit over the full life-cycle.*	The building is to be constructed of concrete to the basement and 1st floor, then steel frame with hebel cladding for the occupancies, giving a durable long-lasting life span with a lot of flexibility to change cladding if eventually required in the future, or add power points and services without affecting the structure. Hebel is a very durable product with a lot of great characteristics, and so far there has been no concern about the life-span of the product and even less concern for the comfort of the habitants. The Liveable Housing Guidelines were followed particularly closely for the rear apartments, with wider passages and wider doors, along with flexibly designed, open bathrooms and laundries where the removal of a shower screen will mean the entire bathroom can be easily converted to disabled access. This means not only will the materials last a life-time, but the design too can be easily changed to suit different needs.	
5. Sustainability *Good design optimises the sustainability of the built environment, delivering positive environmental, social and economic outcomes*	The orientation of the site made the building relatively easy to design sustainably, having 4 apartments with their balconies/courtyards facing directly north, and windows on 3 sides of the apartments, allowing for good ventilation from the afternoon sea breeze, and direct sun on windows at different points of the day. The housing materials are low heat generators consisting of light coloured Colorbond roofs, cream coloured render and fibre-cement boards on top of hebel. Low E-Glass will be used to all East, West and North facing windows, so this house will be incredibly well insulated. The gardens are all low maintenance, consisting of native trees and low watering plants. The medium/large trees alone will provide a lot of canopy to keep the temperatures down, while desiduous trees in the back corners allow sun to enter during the winter. The planter containers will be fed via drip-feed irrigation and filled with slow releasing fertilizer on top of well draining yellow sand.	
6. Amenity *Good design provides successful places that offer a variety of uses and activities while optimising internal and external amenity for occupants, visitors and neighbours, providing environments that are comfortable, productive and healthy.*	Starting with the ground floor, the visitors car and bike bays are covered, secured and well screened behind the front landscaping, while easily accessible to the Foyer. The resident parking is then located behind a locked tilt-up door with a lockable pedestrian gate alongside, giving full security to resident's cars and storage areas. The residents have their own separate lockable entry door into the foyer. Leading up to the foyer, if entering the premises by foot, there is a long and wide, covered passageway with seating down the side for visitors to rest while they wait, or residents to rest when they return home from their walk, taking out the rubbish or collecting their mail. Each apartment has their own slightly different characteristic and appeal to different habitants. The rear 4 apartments are better designed for disabled people and familes, consisting of wide passages, large living areas and large bathrooms with the laundry incorporated in the same room which allows better accessibility for wheelchairs. The apartments upstairs have terrace balconies with open louvred roofs which would ideally suit the elderly and young couples, while the apartments on the bottom floors have large courtyards which would better suit small families. The apartments at the front of the building get the larger balconies looking towards Carine open space across the road suiting the entertainer, with large stacker doors which bonds the outdoor and indoor living areas together as one large open space. The straight kitchens adds to the open plan outdoor/indoor living integration as well. The middle apartment has a more urban townhouse feel, being a narrow double storey with study downstairs and bedrooms with a	

	shared bathroom upstairs. This Apartment has a very private little courtyard with subtle garden beds and a very nice facade. This apartment would be perfect for the young professional couple, students, or a starting family.	
7. Legibility *Good design results in buildings and places that are legible, with clear connections and easily identifiable elements to help people find their way around.*	On approach to the property, whether bike/car or by foot, there are very distinct entry points to make it easy to determine which way to go. Cars and bikes will automatically see the wide entry into the basement carpark with the visitors bays and bike racks first with a security barrier and door from there on separating the visitors from the residents. By foot, people will look for the letterboxes and street number first which is loud and clear at the front of the property with a wide pedestrian access direct to the foyer. The Foyer will have an intercom system to buzz visitors through, and once in the foyer visitors can either take the lift or the fire stairs directly up to the desired floor. The access door to the residents carpark will have a swipe card so visitors can't enter. Once at the desired floor, there is a very simple and direct footpath which leads to all units on each floor while each apartment is clearly numbered to the side of the door. There will be signs on the corner of Apartment 2 on the first and second floors directing visitors around the back to the rear apartments.	
8. Safety *Good design optimises safety and security, minimising the risk of personal harm and supporting safe behaviour and use.*	The Entry is funnelled via 2x openings in the front landscaping allowing cars in through one side, and pedestrians the other, making it safer already for Pedestrians and visitors entering/leaving the premises. Security gates to the basement parking directly connected to the foyer, with no other access to the property makes this a completely secure complex. Wide and flat walkways through offer great wheelchair accessibility, with minimal turns and no blind spots, reducing the potential for people to walk into one another or trip or clip any hazards. The 1st and 2nd floors have and internal atrium for access to all apartments, which cannot be accessed directly from the outside, adding again to the security of the complex.	
9. Community *Good design responds to local community needs as well as the wider social context, providing environments that support a diverse range of people and facilitate social interaction.*	This has been touched on a bit already through the amenities provided and the Context/Character. The rear apartments in particular were designed heavily in accordance with the Gold Standard level highlighted in the Liveable Housing Guidelines, offering a flexible design which can be easily manipulated by any potential buyers and allow full disabled access. The wide pedestrian access corridor to the property offers a large bench seat down the side, in a comfortable, covered area enclosed with attractive landscaping. This area in particular offers a great social context for anyone doing their bin run, retrieving mail or returning home, while being in a large undercovered area which facilitates a lot more people for a lot longer should the weather be bad. An internal atrium holding all the apartment entry doors, forces interaction between neighbours, adding to the community feel of living in the same complex, and adding to the security by knowing your neighbours. Each apartment has its own design principle and purpose within the building, with 1st floor apartments offering large courtyards or balconies for entertaining in summer, while the Mezzanine apartment offers a townhouse/penthouse feel which could suit renters or a professional young couple/family who need more space and light.	

10. Aesthetics *Good design is the product of a skilled, judicious design process that results in attractive and inviting buildings and places that engage the senses.*	The Aesthetic design of this property was quite possibly the simplest part, as inspiration was drawn by the existing house's attractive bushy gardens, and the intention to retain the majority of the landscaped areas and neighbourhood's character. Old houses in the area have natural, cream coloured tones along with aged brick houses to either side of our development. New developments are using a mixture of cream render, face brick, weatherboards and gable/skillion roofs. Most new developments also have large, street facing balconies. We wanted modern elevations with natural tones that would blend into the landscape, so we started with deep, wide balconies facing the street, which have a subtle recycled brick band wrapping around them, and timber recessed ceilings. The Balconies were angled, to add articulation and provide a better entry statement to the public domain, with the 1st floor balcony projecting further out with a planter box which incorporates the address above the pedestrian entry walkway.  The Mezz Apartment and rear apartments incorporated this same recycled brick band, while also having a more predominant weatherboard cladding elevation to balance between a few other developments down the street as previously shown. The key aim with the side and rear apartments was to design their elevations to blend the apartments together and look more like double storey townhouses than individual apartments, offering a more sensitive progression to an area slowly switching codes from R20 to R60. I truly believe this idea has been achieved, as materials carry through the 2x floors fluently and rear windows have a connection together.	

LPP 7.3 - R-CODES VOLUME 2 – APARTMENTS

Part 2 - Primary Controls

Building Heights	**2.2.1 -** The street is already starting to build up in height, with townhouses and apartments already present. Any existing houses in the street which are getting on in age will surely follow suit once sold due to the re-zoning and HOA. Our Development meets the 9m building height requirement, apart from a small portion of the skillion roof slightly exceeding that height. With a slope of roughly 3m uphill from front to back, we incorporated a basement carpark slightly further down from the street level which allows the 1st floor apartments to sit at the same level of the existing backyard. LHS fenceline has been retained for the most part while the rear fenceline hasn't been affected at all. **2.2.3 -** Roof design is very articulate with the use of skillions and gable ends adding character to the design. **2.2.4 -** solar access to neighbouring properties was never really a concern due to the northern orientation at the rear and increased side setbacks for intended landscaping.	
Street Setbacks	**2.3.1** - the development was setback specifically to preserve the existing front landscaping, so the building has been setback further than the minimum 2m requirement regardless, which is already further back than the most recent developments along the street which don't even have landscaping along the front to begin with. **2.3.2** - The landscaping seamlessly divides the property from the public realm while adding character to the verge and public domain. **2.3.3** – Starting the apartments on the first floor already gives the residents visual privacy, while the landscaping within the street setback provides security to the carpark and further privacy to the first floor balconies from the footpath. **2.3.4** – With the street facing apartments on the first and second floors, there is very good passive surveillance provided from Bed 1, and the	

	Indoor/Outdoor living areas. Apartment 2 also faces down the driveway meaning 3x apartments have passive street surveillance.	
Side and Rear Setbacks	**2.4.1** - Side Setbacks only sit at the minimum 2m for small sections then immediately push out to 3-4m to achieve good articulation and allow for more quality landscaping and canopy cover in between. **2.4.2** - Building setbacks exceed the requirements along the street and to the rear, in order to integrate nicely into the predominantly R20 area. **2.4.3** - Side Setbacks were designed specifically to help maintain existing landscaping and even add to it to help provide a further buffer between properties. **2.4.4** - Side Setbacks exceed the requirements to integrate with the neighbouring properties as they are currently still single stories on large blocks, which is very likely to change in the future considering the age of each house.	
Plot Ratio	**2.5.1 -** The plot ratio has been exceeded slightly by 0.04, mainly due to 2x floors being apartments rather than just the one floor. The proposal still manages to maintain 10% extra landscaping than required, the building is well articulated and not built close to boundaries, nor does it overshadow any neighbouring houses. Due to all the above, the proposal wasn't considered "overdeveloped" by ourselves nor the planners.	
Building Depth	**2.6.1 / 2.6.2 / 2.6.3 –** All the apartments have been designed longways to suit the shape of the block and receive a lot of external wall face area in order to place more windows for light and ventilation.	
Building Separation	**2.7.1 –** The proposal actually has better separation than most existing houses and developments down the street, while due to the 2x existing neighbouring blocks being R20's then we had no choice but to maintain larger setbacks for privacy. **2.7.2 –** As above **2.7.3 –** Setbacks were predominantly determined by the extensive deep soil zones, boosting all forms of amenity. **2.7.4 –** as above	

Part 3 – Siting the Development

Orientation	**3.2.1 –** The building takes advantage of the topography of the site by incorporating a basement carpark and starting the 1st floor apartments at the same level as the existing rear levels of the site. Lifting the apartments at the rear along with a deeper setback due to balconies facing north, means there's plenty of northern sunlight being accessed from the rear apartments. **3.2.2 -** Overshadowing was never an issue for neighbouring properties due to the northern orientation at the rear of the property.	
Tree Canopy and Deep Soil Areas	**3.3.1 –** Achieved, have managed to retain 7 of the 10 existing trees, while 2 of the 3 trees being removed were small anyway and well replaced. **3.3.2 -** Retaining the majority of the existing trees and adding more trees alike to those means we have increased the tree canopy over what's already existing. **3.3.3 -** Deep soil areas have been retained to the majority of the development in order to retain and add to the existing mature trees.	
Communal Open Space	Communal seating has been incorporated into the Pedestrian Accessway leading to the Foyer. This seating area is covered, wide and well landscaped. It is located on the ground floor, away from any habitable rooms or private living areas. On the 1st and 2nd floors, there is also a landscaped atrium where residents will meet their numbers at some stage as all Apartment Entry doors are located through this area, meaning neighbours will get to know who lives nextdoor to them eventually.	

Visual Privacy	**3.5.1 –** As the neighbouring properties are still zoned R20 then most windows needed to be highlights or obscured anyway until those neighbours gradually start becoming R60 properties and the obscuring can then be removed. This however did not affect the solar access while the living rooms were not even affected.	
Public Domain Interface	**3.6.1 -** The front landscaping adds a lot of protection to the basement carpark and street facing apartments due to its height and thickness, only leaving openings for access to the carpark and foyer. **3.6.2 -** Due to the front landscaping being retained and added to along with larger setbacks, the building has integrated seamlessly into the streetscape.	
Pedestrian Access and Entries	**3.7.1 -** Due to the heavy landscaping, the entry points for cars and pedestrians alike are very clear and distinct. By car, you will enter from the street regardless and see the Basement carpark straight away down the end, with visitor's carbays to the left. Pedestrians will notice straight away the Letterbox housing with the house number, and on approach see a large, wide, covered passage open up in between the landscaping, with the 2st floor balcony overhanging with the full address. Directly down the end of this passage is the sliding door into the Foyer, and some seating down the side of the passage offering a warm welcome. **3.7.2 –** between the landscaping and the attractive Balcony feature hanging over the pedestrian entrance, there is a very attractive street presence.	
Vehicle Access	**3.8.1 -** Vehicle access to the property is straight and direct, and doesn't overlap any pedestrian walkways. Cyclists will be able to enter the property the same as a car and leave their bikes locked up safely alongside the visitors carbays. **3.8.2 –** As the parking is located in the basement, behind a densely landscaped frontage, and deeper into the property with only timber slats offering some permeability, then there is no unnecessary visual impact on the street.	
Car and Bicycle parking	**3.9.1 -** Resident Bike Storage is close to double that of the requirement. Parking bays are deeper and wider than required. **3.9.2 -** Extra carbays have been allowed to 3x units just for general amenity to anyone who may need it, however we did only require 1 bay per dwelling so we have exceeded the minimum requirement. **3.9.3 -** The visitor and resident carparking is deemed safe as the visitors bays are well screened from street view because of the landscaped frontage and being slightly lower than the verge, while the resident parking is well secured in a basement behind a locked garage door. The Entry will also require a FOB to enter the building and again to enter the resident carpark so that even visitors can't enter without a resident with them. **3.9.4 -** Achieved as previously stated.	

Part 4 – Designing the Building

Solar and Daylight Access	**4.1.1 -** Of 7 dwellings, 4 of them are facing directly north, while the middle Mezzanine Apartment achieves much of the morning sun to both the living room and Bed 1, then a bit more light through the day from a window in the stair void facing the atrium. Only the 2x Street Facing apartments facing south will lack in morning sunlight but still achieve at least 3hrs in the afternoon. All Apartments have been designed with at least 2 lengths of external wall being free from other apartments or neighbours, maximising the amount of light to fill the apartments. 5 of the 7 Private outdoor living areas (incuding balconies) will receive full on northern sun for at least half the day, with only the front 2x Balconies sacrificing northern sunlight in order to gain views of the reserve across the road. **4.1.2 -** achieved as stated above.	

	4.1.3 – Most of the Western facing windows are quite well protected by the tall trees down the side, particularly in Summer when the sun wraps further around to the West, so these trees will protect the windows from the setting summer sun. Living Areas are all well protected because of the Balconies and orientation, while the upper apartments at the rear have fixed louvred pergolas to block out the summer sun and let in the lower winter sun. Low E-Glass has been requested by the City to all East, North and West facing windows.	
Natural Ventilation	With the building being well articulated and all apartments having external walls on at least 2x sides, then more windows can be added to provide better natural ventilation. All apartments have windows on 2x walls to the living areas (3x in Unit 2) while 6 of 7 Apartments have windows to 2x walls in Bed 1.	
Size and Layout of Dwellings	**4.3.1 –** Every apartment has been flexibly designed, using L and Straight Kitchens which use up less floor area and allow more options for furnishings. Large square Living rooms with no obstructions allow for a variety of different sofa arrangements. Almost every bedroom in the building has 2x potential walls to place beds or desks along. All apartments were designed with wider and/or straighter Entries along with large open living areas to aid people with wheelchairs, therefore allowing flexibility with furniture being able to sit along the outskirts of rooms and easy access around any potential future furniture arrangements. **4.3.2 -** achieved	
Private open Space and Balconies	**4.4.1 -** 5x of the 7x apartments have larger than required outdoor living areas, making them feel more like grouped dwellings/Villas than apartments. The northern facing ground floor apartments have their share of what was the original backyard, making them perfect for younger families whose kids need more room to run, while the street facing apartments are for the entertainer, with large, reserve facing balconies with large sliding doors which open the entire apartment right up to the outside. The rise from street level and the retained mature trees and shrubs along the front offer the occupants a life amongst the trees. The Mezzanine Apartment in the middle feels more like an urban townhouse, with a large, terrace style courtyard where they could place a sunshade, and a double storey façade with planter incorporated to let plants fall and offer a very cosy little sanctuary. This would suit perfectly a young professional couple with a low maintenance courtyard, or even a starting family. Finally the north facing apartments upstairs have low maintenance balconies with Solar Pergola's which would suit the downsizing elderly who'll still get all their vitamin D during the day in winter, or again a young professional couple who'll get their terrace style balcony to relax on in the afternoons. Opening up to the rear means these occupants get a great leafy view amongst the top of the trees aswell, where no doubt birds and butterflies will come to visit. **4.4.2 -** Achieved through the decision of North facing courtyards to 5 of the 7 apartments, or the sacrifice of sun for views in regards to the street facing apartments. Depends what style of liveability the resident is after, there's an apartment for everyone. **4.4.3 -** Private open spaces were designed to retain the existing character of the property through the retention of existing trees and landscaping. The Balconies to the front have been well integrated into the overall design by adding an articulate and attractive streetscape, while apartments upstairs to the rear have been designed with solar pergola roofs to offer view to the sky and feel less boxed in.	

