WLPP No.	Item 3
DA No.	DA-2020/297
Proposal	Residential - demolition of existing structures, Subdivision - Torrens title - two (2) lots and construction of a dual occupancy on each lot and associated stormwater infrastructure.
Property	18 Hopetoun Street, Woonona NSW 2517 Lot B DP 157627 (Development Site) 93 Farrell Road, Bulli NSW 2516 Lot 13 DP 6454 (Stormwater infrastructure)
Applicant	MMJ Wollongong (Luke Rollinson)
Responsible Team	Development Assessment and Certification – City Wide Planning Team (JW + MB)

ASSESSMENT REPORT AND RECOMMENDATION

Executive Summary

Reason for consideration by Local Planning Panel

The proposal has been referred to Local Planning Panel **for determination** pursuant to clause 2.19(1)(a) of the Environmental Planning and Assessment Act 1979. Under Schedule 2 of the Local Planning Panels Direction of 1 March 2018, the proposal has received greater than 10 unique submissions.

Proposal

The proposal on Lot B DP 157627 is for the demolition of existing dwelling and ancillary structures, two (2) lot Torrens title subdivision and construction of attached two storey dual occupancies on each created lot. Lot 13 DP 6454 the demolition of existing garage and stormwater infrastructure.

Permissibility

The sites are zoned R2 Low Density Residential pursuant to Wollongong Local Environmental Plan (WLEP) 2009. The proposal is categorised as a subdivision and Dual Occupancy and is permissible in the zone with development consent.

Consultation

The proposal was exhibited in accordance with Council's Community Participation Plan 2019 and received 15 submissions which are discussed at section 1.3 of the assessment report.

Councils Subdivision, Stormwater, Traffic, Landscape and Heritage Officers have reviewed the proposal and provided conditionally satisfactory referral advice.

Main Issues

Variation to Chapter B1 4.6 – Private Open Space within the front setback of Unit 1.

Issues raised within submissions.

RECOMMENDATION

It is recommended that DA-2020/297 be **approved** by way of deferred commencement as contained in **Attachment 3.**

1.0 DETAILED DESCRIPTION OF PROPOSAL

The proposal comprises the following:

Site preparation

- Demolition of existing dwelling on the site.
- Tree removal and protection arborists report provided
- Lot 13 DP 6454 – demolition of existing garage in rear yard and installation of stormwater infrastructure.

Works / Construction / building details

- Subdivision of site into two lots
- Attached Two storey dual occupancies with 4 bedrooms on each created lot

Traffic, parking and servicing

- Access via Hopetoun Street
- Double garage car parking spaces per dwelling.

1.1 BACKGROUND

DA Number	Description	Determination
DA-2018/233	Residential - demolition of existing structures and multi dwelling housing and six lot strata subdivision	Rejected 28/02/2018
PL-2018/63	Residential - multi dwelling development	Completed 4/05/2018
DA-2018/1032	Residential - Demolition of existing dwelling and outbuildings and construction multi dwelling housing and Subdivision - Strata title - four (4) lots	Refused 6/11/2019

Customer service actions

There are no outstanding customer service requests of relevance to the development.

1.2 SITE DESCRIPTION

The site is located at 18 Hopetoun Street, WOONONA NSW 2517 Lot B DP 157627. The regular 1279.61m2 site has a primary frontage to Hopetoun Street. The site falls 6 metres from the Hopetoun Street frontage to the rear boundary.

Single residential dwelling is located on the western and northern adjoining sites. A Residential Flat Building containing 10 units is located to the eastern boundary of the site. A Residential Flat Building with 15 units adjoins the site on the north western portion of the site. The subject site contains an existing dwelling and a garage at the rear on the eastern side of the property. There is one Jacaranda Tree on the north western corner of the site, which is proposed to be retained. There are small except species on the site between the dwelling house and outbuilding which require removal. There is one street tree located at the front of the property and seven trees / large shrubs growing on neighbouring properties.

Surrounding development consists of one and two storey residential development. The street trees frame and screen many of the properties along this stretch of Hopetoun Street softening the environment and providing character.

Property constraints

Council records identify the land as being impacted by the following constraints:

- Acid sulphate soils: No significant earthworks are proposed, and no concerns are raised in this regard.
- Heritage vicinity: The proposal on Lot B is in vicinity to locally listed heritage items on Farrell Road.
- Heritage Item: Lot 13 DP 6454 the proposal involves the establishment of an easement for stormwater drainage to the benefit of Lot B DP 157627, the establishment of the easement will also require the removal of a garage. The heritage listing of the row of houses on Farrell Road is for the façade as single storey cottage dwellings which will not be impacted by the proposal.
- Flood Risk Precinct: Lot 13 DP 6454 is within a flood risk precinct, the proposal is not considered to be adversely impacting the locality, nor susceptible to an increased risk of flood as a result of the removal of the garage and establishment of the easement.

There are no restrictions on the title that would preclude the development.

Figure 1: Aerial photograph

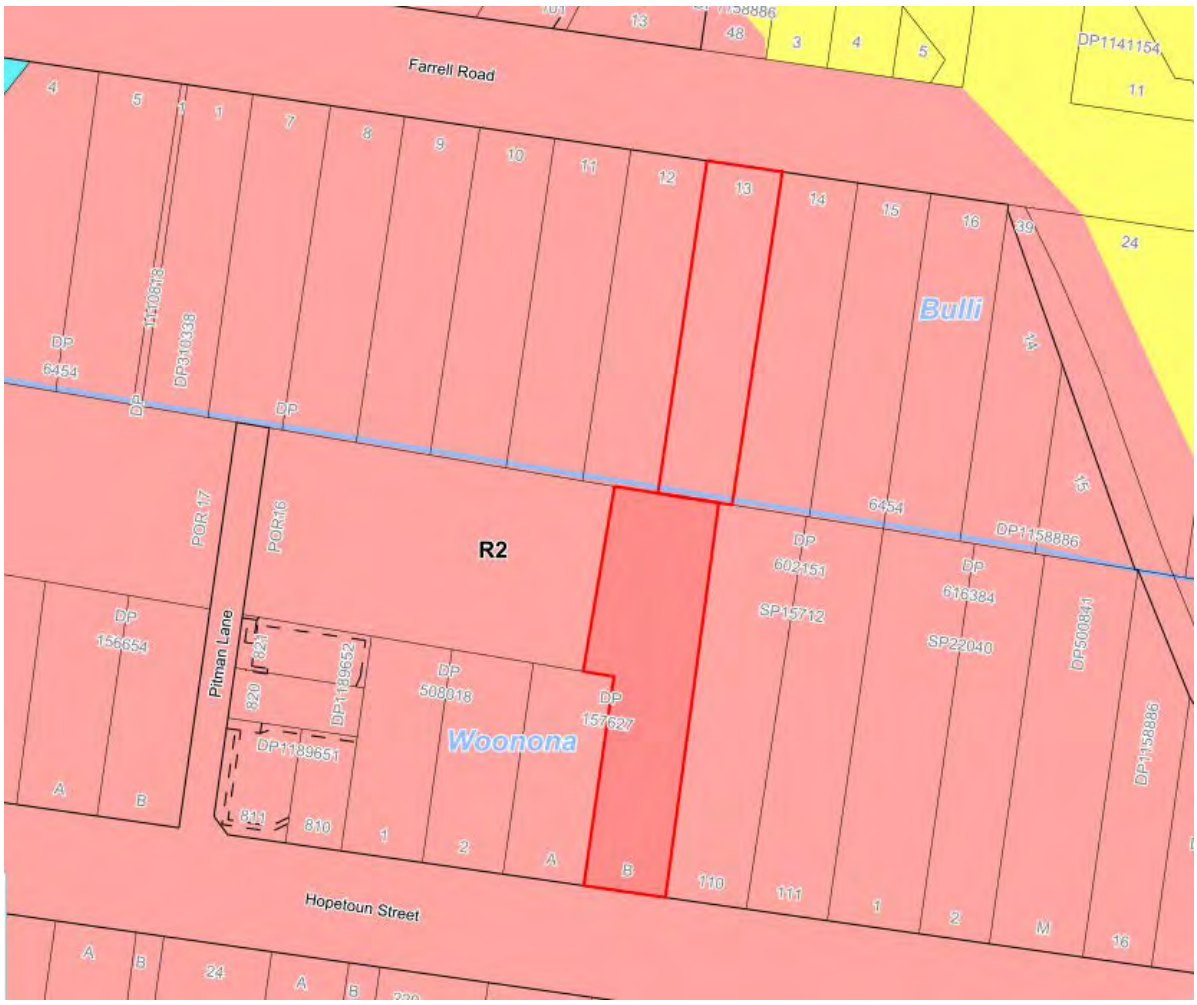

Figure 2: WLEP 2009 zoning map

1.3 SUBMISSIONS

The application was exhibited in accordance with Council's Community Participation Plan 2019. 15 submissions were received (14 objections and 1 submission actioned as a Customer Service Request) and the issues identified are discussed below.

Table 1: Submissions

Concern	Comment
1. Traffic Matters Manoeuvring and parking provision onsite Street parking impacts Bin Collection Street network impacts	The proposal involves the provision of the minimum required car parking facilities at sizes that are compliant with Councils requirements. The manoeuvring plans have been reviewed by Councils Traffic Engineer who has provided a satisfactory referral subject to conditions of consent. Within the requirements of the WDCP 2009 the kerb frontage is sufficient for adequate bin collection. The wider street networks are unable to be assessed as part of this application and the proposal is provided with adequate area for car parking spaces on the street

Concern	Comment
	frontage.
2. Overdevelopment / Built form Block size is too small for proposal Dwellings are too large for site Variations to Development Controls of Chapter B1 and B2 WDCP2009 Greed Loss of value to surrounding property	The proposal complies with FSR and site coverage requirements of the WLEP 2009 and WDCP 2009. The built form requirements of the WDCP 2009 are addressed within Chapter B1 discussion of this report. The architectural design of the proposal has been assessed on impacts of built form requirements within Chapter B1 and D1 of the WDCP 2009. With consideration of these development controls the proposal is considered to be consistent with the requirements and objectives. The variation to the two storey dual occupancy on the battle-axe allotment has been considered against Councils development controls as discussed within this report and is considered to be satisfactory to the development controls ability to vary this control on merit. The variations raised by the submitters to the Chapter B1 4.10.2 control for the battle-axe access handle and the same control within Chapter B2 are not variations, as the proposed Right of Carriage Way over Lot 1 is satisfactory in accordance with the consideration of an access handle, and the proposed Lot 2 will have street frontage due to the ROC. This is considered to be satisfactory and not a variation. Monetary impacts raised are noted.
3. Impacts to Jacaranda Tree	The Jacaranda Tree is to be retained in accordance with the Arborists recommendations. The proposal was reviewed by Councils Landscape Officer who provided conditions of consent to be imposed, these include that a qualified arborist is to conduct any pruning that is permitted under this consent and be present during the tree protection works. It is considered that this is satisfactory for the protection of the tree. The site also has medium sized tree plantings within the Deep Soil Zones of the dual occupancies, with a street planting in accordance with recommendations of Councils Landscape Officer.

Issue No.	**1**	**2**	**3**
Frequency	14	12	4

The applicant has elected to provide direct comment to issues raised within the submissions. A copy is provided at **Attachment 2**.

1.4 CONSULTATION

1.4.1 INTERNAL CONSULTATION

The proposal has been reviewed by Council's Subdivision Engineer, Stormwater Engineer, Traffic Engineer, Landscape Architect and Heritage Officer who have all provided conditionally satisfactory referrals.

1.4.2 EXTERNAL CONSULTATION

None required

2 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

2.1 SECTION 4.15(1)(A)(1) ANY ENVIRONMENTAL PLANNING INSTRUMENT

2.1.1 STATE ENVIRONMENTAL PLANNING POLICY NO. 55 – REMEDIATION OF LAND

7 Contamination and remediation to be considered in determining development application

(1) A consent authority must not consent to the carrying out of any development on land unless—

(a) it has considered whether the land is contaminated, and

(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and

(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

(2) Before determining an application for consent to carry out development that would involve a change of use on any of the land specified in subclause (4), the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines.

(3) The applicant for development consent must carry out the investigation required by subclause (2) and must provide a report on it to the consent authority. The consent authority may require the applicant to carry out, and provide a report on, a detailed investigation (as referred to in the contaminated land planning guidelines) if it considers that the findings of the preliminary investigation warrant such an investigation.

(4) The land concerned is—

(a) land that is within an investigation area,

(b) land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines is being, or is known to have been, carried out,

(c) to the extent to which it is proposed to carry out development on it for residential, educational, recreational or child care purposes, or for the purposes of a hospital—land—

(i) in relation to which there is no knowledge (or incomplete knowledge) as to whether development for a purpose referred to in Table 1 to the contaminated land planning guidelines has been carried out, and

(ii) on which it would have been lawful to carry out such development during any period in respect of which there is no knowledge (or incomplete knowledge).

Councils Environment Officer has reviewed Councils records which do not indicate any previous historic use that would contribute to the contamination of the site. The land has only been used for residential purposes and does not propose a change of use. Therefore, no concerns are raised in regard to contamination as relates to the intended use of the land and the requirements of clause 7.

2.1.2 STATE ENVIRONMENTAL PLANNING POLICY (KOALA HABITAT PROTECTION) 2019

The City of Wollongong is identified within Schedule 1 as land to which this Policy applies. Wollongong is located within the South Coast Koala Management Area.

Part of the subject site is mapped as being within the Site Investigation Area for Koala Plans of Management pursuant to the SEPP Maps. This mapping is provided as a tool for Council in developing Koala Plans of Management and does not apply to the development application process. Council does not have an approved Koala Plan of Management for the land at the time of preparing this report, and as such, no further consideration of this SEPP is required.