Circulation and Common Spaces	**4.5.1 -** All communal and private passageways have been designed to suit the minimum silver standard for disabled access, let alone making it easier for residents to move furniture around. **4.5.2 -** Circulation and communal spaces are well lined with quality landscaping, with seating along the passage towards the entry, then a well landscaped atrium flowing through the 1st and 2nd floors leading to all Apartment Entries, where residents can also socialise.	
Storage	**4.6.1 -** All apartments have easy, close access to their Store rooms, whether that be directly next to their parking bay or Apartment's Entry door.	
Managing the impact of Noise	The building is proposed to be constructed of AAC panels on steel frame, which is very well known for its acoustic properties. Only 2x bedrooms face the road, and the verge is very deep regardless, so there's no concerns over noise entering bedrooms. All apartments windows will have low E-Glass, eliminating any extra potential noise.	
Dwelling Mix	Although every apartment is a 2x2 apartment with a Study, the layouts and courtyard/balcony sizes vary enough that give a lot of flexibility to a range of demographics of people who could comfortably move in. There's a range of low maintenance apartments to apartments with backyards, and even a Mezzanine Apartment offering a large light void in the Stairwell/Entry offering a luxurious penthouse/townhouse feel.	
Universal Design	Starting with the inclusion of a basement carpark, this levelled out property from the street already making it have flatter and better access for people of limited mobility. A wide pedestrian access leads to the Foyer with a 0 threshold and no rise or fall from the street to enter the building. Alongside this passage, a long bench seat is on offer for people to rest. In the Foyer, there's a lift which leads to each floor. Each floor contains a wide Foyer again and a wide electrical sliding door leading out into the Egress routes towards every apartment. The Egress routes outside the foyers are 1.5m wide. All apartments have 920w entry doors, and each apartments Entry is minimum 1.1m wide and straight. Each Apartment has a wide and flexibly designed living area which allows plenty of comfortable circulation space for wheelchairs. All 4x northern facing apartments have been particularly designed with bathroom/laundry combos where the shower screen could be removed in future and act as a perfect disabled bathroom straight off the main passageway. The Ensuites in these apartments were designed with the same intention of manoeuvrability should the shower screen be removed. Thresholds from Egress routes into apartments will be between 0-10mm depending on the tiling and screed thicknesses.	
Façade Design	**4.10.1 -** The front façade has been made very articulate in nature, consisting of angled, deep balconies, then bedrooms with a stepped timber feature design to tie in with the very natural landscape and character of the suburb. There is a recycled brick border around the balconies to add more interest and again tie in with the existing brick retaining wall found at the front left hand corner, while still maintaining a very modern look. This recycled brick cladding has again been used again down the entire pedestrian walkway to the retained planters while a timber bench seat sits against one of the planters, which matched the timber posts to the balconies, and the timber ceilings, adding a good contrast in materials which enhance the landscaping colours. Along the sides of the buildings, the middle Duplex Apartment has been stepped in and "weatherboard" clad to add character and articulation to the sides. The rear elevation again has weatherboard cladding and terraces were incorporated instead of enclosed balconies to give the building a more modern look aswell. **4.10.2 -** Due to the landscaping and the apartments starting higher than the street for security and privacy, there probably isn't a great	

	expression of much more than the large entertaining balconies and maybe the living areas.	
Roof Design	A series of 5deg pitched flat roofs have been used throughout, overlapping each other where possible to add more interest and skillions where possible. Most new developments in the area have used skillions and gable end style roofs, so we followed suite to maintain this new character to the neighbourhood.	
Landscape Design	**4.12.1 -** achieved and has been explained previously. **4.12.2 -** A lot of the trees added are similar to existing ones, particularly down the left hand side in the deep soil areas. This left hand side portion has been filled with Australian native trees which can trained to grow upwards so there's still access alongside the trunks to reach the other trees for pruning. For all the planters, smaller trees and shrubs were selected, offering additional canopy cover and privacy screening along with some general ambience and amenity to the outdoor living areas. Golden canes and palms face the public domain for a more tropical and resort-style look, plus they are little to no maintenance in harder to reach areas. **4.12.3 –** While the retained matured trees are already Australian natives, we will be adding more Australian and WA endemic native trees and shrubs to the deep rooting zones, while placing small trees/shrubs and tropical natives to all the planter boxes which will be drip-fed and well drained. This landscape design really won't require much watering at all once established as most of the selected plants are hardy and can fight through droughts. **4.12.4 -** The development was actually designed around the existing landscaping, retaining as much of the existing front and backyard as possible, and then adding the planter boxes to improve amenity through the communal passages and in the private yards. The use of natural materials to the building was aimed to be subtle and complement the beautiful greenery being retained on site.	
Adaptive reuse	This isn't really applicable in regards to the building, but retaining the landscaping was a massive complement to the existing property and neighbourhoods character, along with finding matching recycled bricks to complement the existing retaining wall holding up the front landscaping.	
Mixed use	Not applicable	
Energy Efficiency	Through thoughtful design of the layouts of the apartments along with retaining a lot of the existing gardens, this development really shouldn't be wasting too much energy trying to keep the SOU's cool. AAC panels to the exteriors are also fantastic insulators, along with low E-Glass windows and reflective insulation to the roof and walls. Having an incredibly green property with a lot of canopy offers shading to external walls and windows keeping the house cooler in summer. Some trees are deciduous and will allow sun in through winter.	
Water Management and Conservation	Through the amount of landscaped and deep soil areas, water will be easily soaked up on site, and the types of plants won't require much watering either. Soakwells will be able to retain all water on site without running onto the street. These will be located under the slab in the basement, potentially even through the deep soil zones in between trees. Due to being apartments, it would be thought that not much potable water would be used anyway, All plumbing fixtures and appliances will have 4 star minimum WELS ratings.	
Waste Management	The Bin area is easily accessible down the LHS of the property, located behind tall double bricks walls and a solid gate, and screened from the public via heavy landscaping. It would be thought that due to such a limited number of bins in the area, that the odours wouldn't be strong enough to affect any visitors or residents.	

	As already discussed with the City, 3x Yellow bins, 4x Red bins and 3x FOGO bins will be required, and due to limited clearance height down the driveway then the Garbage truck will not fit and would also be blocking the driveway. The Waste Management report will outline how to rectify these issues, including who will bring the bins to the street and on what days.	
Utilities	**4.18.1 -** All services will be made available to the residents. **4.18.2 -** All services are/will be easily accessible from communal zones of the property. **4.18.3 -** As above. Distribution box for electricity is already located to the side of the driveway, as will be the gas and NBN. The driveway is wide enough to support maintenance while not restricting resident accessibility. **4.18.4 -** Utilities within apartments are backed onto the same in other apartments to restrict any unnecessary noise transfer between apartments. Laundries within apartments have been placed away from bedrooms and behind closed doors. All Split System Air Con units have been located in courtyards/balconies. Units on Balconies are behind obscured glass, therefore not visible to the public eye. Units in Courtyards are located at "dead" sides of courtyards, as they would be if these were villas anyway, while the north facing top floor units are the only ones which will be wall mounted in between fixed windows of low E-glass, so they'll neither be heard nor seen as they're right up the back of the development, and in the dead side of the courtyards.	

CONCLUSION:

To conclude, the finished product is a modern/luxury development which complements and integrates into the suburb seamlessly through quality existing and new landscaping along with natural, subtle materials. It's a very inviting development which adds further character to the area and will set a high precedent for any future development along the street.

Through very careful and considerate design, practically all of the objectives in the R-Codes Volume 2 have been met, while also achieving the extra requirements set out in the LPP for Housing Opportunity Areas.

We trust that what we have designed here will be cherished by its residents for their lifespan as it offers grouped dwelling amenity with multi-res security.

We appreciate the time you have spent already reviewing this design and look forward to hearing any constructive and positive feedback in which could enhance the development. You may reach me on the details provided below should any further information be required.

Kind Regards,

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Transportation Noise Assessment

Lot 61 (#549) Beach Road, Duncraig

Reference: 21056385-01A

Prepared for:
Fulfil The Dream Developments

Report: 21056385-01A

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Date:	Rev	Description	Prepared By	Verified
24-Jan-22	0	Issued to Client	Hao Tran	Terry George
27-Jan-22	A	Amended wall constructions	Hao Tran	

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Appendices

1 INTRODUCTION

It is proposed to construct 7 grouped dwellings at Lot 61 (#549) Beach Road, Duncraig, as located in *Figure 1-1*. Proposed plans of the residence are provided in *Appendix A*.

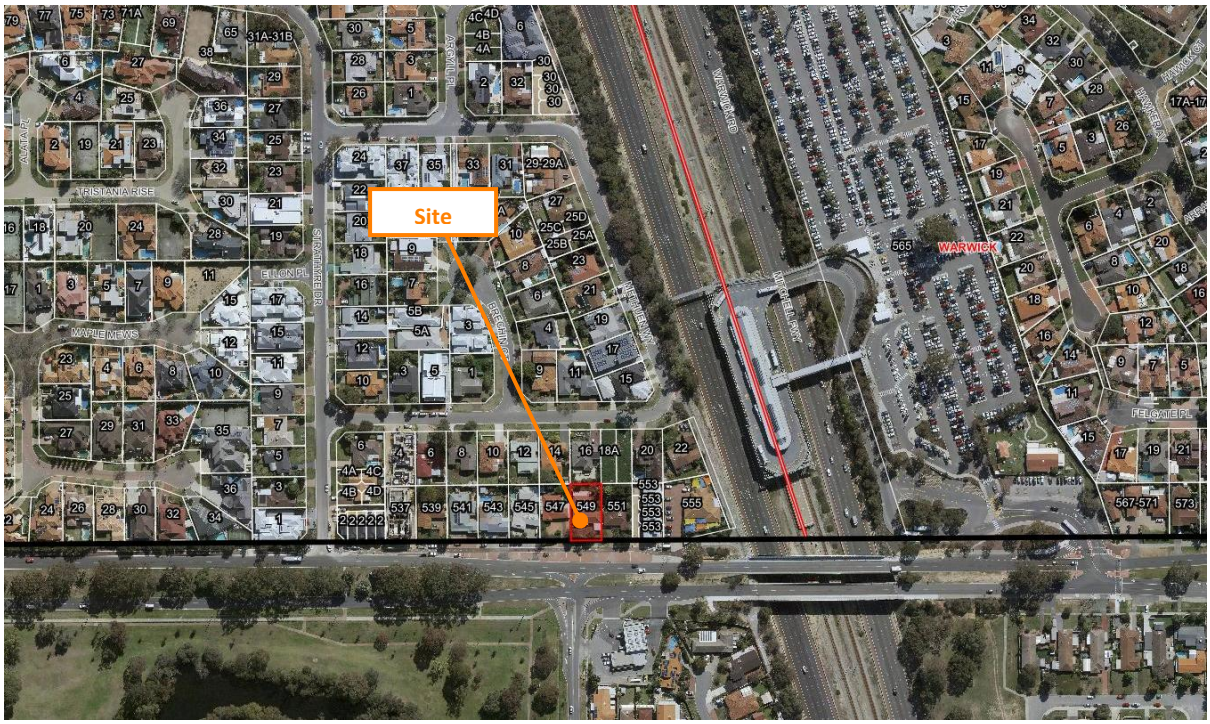


Figure 1-1 Subject Site Locality

As the proposed development is approximately 90 metres from Mitchell Freeway ('Strategic freight/major traffic routes'), a noise assessment against *State Planning Policy No. 5.4 Road and Rail Noise* is required.

Appendix B contains a description of some of the terminology used throughout this report.

2 CRITERIA

The criteria relevant to this assessment are provided in *State Planning Policy No. 5.4 Road and Rail Noise* (hereafter referred to as SPP 5.4) produced by the Western Australian Planning Commission (WAPC). The objectives of SPP 5.4 are to:

- Protect the community from unreasonable levels of transport noise;
- Protect strategic and other significant freight transport corridors from incompatible urban encroachment;
- Ensure transport infrastructure and land-use can mutually exist within urban corridors;
- Ensure that noise impacts are addressed as early as possible in the planning process; and
- Encourage best practice noise mitigation design and construction standards

Table 2-1 sets out noise targets that are to be achieved by proposals under which SPP 5.4 applies. Where the targets are exceeded, an assessment is required to determine the likely level of transport noise and management/mitigation required.

Table 2-1 Noise Targets for Noise-Sensitive Land-Use

Outdoor Noise Target		Indoor Noise Target	
55 dB $L_{Aeq(Day)}$	50 dB $L_{Aeq(Night)}$	40 dB $L_{Aeq(Day)}$ (Living and Work Areas)	35 dB $L_{Aeq(Night)}$ (Bedrooms)

Notes:

- Day period is from 6am to 10pm and night period from 10pm to 6am.
- The outdoor noise target is to be measured at 1-metre from the most exposed, habitable[1] facade of the noise sensitive building.
- For all noise-sensitive land-use and/or development, indoor noise targets for other room usages may be reasonably drawn from Table 1 of Australian Standard/New Zealand Standard AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors (as amended) for each relevant time period.
- Outdoor targets are to be met at all outdoor areas as far as is reasonable and practicable to do so using the various noise mitigation measures outlined in the Guidelines.

The application of SPP 5.4 is to consider anticipated traffic volumes for the next 20 years from when the noise assessment is undertaken.

In the application of the noise targets, the objective is to achieve:

- indoor noise levels specified in *Table 2-1* in noise-sensitive areas (e.g. bedrooms and living rooms of houses and school classrooms); and
- a reasonable degree of acoustic amenity for outdoor living areas on each residential lot. For non-residential noise-sensitive developments, for example schools and childcare centres, the design of outdoor areas should take into consideration the noise target.

[1] A habitable room is defined in State Planning Policy 3.1 as a room used for normal domestic activities that includes a bedroom, living room, lounge room, music room, sitting room, television room, kitchen, dining room, sewing room, study, playroom, sunroom, gymnasium, fully enclosed swimming pool or patio.

3 METHODOLOGY

Noise measurements and modelling have been undertaken generally in accordance with the requirements of SPP 5.4 and associated Guidelines[2] as described in *Section 3.1* and *Section 3.2*.

3.1 Site Measurements

Noise monitoring was undertaken to the north of the subject site at 18 Methuen Way using a Bruel & Kjaer 2260 sound level meter (refer *Figure 3-1*). This meter complies with the instrumentation requirements of *Australian Standard 2702-1984 Acoustics – Methods for the Measurement of Road Traffic Noise*. The meter was field calibrated before and after the measurement session and found to be accurate to within +/- 1 dB. Lloyd George Acoustics also holds current laboratory calibration certificate for the meter.

The microphone was approximately 1.4 metres above existing ground level and approximately 65 metres from Mitchell Freeway main carriageway. The measurements were recorded on 11 March 2021, between 3.00pm and 4.00pm.

Figure 3-1 Sound Level Meter on Site

A relationship between hourly traffic volumes and noise levels can then be derived to determine the existing $L_{Aeq(Day)}$ and $L_{Aeq(Night)}$ noise levels at the subject site.

[2] Road and Rail Noise Guidelines, September 2019

3.2 Noise Modelling

The computer programme *SoundPLAN 8.2* was utilised incorporating the *Calculation of Road Traffic Noise* (CoRTN) algorithms, modified to reflect Australian conditions. The modifications included the following:

- Vehicles were separated into heavy (Austroads Class 3 upwards) and non-heavy (Austroads Classes 1 & 2) with non-heavy vehicles having a source height of 0.5 metres above road level and heavy vehicles having two sources, at heights of 1.5 metres and 3.6 metres above road level, to represent the engine and exhaust respectively. By splitting the noise source into three, allows for less barrier attenuation for high level sources where barriers are to be considered.
- Note that a -8.0 dB correction is applied to the exhaust and -0.8 dB to the engine (based on Transportation Noise Reference Book, Paul Nelson, 1987), so as to provide consistent results with the CoRTN algorithms for the no barrier scenario;

Predictions are made at heights of 1.4 metres above floor level and at 1-metre from the window of each habitable room, resulting in a + 2.5 dB correction due to reflected noise.

Various input data are included in the modelling such as ground topography, road design, traffic volumes etc. These model inputs are discussed in the following sections.

3.2.1 Ground Topography

Topographical and road design data for this project was taken from publicly available data e.g. *Google*. This was combined with the proposed dwelling and existing neighbouring dwellings to create a 3D noise model.

3.2.2 Traffic Data

Traffic data includes:

- Road Surface – The noise relationship between different road surface types is shown in *Table 3-1*.

Table 3-1 Noise Relationship Between Different Road Surfaces

Road Surfaces							
Chip Seal				Asphalt			
14mm	10mm	5mm	Slurry	Dense Graded	Novachip	Stone Mastic	Open Graded
+3.5 dB	+2.5 dB	+1.5 dB	+1.0 dB	0.0 dB	-0.2 dB	-1.5 dB	-2.5 dB

The existing road surface is open graded asphalt and is expected to remain unchanged into the future.

- Vehicle Speed – The existing and future posted speed is 100km/hr.

- Traffic Volumes – Existing (2016) and forecast (2041) traffic volumes were provided by Main Roads WA (Clare Yu, Traffic Modelling Analyst, Reference: #41377). A validation plot was also provided allowing the Main Roads WA traffic volume model to be calibrated against actual counts. More recent traffic data was also obtained from the Main Roads WA Traffic Map. *Table 3-2* provides the traffic volume input data in the model. It should be noted the modelling includes noise from the Mitchell Freeway only. In reality, noise will exist from Beach Road, however this road is not designated under SPP 5.4 and is therefore not included.

Table 3-2 Traffic Information Used in the Modelling

Parameter	Scenario			
	Existing – 2016		Future - 2041	
	Northbound	Southbound	Northbound	Southbound
24 Hour Volume	62,000	69,300	108,800	120,700
% Heavy	7	7	6	6

3.2.3 Ground Attenuation

The ground attenuation has been assumed to be 0.0 (0%) for the roads and 0.5 (50%) elsewhere. Note 0.0 represents hard reflective surfaces such as water and 1.00 represents absorptive surfaces such as grass.

4 RESULTS

4.1 Noise Monitoring

The results of the hourly noise level measurements, in free-field conditions, were:

- 11 March 2021: 3.00pm to 4.00pm – 55.2 dB $L_{Aeq,1hour}$.

Combining the measured noise levels with the hourly traffic volumes as shown in *Figure 4-1*, the $L_{Aeq(Day)}$ and $L_{Aeq(Night)}$ have been determined to be 53.3 dB $L_{Aeq(Day)}$ and 48.5 dB $L_{Aeq(Night)}$. Based on these results, the $L_{Aeq(Day)}$ and the $L_{Aeq(Night)}$ are approximately 5 dB different such that neither is more critical than the other (refer *Section 2* criteria).

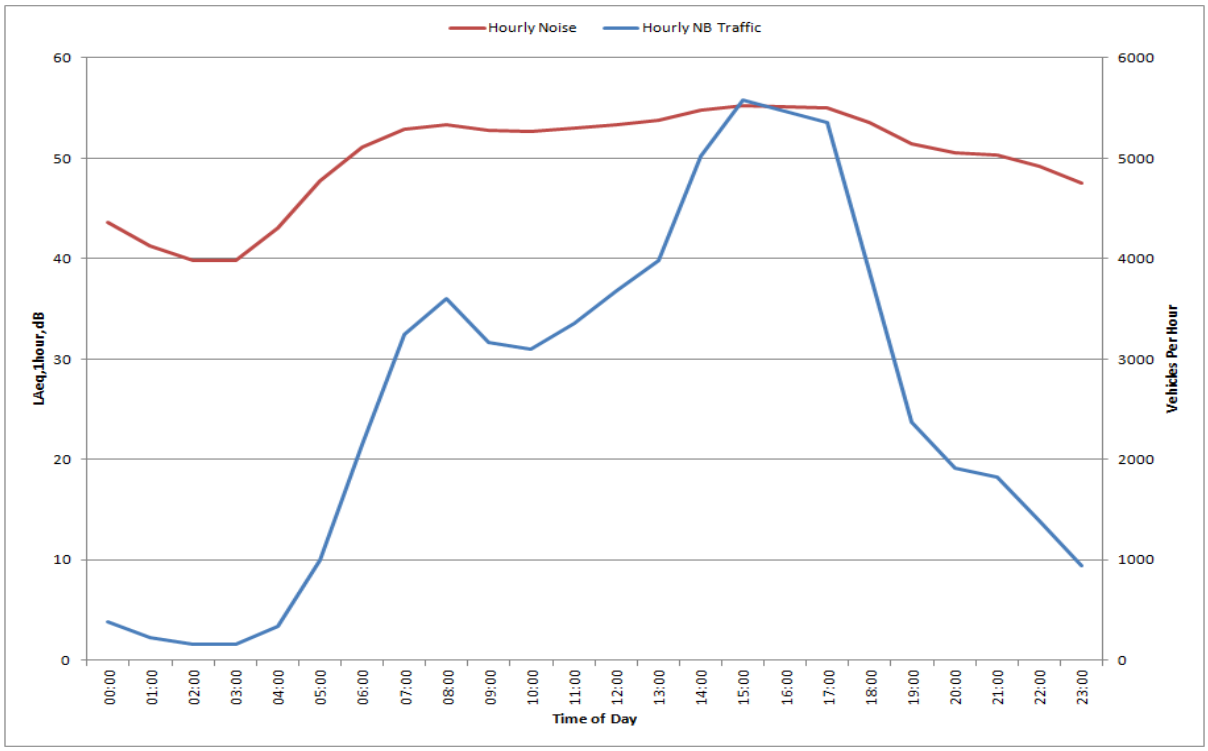


Figure 4-1 Noise Level Relationship to Hourly Traffic Volumes

4.2 Noise Modelling

The noise model was initially set-up for existing conditions and calibrated to the noise measurement location. The model is then updated to include the proposed building plans and future traffic volumes, maintaining the same model calibration. *Table 4-1* provides the predicted $L_{Aeq(Day)}$ noise levels to the glazed facade of each habitable room.

Table 4-1 Predicted Future (2041) $L_{Aeq(Day)}$ Outdoor Noise Levels

Apartment No.	Room	$L_{Aeq(Day)}$, dB
Apartment 2	Bed 1	57
	Bed 2	50
	Study	45
	Meals/Living	54
	Courtyard	52
	Entry	44
Apartment 5	Bed 1	57
	Bed 2	49-56
	Living (Sliding Door)	56
	Meals	57
	Study	56
	Balcony	54
	Entry	48
Apartment 7	Bed 1	54-57
	Bed 2	57
	Living	54
	Study	50
	Balcony	52
	Entry	49

5 ASSESSMENT

The objectives of SPP 5.4 are to achieve:

- indoor noise levels specified in *Table 2-1* in noise-sensitive areas (e.g. bedrooms and living rooms of houses and school classrooms); and
- a reasonable degree of acoustic amenity for outdoor living areas on each residential lot.

Where the outdoor noise targets of *Table 2-1* are achieved, no further controls are necessary. As such, *Table 5-1* provides the minimum construction recommended.

Table 5-1 Recommended Minimum Construction – Apartment 2

Element	Room	Construction
Glazing	Bed 1	Window approximately 36% of floor area and therefore is to achieve $R_w + C_{tr} \geq 27$, likely achievable using 6mm thick glass in fixed/awning style window with acoustic seals.
Walls	Bed 1	Walls to be Hebel Powerpanel Cladding (75mm) to 92mm steel stud with 90mm thick, 11kg/m^3 fibrous insulation and 13mm thick plasterboard.
	All Others	Walls to be Hebel Powerpanel Cladding (75mm) to 92mm steel stud with 90mm thick, 11kg/m^3 fibrous insulation and 11mm thick plasterboard.
Roof/Ceiling	Bed 1	Ceiling to be 13mm thick plasterboard with R4 insulation above.
	All Others	Ceiling to be 10mm thick plasterboard with R4 insulation above.
Outdoor Living	Courtyard	Outdoor living area is calculated to be below the outdoor noise target and therefore compliant with the requirements of SPP 5.4
Ventilation	Bed 1	Fresh air requirements to be satisfied on the basis of windows closed.
Notification	Lot	Notification to be provided on lot title advising of the potential noise impacts.

Note: Install cover mould to weep holes in above window frames where applicable

Table 5-2 Recommended Minimum Construction – Apartment 5

Element	Room	Construction
Glazing	Bed 1	Window approximately 39% of floor area and therefore is to achieve $R_w + C_{tr} \geq 27$, likely achievable using 6mm thick glass in fixed/awning style window with acoustic seals.
	Bed 2	Elevation 1 windows are approximately 36% of floor area and therefore is to achieve $R_w + C_{tr} \geq 26$, likely achievable using 6mm thick glass in fixed/awning style window with acoustic seals.
	Living / Meals	Total glazing approximately 65% of floor area. Sliding door is to achieve $R_w + C_{tr} \geq 26$, likely achievable using 6mm thick glass with acoustic seals. Window to achieve same achievable with 6mm thick glass in fixed/awning style window with acoustic seals.
	Study	Window approximately 27% of floor area and therefore is to achieve $R_w + C_{tr} \geq 21$, standard glazing permitted in fixed/awning style window.
Walls	Bed 1, Bed 2	Walls to be Hebel Powerpanel Cladding (75mm) to 92mm steel stud with 90mm thick, 11kg/m^3 fibrous insulation and 13mm thick plasterboard.
	All Others	Walls to be Hebel Powerpanel Cladding (75mm) to 92mm steel stud with 90mm thick, 11kg/m^3 fibrous insulation and 10mm thick plasterboard.
Roof/Ceiling	Bed 1, Bed 2	Ceiling to be 13mm thick plasterboard with R4 insulation above.
	All Others	Ceiling to be 10mm thick plasterboard with R4 insulation above.
Outdoor Living	Balcony	Outdoor living area is calculated to be below the outdoor noise target and therefore compliant with the requirements of SPP 5.4
Ventilation	Rooms with Upgraded Glazing	Fresh air requirements to be satisfied on the basis of windows closed.
Notification	Lot	Notification to be provided on lot title advising of the potential noise impacts.

Note: Install cover mould to weep holes in above window frames where applicable

Table 5-3 Recommended Minimum Construction – Apartment 7

Element	Room	Construction
Glazing	Bed 1	Glazing approximately 68% of floor area. Sliding door is to achieve $R_w + C_{tr} \geq 28$, likely achievable using 6.38mm thick laminated glass with acoustic seals. Window to achieve same achievable with 6.38mm thick laminated glass in fixed/awning style window with acoustic seals.
	Bed 2	Window approximately 36% of floor area and therefore is to achieve $R_w + C_{tr} \geq 26$, likely achievable using 6mm thick glass in fixed/awning style window with acoustic seals.
Walls	Bed 1, Bed 2	Walls to be Hebel Powerpanel Cladding (75mm) to 92mm steel stud with 90mm thick, 11kg/m^3 fibrous insulation and 13mm thick plasterboard.
	All Others	Walls to be Hebel Powerpanel Cladding (75mm) to 92mm steel stud with 90mm thick, 11kg/m^3 fibrous insulation and 10mm thick plasterboard.
Roof/Ceiling	Bed 1, Bed 2	Ceiling to be 13mm thick plasterboard with R4 insulation above.
	All Others	Ceiling to be 10mm thick plasterboard with R4 insulation above.
Outdoor Living	Balcony	Outdoor living area is calculated to be below the outdoor noise target and therefore compliant with the requirements of SPP 5.4
Ventilation	Rooms with Upgraded Glazing	Fresh air requirements to be satisfied on the basis of windows closed.
Notification	Lot	Notification to be provided on lot title advising of the potential noise impacts.

Note: Install cover mould to weep holes in above window frames where applicable

By implementing the above construction recommendations, noise levels are calculated to comply with the targets of SPP 5.4. Alternative constructions can be accepted provided these are supported by a laboratory calibration certificate.

It should be noted that the recommendations in this report are calculated to achieve acceptable internal noise levels in accordance with *State Planning Policy No. 5.4*. Compliance with this Standard does not result in all residents considering the noise level as acceptable as this is a subjective response. Where a resident is particularly sensitive to noise, they may wish to consider upgrading all glass (thicker, laminated glass results in higher levels of attenuation) and converting sliding windows/doors to hinged versions such as awning/casement style.

Appendix B

Terminology

The following is an explanation of the terminology used throughout this report.

Decibel (dB)
The decibel is the unit that describes the sound pressure and sound power levels of a noise source. It is a logarithmic scale referenced to the threshold of hearing.

A-Weighting
An A-weighted noise level has been filtered in such a way as to represent the way in which the human ear perceives sound. This weighting reflects the fact that the human ear is not as sensitive to lower frequencies as it is to higher frequencies. An A-weighted sound level is described as L_A dB.

L_1
An L_1 level is the noise level which is exceeded for 1 per cent of the measurement period and is considered to represent the average of the maximum noise levels measured.

L_{10}
An L_{10} level is the noise level which is exceeded for 10 per cent of the measurement period and is considered to represent the "*intrusive*" noise level.

L_{90}
An L_{90} level is the noise level which is exceeded for 90 per cent of the measurement period and is considered to represent the "*background*" noise level.

L_{eq}
The L_{eq} level represents the average noise energy during a measurement period.

$L_{A10,18hour}$
The $L_{A10,18\ hour}$ level is the arithmetic average of the hourly L_{A10} levels between 6.00 am and midnight. The *CoRTN* algorithms were developed to calculate this parameter.

$L_{Aeq,24hour}$
The $L_{Aeq,24\ hour}$ level is the logarithmic average of the hourly L_{Aeq} levels for a full day (from midnight to midnight).

$L_{Aeq,8hour}$ / $L_{Aeq\ (Night)}$
The $L_{Aeq\ (Night)}$ level is the logarithmic average of the hourly L_{Aeq} levels from 10.00 pm to 6.00 am on the same day.

$L_{Aeq,16hour}$ / $L_{Aeq\ (Day)}$
The $L_{Aeq\ (Day)}$ level is the logarithmic average of the hourly L_{Aeq} levels from 6.00 am to 10.00 pm on the same day. This value is typically 1-3 dB less than the $L_{A10,18hour}$.

Noise-sensitive land use and/or development
Land-uses or development occupied or designed for occupation or use for residential purposes (including dwellings, residential buildings or short-stay accommodation), caravan park, camping ground, educational establishment, child care premises, hospital, nursing home, corrective institution or place of worship.

About the Term 'Reasonable'

An assessment of reasonableness should demonstrate that efforts have been made to resolve conflicts without comprising on the need to protect noise-sensitive land-use activities. For example, have reasonable efforts been made to design, relocate or vegetate a proposed noise barrier to address community concerns about the noise barrier height? Whether a noise mitigation measure is reasonable might include consideration of:

- The noise reduction benefit provided;
- The number of people protected;
- The relative cost vs benefit of mitigation;
- Road conditions (speed and road surface) significantly differ from noise forecast table assumptions;
- Existing and future noise levels, including changes in noise levels;
- Aesthetic amenity and visual impacts;
- Compatibility with other planning policies;
- Differences between metropolitan and regional situations and whether noise modelling requirements reflect the true nature of transport movements;
- Ability and cost for mobilisation and retrieval of noise monitoring equipment in regional areas;
- Differences between Greenfield and infill development;
- Differences between freight routes and public transport routes and urban corridors;
- The impact on the operational capacity of freight routes;
- The benefits arising from the proposed development;
- Existing or planned strategies to mitigate the noise at source.

About the Term 'Practicable'

'Practicable' considerations for the purposes of the policy normally relate to the engineering aspects of the noise mitigation measures under evaluation. It is defined as "reasonably practicable having regard to, among other things, local conditions and circumstances (including costs) and to the current state of technical knowledge" (*Environmental Protection Act 1986*). These may include:

- Limitations of the different mitigation measures to reduce transport noise;
- Competing planning policies and strategies;
- Safety issues (such as impact on crash zones or restrictions on road vision);
- Topography and site constraints (such as space limitations);
- Engineering and drainage requirements;
- Access requirements (for driveways, pedestrian access and the like);
- Maintenance requirements;
- Bushfire resistance or BAL ratings;
- Suitability of the building for acoustic treatments.