2.1.3 STATE ENVIRONMENTAL PLANNING POLICY (BUILDING SUSTAINABILITY INDEX: BASIX) 2004

The proposal is BASIX affected development to which this policy applies. In accordance with Schedule 1, Part 1, 2A of the Environmental Planning and Assessment Regulation 2000, a BASIX Certificate has been submitted in support of the application demonstrating that the proposed scheme achieves the BASIX targets.

The BASIX certificate was issued no earlier than 3 months before the date on which the development application was lodged.

2.1.4 WOLLONGONG LOCAL ENVIRONMENTAL PLAN 2009

Clause 1.4 Definitions

Dual occupancy means a dual occupancy (attached) or a dual occupancy (detached).

Dual occupancy (attached) means 2 dwellings on one lot of land that are attached to each other, but does not include a secondary dwelling.

Subdivision of land means the division of land into two or more parts that, after the division, would be obviously adapted for separate occupation, use or disposition. The division may (but need not) be effected:

(a) By conveyance, transfer or partition, or

(b) By any agreement, dealing, plan or instrument rendering different parts of the land available for separate occupation, use or disposition.

(EP&A Act 1979 definition)

Part 2 Permitted or prohibited development

Clause 2.2 – zoning of land to which Plan applies

The zoning map identifies the land as being zoned R2 Low Density Residential.

Clause 2.3 – Zone objectives and land use table

The objectives of the zone are as follows:

- *To provide for the housing needs of the community within a low-density residential environment.*

- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*

The proposal is considered satisfactory with regard to the above objectives as it would provide for additional housing opportunities.

The land use table permits the following uses in the zone.

> *Attached dwellings; Bed and breakfast accommodation; Boarding houses; Boat launching ramps; Centre-based child care facilities; Community facilities;* ***Dual occupancies****; Dwelling houses; Environmental facilities; Exhibition homes; Exhibition villages; Group homes; Health consulting rooms; Home-based child care; Hospitals; Hostels; Information and education facilities; Jetties; Multi dwelling housing; Neighbourhood shops; Places of public worship; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Residential flat buildings; Respite day care centres; Roads; Semi-detached dwellings; Seniors housing; Shop top housing; Signage; Veterinary hospitals*

The proposal is categorised as a ***Dual Occupancy*** as defined above and is permissible in the zone with development consent.

Clause 2.6 Subdivision—consent requirements

The proposal seeks the Torrens title subdivision of the site (18 Hopetoun Street) into two lots. then subsequent of the Torrens title subdivision of the dual occupancy development on the newly created lot; subdivision is permissible with development consent.

Part 4 Principal development standards

Clause 4.1 Minimum subdivision lot size

Minimum subdivision lot size for site: 449 m²

The site is 1,279.61 m²

The proposed two lots are:

Lot 1: 611.6 m²

Lot 2: Battle-axe lot – 686.5 m²

The proposal is compliant with minimum subdivision lot sizes.

Clause 4.3 Height of buildings

The proposed maximum building height of 7.64m does not exceed the maximum of 9m permitted for the site.

Clause 4.4 Floor space ratio

Maximum FSR permitted for the zone: 0.5:1

Lot 1

Site area:	611.6 m²
GFA:	266.2 m²
FSR:	266.2 m² / 611.6 m² = 0.44:1

Lot 2

Site area:	686.5 m²

GFA:	343.9 m²
FSR:	343.9 m² / 686.5 m² = 0.5:1

Part 7 Local provisions – general

Clause 7.1 Public utility infrastructure

The development is already serviced by electricity, water and sewage services.

A condition will be imposed upon the development consent requiring approval from the relevant authorities for the connection of electricity, water and sewage to service the site.

Clause 7.5 Acid Sulfate Soils

The proposal is identified as being affected by class 5 acid sulphate soils. An acid sulphate soils management plan is not required as excavations are not expected to reach the depth at which acid sulphate soils are found. It is considered that the application is therefore satisfactory in this regard.

Clause 7.6 Earthworks

The proposal comprises minimal earthworks associated with the construction of the dual occupancies and stormwater infrastructure. The earthworks are not expected to have a detrimental impact on environmental functions and processes, neighbouring uses or heritage items and features surrounding land.

2.2 SECTION 4.15(1)(A)(II) ANY PROPOSED INSTRUMENT

None applicable

2.3 SECTION 4.15(1)(A)(III) ANY DEVELOPMENT CONTROL PLAN

2.3.1 WOLLONGONG DEVELOPMENT CONTROL PLAN 2009

CHAPTER A1 – INTRODUCTION

8 Variations to development controls in the DCP

Issue (e.g. setbacks)

Issue Variation 4.6 – Private Open Space

The applicant proposes variations to Clause 4.6.2 (1) b) and e) of Chapter B1 Residential Development WDCP2009: b) Private open spaces and private courtyards should not be located on side boundaries or front yard. Variations may be permitted where the private open space is sufficiently setback as to ensure that the private open space will not be impacted upon by existing or future complying dwellings on adjoining lots. e) Private open space areas including balconies and decks must not extend forward of the front building line by greater than 900mm. The variation request is considered justified and capable of support. See considerations table below.

Control	Comment
1. The variation statement must address the following points:	
a) The control being varied; and	The variation request statement identifies the control being varied as WDCP 2009 Chapter B1 Clause 4.6.2 (1) b) Private open spaces and private courtyards should not be located on side boundaries or front yard. Variations may be permitted where the private open space is sufficiently setback as to ensure

	that the private open space will not be impacted upon by existing or future complying dwellings on adjoining lots. e) Private open space areas including balconies and decks must not extend forward of the front building line by greater than 900mm.
b) The extent of the proposed variation and the unique circumstances as to why the variation is requested; and	**Justification for Number of Storeys (Rear Setback) Variation:** The applicant has proposed the construction of a dual occupancy on the site, with the Private Open Space of Unit 1 within the 9.1m front setback. The proposed Private Open Space extends 4m from the front building line – which is setback from the front boundary by 9.1m, making the proposed POS area 5.1m from the front boundary. The proposed 5.1m front setback between the Private Open Space and the front boundary contains a privacy screen, Deep Soil Zone and landscaped area which is considered to ameliorate any potential privacy or overlooking concerns to and from the public domain. The variation is not considered to be adverse on the streetscape and proposed to allow for greater amenity to neighbouring properties and primarily the occupants of the proposed dwelling.
c) Demonstrate how the objectives are met with the proposed variations; and	The overall objectives of the WDCP 2009 Chapter B5 Clause 4.6.1: *(a) To ensure that private open spaces are large enough to accommodate a range of uses and are accessible and connected to indoor spaces.* *(b) To ensure that private open space is suitability located taking into account existing and potential surrounding development.* *(c) To minimise amenity impacts to neighbours.* *(d) To ensure functionality of the private open space area by reducing overlooking, overshadowing and amenity impacts onto / from adjoining properties, through the provision of appropriate buffer screen planting around the perimeter of the open space area, where necessary.* *(e) To protect existing trees and other vegetation in the immediate locality which contribute to the natural setting of the site.* The proposed variation meets the objectives of this

	section. The Unit 1 POS is forward of the building line but provides a minimal amenity impact to neighbours by locating it within the front setback, reduces overlooking and privacy impacts through landscaping and privacy screening. The POS area is not forward of the streets existing front building line, and as such is still suitably setback from the street. <u>Council comment:</u> The development is not considered to be inconsistent with the above objectives.
d) Demonstrate that the development will not have additional adverse impacts as a result of the variation.	<u>Applicants response:</u> The proposed development includes private open space forward of the building line in the front yard. Whilst the proposed POS at ground level situated forward of the Unit 1 building line, it must be recognised that this building line is quite setback from the current street frontage (having 9.1 metre setback). The front fence line of the POS area is still setback 5.1 metres, which is relatively consistent with the building line setback of the properties to the east at 16 Hopetoun Street, and behind the front building line setback verandah of the adjoining dwelling to the west at 20 Hopetoun Street. While this does not explicitly comply with this control, a variation is sought given the proposed POS is setback from the front boundary, screened by brick/aluminium slatted privacy fencing, a notably wide landscape/deep soil buffer, and the provision of street tree – all of which provides to enclose and secure the POS and provide suitable privacy. There will be minimal impact to neighbours and the future residents of Unit 1, nor will the streetscape be negatively impacted given the proposed landscape treatment. <u>Council comment:</u> Due to the location of the site, built form of the proposed garage and existing dwelling and setbacks provided the development is not considered to result in adverse impacts as a result of the variation.
Comment: The requested variation is considered capable of support.	

CHAPTER B1 – RESIDENTIAL DEVELOPMENT

4.0 General Residential controls

Controls/objectives	*Comment*	*Compliance*
4.1 Maximum Number of Storeys • 8m rear setback to two storey elements of dwellings • Battle-axe lots restricted to single storey unless satisfies objectives	The proposal provides rear setbacks greater than 8 metres to the two storey elements of the dual occupancies. The proposal does provide a two storey dual occupancy on a battle-axe lot (Proposed Units 3 and 4 on proposed Lot 2). In accordance with the requirements of the clause, the applicant has demonstrated that the proposal meets the objectives of the clause and therefore is satisfactory. The applicants comments are as below: *The proposed development includes a two (2) lot Torrens title battle-axe subdivision with a dual occupancy development on each. The proposed rear lot 2 is a two (2) storey dual occupancy which does not meet the development control guidance of a single storey dwelling on battle-axe lots. A variation to this control is requested given the proposed dual occupancy development is consistent with the maximum building height in the LEP and the objectives in section 4.1.1, specifically by ensuring:* *a) buildings integrate within the streetscape and the natural setting whilst maintain the visual amenity of the area.* *b) for overlooking on adjacent dwellings and open space areas.* *c) ensuring that development is sympathetic to and addresses site constraints.* *d) To encourage split level stepped building solutions on steeply sloping sites.* *e) To encourage a built form of dwellings that does not have negative impact on the visual*	Yes

amenity of the

adjoining residences.

f) To ensure ancillary structures have appropriate scale and are not visually dominant compared to the

dwelling.

g) To ensure appropriate correlation between the height and setbacks of ancillary structures.

h) To encourage positive solar access outcomes for dwellings and the associated private open spaces.

The proposal in this instance is quite different from establishing a dual occupancy on an existing battle-axe lot, as the design of the proposed dwellings and associated subdivision is purpose specific and have been informed by each other (i.e. one purposely responds to the other). The surrounding areas has existing medium density developments including two storey town houses and a 3-storey apartment building to the west. The proposed location of the two storey dual occupancy at the rear will be located such that it will not negatively impact the prevailing character, and the downslope away from the street frontage will result in these dwellings sitting lower on the site and those proposed in the front lot. This property cross fall also makes it difficult to establish single level residences across the property, as it would incur greater site coverage. The proposed building design includes articulation and design to minimise bulk and overshadowing. The deep soil zone proposed along the rear northern boundary will provide suitable landscape screening to soften the buildings in their setting. The dwellings are situated such that notable building separation exists between the adjoining properties, being well away from the villas to the east, dwellings to

	the north, and the residential flat building to the west. Thus, overlooking of adjoining properties is limited.	
4.2 Front Setbacks		
• 6m front setback • Garages and carports 5.5m	The proposal provides a front setback of 9.1m No garages face or are in the front setback.	Yes
4.3 Side and Rear Setbacks		
• 900mm side and rear boundary setback to walls • 450mm to eaves/gutters • 3m setback for walls greater than 7m in height	The proposal provides a minimum setback of 1.2m on the eastern side boundary. All windows and setbacks have been provided to reduce and prevent direct overlooking. It is considered that the development is satisfactory.	Yes
4.4 Site coverage		
50% of site area	The proposal complies with the equal or less than 50% of the proposed lots.	Yes
4.5 Landscaped Area		
• 120m^2 + 30% of site area > 600m^2 • Lot 1: 113.48m^2 required • Lot 2: 135.95m^2 required	The proposal provides greater than the required landscape area: Lot 1: 136.77m^2 provided Lot 2: 221.45m^2 provided. The proposal also involves the retention of the existing jacaranda tree, and the additional plantings of medium sized trees (45l) within the landscaped area and deep soil zone. This is detailed on the landscape plan. It is considered that the proposal is satisfactory	Yes
4.6 Private Open Space		
• 24m^2 with minimum 4m width • Private open spaces and private courtyards should not be located on side boundaries or front yard. Variations may be permitted where the private open space is sufficiently setback as to ensure that the private open space will not be impacted upon by existing or future complying dwellings on adjoining lots.	The proposal provides POS areas of 24m^2 with minimum widths of 4m. The proposal does provide a Private Open space that is forward of the front building line. It is considered that the variation on merit is acceptable in this instance.	No – Variation capable of support.