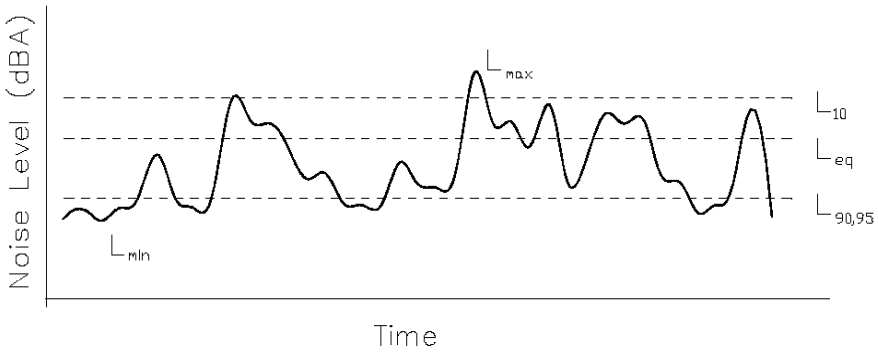
R_w

This is the weighted sound reduction index and is similar to the previously used STC (Sound Transmission Class) value. It is a single number rating determined by moving a grading curve in integral steps against the laboratory measured transmission loss until the sum of the deficiencies at each one-third-octave band, between 100 Hz and 3.15 kHz, does not exceed 32 dB. The higher the R_w value, the better the acoustic performance.

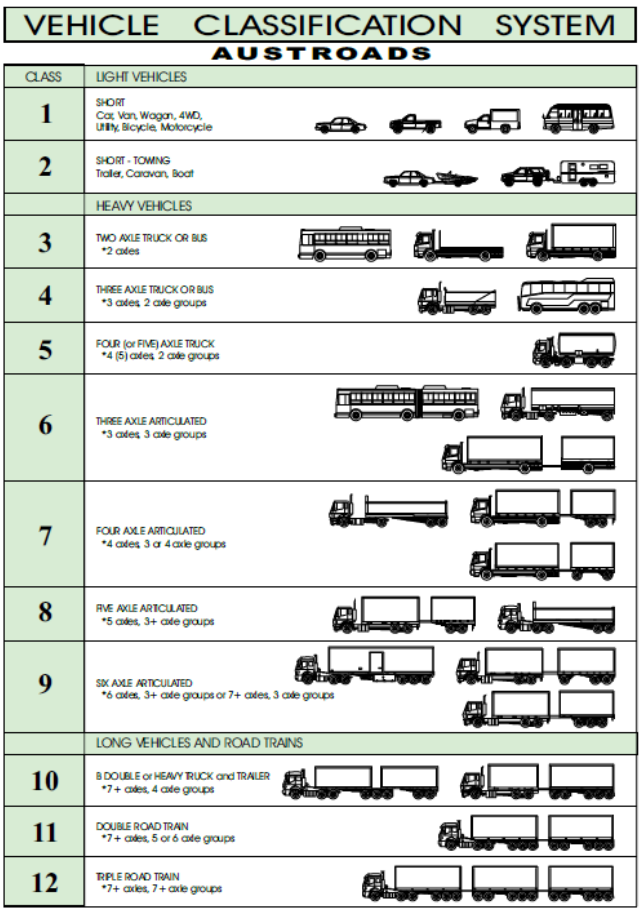
C_{tr}

This is a spectrum adaptation term for airborne noise and provides a correction to the R_w value to suit source sounds with significant low frequency content such as road traffic or home theatre systems. A wall that provides a relatively high level of low frequency attenuation (i.e. masonry) may have a value in the order of –4 dB, whilst a wall with relatively poor attenuation at low frequencies (i.e. stud wall) may have a value in the order of -14 dB.

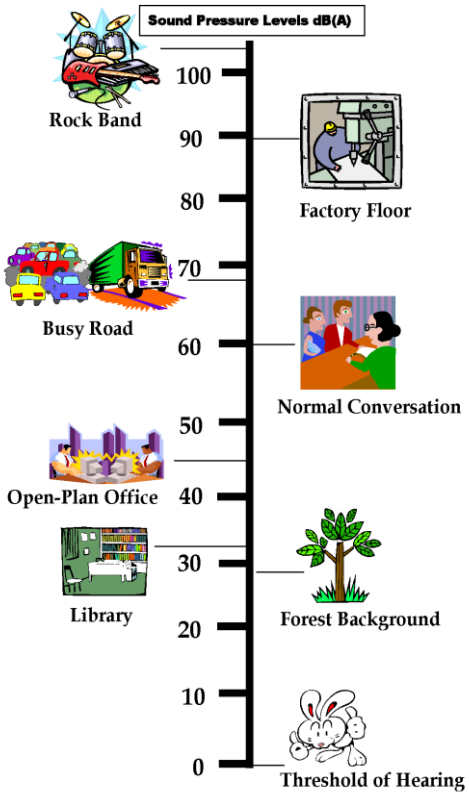
Chart of Noise Level Descriptors



Austroads Vehicle Class



Typical Noise Levels



WASTE MANAGEMENT PLAN

PROPOSED SEVEN (7) MULTIPLE DWELLINGS

LOT 56 (NO.549) BEACH ROAD, DUNCRAIG

CITY OF JOONDALUP

Prepared for:

Fulfil The Dream Developments

Prepared by:

CF Town Planning & Development
Planning & Development Consultants

Address: 3/1 Mulgul Road, Malaga WA 6090
Tel: 9249 2158
Mb: 0407384140
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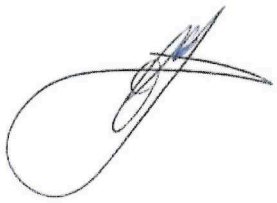
February 2022

CF Town Planning & Development

This Waste Management Plan has been prepared by CF Town Planning & Development on behalf of Fulfil The Dream Developments for the construction of seven (7) new multiple dwellings on Lot 56 (No.549) Beach Road, Duncraig.



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Document Revisions:

- Waste Management Plan (i) Dated 10 February 2022

Contents

List of Appendices

City of Joondalup

1.0 BACKGROUND & DESCRIPTION

CF Town Planning & Development have been commissioned by Fulfil The Dream Developments to prepare a Waste Management Plan (WMP) in support of the development application being considered by the City of Joondalup for the construction of seven (7) new multiple dwellings on Lot 56 (No.549) Beach Road, Duncraig.

According to the City of Joondalup s current operative Local Planning Scheme No.3 (LPS No.3), the sub ect land is classified Residential one and comprises a split density coding of R20/60. The sub ect land is located within the southern extremities of the Duncraig locality, ad acent the Carine Regional Open Space Reserve and in close proximity to the Warwick Train Station. Furthermore, the sub ect land is located within a Housing Opportunity Area .

Under the terms of the City s LPS No.3, the development and use of land within the Residential one for the Multiple Dwelling purposes is identified as a discretionary (D) use, meaning that the use is not permitted unless the local government has exercised its discretion by granting development approval.

As previously mentioned, the development application for sub ect land proposes the construction of seven (7) new multiple dwellings, with the following configuration:

i) Seven (7) two bedroom, two (2) bathroom dwellings.

It is significant to note that each dwelling has been designed to include a study to accommodate the opportunity for the future occupants of each dwelling to work from home, given the current climate (conse uences of Covid19).

A copy of the site development plans are provided in Appendix 3 (Site Development Plans).

2.0 PURPOSE OF WASTE MANAGEMENT PLAN

This Waste Management Plan has been prepared and submitted with the City of Joondalup in support of the development application lodged with the City for the construction of seven (7) new multiple dwellings on the sub ect land.

The aim of this Plan is to:

1. Identify the indicative volume of waste.
2. Ensure ade uate facilities are provided to serve the future occupants of the proposed multiple dwelling development on the sub ect land.
3. Demonstrate the proposed design meets industry best practice.
4. Provide for an ade uate on-site bin pick-up location and avoid impacting traffic safety and movements along Beach Road.
5. Identify methods available for the future occupants of the development to minimi e waste generation and reduce potential landfill.

3.0 KEY REFERENCE MATERIAL

- *WALGA Multiple Dwelling Waste Management Plan Guidelines;*
- *Sustainability Victoria (Victorian State Government);*
- New South Wales (NSW) Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities and
- *Discussions with the City of Joondalup Waste Management Division.*

4.0 ESTIMATED VOLUMES & BIN TYPE

4.1 Waste Generation Volume

The proposed multiple dwelling development on the sub ect land consists of the following dwelling configuration:

i) Seven (7) two bedroom, two bathroom dwellings.

The *WALGA Multiple Dwelling Waste Management Plan Guidelines* indicates that on average, each multiple dwelling (i.e. apartment) will generate the following waste (Table 1):

Table 1 – WALGA Waste Guidelines

Waste Stream	Dwelling Size	Waste Generation
General Waste	1 bedroom 2 bedroom 3 bedroom	80L/week 160L/week 240L/week
Recycle Waste	1 bedroom 2 bedroom 3 bedroom	40L/fortnight 80L/fortnight 240L/fortnight
Organic/Food Waste	1 bedroom 2 bedroom 3 bedroom	40L/fortnight 80L/fortnight 120/fortnight

Reference: Table 2 of the WALGA Multiple Dwelling Waste Management Plan Guidelines

Following discussions with the City of Joondalup s Waste Management Department (Mr Chris Hoskisson Waste Operations Coordinator), the following information was provided:

i) The City re uires on-site pick-up for developments comprising more than five (5) dwellings

ii) The City does not currently have Food Organic and combined Garden Organic (FOGO), but will introduce a service in the future. As such, ade uate space will be needed in storage area to cover the 3 services and

iii) The following waste generation ratios have been applied by the City of Joondalup and have been applied as part of this Waste Management Plan:

Table 2 – City of Joondalup Waste Generation Rates

Waste Stream	Dwelling Size	Waste Generation
General Waste	1 bedroom 2 bedroom 3 bedroom	80L/week 110L/week 140L/week
Recycle Waste	1 bedroom 2 bedroom 3 bedroom	80L/fortnight 110L/fortnight 240L/fortnight
Organic/Food Waste	1 bedroom 2 bedroom 3 bedroom	40L/fortnight 80L/fortnight 240L/fortnight

As previously mentioned, the proposed development on the sub ect land includes seven (7) two bedrooms, two bathroom multiple dwellings.

The following e uation has been used to calculate the anticipated weekly/fortnightly general waste and recycling generation:

- Waste & recycle generation calculations

  Total amount of Waste Type = Dwelling Number/Type x Waste Rate (weekly or fortnightly)

The following waste generation calculations (i.e. Table 3) is provided in support of the development for the purpose of establishing the number of bins re uired, based on the dwelling type within the development:

Table 3 – Weekly Waste Generation

Dwelling Type	Number of Bedrooms	General Waste	Recycle Waste	Greens/FOGO
Multiple Dwelling	2 bedroom (7 dwellings)	770 litres/per week	770 litres/per fortnight	560 litres/per fortnight
	Total Waste	770 litres (weekly)	770 litres (fortnightly)	560 litres (fortnightly)

4.2 Bin Type

The City of Joondalup have advised that the usage of 240 litre mobile bins per waste stream for the proposed multiple dwelling development on the sub ect land could be adopted given the small si e of the development. In addition, the City s re uires an on-site pick up service for developments comprising greater than five (5) dwellings. As such, the waste bins for the development will be collected on-site by the City s contractor (Sue) with a rear loading truck e uipped with a reverse camera system (see Figure 1). Figure 2 illustrates the bin si e and dimensions being provided in support of this development.

Given the City s waste generation rates, the proposed development will be provided with three (3) bin types (i.e. general waste, recycle & greens). It should be noted that the green bins have been provided to accommodate the City s introduction of a FOGO bin (Food Organics, Garden Organics) in the future.

In light of the above, the following bin re uirements are to be applied to the proposed development on the land:

- General waste bins- 4 x 240L
- Recycle waste bins- 4 x 240L
- FOGO waste bins - 4 x 240L (greens or future FOGO)

The following e uation has been used to calculate the number of bins re uired to service the development and the capacity of the bins for each waste stream:

- Total bins re uired for general/recycle waste

  Total number of bins required = Total waste generation/bin size (i.e. 240L)

The following calculation (i.e. Table 4) is provided in support of the waste generation and the number of bins re uired and the bin capacity to service the use:

Table 4 – Bin Capacity

WASTE TYPE	BIN SIZE	NUMBER OF BINS	BIN CAPACITY	WASTE GENERATION CALCUALTION
General Waste	240L	4	960L per week	770L per week
Recycle Waste	240L	4	960L per fortnight	770L per fortnight
Green/FOGO	240L	4	960L per fortnight	560L per fortnight

In light of the above bin capacity calculations, it is contended that the provision of the bin numbers listed in Table 4 is sufficient to accommodate the needs of the future occupants of the development on the sub ect land. This includes setting aside ade uate space/provisions for the future FOGO service.

In addition to the bin provision for the development, there is sufficient space within the verge area abutting the sub ect land to accommodate the verge pick up and to accommodate a skip bin. The area will be used to accommodate a skip bin to service the development and the storage of white goods, mattresses and any annual bulk green waste collection. It is noted that the verge area does comprise a footpath and that ade uate space is available to ensure that the pedestrian path will not be obstructed or not impact the pedestrian thoroughfare (see Figure 3 & Appendix 1).

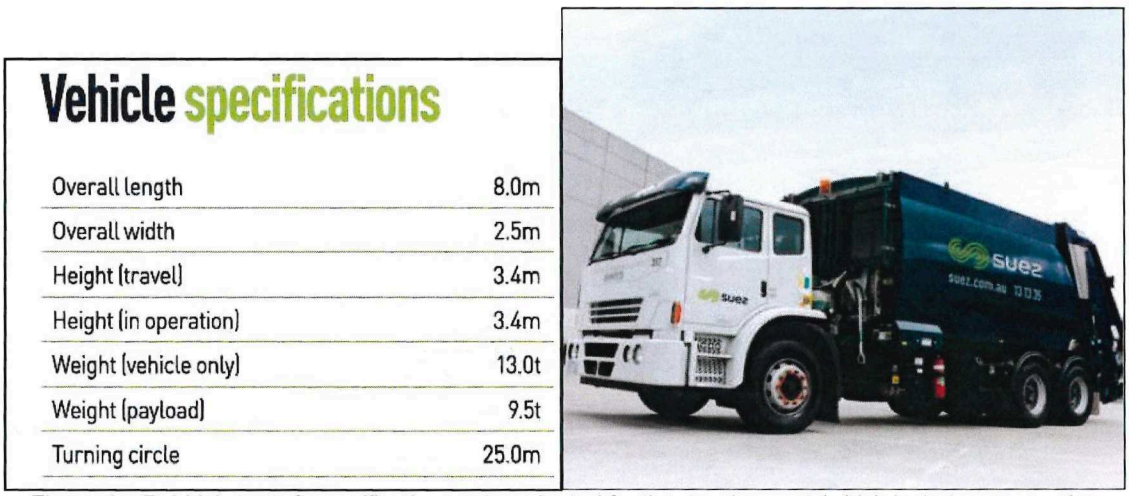


Figure 1 Rubbish truck & specifications to be adopted for the development (which includes a reversing camera to access/egress the sub ect land)

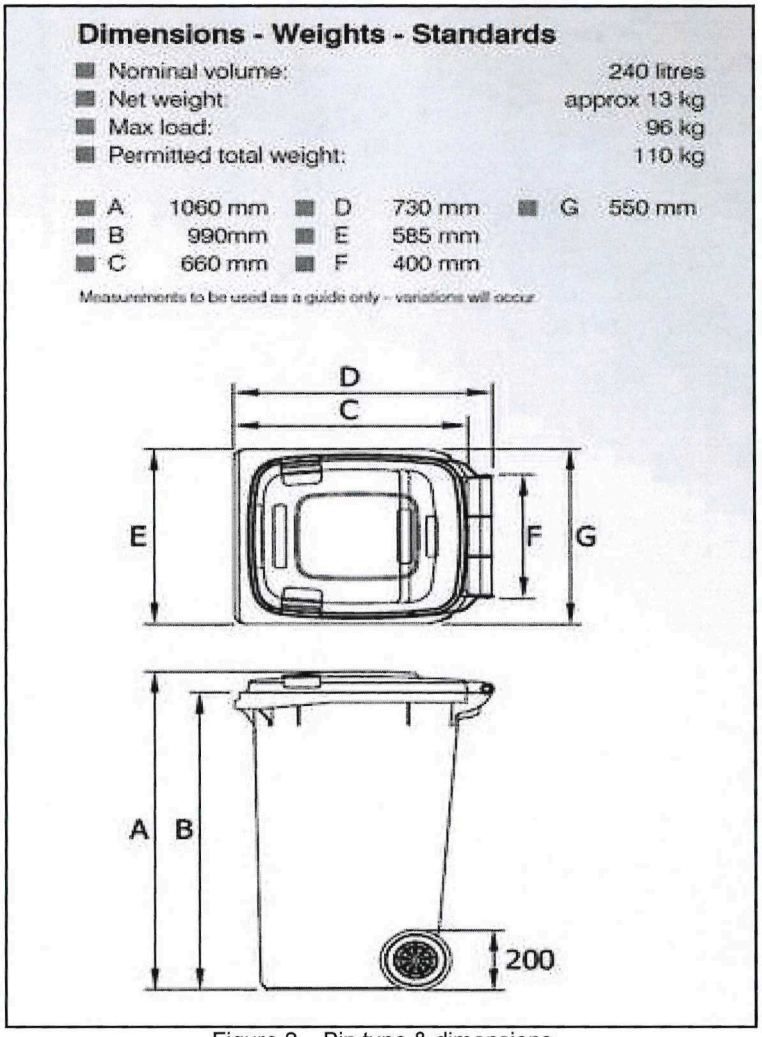


Figure 2 Bin type & dimensions

All bins will comprise appropriate colour coding and signage to clearly indicate the types of waste to be placed in the relevant bins. This will assist with ensuring that cross contamination of waste is avoided by the future occupants of the development. This will also allow for the reduction of landfill and potentially increase recycling.

5.0 COLLECTION FREQUENCY & PROVIDER

The City of Joondalup is the rubbish collection service provider (also via its contractor Sue), with the following collection services being provided to residential within the new development on the sub ect land:

- Weekly general waste mobile bin collection (every Monday).
- Fortnightly recycle mobile bin collection (every second Monday).
- Fortnightly green waste mobile bin collection (every second Monday alternative to the recycle waste collection).
- One (1) skip bin (bulk bin) per year for bulk rubbish/ unk collection.

- Annual collection of tree prunings.
- White goods pick-up.

In addition to the above services, the City provides collection points for the general public (i.e. library/civic centres) for mobile phone, globes & battery collection.

As previously mentioned, the City has advised that all bins will be collected on-site by the contractor, with the rubbish truck likely to access the site with a rear loading vehicle that will reverse onto the property along the driveway to service the bins (see Appendix 1 Bin Storage Location & Figure 3). The collection service will be undertaken on a weekly basis for general waste and fortnightly for recycle waste and green waste. It is recogni ed that the bins will need to be transferred from the bin store to the driveway for collection and returned once serviced.

Ade uate space has been provided along the common driveway to accommodate the rubbish truck on-site. On collection day, the truck will be stationary for a short period of time, with collection time being anytime between 6am and 5pm. This reflects the current waste collection service along beach Road. It should be noted that an appointed site manager (i.e. resident appointed by the strata company) will be responsible for transferring the bins from the bin store to the driveway for collection.

In light of the weight of the rubbish truck, the portion of driveway to be utili ed by the truck will be constructed to a higher standard to accommodate the truck without damaging the driveway.

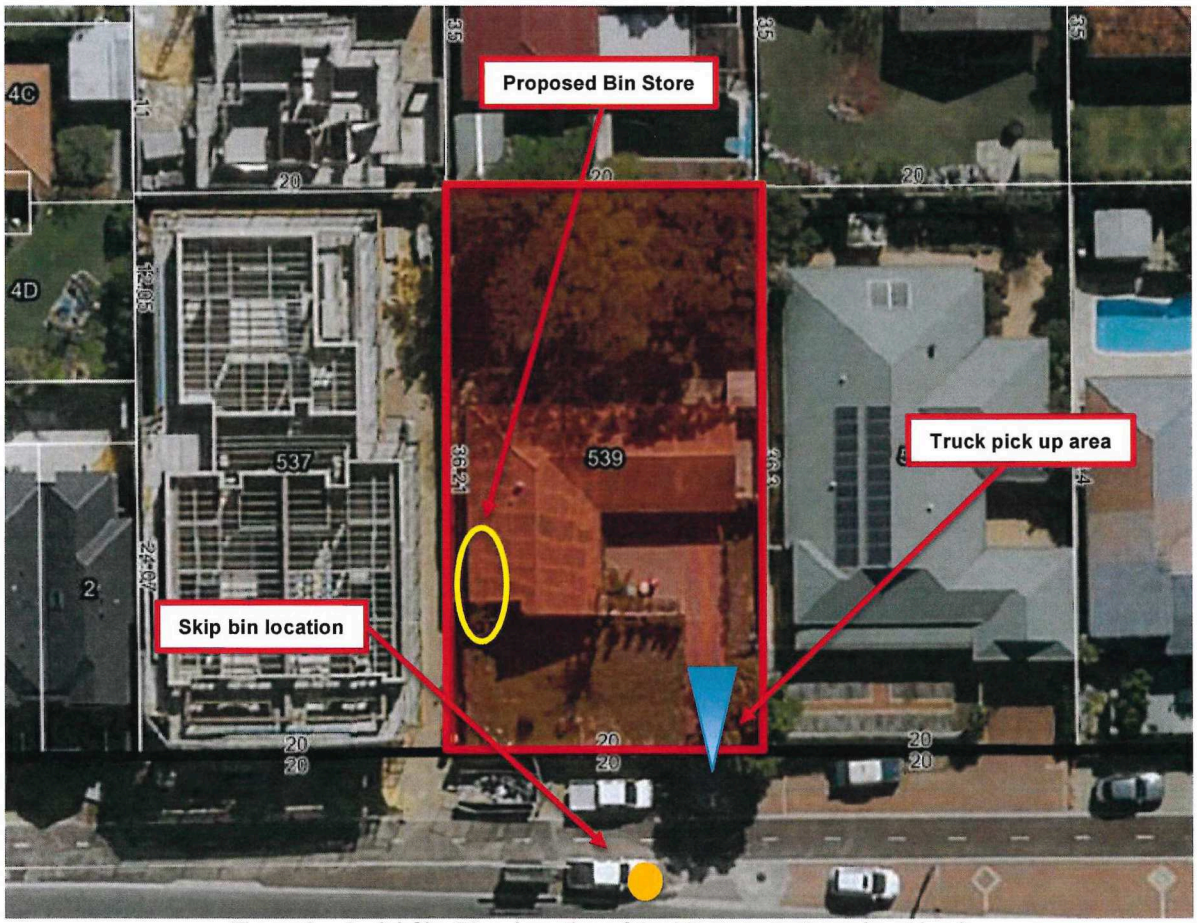


Figure 3 Aerial Site Plan. Location of the bin store on the sub ect land.

6.0 LOCATION, SIZE & FEATURES OF BIN STORAGE AREA

6.1 Bin Store Area & layout

As previously mentioned, the proposed multiple dwelling development on the sub ect land will include a total of twelve (12) 240 litre mobile garbage bins. The following table provides a breakdown of the re uired area for the bin storage area to accommodate the re uired bins (the re uired areas have been adopted using the New South Wales Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities):

Table 5 – Bin Storage Area

BIN SIZE	BIN AREA ALLOWANCE	QUANTITY	MANOEURING SPACE ALLOWANCE	AREA REQUIRED
240L MGB (General Waste)	0.24m^2	4 bins	X 2 (shared access)	1.92m^2
240L MGB (Recycle Waste)	0.24m^2	4 bins	X 2 (shared access)	1.92m^2
240L MGB (Greens/FOGO)	0.24m^2	4 bins	X 2 (shared access)	1.92m^2
		Total Area Required		**5.76m^2**
		Total Area provided		**16.24m^2**

As outlined above, the bin storage area proposed for the development is ade uate to accommodate the needs of the development. Furthermore, the bin store area proposed for the development will comprise gates to allow for easy access and storage of the bins. The store has been designed to provide easy removal of the bins for servicing and cleaning (see Appendix 1 Bin Store Location).

6.2 Bin Store Location & Features

Bin storage area will be located within the property boundaries, along the land s western side boundary and behind the building line. The bin store will be enclosed and no visible from the street and/or the ad oining properties. The bins will be moved from the bin store to the common driveway for collection and returned once serviced. It is proposed that the rubbish collection truck will enter the site in a reserve gear and exit is a forward gear (see Appendix 1 Bin Store Location).

The location of the bin store will be abutting the driveway for the new multiple dwelling development on the ad oining western property. It should be noted that the bin store on the sub ect land will be enclosed and is well clear of any ma or openings and the outdoor living area for the new dwellings on the ad oining western property. Given these fact, the bin store will not have an adverse impact on the future occupants of the new multiple dwelling development on the ad oining western property (see Figure 3). Furthermore, the bin storage area will also be located away from the any dwellings within the new development on the sub ect land.

The proposed location of the bin storage area will:

i) Minimise odour levels impacting on the occupants of the development
ii) The bin store is located away from any habitable rooms of the existing dwellings on the ad oining western property
iii) Provide easy access to all future occupants of the development and
iv) Accommodate the City s rubbish truck access.

Key design points of the common bin storage area are as follows:

- The bin storage area will comprise a tap and connection to sewer for wash-down purposes.
- The bin storage area will comprise a 100mm concrete floor.
- The bin store area will be screened and gated to hide its view from the street, common property area and provide security.
- A galvani ed pipe will be installed along the walls to prevent the bins from hitting and damaging the walls of the bin store.
- The bin storage area will be secure and screened from the future occupants of the development. The screen will include a masonry wall and landscaping along the frontage of the bin store to provide additional screening from being viewed from the public realm.
- The bin store will be enclosed.
- Ade uate on-site collection area (see Appendix 1 Bin Store location).

7.0 NOISE, ODOUR & MINIMIZING LANDFILL

It is anticipated that the location of the bin storage area for new multiple dwelling development on the sub ect land will provide easy access by the occupants of each individual dwelling and minimi e disruption to neighbors and residents.

Noise

The bin storage area will be screened and located within the sub ect land, away from any dwellings and will be enclosed. The ad oining western property comprises a common driveway ad acent to the bin store on the sub ect land. The bin storage area will comprise a masonry wall around the perimeter of the compound and landscaping along the frontage of the storage area.

It is expected that the bin storage area will generate minimal vertical and hori ontal noise transfer during use. As such, it is contended that the noise generated from the bin storage area will not result in any undue noise that would not be consistent with that generated by the ad oining properties.

In light of the above, it is contended that there will be no notable impacts on the residential dwellings on the ad oining properties from the development on the sub ect land in terms of waste management.

Odour

Strategies to minimi e odour are:

- Locating the common bin storage area along the side of the development, the facility being enclosed.
- The bin storage area will not abutting any habitable space for the existing dwelling on the ad oining western property.
- Construction of a masonry wall around the perimeter of the bin storage area.
- Screening the bin storage area.
- Allowing for natural ventilation of the bin storage area.
- Regular washing of the bins and storage area.

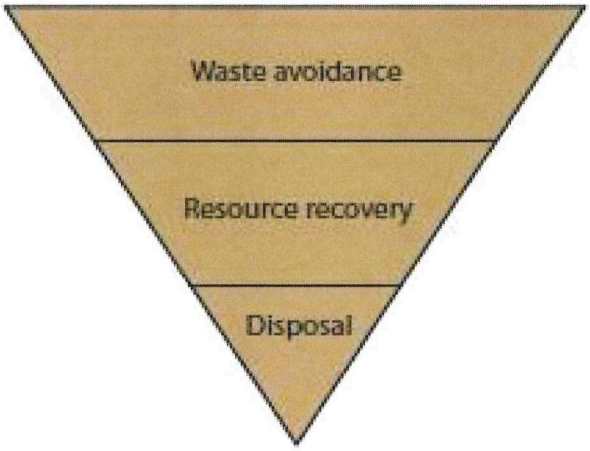
Minimising landfill

Given that the City of Joondalup provide three (3) separate bins (i.e. general waste, recycling & greens), it allows occupants of the development to sort rubbish accordingly. The provision of recycling bins will enable occupants of the development to place the following items for recycle collection:

- Glass bottles and ars (excluding broken glass, plates, pottery etc.).
- All plastic bottles.
- Newspapers and glossy maga ines, paper, envelopes
- Cardboard boxes, cereal boxes, pi a boxes, egg cartons etc.
- Cans - steel and aluminum, including aerosols cans.
- Milk and uice cartons.

Furthermore, the City of Joondalup provides annual bulk waste (i.e. skip bin), greens pickup and white goods pickup to reduce the amount of waste being placed within the general waste bin.

In light of the above services, it is contended that ade uate measures are available for the future occupants of the development to minimi e disposal of rubbish within the general waste bin resulting in long term reduction of landfill.



In light of the above services, it is contended that ade uate measures are available for the future occupants of the development to minimi e disposal of rubbish within the general waste bin resulting in long term reduction of landfill.

Vermin

The bin lids will remain closed at all times to reduce access by vermin. The use of bait stations could be implemented/considered by the occupier of each dwelling in instances of vermin appearing.

8.0 SCREENING OF BIN STORARE AREAS

The proposed multiple dwelling development on the sub ect land has been designed to be relatively small and comprises a masonry wall where it abuts the ad oining property. Furthermore, the bin store area will abut non-habitable spaces (which comprises mature vegetation) of the dwelling on the ad oining western property. Given this separation, it is concluded that an ade uate buffer is provided between the bin store and the livable spaces on the ad oining property.

It is contended that the bin storage area is consistent with a bin storage area akin to a conventional residential development (i.e. grouped dwelling development). Notwithstanding this fact, it is significant to note that the bin store for the proposed development on the sub ect land is well located and will be constructed to minimi e any adverse impacts on the ad oining properties.

In light of the above, it is contended that any potential impacts on the ad oining properties from the proposed bin storage area on Lot 56 is expected to be minimal and would be consistent with the waste disposal activities of a typical grouped and/or multiple dwelling development within the immediate locality.

9.0 IMPACT ON ADJOINING/ADJACENT PROPERTIES

The proposed multiple dwelling development on the sub ect land has been designed to be relatively small and comprises a masonry wall where it abuts the ad oining property. Furthermore, the bin store area will abut non-habitable spaces associated with the existing dwellings on the ad oining properties (i.e. the bin store abuts a driveway on the ad oining western property). Given this separation, it is concluded that an ade uate buffer is provided between the bin store and the livable spaces on the ad oining property.

It is contended that the bin storage area is consistent with a bin storage area akin to a conventional residential development (i.e. grouped dwelling development). Notwithstanding this fact, it is significant to note that the bin store for the proposed development on the sub ect land is well located and will be constructed to minimi e any adverse impacts on the ad oining properties.

In light of the above, it is contended that any potential impacts on the ad oining properties from the proposed bin storage area on the sub ect land is expected to be minimal and would be consistent with the waste disposal activities of a typical grouped and/or multiple dwelling development within the immediate locality.

10.0 STRATA MANAGEMENT COMPANY REQUIREMENTS

The appointed Strata Management Company contracted to manage the multiple dwellings on the sub ect land will be responsible to:

i) Appoint a site manager (i.e. a resident) to be responsible for coordinating the occupants of the complex to arrange cleaning of the bins and bin storage areas every two (2) to three (3) weeks

ii) The site manager will be responsible to transferring the bins from the bin store area to the driveway the night prior to pick up (before 7pm) and returning the bins to the store area on the evening of collection day (before 6pm)

iii) Ensure litter is cleaned up through regular landscape maintenance

iv) Deal promptly with any issues or complaints relating to hygiene, noise, odour or other inconvenience

v) Arrange for a private contractor to collect and disposal of green waste (i.e. small garden prunings etc.) as part of maintaining the landscaping areas for the development (i.e. private gardener) and

vi) Provide the City with relevant authori ation to access the site and any re uired indemnification regarding liability (see Appendix 2).

The abovementioned procedure will also be implemented if a sole landowner has control of the development (i.e. appoint a tenant to undertake the aforementioned tasks).

The future prospective purchases/occupants of the complex will be provided with a copy of the approved Waste Management Plan on occupancy of a dwelling. The Waste Management Plan will also be incorporated or referred to in any Strata Management Plan or Strata By-Laws or any rental agreements prepared for the development.

11.0 CONSTRUCTION WASTE

During construction, a waste compound will be provided on-site to store any waste produced during the construction process and will be serviced regularly (when re uired) by a private contractor. The contractor will provide off-site sorting of the waste to ensure that waste is recycled where possible to minimi e landfill waste.

Sub-contractors will be responsible for pre-sorting of waste products into appropriate areas within the waste compound as much as possible to reduce overall construction costs. The site manager will monitor the disposal of waste and sorting of recycle material.