4.7 Solar Access		
• Windows on the northern elevation adjoining living rooms must receive 3hrs continuous sunlight between 9am-3pm on 21 June • At least 50% of the POS of adjoining properties must receive at least 3hrs continuous sunlight between 9am-3pm on 21 June	The proposal provides all northern facing living rooms with at least 3hrs continuous sunlight on the 21 June, as demonstrated within the shadow diagrams provided. The proposal also does not overshadow the Private Open Space areas of any adjoining properties on June 21 between 9am and 3pm.	Yes
4.8 Building Character and Form		
• New dwelling-houses within established residential areas should be sympathetic with the existing character of the immediate locality • Large bulky forms are to be avoided, particularly in visible locations. The use of extended terraces, balconies, sun shading devices and awnings will help reduce the apparent bulk of buildings	The proposal is considered to be sympathetic in building character and form to the existing residential development of the locality. The proposal provides a built form that reduces bulking from the streetscape, providing a dual occupancy with its front building line setback 9.1m from the street frontage, while also providing a similar scale to the eastern adjoining development. It is considered that the proposal is satisfactory with regard to building character and form	Yes
4.9 Fences		
• Any fence and associated retaining wall within the front setback area from the primary road frontage must be a maximum 1.2 metres in height, above existing ground level. • Front fences must be open for at least 50% of the upper 2/3 of the area of the fence. Any brick or other solid portion of the fence above 600mm must not be more than 250mm wide	The proposal provides a front fence in the form of pillars and open slats with planting in front of the fence. It is considered that the proposal reflects the streetscape character and is sympathetic of the surrounding development.	Yes
4.10 Car parking and Access		
• 2 spaces per dwelling with a gross floor area of 125m2 or greater • The minimum internal dimensions for a single garage shall be 6 metres (depth) x 3 metres (width).The minimum internal dimensions for a double garage shall be 6 metres (depth) x 6 metres (width). • Driveways shall be separated from side	The proposal consists of dwellings that are greater than 125m^2 and therefore 2 car parking spaces are required for each dwelling. The proposal provides each dwelling with double garages of minimum 6m x 6m internal dimensions. The driveway of the proposal is	Yes

boundaries by a minimum of 1 metre. • Dual Occupancy - Access for a rear dwelling must be provided by a dedicated access corridor attached to the same ownership of the rear property. A right of carriageway over the front public road frontage lot in favour of the rear lot will generally not be supported, except where, in the opinion of Council, this access arrangement would provide a more functional arrangement and not pose any adverse impact upon the amenity or streetscape character of the locality.	separated from the western side boundary by 1m. The proposal provides a Right of Carriage way to the street frontage for the proposed Lot 2 over Lot 1. This will be in place prior to the construction of the Dual Occupancies and as such is considered to comply.	
4.11 Storage Facilities		
• Three or more bedrooms storage volume 10m3 storage area 5m2	The proposal provides greater than the required storage volume and area within the dwelling and within the garage areas of the proposed dual occupancies	Yes
4.12 Site Facilities		
• Air conditioning units and ancillary structures away from street frontage and not visible from street or other public places.	The proposal provides space on the site for adequate placement of site facilities such as air conditioners to comply with this requirement.	Yes
• All dwellings be provided with open air clothes drying facilities that are easily accessible and which are screened from the public domain and communal open spaces.	The proposal provides clothes drying facilities that are open air, easily to access and do not conflict with the landscape plan or POS areas.	
4.13 Fire Brigade Servicing		
• All dwellings, particularly dual occupancy and dwellings on battle axe allotment must be located within 60m of a fire hydrant, or the required distance as required by Australian Standard AS2419.1. Provision must be made so that Fire and Rescue NSW vehicles can enter and leave the site in a forward direction	The site is within 60 metres of a fire hydrant on Hopetoun Street, and there is adequate space on the site for a Fire and Rescue NSW vehicle to enter and exit in a forward direction.	Yes
4.14 Services		
• Water, sewerage, gas, underground electricity and telephone are to be provided to the proposed development by the developer in accordance with Council and servicing authority requirements.	The subject site is currently serviced by all utilities, and as such is considered to be able to organise connection to the required utilities.	Yes
4.16 View sharing		
• A range of view sharing measures shall be considered for incorporation into the	There are not considered to be views to or from the site that will	Yes

design of a building including: (a) Appropriate siting of the building on the land so as to provide a strip of land, unencumbered with structures, down one side of the dwelling. This strip of land must be a minimum width of 3m or 25% of the lot width whichever is the greater. (b) A reduced view corridor width may be accepted, where it is located adjacent to a view corridor on the adjacent site, subject to the combined width having a minimum of 4m. (c) Appropriate placement of the bulk of the building on a site. (d) Provision of greater separation between buildings, where necessary to retain view corridors. (e) Articulation within the buildings design. (f) Careful selection of roof forms and slope. (g) Placement of vents, air conditioning units, solar panels and similar structures in locations which will not restrict views.	be impacted by the proposed development. Potential views from the second level of the proposed development are the Illawarra Escarpment or of the coastline. The design is considered to be adequate with regard to adjoining development. The proposal is not expected to have an adverse impact on adjoining dwellings in this regard due to the placement of building bulk, separations, articulations of building design, roof form and façade expanses.	
<u>4.17. Retaining walls</u>		
• A retaining wall or embankment should be restricted to a maximum height above or depth below natural ground level of no more than: (a) 600mm at any distance up to 900mm setback from any side or rear boundary; or (b) 1 metre, if the toe of the retaining wall or embankment is setback greater than 900mm from any side or rear boundary.	The proposal provides minor retaining walls well below the 600mm height and are provided in association with landscaped areas.	Yes
<u>4.21 Additional controls for Dual Occupancies minimum site width</u>		
• A minimum site width of 15 metres is required for a dual occupancy development. Site width shall be measured for the full width of the site, perpendicular to the side property boundaries. Variations may be granted for irregular shaped blocks or where development can demonstrate compliance with privacy, solar access, private open space, visual amenity, built form, car parking and landscaping requirements.	Proposed Lot 1 – non-compliant Proposed Lot 2 – complies. The non-compliance of Lot 1 is due to the site width being 14.24m in width which is 0.76m less than the minimum site width. The variation is considered to be of a very minor nature, and can provide for the adequate site facilities, services and setbacks required for a compliant development despite	Yes

	the 0.76m shortfall. The variation is considered capable of support as it meets the objectives as discussed below: *(a) To permit dual occupancy developments upon sites which are of sufficicent size to accommodate the reuqiqred building envelope, car parking, private open space, landscaping and other requirements, whilst maintain the amenity of surrounding residential development and the streetscape character of the locality.* *(b) To allow for development of sites only where the land is not significantly constrained by flood, geotechnical or other environmental hazards.* *Lot 2 has a minimum site width of 19.977m which complies with the minimum site width. The site width of Lot 1 is 14.24m which is 0.76m less than the minimum site width of 15m required.* *A variation is requested under the development controls of this section as the site is irregular in shape which includes a narrow width at the frontage and extends to over 20m in width approximately 38.97m back from the front boundary. The orientation of the proposed development on Lot 1 provides a frontage similar to a dwelling house (although two-storey in form) and the design has provided suitable privacy, solar access, amenity, built form, car parking, private open space and landscaping. In fact, the proposed development exceeds the minimum requiremets for private open space, building line setbacks, and landscaping and is less than the maximum permitted thresholds for site coverage, FSR and building height. The proposed development is an example of how a purpose specific design and subdivision*	

	response can suitably sit within a site that has a width of less than 15m. It is considered that due to the minor nature of the variation and compliance with setbacks, POS, landscaping, shadowing, privacy and built form controls, this development control is considered to be satisfied in this regard.	
4.23 Additional Controls for Dual Occupancy's – Deep Soil Zones		
• A minimum of half of the landscaped area must be provided as a deep soil zone. The deep soil zone may be located in any position on the site, subject to this area having a minimum dimension of 3m. The deep soil zone must be located outside the minimum private open space required.	The proposal provides Deep Soil Zones for each proposed dual occupancy that comply with the objectives and development controls of the section. The proposed Deep Soil Zones are considered to be consistent with the submitted stormwater plans. The proposed Deep Soil Zone involves the planting of medium sized trees, in accordance with requirements of this chapter. The proposal is therefore considered to be satisfactory	Yes

CHAPTER B2 – RESIDENTIAL SUBDIVISION

Controls/objectives	Complete	Compliance
5 Topography, landform conservation, cut and fill		
	No earthworks are required to facilitate the proposed two lot Torrens title subdivision. It is considered that the topography is suitable for the proposal.	Yes
6 Subdivision design		
6.1 Lot Layout - Aspect and solar access		
Roads running generally east – west are preferred since they provide for lots with a north-south axis which caters for optimum solar access to dwellings and private open space. Lots with a main north-south axis (20ºW to 30°E) provide the best flexibility for the siting of future dwellings and	The proposal provides a battle-axe subdivision of the site, it is considered that it is in keeping with the existing subdivision pattern of the locality being N-S axis lots with an E-W Road.	Yes

reduce potential overshadowing problems.		
6.2 Lot Size		
Comply with minimum lot size requirement of WLEP 2009. Battle-axe lot (excluding access handle) 550m^2	The proposal provides two lots greater than the minimum subdivision lot size of the Wollongong Local Environmental Plan 2009. The proposal also provides a battle-axe subdivision with both lots greater than 550m^2	Yes
6.3 Lot Width and Depth		
A minimum 12 metre lot width is required for residential allotments with N to NE rear boundary alignment.	The proposal provides both lots with greater than 12m widths.	Yes
6.4 Battle-axe Lots		
1. The minimum allotment size requirement for battle-axe lots shall be in accordance with the relevant LEP and accompanying Lot Size Map, excluding the site area required for the battle-axe lot access handle. 2. The minimum lot width for a battle-axe allotment shall be 15 metres as measured at the front building line (ie exclusive the access handle). The 15 metre minimum lot width requirement for battle axe lots is set at 6 metres from the end of the battle axe handle (ie within the main building portion of the site). 4. All battle-axe allotments must have direct access to a dedicated public road, through the provision of an access handle attached to each battle-axe lot or via a shared access corridor (ie maximum of two (2) lots may share a common access corridor). 5. The minimum access corridor width for a battle axe allotment shall be 5 metres with a minimum road pavement width of 3 metres for the entire length of the access handle. 6. A 1 metre wide landscaping strip shall be provided along each side of the required 3 metre wide road pavement. The landscaping strip shall be planted with suitable small trees, shrubs and groundcovers. 9. A minimum 1 metre wide landscaping	The proposal provides the minimum lot size requirements of the WLEP 2009 and WDCP2009 Chapter B2 The proposed battle-axe lot has a Right of Carriage way proposed over Lot 1 to Hopetoun Street. The proposed access handle and driveway has a minimum 1m metre landscaped area on the western boundary, which is proposed to be planted with suitable small shrubs. The proposed driveway is of hardstand concrete and as such is considered to be satisfactory.	Yes

strip must be provided along each side of the required 3-metre-wide road pavement of any shared access handle. The landscaping strip shall be planted with suitable small trees, shrubs and groundcovers. A hard stand area on one side of the access handles for garbage and recycling bins (ie directly abutting the public road reserve). The opposite 1 metre wide landscaping strip in the shared access handle shall include letterboxes for the two lots (ie. directly abutting the public road reserve). 10. All battle-axe lot access corridors must be provided with all-weather road pavement. All access handle driveway crossings must be of a full concrete or asphalt construction and must be designed having regard to current fire regulations for fire hydrants. Driveways must be sited to allow for visibility of vehicles entering and leaving the site.		
<u>6.5 Building envelopes</u> A 15 metre (depth) x 10 metre (width) building envelope will be required for any proposed battle axe allotment upon land zoned R2 Low Density Residential, since the erection of a two storey .dwelling on a battle axe allotment is not permitted for land zoned Residential R2, under Chapter B1: Residential Development. Therefore, a building envelope is required to provide a sufficient building platform, to cater for a single storey dwelling.	The application involves the initial subdivision then construction of a dual occupancy on both proposed lots. It is considered to satisfactorily address this section.	Yes

CHAPTER E3: CAR PARKING, ACCESS, SERVICING/LOADING FACILITIES AND TRAFFIC MANAGEMENT

The proposal was reviewed by Councils Traffic Engineer who provided a satisfactory referral subject to conditions of consent.

The proposal involves the provision of double garages for each of the proposed dwellings, accessed via Hopetoun Street.

The proposed traffic arrangements are considered to be satisfactory with regard to the development controls of this Chapter.

CHAPTER E6: LANDSCAPING

The proposal involves the provision of a street tree planting, and the provision of adequate landscaped areas on the site.

The proposal involves the removal of an exempt species tree, and the retention of a significant jacaranda tree.

Councils Landscape Architect has reviewed the proposal and provided a satisfactory referral with conditions of consent relating to planting types, tree protection measures and compensatory plantings.

CHAPTER E7: WASTE MANAGEMENT

A Site Waste Minimisation and Management Plan has been provided in accordance with this chapter.

The proposal involves demolition of the existing dwelling and associated structures, and a demolition plan has accordingly been provided.

Suitable waste storage and servicing arrangements have been provided to Council's Traffic Engineers satisfaction.

CHAPTER E11 HERITAGE CONSERVATION

The proposal is in vicinity of locally listed heritage item on Farrell Road Bulli (northern adjoining properties). The proposal is not visible from the heritage items curtilage, and as such there are no direct visual impacts on heritage items as a result of the proposal.

The proposal also involves the establishment of a stormwater easement over 93 Farrell Road which is part of the local heritage listing, the proposed stormwater easement is considered to not impact on the heritage significance of the item or the dwelling.

Councils Heritage Officer has reviewed the proposal and did not raise objection to the proposal on the grounds of heritage considerations.

The proposal is considered to be satisfactory in this regard.

CHAPTER E14 STORMWATER MANAGEMENT

Stormwater is proposed to be disposed of through a proposed easement which has an in-principle agreement over 93 Farrell Road Bulli (northern adjoining property). Council's stormwater engineer has reviewed the proposal with respect to the provisions of this chapter and has recommended conditions of consent including deferred commencement for easement registration.

CHAPTER E17 PRESERVATION AND MANAGEMENT OF TREES AND VEGETATION

The proposal includes the removal of one exempt species and retention of an existing jacaranda tree which is impacted within the tree protection zone by less than 10%. The tree protection measures within the Arborists report is deemed satisfactory. The application was referred to Council's Landscape Officer and satisfactory referral advice was provided.

CHAPTER E19 EARTHWORKS (LAND RESHAPING WORKS)

The proposal involves minimal earthworks to prepare the site for the development.

CHAPTER E21 DEMOLITION AND HAZARDOUS BUILDING MATERIALS MANAGEMENT

The proposal involves demolition of all structures on site and a Site Waste Management Plan has been submitted. Standard demolition and asbestos management conditions will be imposed on any consent to be issued.

CHAPTER E22 SOIL EROSION AND SEDIMENT CONTROL

Conditions of consent are recommended in regard to appropriate sediment and erosion control measures to be in place during works.

2.3.2 WOLLONGONG CITY WIDE DEVELOPMENT CONTRIBUTIONS PLAN 2019

1. Schedule 1 – City-Wide levy rates

In accordance with clause 25K(1)(a) of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), the rate of the levy for development carried out on land to which this Plan applies (excluding Wollongong City Centre Commercial Core - see Schedule 2) is calculated as follows:

Proposed cost of carrying out development *(Determined in accordance with Clause 18 of this Plan)*	**Levy Rate**
Up to and including $100,000	Nil
More than $100,000 and up to and including $200,000	0.5%
More than $200,000	1%

2. Schedule 2 - Wollongong City Centre Commercial Core levy rates

In accordance with clause 25K(1)(b) of the EP&A Regulation, the rate of the levy for development carried out on land within the B3 Commercial Core zone in the Wollongong City Centre, as shown at Figure 2, is calculated as follows:

Proposed cost of carrying out development *(Determined in accordance with Clause 18 of this Plan)*	**Levy Rate**
Up to and including $250,000	Nil
More than $250,000	2%

The estimated cost of works is $895,000 and a levy of 1 % is applicable under this plan as the threshold value is $ 200,000.

2.4 SECTION 4.15(1)(A)(IIIA) ANY PLANNING AGREEMENT THAT HAS BEEN ENTERED INTO UNDER SECTION 7.4, OR ANY DRAFT PLANNING AGREEMENT THAT A DEVELOPER HAS OFFERED TO ENTER INTO UNDER SECTION 7.4

There are no planning agreements entered into or any draft agreement offered to enter into under S7.4 which affect the development.

2.5 SECTION 4.15(A)(IV) THE REGULATIONS (TO THE EXTENT THAT THEY PRESCRIBE MATTERS FOR THE PURPOSES OF THIS PARAGRAPH)

92 What additional matters must a consent authority take into consideration in determining a development application?

Conditions of consent are recommended with regard to demolition.

93 Fire safety and other considerations

Not applicable

94 Consent authority may require buildings to be upgraded

Not applicable

2.6 SECTION 4.15(1)(B) THE LIKELY IMPACTS OF DEVELOPMENT

Context and Setting: The proposal is a contemporary design; however, the area is characterised by a mix of single storey, two storey dwelling-houses as well as townhouses and residential flat buildings of traditional and contemporary construction. It is likely the older housing stock will be modernised over time. The contemporary form is acceptable taking into account compliant height, number of storeys, floor space ratio, and required setbacks (front, rear, side) to the building.
Access, Transport and Traffic: The development provides for the required number of car parking spaces and manoeuvring. Council's Traffic officer has considered the development with regard to impacts on the wider traffic network, and raised no objections to the proposal.
Public Domain: The development is considered unlikely to result in impacts on the public domain with regard to the bulk and scale.
Utilities: The proposal would not be envisaged to place an unreasonable demand on utilities supply.
Heritage: The site is not located in the visual catchment of any nearby heritage items.
Other land resources: The proposal is considered to contribute to orderly development of the site and is not envisaged to impact upon any valuable land resources.
Water: The site is presently serviced by Sydney Water, which can be readily extended to meet the requirements of the proposed development. The proposal is not envisaged to have unreasonable water consumption.
Soils: The proposal would not be expected to result in negative impact on soils.
Air and Microclimate: The proposal is not expected to have an adverse negative impact on air or microclimate.
Flora and Fauna: There is one exempt species to be removed, and Councils Landscape Officer has considered the proposal and provided a satisfactory referral with conditions of consent for tree protection measures and compensatory plantings.

Waste: A condition will be attached to any consent granted that an appropriate receptacle be in place for any waste generated during the construction.
Energy: The proposal is not envisaged to have unreasonable energy consumption.
Noise and vibration: A condition will be attached to any consent granted that nuisance be minimised during any construction, demolition, or works.
Natural hazards: There are no natural hazards affecting the site that would prevent the proposal.
Technological hazards: There are no technological hazards affecting the site that would prevent the proposal. Council records list the site as acid sulphate soil affected
Safety, Security and Crime Prevention: This application does not result in greater opportunities for criminal or antisocial behaviour.
Social Impact: The proposal would not be envisaged to result in negative social impacts.
Economic Impact: The proposal is not expected to create a negative economic impact.
Site Design and Internal Design: The application has a variation to the WDCP 2009 Chapter B1 in relation to the Private Open Space area of Unit 1 being forward of the front building line. The proposed variation was supported with a variation statement and is considered that the variation is of minimal impact to the amenity of the locality and adjoining properties and as such can be supported in this case. Site design, manoeuvring and internal design are considered to be satisfactory.
Construction: Conditions of consent are recommended in relation to construction impacts such as hours of work, erosion and sedimentation controls, works in the road reserve, excavation, demolition and use of any crane, hoist, plant or scaffolding. A condition will be attached to any consent granted that all works are to be in compliance with the Building Code of Australia.
Cumulative Impacts: Considering the matters outlined throughout this report, the proposal is considered unlikely to result in adverse cumulative impacts.

2.7 SECTION 4.15(1)(C) THE SUITABILITY OF THE SITE FOR THE DEVELOPMENT

Does the proposal fit in the locality?

The proposal is considered appropriate with regard to the zoning of the site and is not expected to have negative impacts on the amenity of the locality or adjoining developments.

Are the site attributes conducive to development?

There are no site constraints that would prevent the proposal.

2.8 SECTION 4.15(1)(D) ANY SUBMISSIONS MADE IN ACCORDANCE WITH THIS ACT OR THE REGULATIONS

The proposal was exhibited in accordance with Councils Community Participation Plan 2019. 15 submissions were received (14 objections and 1 submission which was actioned as a customer service request). The submissions received have been considered within Section 1.5 of this report.

2.9 SECTION 4.15(1)(E) THE PUBLIC INTEREST

The application is not expected to have unreasonable impacts on the environment or the amenity of the locality. It is considered appropriate with consideration to the zoning and the character of the area and is considered to be in the public interest.

3 CONCLUSION

This application has been assessed as satisfactory having regard to the Heads of Consideration under Section S4.15(1) of the Environmental Planning and Assessment Act 1979, the provisions of Wollongong Local Environmental Plan 2009 and all relevant Council DCPs, Codes and Policies including a variation to Chapter B1 of WDCP 2009 Section 4.6.2 as discussed within this report is considered capable of support.

4 RECOMMENDATION

It is recommended that DA-2020/297 be **approved** by way of deferred commencement as detailed at within **Attachment 3.**

5 ATTACHMENTS

1 Plans and documents

2 Applicants response to submissions

3 Conditions

SITE/ SITE ANALYSIS PLAN

SCALE 1:250 @A3

NOTE:- WIDTH LESS THAN 1.5M HAVE NOT BEEN INCLUDED IN THE LANDSCAPE AREA CALCULATIONS

SUMMER WINDS

WINTER WINDS

14 DP6454

13 DP6454

12 DP6454

A DP157627

B DP 157627
1296 m² (DEED)
1298 m² (CALC)

SP15712

SP17653

TWO STOREY TIMBER & CLAD METAL ROOF COTTAGE

TWO STOREY BRICK & TILE UNIT BLOCK

TWO STOREY BRICK & TILE UNIT BLOCK

No. 16
ONE & TWO STOREY BRICK & TILE UNIT BLOCK
RIDGE RL 37

METAL CARPORT

METAL CARPORT

METAL CARPORT

METAL CARPORT

METAL CARPORT

No. 20
SINGLE STOREY TIMBER & IRON ROOF RESIDENCE

TWO STOREY TIMBER & METAL ROOF SECONDARY DWELLING

TWO STOREY BRICK UNIT BLOCK

Lower Level

8850
(Upper Level)

7560
(Lower Level)

3600
(PPOS)

14570

9100
(Lower Level)

8200
(Upper Level Balcony)

5100
(PPOS)

UNIT 4
Garage Floor 29.900
Entry Floor 30.086
Lower Floor 29.398
Upper Floor 33.086

UNIT 3
Garage Floor 30.000
Entry Floor 30.086
Lower Floor 29.398
Upper Floor 33.086

UNIT 2
Garage Floor 32.240
Lower Floor 32.068
Upper Floor 35.068

UNIT 1
Garage Floor 32.756
Lower Floor 33.100
Upper Floor 36.100

6m x 4m Principal Private Open Space

RWT (under POS)

CL

gate

courtyard fence

CONCRETE

DRIVEWAY

METAL PANEL FENCE 20 YO

Existing fence to remain unchanged

CUBBY HOUSE

TPZ ENCROACHMENT AREA 7.3m² (10.0%)

SRZ 2.3m RADIUS (NO ENCROACHMENT)

TPZ 4.8m RADIUS

Jacaranda Tree location as confirmed by field survey by Wild Geospatial 05/08/19

No. 95 FARRELL RD

HOPETOUN STREET

PATH

NUS

STAINED TIMBER OR POWDER COATED ALUMINIUM SLATS

selected facebrick to match Unit 1

UNIT 1-COURTYARD FENCE

SCALE NTS

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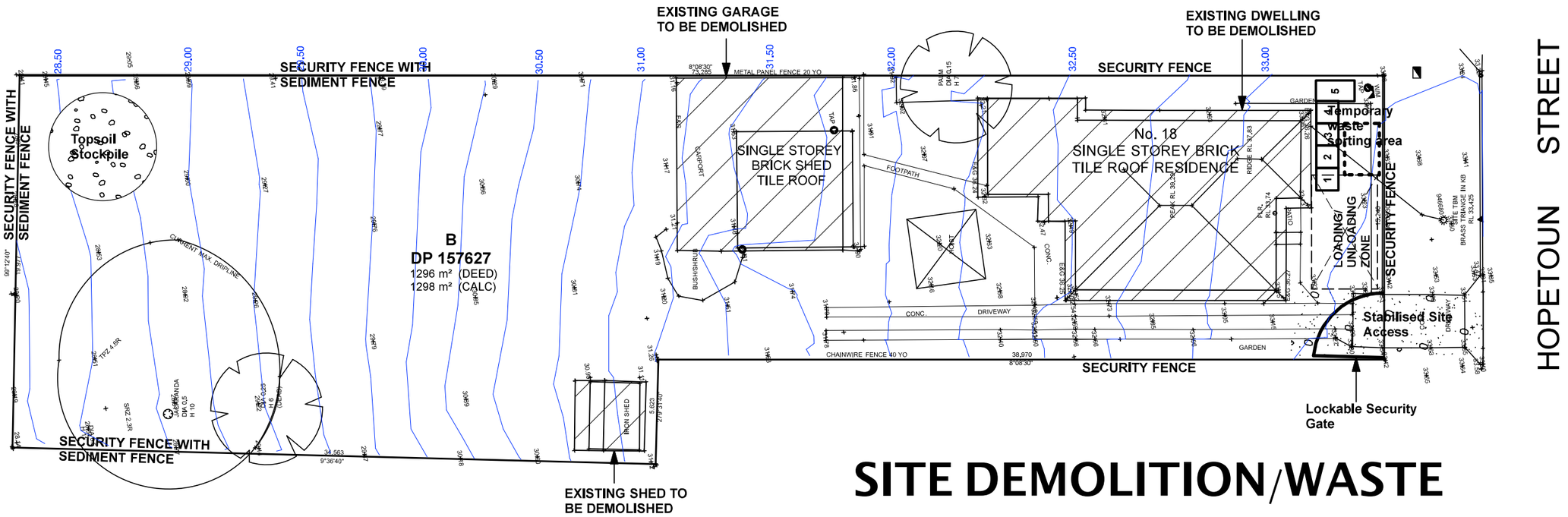


SITE DEMOLITION/WASTE MANAGEMENT/ SOIL EROSION PLAN

SCALE 1:250 @A3

Demolition and Construction Material

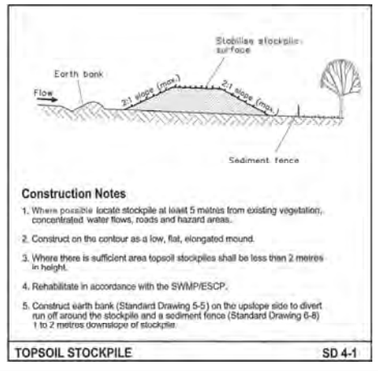
Type of Waste	REUSE Estimated Volume (m^3) or Weight (t)	RECYCLING Estimated Volume (m^3) or Weight (t)	DISPOSAL Estimated Volume (m^3) or Weight (t)	Specify method of onsite reuse, contractor and recycling outlet and/or waste depot to be used
Excavation Material	131m^3			Used as fill on site
Timber		19m^3		Used as formwork / sold
Concrete	10m^3			To be used as fill under driveway
Bricks			27m^3	Dispose via skip and waste removal contractor to Wollongong Waste and Resource Recovery Park
Tiles			8.5m^3	Dispose via skip and waste removal contractor to Wollongong Waste and Resource Recovery Park
Metal			1m^3	Dispose via skip and waste removal contractor to Wollongong Waste and Resource Recovery Park
Glass			2m^3	Dispose via skip and waste removal contractor to Wollongong Waste and Resource Recovery Park
Plasterboard			3m^3	Dispose via skip and waste removal contractor to Wollongong Waste and Resource Recovery Park
Fixtures and Fittings			1m^3	Dispose via skip and waste removal contractor to Wollongong Waste and Resource Recovery Park
Packaging		Qty Unknown		Recycle paper and cardboard packaging via recycling centre. Return timber pallets to supplier where appropriate. Dismantle and dispose otherwise via skip and waste removal contractor
Containers (cans, plastic, glass)		Qty Unknown		Recycle containers via recycling centre
Paper / Cardboard		Qty Unknown		Recycle paper and cardboard packaging via recycling centre
Residual Waste		Qty Unknown		Dispose via skip and waste removal contractor to Wollongong Waste and Resource Recovery Park
Hazardous / Special Waste			N/A	

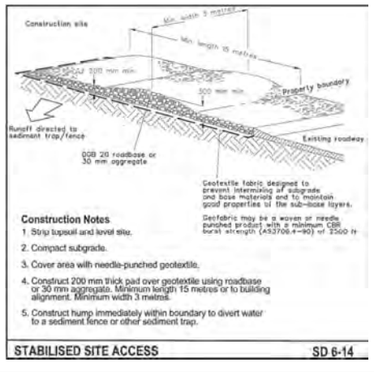
WASTE BAYS

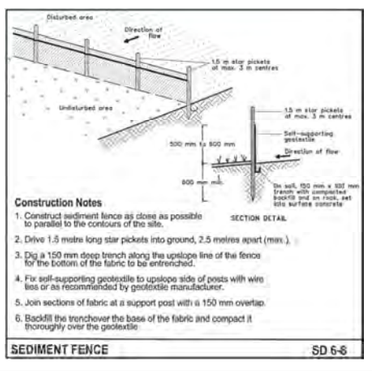
1. BRICK / CONCRETE WASTE BAY
2. TIMBER WASTE BAY
3. PLASTERBOARD WASTE BAY
4. METAL WASTE BAY
5. GENERAL WASTE BAY

- Trees to be removed

WASTE BAYS 1-4 ARE TO BE CONSTRUCTED USING SHADE CLOTH OR SEDIMENT FENCING. WHERE THE WASTE STREAM IS MADE UP OF LIGHT MATERIAL SUCH AS PAPER AND CARDBOARD, THE WASTE BAYS MUST CONSIST OF A CONTAINER FOR THE STORAGE OF THIS MATERIAL.