No waste compounds or rubbish will be placed or stored on the street verge area or footpaths surrounding the pro ect boundaries. All pedestrian and vehicle access areas will remain clear from construction debris at all times.

More details regarding on-site management during the construction phase of the development will be provided as part of a Construction Management Plan to be prepared by the builder prior to the commencement of construction.

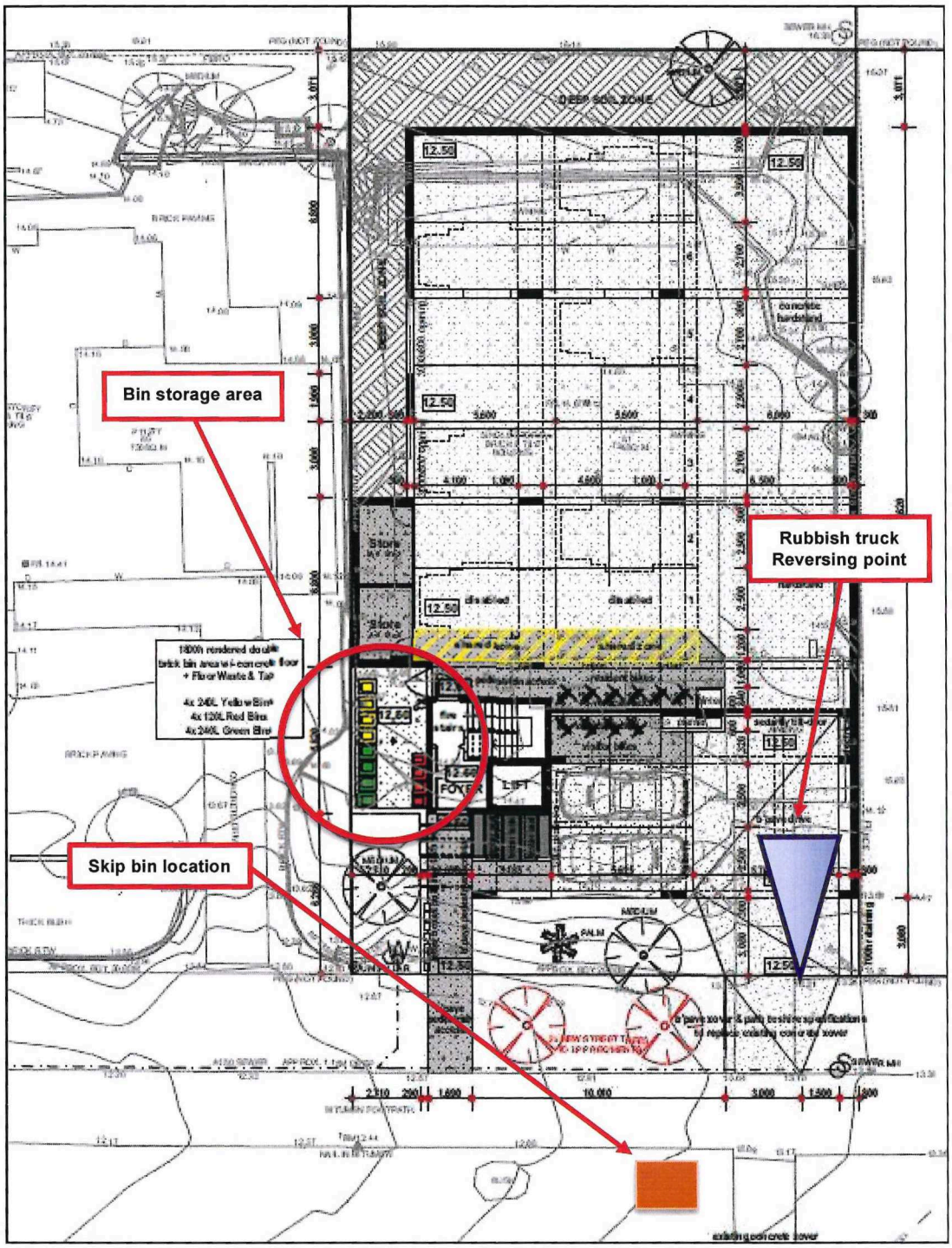
12.0 CONCLUSION

The proposed multiple dwelling development on the land in small in nature, does not generate high uantities of waste and is consistent with other similar multiple dwelling developments approved by the City of Joondalup within the Duncraig locality. As demonstrated within this Waste Management Plan, the proposed multiple dwelling development on sub ect land provides sufficient bin storage and ade uate bins to service the needs of the occupants for each individual dwelling for all waste streams provided by the City of Joondalup and has made allowance for the City intention to introduce a FOGO service in the future.

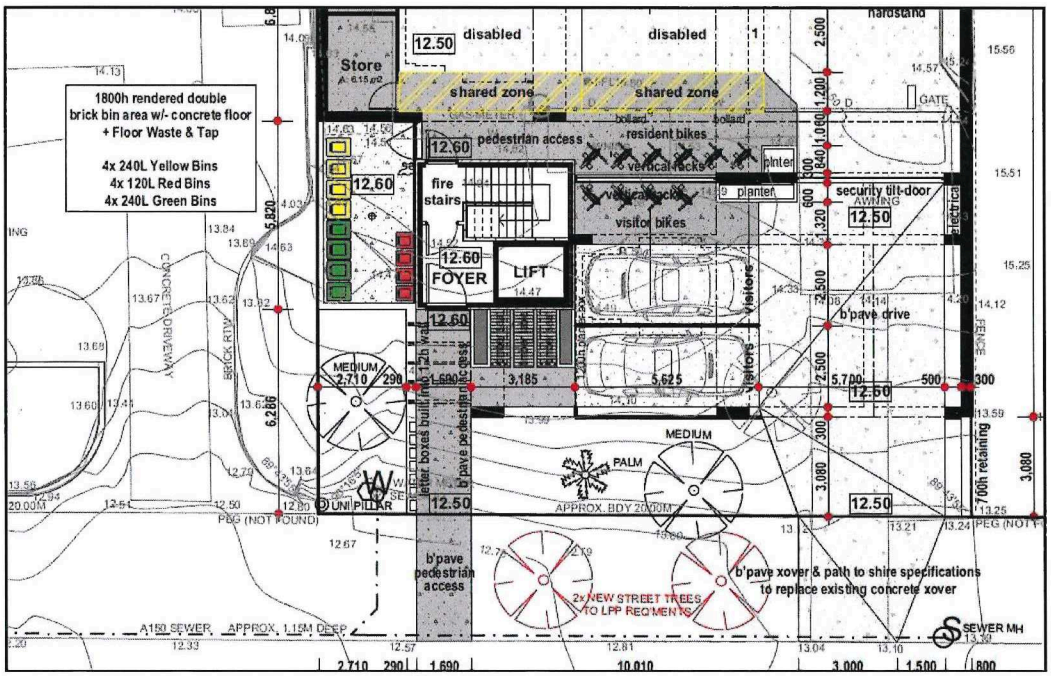
10 February 2022

CF Town Planning & Development
Planning & Development Consultants

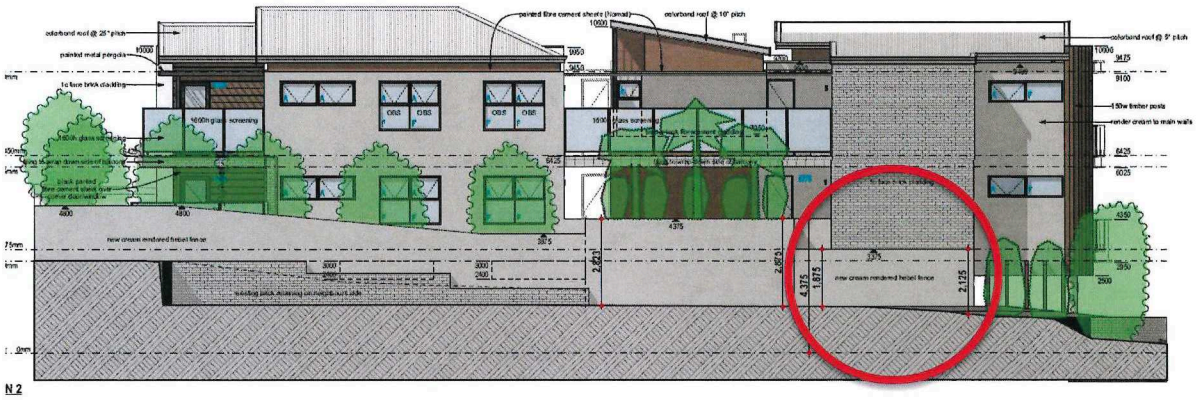
APPENDIX 1 – BIN STORE LOCATION

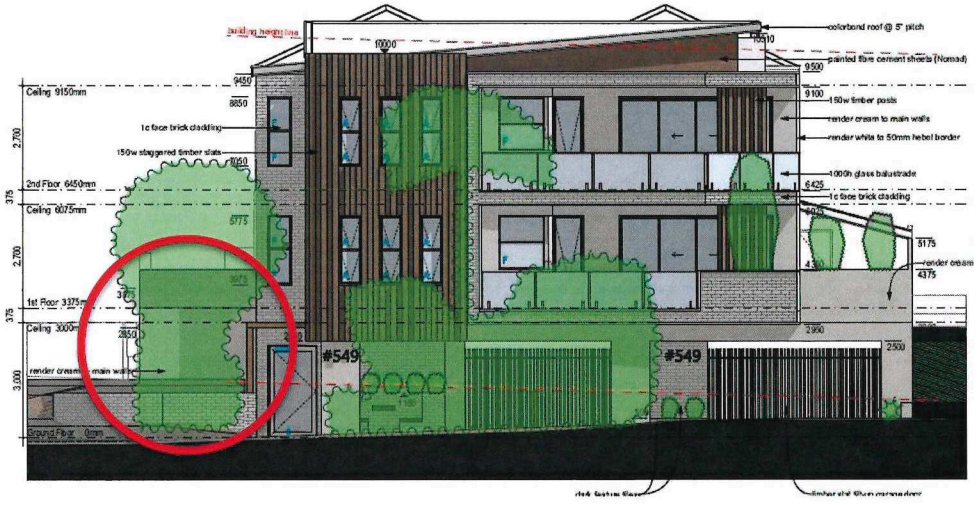


Above - Site Plan



Bin Storage Area





Planning & Development Consultants
Address: 3/1 Mulgul Road, Malaga WA 6090
Tel: 9249 2158 Mb: 0407384140 Email: carlof@people.net.au
CVF Nominees Pty Ltd ABN: 86 110 067 395

APPENDIX 2 – CITY OF JOONDALUP INDEMNITY FORM

City of Joondalup

SUEZ

DEED OF RELEASE

Household Waste Collection Services on Private Property

THIS DEED POLL IS GIVEN BY:

(insert name of Owners Corporation or Strata Manager) **("OWNERS REPRESENTATIVE")**

Of

(Insert property address) **("PROPERTY")**

FOR THE BENEFIT OF:

SUEZ Recycling & Recovery Pty Ltd (ABN 70 002 902 650) (SUEZ)

City of Joondalup (ABN 64 245 472 416) ("The City")

BACKGROUND

A. The Owners Representative has requested household waste or recycling collection services **("Services")** to be carried out at the Property by SUEZ on behalf of The City.

B. SUEZ has conducted a risk assessment and determined that there is no suitable delivery point on land at or near the Property on which to collect the bins as part of the Services, but that SUEZ could conduct the Services by driving a collection vehicle onto the Property.

C. The Owners Representative has requested SUEZ to provide the Services by driving the collection vehicle onto the Property and SUEZ has agreed to provide the Services in this manner on the terms and conditions of this Deed Poll.

OPERATIVE PART

1. **Consent to provide services on private property**

The Owners Representative gives its consent to SUEZ and grants a licence to SUEZ's representatives to enter onto the Property in a collection vehicle for the purpose of carrying out the Services.

City of Joondalup

SUEZ

2. **Indemnity**

The Owners Representative indemnifies and will continue to indemnify SUEZ and The City and each of their officers, employees, agents and contractors and related bodies corporate **(Indemnified Persons)** from and against all actions, claims, losses, damages, penalties, demands, costs and expenses **(Loss)** whatsoever which may be brought or made against an Indemnified Person by any person, including (without limitation) the Owners Representative or any resident, owner, tenant or invitee, in respect of property damage caused to the common areas at the Property (including but not limited to access and egress points, driveways, car parking areas, bin storage areas) arising out of or incidental to the performance by SUEZ of the Services, except to the extent any Loss is caused by the negligence of SUEZ, it's employees or contractors.

3. **Release**

Without limiting clause 2, the Owners Representative releases and forever discharges the Indemnified Persons from all liability for any Loss that the Indemnified Persons may have caused in relation to the subject matter of this deed.

4. **Warranties**

The Owners Representative represents and warrants to SUEZ and The City that the person signing this deed poll has the legal authority to enter into this deed poll on behalf of the Owners Representative and on behalf of the owners of the Property.

5. **Acknowledgement**

The Owners Representative acknowledges the weights of SUEZ's collection vehicles:
(a) collection vehicles to service plastic bins - up to 23 tonnes; and
(b) collection vehicles to service steel bins - up to 28 tonnes,
and that it is the Owners Representative's responsibility to ensure that these vehicles can be accommodated within the common areas on the Property where the Services are to be provided.

EXECUTED as a DEED POLL

City of Joondalup

suez

SIGNED for and on behalf of **the Owners Representative** by its duly authorised representative in the presence of:	
.....	.....
Signature of Owners Representative	Signature of witness
.....	.....
Print name	Print name
.....	.....
Position	Print address
.....	.....
Date	Date

Please return the completed form via one of the following methods:

Email: joondalup@suez-env.com.au
Fax to: (08) 9350 7196
In person to: City of Joondalup Administration Centre 90 Boas Drive, Joondalup WA 6027
(Monday- Friday 8:30am to 5:00pm)

OFFICE USE ONLY

Booking Number: .....

Resident Name: .....

Contact Number: .....

Environmentally Sustainable Design – Checklist

Under the City's planning policy, *Environmentally Sustainable Design in the City of Joondalup*, the City encourages the integration of environmentally sustainable design principles into the construction of all new residential, commercial and mixed-use buildings and redevelopments (excluding single and grouped dwellings, internal fit outs and minor extensions) in the City of Joondalup.

Environmentally sustainable design is an approach that considers each building project from a 'whole-of-life' perspective, from the initial planning to eventual decommissioning. There are five fundamental principles of environmentally sustainable design, including: siting and structure design efficiency; energy efficiency; water efficiency; materials efficiency; and indoor air quality enhancement.

For detailed information on each of the items below, please refer to the *Your Home Technical Manual* at: **www.yourhome.gov.au**, and *Energy Smart Homes* at: **www.clean.energy.wa.gov.au**.

This checklist must be submitted with the planning application for all new residential, commercial and mixed-use buildings and redevelopments (excluding single and grouped dwellings, internal fit outs and minor extensions) in the City of Joondalup.

The City will seek to prioritise the assessment of your planning application and the associated building application if you can demonstrate that the development has been designed and assessed against a national recognised rating tool.

Please tick the boxes below that are applicable to your development.

Siting and structure design efficiency

Environmentally sustainable design seeks to affect siting and structure design efficiency through site selection, and passive solar design.

Does your development retain:

- [X] existing vegetation; and/or
- [X] natural landforms and topography

Does your development include:

- [X] northerly orientation of daytime living/working areas with large windows, and minimal windows to the east and west
- [X] passive shading of glass
- [X] sufficient thermal mass in building materials for storing heat
- [X] insulation and draught sealing
- [X] floor plan zoning based on water and heating needs and the supply of hot water; and/or
- [X] advanced glazing solutions

Energy efficiency

Environmentally sustainable design aims to reduce energy use through energy efficiency measures that can include the use of renewable energy and low energy technologies.

Do you intend to incorporate into your development:

- [x] renewable energy technologies (e.g. photo-voltaic cells, wind generator system, etc); and/or
- [x] low energy technologies (e.g. energy efficient lighting, energy efficient heating and cooling, etc); and/or
- [x] natural and/or fan forced ventilation

Water efficiency

Environmentally sustainable design aims to reduce water use through effective water conservation measures and water recycling. This can include stormwater management, water reuse, rainwater tanks, and water efficient technologies.