NOTES:

1. Site works will not start until erosion and sediment control works outlined in clauses 2 to 4 below, are installed and functional.
2. The entry to and dep[arture of vehicles from the site will be confined to one stabilised point. Barrier fencing will be used to restrict all vehicular movements to that point. Stabilisation will be achieved by constructing a stabilised site access following SD 6-14.
3. Sediment fences will be installed as shown on this plan.
4. Top soil from the construction area will be stripped and stockpiled in the location shown for later use in landscaping the site.
5. Approved bins for all waste types will be provided and arrangements made for regular collection and disposal.
6. Guttering to be connected to water tank and stormwater system as soon as practicable.
7. Topsoil to be spread and all disturbed areas to be stabilised within 4 weeks of completion of works.
8. All erosion and sediment controls to be checked at least weekly and after rain to ensure tey are maintained in a fully functional condition.

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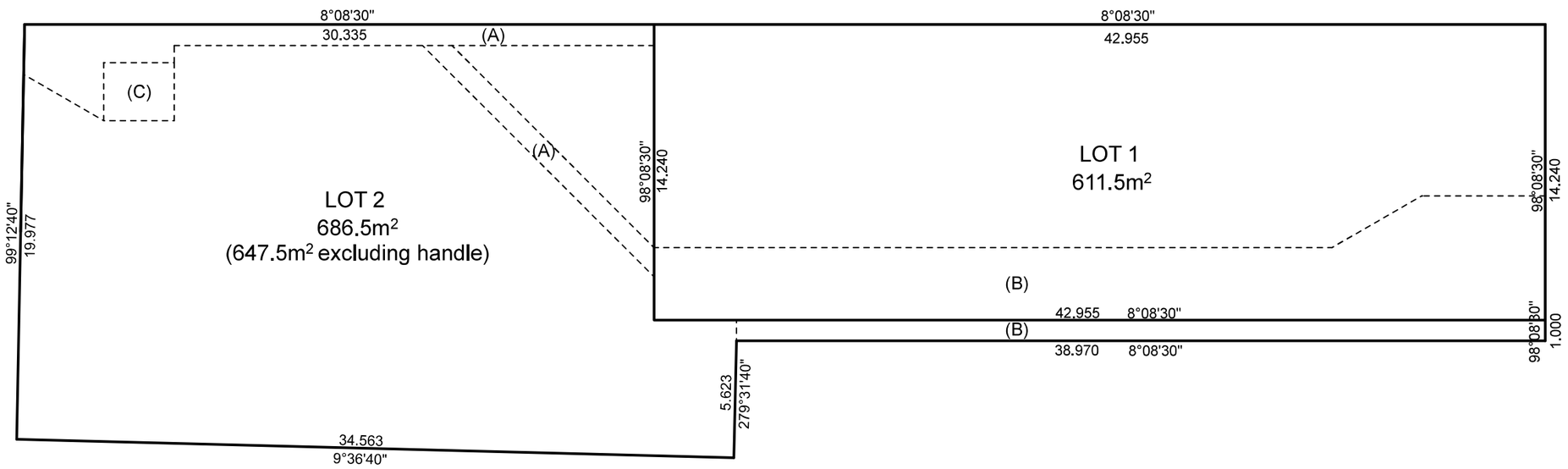
(A) - Proposed Easement to drain water 1.0m wide and Variable

(B) - Proposed Recipricol Right of Way Variable Width

(C) - Restriction as to (User On Site Detention) Variable Width



HOPETOUN STREET

SITE CALCULATIONS	
LOT 1 SITE AREA	611.5 m²
UNIT 1	
Lower Floor Area	49.4 m²
Garage	39.0 m²
Upper Floor Area	81.4 m²
TOTAL	130.8 m²
UNIT 2	
Lower Floor Area	50.8 m²
Garage	39.0 m²
Upper Floor Area	84.6 m²
TOTAL	135.4 m²
TOTAL AREA	266.2 m²
FSR	0.44:1
LOT 2 SITE AREA	686.5 m²
UNIT 3	
Lower Floor Area	66.4 m²
Garage	39.0 m²
Upper Floor Area	99.9 m²
TOTAL	166.3 m²
UNIT 4	
Lower Floor Area	71.0 m²
Garage	39.0 m²
Upper Floor Area	106.6 m²
TOTAL	177.6 m²
TOTAL AREA	343.9 m²
FSR	0.50:1

PROPOSED TORRENS SUBDIVISION

SCALE 1:250 @A3

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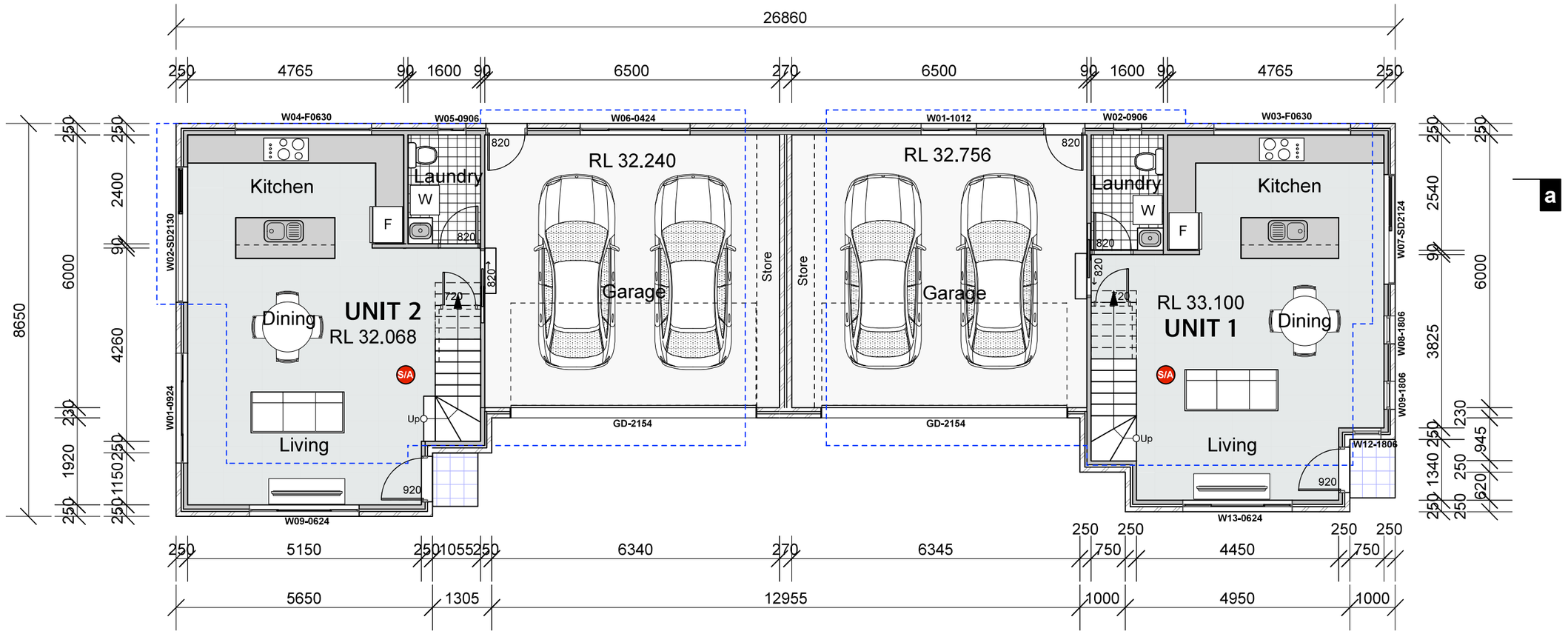
UNIT 1 & 2



a

LOWER FLOOR PLAN

SCALE 1:100 @A3

W3-1206 ← WINDOW SIZE

└ DENOTES BASIX WINDOW REFERENCE

S/A DENOTES SMOKE ALARM TO AS3786 'HARD-WIRED' TO ELECTRICITY MAINS. (THE LOCATION OF COMPLIANT SMOKE ALARMS MUST BE IN ACCOPRDANCE WITH THE PROVISIOND OF PART 3.7.2 OF THE BUILDING CODE OF AUSTRALIA).

All recessed downlights in the thermal envelope to be sealed. All exhaust fans to be fitted with dampers and insulation installed up to cover

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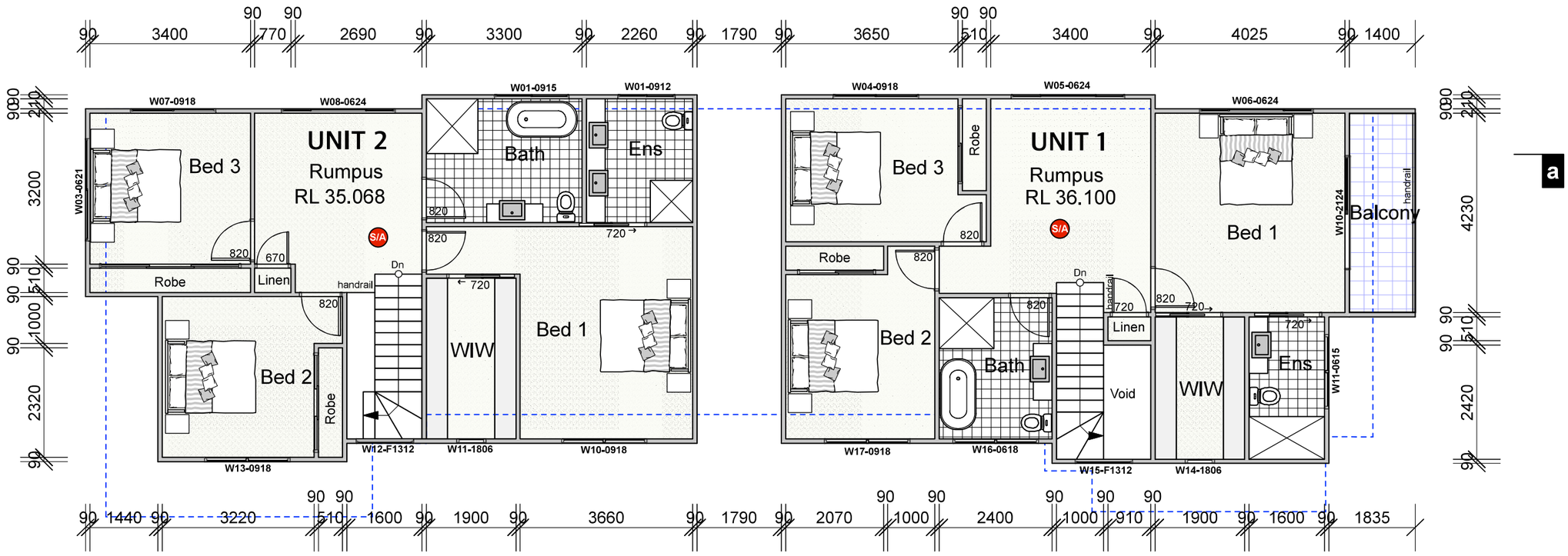
UNIT 1 & 2



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UPPER FLOOR PLAN

SCALE 1:100 @A3

W3-1206 ← WINDOW SIZE

└ DENOTES BASIX WINDOW REFERENCE

S/A DENOTES SMOKE ALARM TO AS3786
'HARD-WIRED' TO ELECTRICITY MAINS.
(THE LOCATION OF COMPLIANT SMOKE ALARMS MUST BE IN ACCOPRDANCE WITH THE PROVISIOND OF PART 3.7.2 OF THE BUILDING CODE OF AUSTRALIA).

All recessed downlights in the thermal envelope to be sealed. All exhaust fans to be fitted with dampers and insulation installed up to cover

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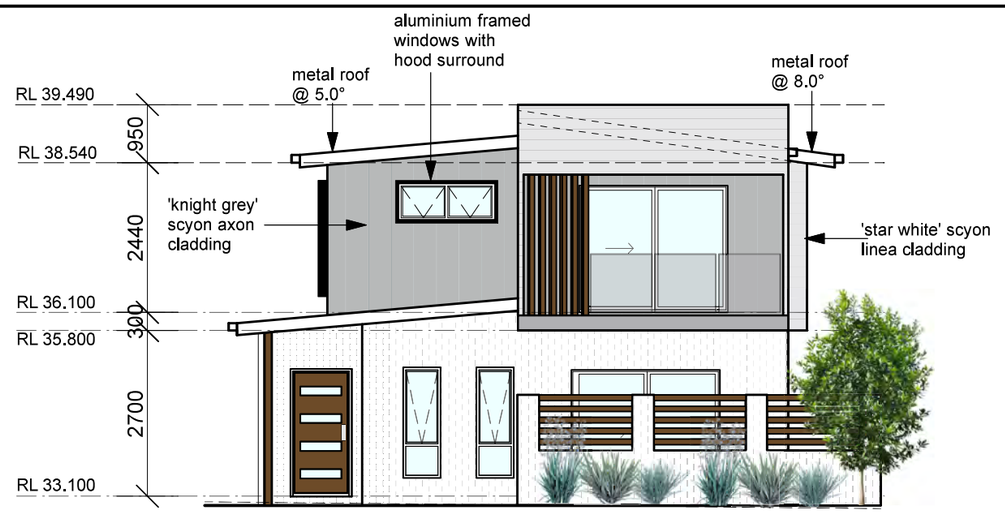
Ingenuity Home Design

UNITS 1 & 2



SOUTHERN ELEVATION

SCALE 1:100 @A3

WESTERN ELEVATION

SCALE 1:100 @A3

CLIENT:	Itsbuilt
JOB ADDRESS:	18 HOPETOUN STREET, WOONONA
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bdaa ACCREDITED BUILDING DESIGNER

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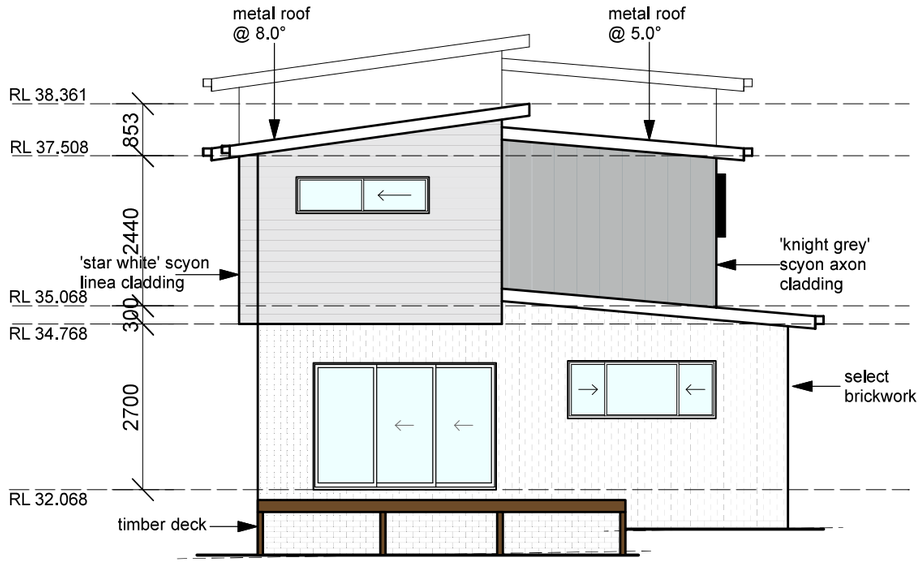
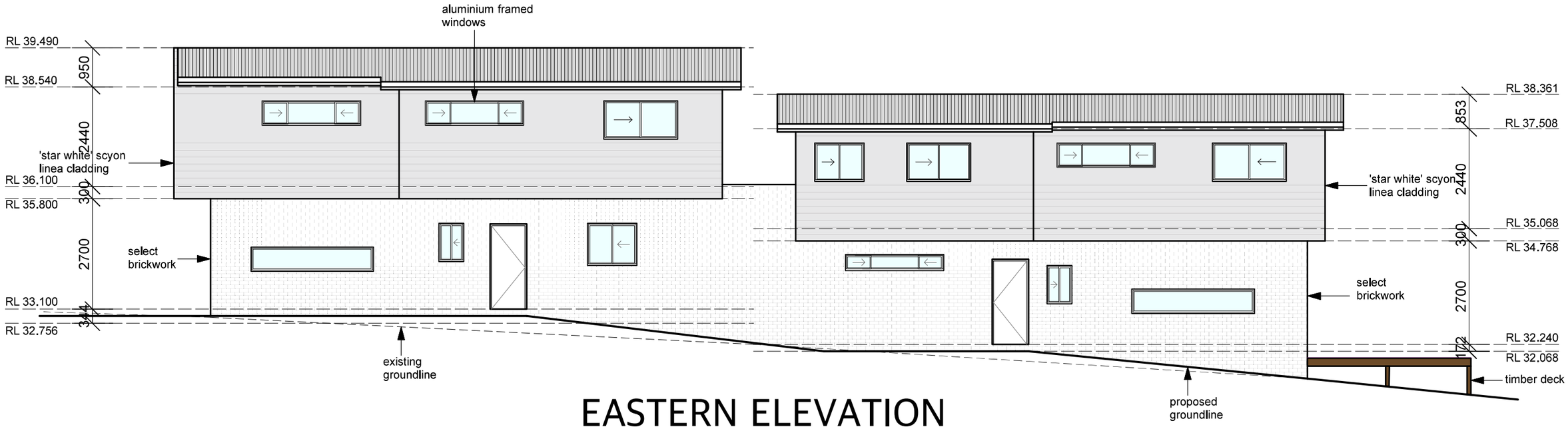
Ingenuity Home Design

UNITS 1 & 2



NORTHERN ELEVATION

SCALE 1:100 @A3



EASTERN ELEVATION

SCALE 1:100 @A3

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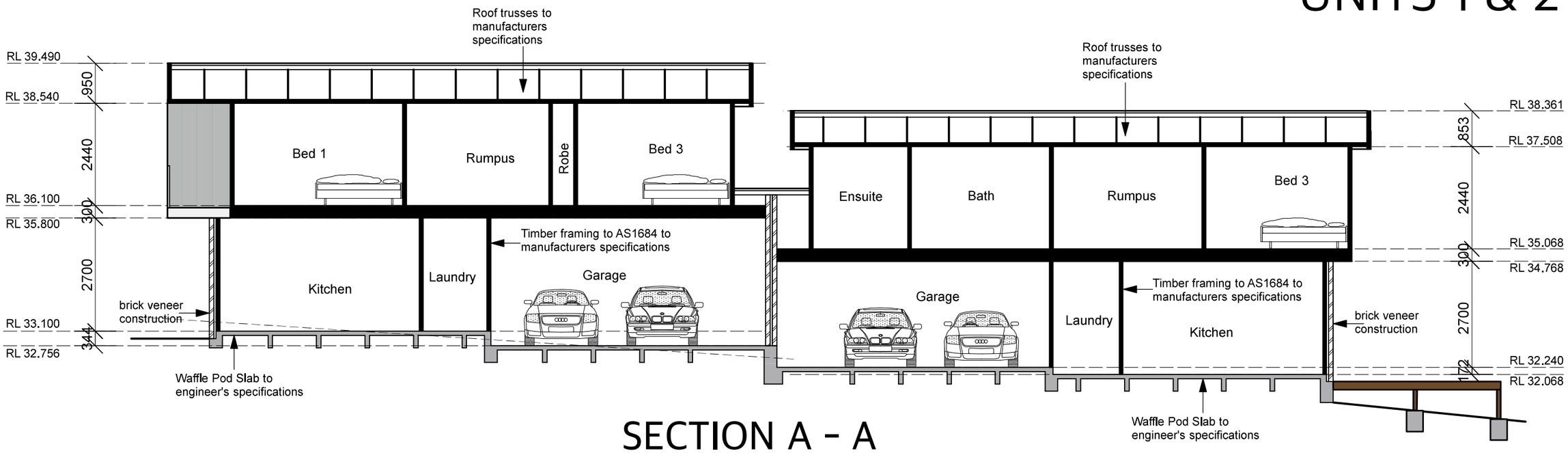
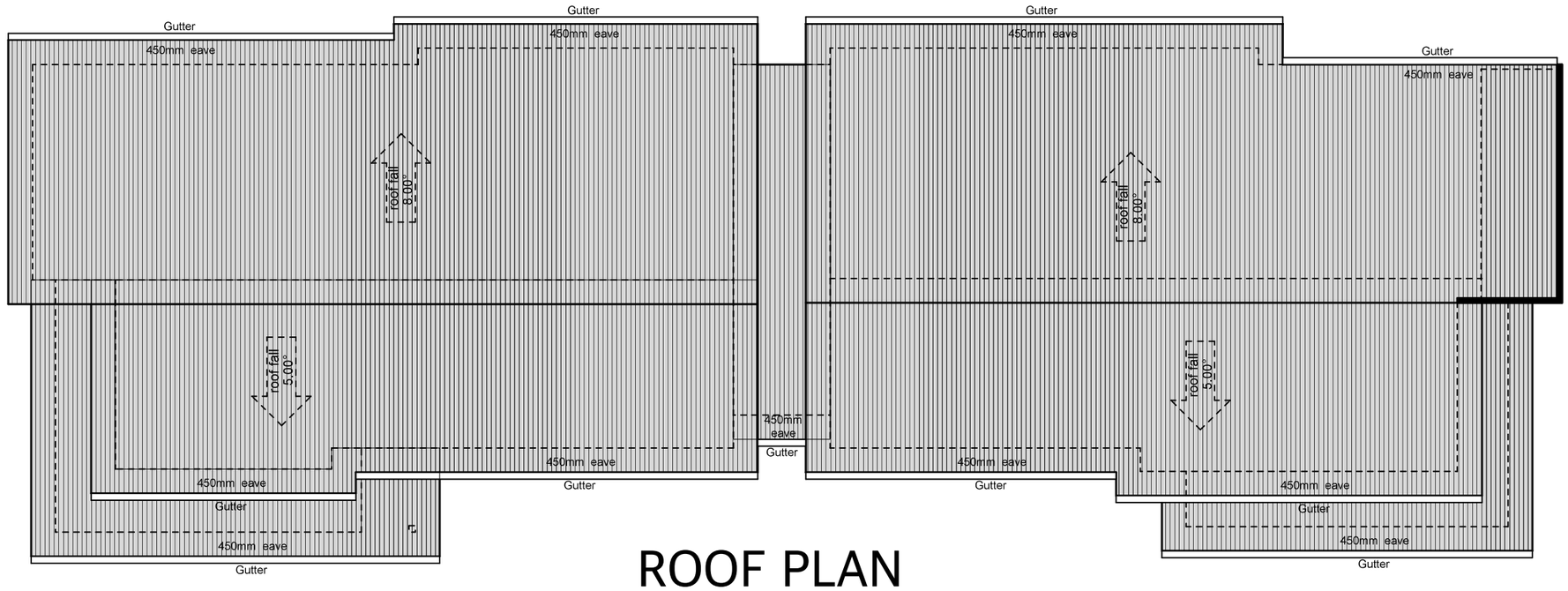
Ingenuity Home Design

UNITS 1 & 2



SECTION A – A

SCALE 1:100 @A3



ROOF PLAN

SCALE 1:100 @A3

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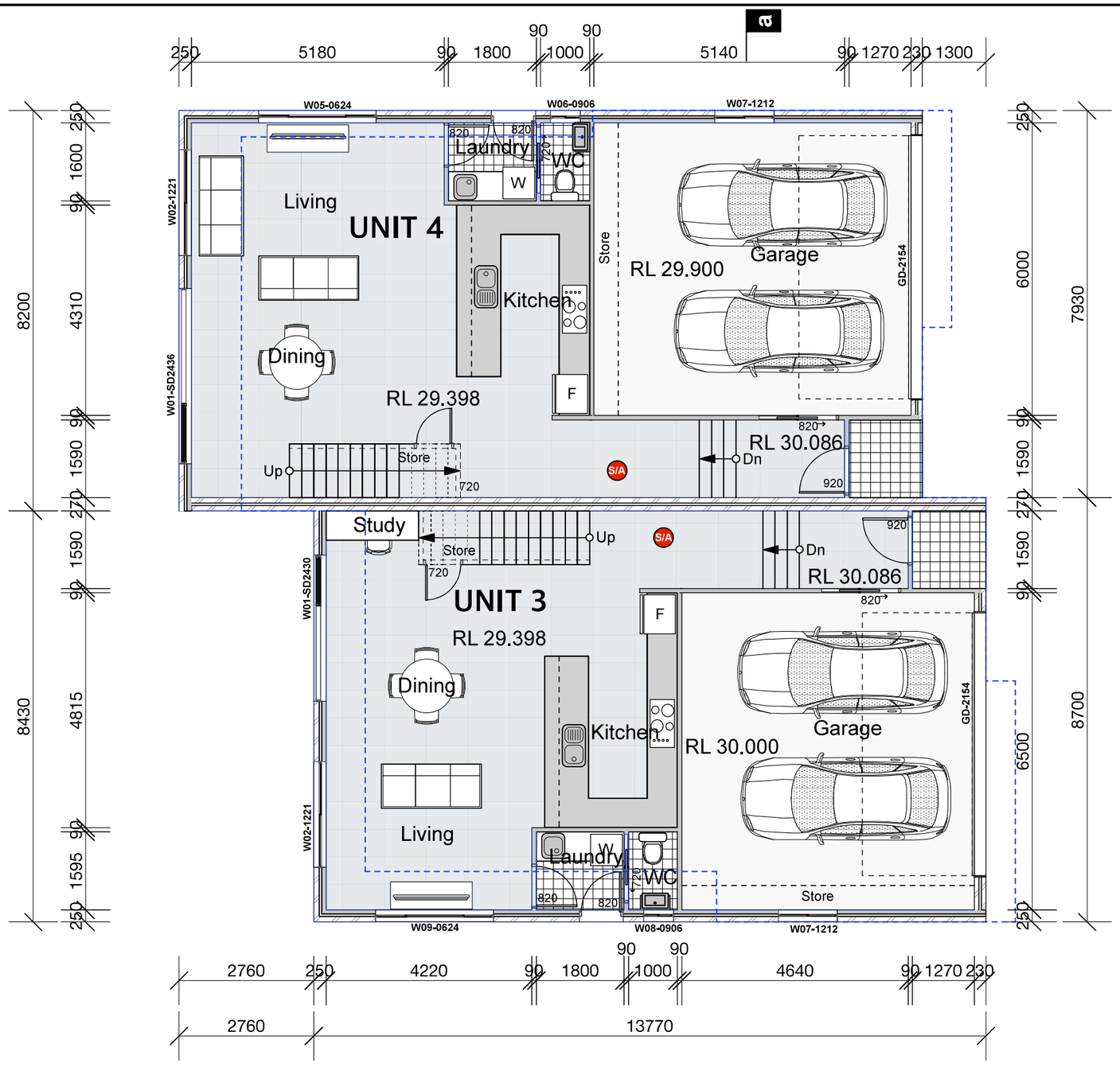
Ingenuity Home Design

UNITS 3 & 4



W3-1206 ← WINDOW SIZE

└ DENOTES BASIX WINDOW REFERENCE

S/A DENOTES SMOKE ALARM TO AS3786 'HARD-WIRED' TO ELECTRICITY MAINS.
(THE LOCATION OF COMPLIANT SMOKE ALARMS MUST BE IN ACCOPRDANCE WITH THE PROVISIOND OF PART 3.7.2 OF THE BUILDING CODE OF AUSTRALIA).