Does your development include:

- [ ] water reuse system(s) (e.g. greywater reuse system); and/or
- [ ] rainwater tank(s)

Do you intend to incorporate into your development:

- [x] water efficient technologies (e.g. dual-flush toilets, water efficient showerheads, etc)

Materials efficiency

Environmentally sustainable design aims to use materials efficiently in the construction of a building. Consideration is given to the lifecycle of materials and the processes adopted to extract, process and transport them to the site. Wherever possible, materials should be locally sourced and reused on-site.

Does your development make use of:

- [x] recycled materials (e.g. recycled timber, recycled metal, etc)
- [x] rapidly renewable materials (e.g. bamboo, cork, linoleum, etc); and/or
- [x] recyclable materials (e.g. timber, glass, cork, etc)
- [x] natural/living materials such as roof gardens and “green” or planted walls

Indoor air quality enhancement

Environmentally sustainable design aims to enhance the quality of air in buildings, by reducing volatile organic compounds (VOCs) and other air impurities such as microbial contaminants.

Do you intend to incorporate into your development:

- [x] low-VOC products (e.g. paints, adhesives, carpet, etc)

‘Green’ Rating

Has your proposed development been designed and assessed against a nationally recognised “green” rating tool?

- [ ] Yes
- [x] No

If yes, please indicate which tool was used and what rating your building will achieve:

_____

_____

_____

If yes, please attach appropriate documentation to demonstrate this assessment.

If you have not incorporated or do not intend to incorporate any of the principles of environmentally sustainable design into your development, can you tell us why:

rainwater and greywater tanks have not been deemed necessary for this development due to the low maintenance nature of water consumption.
Solar Panels may be considered however not currently reflected on the plans. All our lighting is LED anyway and the appliances will be highly rated too, so again, don't really deem solar panels completely necessary.
The design of the apartments and the amount of landscaping/canopy cover, alongside the use of particular materials should mean the houses require less cooling too.

Is there anything else you wish to tell us about how you will be incorporating the principles of environmentally sustainable design into your development:

When you have checked off your checklist, sign below to verify you have included all the information necessary to determine your application.

Thank you for completing this checklist to ensure your application is processed as quickly as possible.

Applicant's Full Name: Dean Turner **Contact Number:** 0433379119

Applicant's Signature: D.Turner **Date Submitted:** **19/07/21**

Accepting Officer's Signature:

Checklist Issued: March 2011

Joondalup Design Review Panel comments and applicants' response

Summary of Design Reference Panel comment	Summary of Applicant response
Overall the design is lacking and needs more thought, with too many architectural styles. The roof needs to be simplified.	The design has been tweaked after looking at it further and taking the JDRP's points on board. The roof wasn't requested to be simplified, if not more "consistent" as there were "too many different architectural features" before and the hip and valley roof along with parapet walls were the main concerns. The roof has now been made more consistent throughout enhancing the side and rear elevations to compliment the front elevation more as there was no negative response in regards to the front elevation other than questioning the construction method.
Concerns with the overall bulk and scale, noting that the development potentially does not comply with privacy setbacks when transitioning from a R20 area.	The overall bulk and scale has actually dropped significantly as it was realised while making amendments that the neighbouring ground levels were actually drawn 500mm lower than they should have been. This alone made a massive difference along the sides of the property. The rear setback was also recognised as being 500mm under the requirement for even overlooking under R60, therefore the rear apartments have been brought in 500mm (leaving a 4.5m setback to living areas) while shaving minor portions out of each apartment. Windows have now been clearly labelled where obscured glazing will be placed, and this obscuring can be potentially removed in the future should the neighbouring properties convert to R60 as well. Overall, the bulk and scale of the development we believe is more compassionate to the neighbourhood than the grouped and multi-dwellings that already exist along the street which are built right up to the 2m front setback and possibly 1.2m/1.5m from the sides in places. These existing developments along the street don't even feature front landscaping to help ease the impact on the streetscape, let alone the sides of the property where the double storeys are at their absolute minimum setbacks where possible. Our 3m and 4.5m setbacks to the sides are by far more sympathetic to the neighbours, while the landscaping wrapping around the entire building adds an extra buffer.
Concerns with Apartment 2. This seems to be squeezed in and results in a compromised design.	Apartment 2 has been re-designed to allow more privacy and acoustic/privacy buffer to the bedrooms. The void was removed meaning Bed 1 has been pushed to the external wall therefore Bed 1 no longer has a window facing into a communal corridor, and the window facing out is larger and not obscured as it meets the R20 privacy requirements. The Study and Bed 2 windows have been

Summary of Design Reference Panel comment	Summary of Applicant response
	rotated and pushed back respectively from the communal corridor, with vertical landscaping to help add further privacy to these rooms. Acoustics has not been recognised as a major issue due to the egress route behind not being considered highly trafficable, only having 2 apartments behind, and those 2 apartments only having a study and entry door facing into the corridor. Should the acoustics engineer highlight this as a potential impact on the acoustic ratings of those rooms, we can easily add V-Lam Hush glass to those windows instead of the double glazing
There is no passive shading to windows on the eastern and western elevations and there will be a significant heat load should they not be treated appropriately.	Eastern windows aren't considered to generate a "significant heat load" regardless, but due to the topography to the east of the block, most of the early morning summer sun will be blocked out regardless as Warwick is significantly higher than Duncraig. The Western Windows however are well protected by trees as the banksias and acacias will be tall enough to protect the windows from the summer sun which wraps around further in the afternoon, but still allow enough winter sun to heat up the apartments.
Some apartments have the TV in front of half the glass sliding door, obstructing the view.	This has been amended to reflect a swing door instead of a sliding door.
The location of the entry to Apartment 1 and 2 has no buffer from the foyer exit and there will be a lot of traffic going past these units.	The Lift/Stair Shaft has now been flipped to bring the Egress doors further away from the SOU Entries. Apartments 1 and 5 have had their Entry doors rotated around as well to allow better access to the store doors.
There are a number of windows opening into the accessways. The separation does not provide visual or acoustic privacy and is a poor design outcome.	Apartment 2 has now been re-designed to bring the windows away from the communal corridor with better privacy protection through a vertical landscape containing climbing plants. The Study windows to the rear apartments were noted as incorrect anyway and have been amended as they realistically need to have sills above 1500mm for fire requirements anyway. Acoustics isn't really considered an issue as it is doubtful there will be much traffic down this rear communal corridor with only 1 apartment in the rear corner, plus being Studies rather than bedrooms then any potential noise would be more acceptable for the decibel requirements that the acoustics engineers work off.

Summary of Design Reference Panel comment	Summary of Applicant response
The upper floor accessway is open to the west and has no weather protection.	Protection has now been added in the form of a macrolon lined pergola roof as we would still prefer natural light coming into this corridor to service the apartments.
The screening to the balconies at the rear is not a good outcome.	Only 2 apartments of the 7 have this screening while they also have open louvred roofs anyway. 1600h isn't even fence height and being obscured glass rather than a solid wall it could be justified that it's a better outcome than most grouped dwellings have. The rear neighbour's fence line along with ours is also well vegetated, so a discussion could be had to drop the height of the rear screening to a standard balustrade as it's hardly going to be invasive anyway. Another suggestion that could be considered by council is to have 75% permeable screening to these terraces instead, however I personally feel obscured glazing is more comfortable than screening unless it's perforated metal in which it potentially adds to the amenity and character of the terraces.
The configuration of some of the balconies means there is unusable space that may become a maintenance issue and the design could be done to be more functional.	This was noted, and the portion of the balconies that were narrower and screened were in turn actually blocking the views of the habitants, therefore these portions were changed to planter boxes instead and the windows now have views with some added amenity.
The entry is not legible, is tucked behind the parking bays and is uninviting.	This was a previous consideration in the design and has now been adjusted accordingly due to the negative response in regards to the existing landscaping retention.
Retaining the vegetation in the front is a disadvantage to the overall design and creates a CPTED issue with concealed areas.	The motivation to retain as much existing landscaping was due to it being very bushy which ties in with the neighbourhood, along with the actual R-Codes even stating to retain as much mature vegetation as possible. Storage can and would eventually be kept within the basement anyway or on the very deep verge. However, the JDRP's comments have been accepted and the landscaping has been re-designed along with the Entry to the building to be safer and more practical.
The existing landscaping is not well kept. The construction management will likely mean that a lot of this would need to go to accommodate construction.	As stated above.

Summary of Design Reference Panel comment	Summary of Applicant response
Concerns raised with the planter boxes and the heights used. The elevations and levels do not seem accurate. Queried whether the concrete slab will be able to support the soil load.	The Planter Box outside of Unit 4's bedroom windows was incorrectly notated and has since been fixed. (1000h in lieu of 1800h high) The elevations are now more clearly labelled to show what hides behind the fence. The JDRP's comments were noted that some of the planter boxes may not be easily accessible either without possibly a ladder, therefore some screening has been removed and the planters amended in heights to be more easily accessible. The plant selection has been slightly amended now to include plants of little to no maintenance. The concrete slab is an engineering issue, therefore not considered an issue at planning stage anyway. There are various methods that could be incorporated to make this work if the engineer deems it as needing attention. People put pools on rooftops, I don't think a planter box will be an issue.
Concerns regarding maintenance and access to the planter boxes, and possible safety issue for maintenance.	As stated above
There is an opportunity to create an informal communal space in the street area combined with the frontage and entry point.	Noted and accepted. An informal communal space has been added near the entry, and further to this some small seating areas have also been added to each floor outside of the fire stairs.
The plant mix could be better, palms are not ideal.	The palms selected can be kept in pots, and palms are pretty much always low maintenance, therefore I don't agree with this opinion. Tropical natives are also incredibly common in the northern suburbs to add character to the garden and give the residents a holiday welcome home. It was however accepted that not all of the plants originally selected were of low maintenance, therefore the Dianella's previously selected to the planter boxes have been only located within arms reach of the walkway, while in other areas replaced with Snake plants and Cordylines which literally need zero maintenance.
Would be beneficial to provide a diagram that demonstrates how the development complies with landscaping requirements,	Accepted and has been added.

Summary of Design Reference Panel comment	Summary of Applicant response
including deep soil areas and root zones for all trees.	
Grass proposed for the rear dwellings is not practical and could create an on-going maintenance issue.	Accepted and has been amended
Disabled parking bays do not comply with the Australian Standard.	The shared zone has now been flipped to the Foyer side of the Disabled bays which in turn increases the functionality and access to the Foyer.
Queried lift shaft and stairs and if they will be motion-sensor activated. Concerns that use of a sliding door will not meet fire separation requirements.	The sliding doors have been removed now anyway so this will no longer be an issue. These doors will now be standard fire doors.
Queried the treatments to the southern façade and how the element will work structurally.	The first and second floors are to be made from steel truss frames with the floors and external walls lined with 50mm and 75mm hebel panels. The front façade has 2 queries; 1) The Border to the Balconies – this will be designed with the 50mm hebel panel just overhanging the steel frame by 100mm, very simple. The bottom part of the borders will be 50mm hebel connected to the underside of the frame. 2) The *Timber Wave Feature to the Bed 2 walls – This will be lightweight steel framing with timberlook composite boards lined around the frame. Again, very simple and being composite boards then there's no fire hazard.
Queried how the upper floor is supported.	This is obviously a building issue, but basically the basement is constructed entirely of concrete with concrete pillars and beams with a concrete floor to the First Floor. After that we will start using Steel Framing for the 2x floors with 50mm and 75mm Hebel to line the floors and external walls. This construction has already been approved in other projects of ours as high as 5 Storeys.
Queried if there will appropriate acoustic buffer between the floors.	Yes, there needs to be or it won't pass the NCC. Hebel is well renowned for its acoustic, fire and energy properties regardless, and again, we've had this approved in 5 storey apartment buildings already.

City of Joondalup

HOALPP / SPP 7.3 assessment summary

The detail highlighted in red has been identified as not achieving the suggested requirements under the acceptable outcome.

HOALPP

Element	SPP 7.3 reference	Objectives	Development Standards	Proposed
1 Urban design — Public domain interface	**3.6 Public domain interface**	Achieved	Blank walls, vehicle access and building services (e.g. bin store, booster hydrant) shall not exceed 20% of the total lot frontage to the public realm.	Vehicle access, visitor parking and bin store screen total 15.9m or 79.5%
3 Urban design – Multiple dwellings – Application of average site area	**A2.5.2 Plot ratio**	Achieved	Development of multiple dwellings which complies with a minimum site width street boundary of 20 metres;	20 metre site width
			is located within an 800m walkable catchment, as defined on the Scheme map, from any existing or proposed strategic metropolitan, secondary, or specialised activity centre or railway station on a high frequency rail route	Located within 800m catchment of Warwick Train Station
4. Building height	**2.2 Building height**	Achieved	2 storeys (9m)	2 storeys + under croft (9.4m)
5 Street setbacks	**2.3.1 Street setbacks**	Achieved	Primary Street: 2 metres	2 metre minimum setback
6 Side and rear setbacks	**2.4 Side and rear setbacks**	Achieved	Ground floor: 2 metres Upper floor: 3 metres	Ground floor: minimum 2 metres Upper floor: minimum 2 metres (west and east)
7 Resident parking – Location	**3.8 Vehicle access**	Achieved	Resident parking, including a carport, garage or other hardstand area, shall be setback a minimum of 5.5 metres from the public road boundary.	Undercroft parking setback 10.8 metres from primary street.
8 Solar access for	**3.2 Orientation**	Achieved	Shadow to residential properties to the south shall not exceed 40%	Shadow from development falls onto Beach Road and not any adjoining property.

Element	SPP 7.3 reference	Objectives	Development Standards	Proposed
adjoining sites			of the site area as cast at midday on 21 June.	
9 Access and parking – Resident Parking	**3.9 Car and bicycle parking**	Achieved	N/A – Amended definition for Location A parking.	Considered in assessment of 3.9 below.
10 Access and Parking	**3.8 Vehicle access**	Achieved	Crossover width to a maximum of 4.5 metres	Crossover 4.5 metres wide
			Crossovers shall not interfere with existing or proposed street trees, or the levels of pavement.	Crossover is intended to replace existing crossover location and will not impact trees.
11 Landscape area	**3.3 Tree canopy and deep soil areas**	Achieved	20% of the site (146.m2) to be landscaped. Minimum dimension of 1.5m	28% (211.92m2) landscaped. All areas within calculation meet minimum 1.5m dimension.
12 Tree Sizes and Deep Soil Areas	**3.3 Tree canopy and deep soil areas**	Achieved	Trees (see 13 below) provide minimum area and dimensions. Medium trees: 36m2 deep soil area. Minimum dimensions 3m. Small trees: 9m2 deep soil area. Minimum dimensions 2m.	Development has space for medium trees at the rear of the development measuring 31m2 (east) and 30.7m2 (west). Western area also has a 2.2m landscape strip, however, does not meet the minimum dimensions of 3m. Small trees have minimum 9m2 and dimension of 2m.
13 Trees	**3.3 Tree canopy and deep soil areas**	Achieved	Given lot size, development requires either: One large tree and two small trees; or Two medium trees and one small tree	Two medium trees and numerous small trees in addition to the retention of six trees (small and medium) on site.
14 Tree retention	**3.3 Tree canopy and deep soil areas**	Achieved	Landscaping can be reduced where medium or large trees are retained. Tree retention is required to be supported by an Arboriculture report.	No arboriculture report was provided by the applicant. Therefore no reducing in the landscaping requirement was considered.
15 Outdoor living areas	**4.4 Private open space and balconies**	Achieved	Outdoor living areas may be located in the front setback area where their design enhances surveillance of the adjacent streetscape.	No outdoor living areas were proposed within the front setback area.
16 Size and layout of dwellings	**4.3 Size and layout of dwellings**	Achieved	Policy does not alter requirements for multiple dwellings.	Consideration against 4.3 of SPP 7.3 below.