LOWER FLOOR PLAN

SCALE 1:100 @A3

All recessed downlights in the thermal envelope to be sealed. All exhaust fans to be fitted with dampers and insulation installed up to cover

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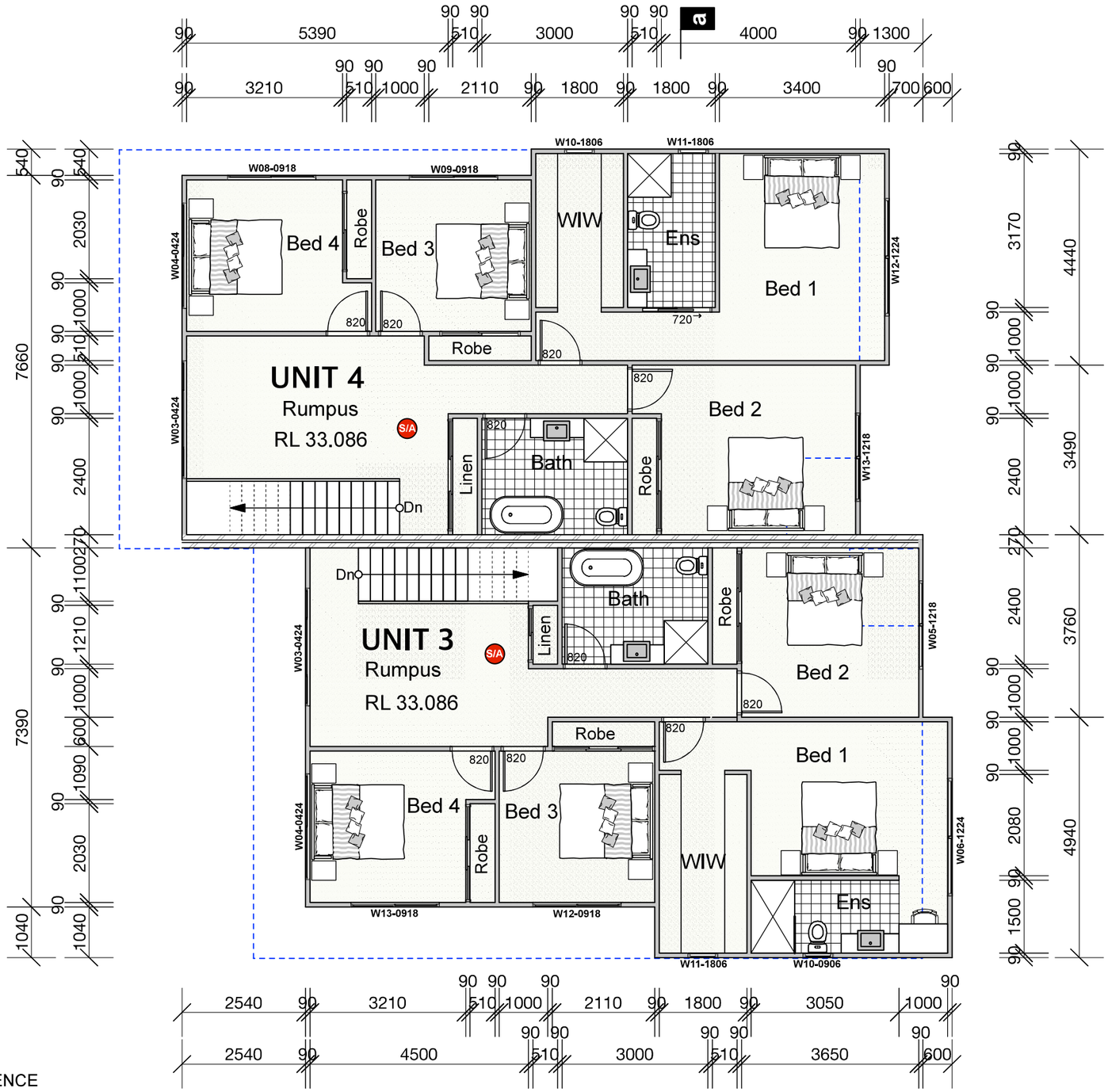
Ingenuity Home Design

UNITS 3 & 4



W3-1206 ← WINDOW SIZE

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(THE LOCATION OF COMPLIANT SMOKE ALARMS MUST BE IN ACCOPRDANCE WITH THE PROVISIOND OF PART 3.7.2 OF THE BUILDING CODE OF AUSTRALIA).

UPPER FLOOR PLAN

SCALE 1:100 @A3

All recessed downlights in the thermal envelope to be sealed. All exhaust fans to be fitted with dampers and insulation installed up to cover

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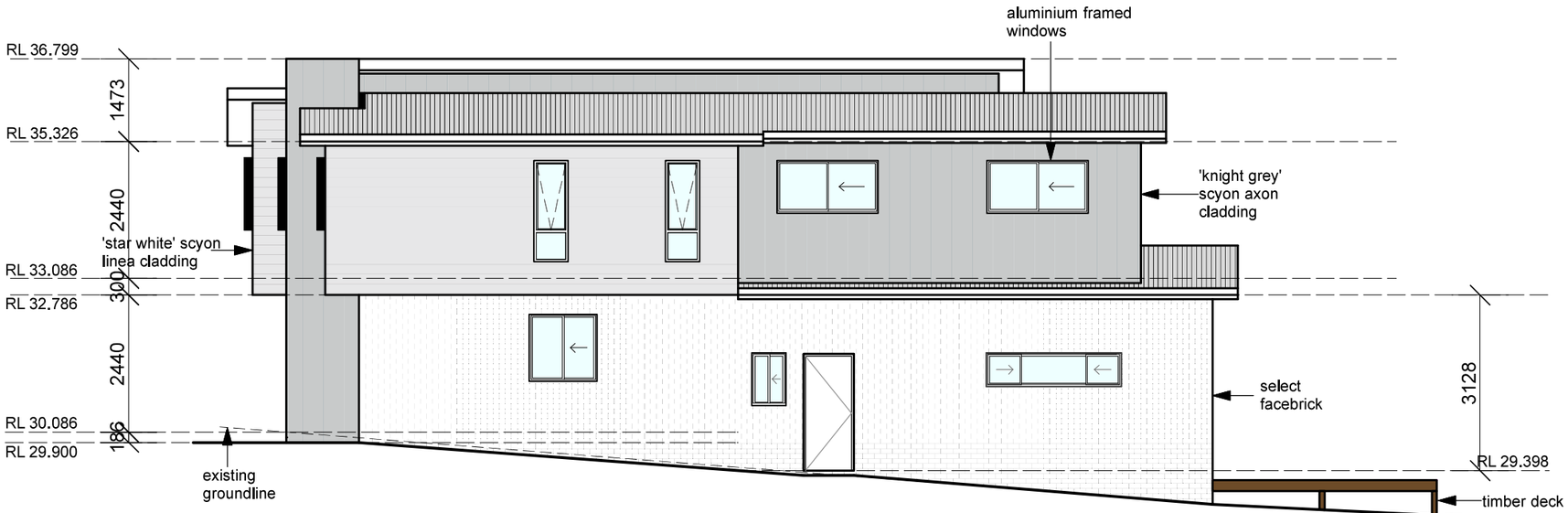
Ingenuity Home Design

UNITS 3 & 4

SOUTHERN ELEVATION

SCALE 1:100 @A3



EASTERN ELEVATION

SCALE 1:100 @A3

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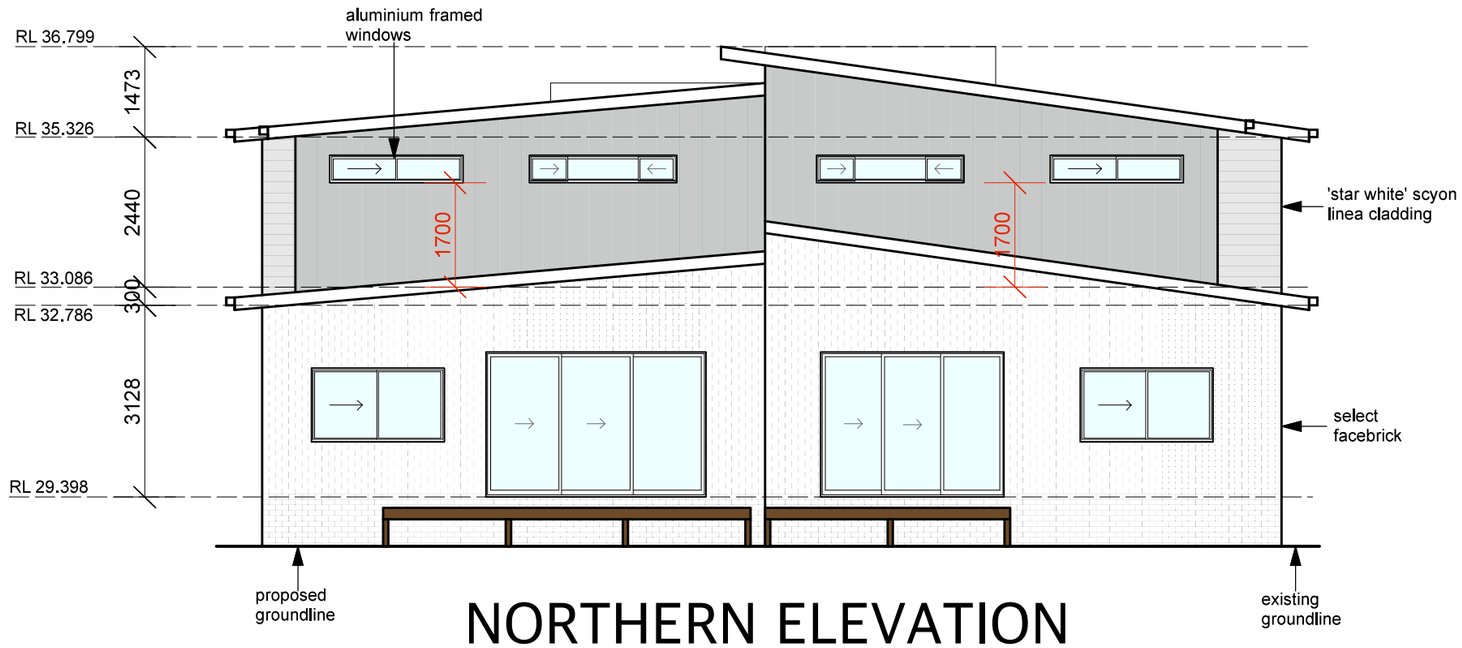
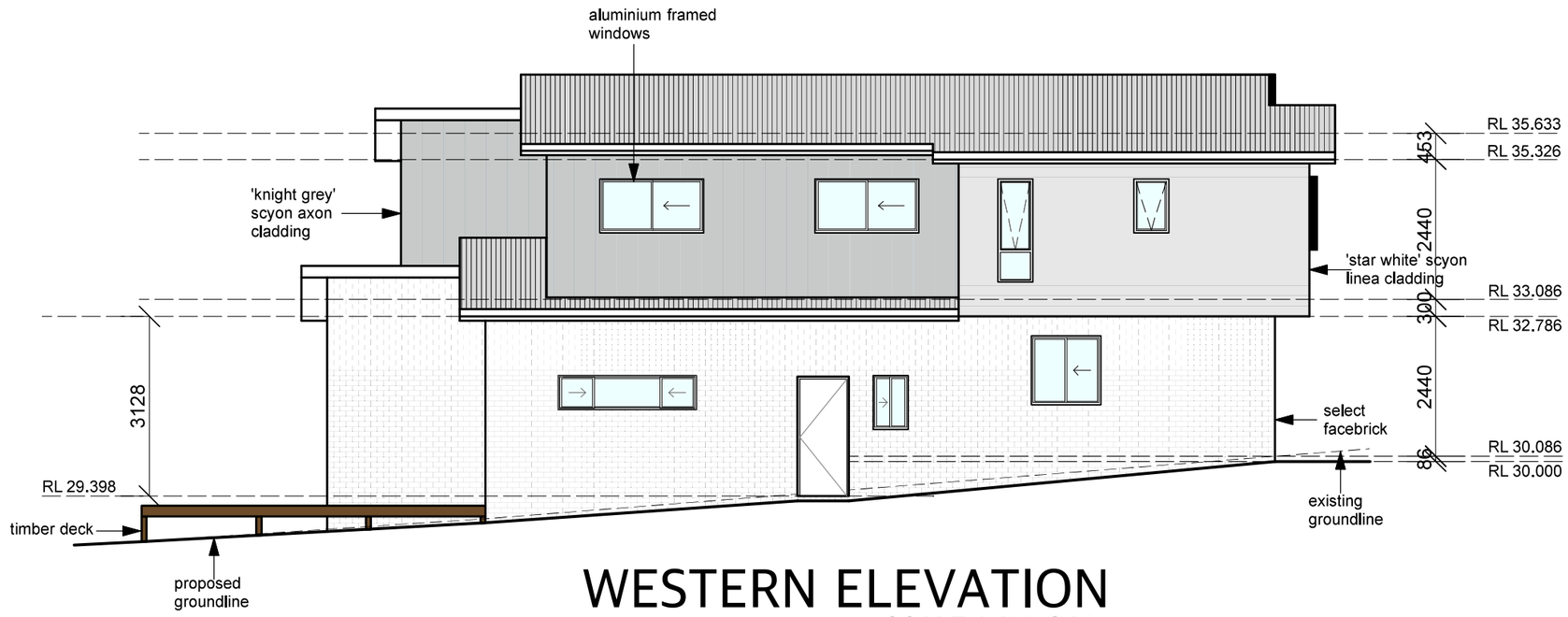
Ingenuity Home Design