Element	SPP 7.3 reference	Objectives	Development Standards	Proposed
17 Solar and daylight access	**4.1 Solar and daylight access**	Achieved	A site plan is to be prepared to demonstrate solar design outcomes for the Responsible Authority assessment.	The applicant has provided sufficient information to demonstrate the solar outcomes for the development.
18 Natural ventilation	**4.2 Natural ventilation**	Achieved	All rooms, with the exclusion of store rooms, shall have operable windows. Window opening design shall maximise natural ventilation.	All rooms have access to operable windows except the following: A1 & 5: Bath A2: Pdr (toilet) A3, 4, 6 & 7: Bath/laundry
			Habitable rooms shall have a window in an external wall which: a) Has a minimum glass area not less than 15% of the floor area of the room;	All rooms meet the relevant windows except the following: A1: Bed 2 (12.43%) A5: Bed 2 (12.5%)
			b) Comprise a minimum of 50% clear glazing; and,	N/A
			c) Is openable for 50% the size of the window.	A1: Bed 2 (41.44%) A3: Bed 1 (48.95%) A4: Bed 1 (48.95%) A5: Bed 2 (41.44%) A6: Bed 1 (48.95%) A7: Bed 1 (48.95%)
19 Waste management	**4.17 Waste management**	Achieved	A communal bin store shall be provided, with a shared bin service. The number of bins provided for each development will be determined by the City.	A communal bin store has been provided. A waste management plan has sufficiently demonstrated the volumes of waste to be generated and bin types required.
			A suitable area for bulk hard waste and green waste collection shall be provided.	The waste management plan identifies that bulk waste would be collected via skip bin that could be located on the verge without any impact on surrounding properties.
			The development shall be designed to facilitate on-site bin collection by the City. The collection point and access for service vehicles shall be constructed to the City's specification.	The applicant has agreed through, the waste management plan, that the design and construction of the driveway will be to a higher than normal standard for residential development. A condition is recommended should the matter be approved.

SPP7.3

Element	Element Objectives	Proposed
2.2 Building height	As discussed in the body of the report.	
2.3 Street setbacks	As discussed in the body of the report.	
2.4 Side and rear setbacks	As discussed in the body of the report.	
2.5 Plot ratio	As discussed in the body of the report.	
2.6 Building depth	O 2.6.1 Building depth supports apartment layouts that optimise daylight and solar access and natural ventilation.	Apartments received sufficient daylight/solar access and ventilation through the overall design.
	O 2.6.2 Articulation of building form to allow adequate access to daylight and natural ventilation where greater building depths are proposed.	As above, development receives sufficient daylight and ventilation.
	O 2.6.3 Room depths and / or ceiling heights optimise daylight and solar access and natural ventilation.	The development has multiple aspects with no single aspect apartments, allowing daylight and ventilation in through multiple directions.
2.7 Building separation	O 2.7.1 New development supports the desired future streetscape character with spaces between buildings.	Development is considered to be adequately separated from adjoining properties to retain future streetscape.
	O 2.7.2 Building separation is in proportion to building height.	Dwelling is predominantly two storeys and largely meets the setback requirements of the HOALPP.
	O 2.7.3 Buildings are separated sufficiently to provide for residential amenity including visual and acoustic privacy, natural ventilation, sunlight and daylight access and outlook.	Development is separated sufficiently from adjoining property with elements of visual privacy, solar access etc considered under separate sections.
	O 2.7.4 Suitable areas are provided for communal and private open space, deep soil areas and landscaping between buildings.	Informal communal area appropriate for the seven-dwelling development. Provides for connection with landscaping and deep soil areas at the front of the development.
3.2 Orientation	O 3.2.1 Building layouts respond to the streetscape, topography and site attributes while optimising solar and daylight access within the development.	Building layout achieves adequate daylight access to units and responds to the street layout with street fronting apartment design.
	O 3.2.2 Building form and orientation minimises overshadowing of the habitable rooms, open space and solar collectors of neighbouring properties during mid-winter.	• No solar collectors on existing adjoining dwellings will be impacted. • Shadow from the winter sun will be cast to Beach Road.
3.3 Tree canopy and deep soil areas	As discussed in the body of the report.	

Element	Element Objectives	Proposed
3.4 Communal open space	O 3.4.1 Provision of quality communal open space that enhances resident amenity and provides opportunities for landscaping, tree retention and deep soil areas.	The informal seating provides a small meeting area for both resident and visitors, at the entrance of the development. The area is not excessive and allows tree retention and deep soil areas.
	O 3.4.2 Communal open space is safe, universally accessible and provides a high level of amenity for residents.	The residential units provide for surveillance over the communal space, with open visibility to the street.
	O 3.4.3 Communal open space is designed and oriented to minimise impacts on the habitable rooms and private open space within the site and of neighbouring properties.	The informal seating area is not considered to adversely impact habitable rooms and/or adjoining OLAs.
3.5 Visual privacy	As discussed in the body of the report.	
3.6 Public domain interface	As discussed in the body of the report.	
3.7 Pedestrian access and entries	As discussed in the body of the report.	
3.8 Vehicle access	O 3.8.1 Vehicle access points are designed and located to provide safe access and egress for vehicles and to avoid conflict with pedestrians, cyclists and other vehicles.	• Beach Road verge is 14.15m wide which allows sufficient area for entering vehicles to wait as another vehicle exits the development. • The development also includes a separate pedestrian path so there is no conflict between pedestrians and vehicles.
	O 3.8.2 Vehicle access points are designed and located to reduce visual impact on the streetscape.	Resident bays are within an undercroft area and are behind a timber tilt-up garage door and landscaping will reduce the visual impact of the visitor bays on the streetscape.
3.9 Car and bicycle parking	As discussed in the body of the report.	
4.1 Solar and daylight access	O 4.1.1 In climate zones 4, 5 and 6: the development is sited and designed to optimise the number of dwellings receiving winter sunlight to private open space and via windows to habitable rooms.	• Four apartments face north. • Two apartments face south however include MOs to the west to allow for sunlight in the afternoons – windows facing west include Low E glass to reduce heat gain. • Five apartments OLAs have access to northern light.
	O 4.1.2 Windows are designed and positioned to optimise daylight access for habitable rooms.	Daylight access is optimised as all habitable rooms (except the study for the rear apartments) have windows with access to direct sky.
	O 4.1.3 The development incorporates shading and glare control to minimise heat gain and glare: – from mid-spring to autumn in climate zones 4, 5 and 6 AND – year-round in climate zones 1 and 3.	Low E Glazing incorporated to minimise glare and heat gain.

Element	Element Objectives	Proposed
4.2 Natural ventilation	O 4.2.1 Development maximises the number of apartments with natural ventilation.	• A1 & 5 (street facing apartments) – cool breezes can flow in through the large south facing balconies and out through the entrance. • A2 – cool breezes can flow in through the living and out through the courtyard. • A3, 4, 6 & 7 (rear apartments) – cool breezes can flow in through the openings to the west and east and out through the primary living space and courtyard/balconies. • All apartments receive cross ventilation, with openings to at least two elevations for each apartment.
	O 4.2.2 Individual dwellings are designed to optimise natural ventilation of habitable rooms.	As above, all apartments have the ability to gain ventilation with the majority having access to west or south.
	O 4.2.3 Single aspect apartments are designed to maximise and benefit from natural ventilation.	No single aspect apartments
4.3 Size and layout of dwellings	O 4.3.1 The internal size and layout of dwellings is functional with the ability to flexibly accommodate furniture settings and personal goods, appropriate to the expected household size.	• All primary living spaces meet the 4m minimum dimension. • The development meets the requirements for room areas for habitable rooms. • All living rooms are open plan and allow for a furniture layout where navigation around the furniture will not be obstructed. • 4/7 of the apartments include a linen cupboard which provides alternative areas for storage that means less furniture is required. • The 3 apartments that do not include linen cupboards include WIRs to master bedrooms. • The size and shape of the bedrooms are considered functional and the built in robes provide additional storage space for the room. • The development plans include indicative furniture layouts demonstrating functionality of all habitable spaces.
	O 4.3.2 Ceiling heights and room dimensions provide for well-proportioned spaces that facilitate good natural ventilation and daylight access.	All apartments have been designed with more floor area than the minimum requirement and ceiling heights are compliant which allows for natural ventilation and daylight access.
4.4 Private open space and balconies	O 4.4.1 Dwellings have good access to appropriately sized private open space that enhances residential amenity.	All private open spaces exceed suggested size requirements and are accessed directly from an open plan primary living space via a sliding door thereby enhancing residential amenity.
	O 4.4.2 Private open space is sited, oriented and designed to enhance liveability for residents.	• Courtyards are open to the sky, the rear apartment balconies include metal louvre pergolas to allow

Element	Element Objectives	Proposed
		sunlight access and the front apartments are open to the street which enhances liveability for residents. • Oblique glass balustrading is used to provide privacy to residents.
	O 4.4.3 Private open space and balconies are integrated into the overall architectural form and detail of the building.	• A1 & 5 (front apartments) balconies have been well integrated into the overall design by adding an articulate and attractive streetscape. • Despite A3, 4, 6 & 7 (rear apartments) have been designed more terrace like to deter away from a large bulky roof cover. • The design of each open space complements the overall appearance with shade structures and balustrading to match the design.
4.5 Circulation and common spaces	As discussed in the body of the report.	
4.6 Storage	O 4.6.1 Well-designed, functional and conveniently located storage is provided for each dwelling.	• All storage areas are located in convenient and safe locations that reasonably integrate into the main building. • Where storage is provided in the undercroft it is located adjacent to the relevant apartments car parking space and other storage rooms are next to the front door of the corresponding apartment.
4.7 Managing the impact of noise	O 4.7.1 The siting and layout of development minimises the impact of external noise sources and provides appropriate acoustic privacy to dwellings and on-site open space.	The applicant has provided an acoustic report which has been reviewed and approved by the City's Environmental Health Department which outlines ways the development mitigates external noise sources.
	O 4.7.2 Acoustic treatments are used to reduce sound transfer within and between dwellings and to reduce noise transmission from external noise sources.	The bin store location in relation to noise generation is considered appropriate given there is not expected to be excessive noise from residents emptying waste into the bins.
4.8 Dwelling mix	O 4.8.1 A range of dwelling types, sizes and configurations is provided that caters for diverse household types and changing community demographics.	The development is seven dwellings with different layouts to cater for diversity of housing.
4.9 Universal design	A 4.9.1 20% of dwellings achieve Silver Level requirements as defined in the *Liveable Housing Design Guidelines,* or 5% achieve Gold Level requirements	• The development includes a wide pedestrian access which leads to the foyer with a 0m threshold and no rise or fall from the street to enter the building. • A lift is in the foyer which leads to each floor and the egress routes outside the foyer are 1.5m wide. • Each apartment has a wide and flexibly designed living area which allows plenty of comfortable circulation space for wheelchairs.

Element	Element Objectives	Proposed
		• The rear apartments have been designed with bathroom/laundry combos where the shower screen could be removed in future and act as a disabled bathroom straight off the main passageway. The ensuites in these apartments were designed with the same intention of manoeuvrability should the shower screen be removed.
4.10 **Façade design**	O 4.10.1 Building façades incorporate proportions, materials and design elements that respect and reference the character of the local area.	• The front façade is articulate in nature consisting of angled, deep balconies, then bedrooms with a staggered timber feature design to tie in with the retained trees and character of the suburb. • There is a recycled brick border around the balconies to add more interest and to tie in with the brick retaining wall found at the front left hand corner. • Along the sides of the buildings includes, vertical timber boards, recycled brick and render to break up the length of the building. • The rear elevation has a mix of weatherboard cladding and terraces were incorporated instead of enclosed balconies to give the building a more modern look.
	O 4.10.2 Building façades express internal functions and provide visual interest when viewed from the public realm.	• The development includes two large balconies with large sliding doors into the primary living spaces that face the primary street. • The development also includes major openings to master suites which face the primary street.
4.11 **Roof design**	O 4.11.1 Roof forms are well integrated into the building design and respond positively to the street.	• The development includes a number of skillion roof structures with pitches ranging from 1-5 degrees. • There is a recycled brick border around the front balconies to add more interest and to tie in with the brick retaining wall at the front of the development. • The 'nomad' brown paint under the skillion ties in with the staggered timber slats to the bedrooms. • The rear apartments include two inward sloping skillion roofs and metal louvred pergolas have been included to help gain more light into these apartments but also to reduce visual bulk. • From the rear the development appears like adjoining townhouses instead of a large bulky apartment unit.

Element	Element Objectives	Proposed
	O 4.11.2 Where possible, roof spaces are utilised to add open space, amenity, solar energy generation or other benefits to the development.	The roof design does not lend itself to use for open space purposes but can accommodate solar energy infrastructure in the future as required.
4.12 Landscape design	O 4.12.1 Landscape design enhances streetscape and pedestrian amenity; improves the visual appeal and comfort of open space areas; and provides an attractive outlook for habitable rooms.	• The development proposes to retain six medium trees along the periphery of the development (northern & western side boundaries). • The development includes a number of raised planter boxes with depths ranging from 0.6m-1.2m which provide an attractive outlook from habitable rooms and private open spaces.
	O 4.12.2 Plant selection is appropriate to the orientation, exposure and site conditions and is suitable for the adjoining uses.	The majority of trees onsite are being retained (four removed, six retained) and a number of new trees are proposed in accordance with the City's HOALPP.
	O 4.12.3 Landscape design includes water efficient irrigation systems and, where appropriate, incorporates water harvesting or water re-use technologies.	The development incorporates the retention of existing trees that would not require additional irrigation.
	O 4.12.4 Landscape design is integrated with the design intent of the architecture including its built form, materiality, key functional areas and sustainability strategies.	• The development was built around the retained landscaping and planter boxes were included to improve amenity through the centre atrium and within private open spaces. • The use of natural materials to the building complements the greenery being retained on site.
4.13 Adaptive reuse	O 4.13.1 New additions to existing buildings are contemporary and complementary and do not detract from the character and scale of the existing building.	Not applicable
	O 4.13.2 Residential dwellings within an adapted building provide good amenity for residents, generally in accordance with the requirements of this policy.	Not applicable
4.14 Mixed use	O 4.14.1 Mixed use development enhances the streetscape and activates the street.	Not applicable
	O 4.14.2 A safe and secure living environment for residents is maintained through the design and management of the impacts of non-residential uses such as noise, light, odour, traffic and waste.	Not applicable
4.15 Energy efficiency	O 4.15.1 Reduce energy consumption and greenhouse gas emissions from the development.	Development is to incorporate: • Low energy technologies and/or • Natural and/or fan forced ventilation. Development is to incorporate water efficient technologies.

Element	Element Objectives	Proposed
		Development makes use recyclable materials: • Development makes use recyclable materials
4.16 Water management and conservation	O 4.16.1 Minimise potable water consumption throughout the development.	Development is to incorporate water efficient technologies.
	O 4.16.2 Stormwater runoff from small rainfall events is managed on-site, wherever practical.	Soak wells will retain all water on site without running onto the street.
	O 4.16.3 Reduce the risk of flooding so that the likely impacts of major rainfall events will be minimal.	The topography of the lot is to reduce the impacts of flooding.
4.17 Waste management	A 4.17.1 Waste storage facilities are provided in accordance with the Better Practice considerations of the WALGA Multiple Dwelling Waste Management Plan Guidelines (or local government requirements where applicable).	The applicant has provided a Waste Management Plan (WMP) which outlines that onsite waste management staff will present the bins to the front verge, adjacent to the kerb. Once collection has occurred, onsite waste management personnel/staff will return the bins to the store.
	A 4.17.2 A Level 1 Waste Management Plan (Design Phase) is provided in accordance with the WALGA Multiple Dwelling Waste Management Plan Guidelines - Appendix 4A (or equivalent local government requirements).	Provided as part of WMP.
	A 4.17.3 Sufficient area is provided to accommodate the required number of bins for the separate storage of green waste, recycling and general waste in accordance with the WALGA Multiple Dwelling Waste Management Plan Guidelines - Level 1 Waste Management Plan (Design Phase) (or local government requirements where applicable).	A 16.31m^2 bin store is provided.
	A 4.17.4 Communal waste storage is sited and designed to be screened from view from the street, open space and private dwellings.	Communal waste storage is provided and screened from the street.
4.18 Utilities	O 4.18.1 The site is serviced with power, water, gas (where available), wastewater, fire services and telecommunications/broadband services that are fit for purpose and meet current performance and access requirements of service providers.	As part of strata and in accordance with BCA.
	O 4.18.2 All utilities are located such that they are accessible for maintenance and do not restrict	Utilities are located where they can be accessed without obstruction pedestrians or vehicles.

Element	Element Objectives	Proposed
	safe movement of vehicles or pedestrians.	
	O 4.18.3 Utilities, such as distribution boxes, power and water meters are integrated into design of buildings and landscape so that they are not visually obtrusive from the street or open space within the development.	Utilities such as gas & electric boxes are not shown on the plans therefore a condition will be provided to ensure they integrate with the design of the building where possible or located so they are not visually obtrusive.
	O 4.18.4 Utilities within individual dwellings are of a functional size and layout and located to minimise noise or air quality impacts on habitable rooms and balconies.	Utilities located away from the apartments and Major Openings.

Please note that the acceptable outcomes stated above is a summary only and when considering compliance with these requirements, please refer to the full requirement as detailed in *State Planning Policy 7.3 Residential Design Codes Volume 2 – Apartments.*