UNITS 3 & 4



NORTHERN ELEVATION

SCALE 1:100 @A3



WESTERN ELEVATION

SCALE 1:100 @A3

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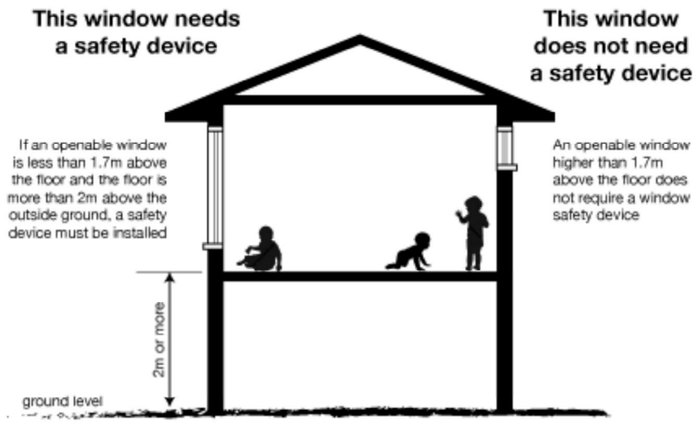
Ingenuity Home Design

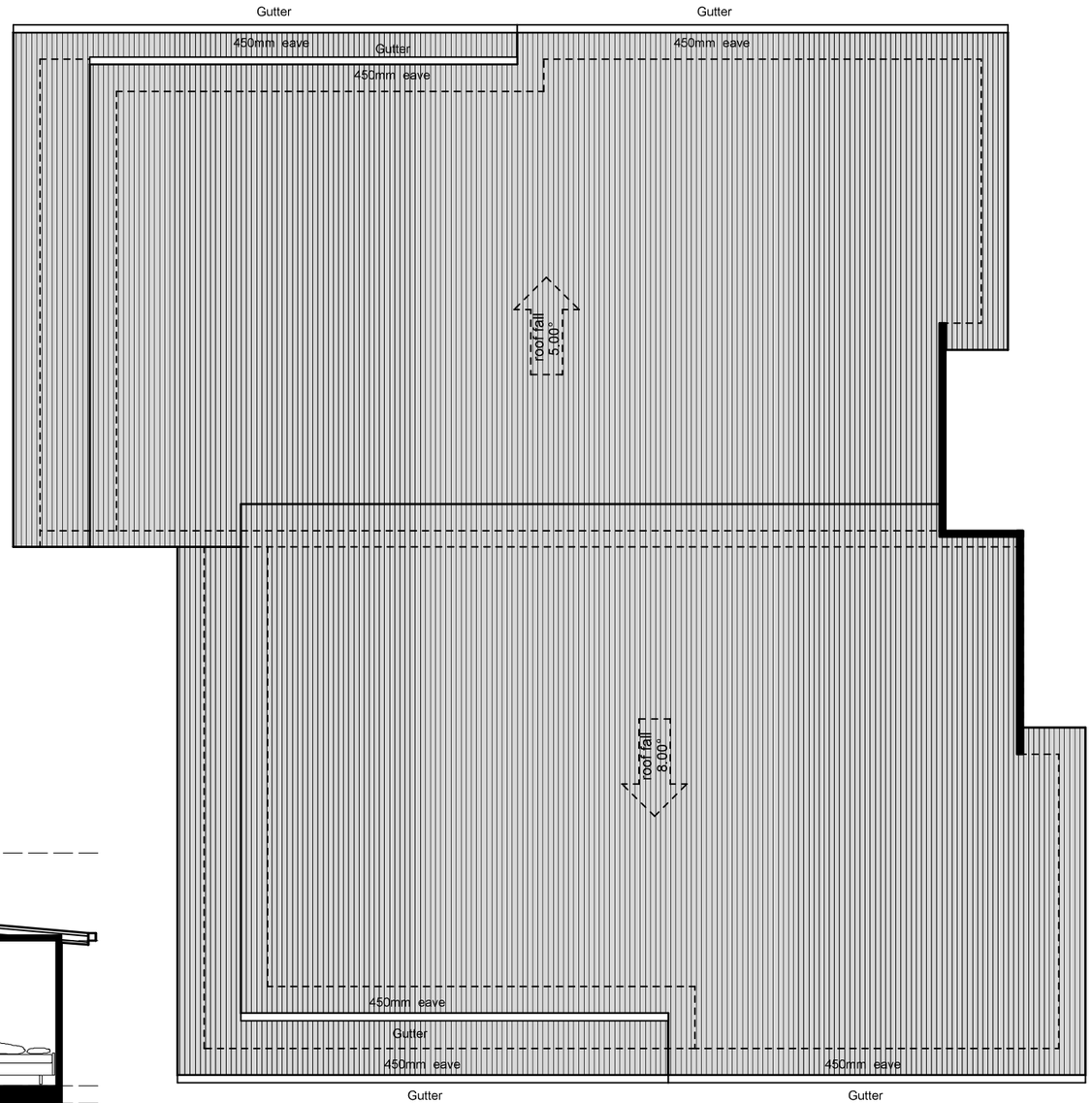
UNITS 3 & 4

An openable window will need a safety device installed if:

1. the lowest part of the window is less than 1.7m above the floor; and
2. the internal floor under the window is 2m or more above the outside surface.

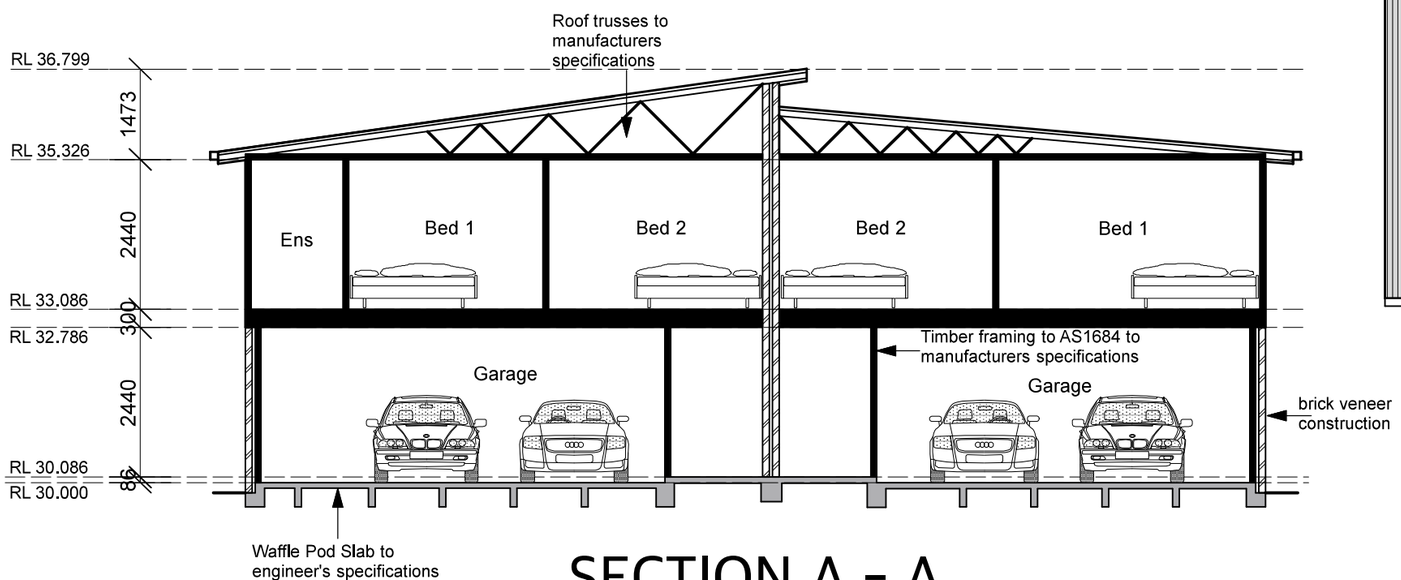
The safety devices must be able to limit the maximum window opening to 12.5cm, must be robust, and must be childproof. Suitable window safety devices would include window locks or safety screens, but not ordinary insect screens.





ROOF PLAN

SCALE 1:100 @A3



SECTION A – A

SCALE 1:100 @A3

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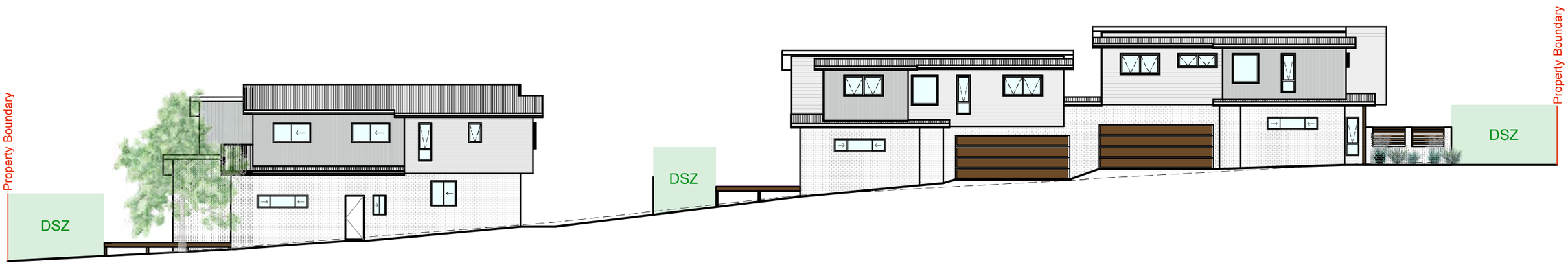
Ingenuity Home Design



WESTERN ELEVATION

SCALE 1:200 @A3

CLIENT: Itsbuilt	JOB ADDRESS: 18 HOPETOUN STREET, WOONONA	JOB NUMBER: 20200001	
		DATE: 01/07/2020	
		ISSUE: B	
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Ingenuity Home Design

MASONRY NOTES:

M1– All workmanship and materials shall be in accordance with AS3700.
M2– The design strength of masonry shall be:

Exposure Classification to AS3600	Brick Compressive Strength (MPa)	Brick Salt Resistance Grade	Durability Classification of Built In components	Mortar Mix	
				GP Portland Cement:Lime:Sand	f'c(MPa)
A1/A2	5	General Purpose	R3 (Galvanised)	1.0:1.0:6.0	2.8
B1	5			1.0:1.0:6.0	2.8
B2	5	Expose	R4 (Stainless)	1.0:0.5:4.5	2.8

M3– All masonry walls supporting concrete slabs and beams shall have a slip joint comprising of two layers of galvanized steel in between the concrete and masonry.
M4– All masonry walls supporting or supported by concrete floors shall be have vertical joints located to match any control construction joints in the concrete.
M5– Do not construct any masonry walls on suspended slabs until the slab formwork has been stripped and de–propped.
M6– Non load bearing masonry walls shall be separated from concrete slab or beam above by 20 mm thick compressible filler.
M7– Provide vertical control joints at 8 meters maximum centers, and 4 meters maximum from corners in masonry walls, and between new & existing brickwork. The joint shall have expansion joint ties and suitably sealed with a mastic sealant.
M8– Masonry retaining wall are to be back filled with either of the following material:
–Coarse grained soil with low silt content
–Residual soil containing stones
–Fine silty sand
–Granular materials with low clay content

BLOCKWORK NOTES:

B1– All workmanship and materials shall be in accordance with AS3700
B2– Reinforced concrete blockwork shall comply with the following, UNO:
–Blocks: Minimum 10 MPa unconfined compressive strength conforming to AS54455.
–Mortar: 1.0:1.0:6.0 ratio of cement : lime : sand : UNO
–Blocks shall be either 'H' or Double–U configuration.
–provide cleanout holes at the base of the wall & rod core holes to remove excess mortar
–Core filling shall be 25 MPa concrete with maximum 10mm aggregate size with a maximum slump of 180 ±20mm.
–Minimum cover of 50mm from the outside of the blockwork.
B3– Blockwork retaining walls are to be back filled with either of the following material:
–coarse grained soil with low silt content
–Residual soil containing stones
–Fine silty sand
–Granular materials with low clay content
B4– No admixtures shall be used to the mortar mix or the core fill mix without prior written consent from the engineer.
B5– Provide vertical joints at 10m max centres generally and 5m max from corners or as specified in the BCA
B6– Provide cleanout holes at base and rod core holes to remove protruding mortar.
B7– Core filling concrete to be F'c= 20 MPa Slump= 200mm, Aggregate= 10mm
B8– Grout shall be placed in lifts of 1200mm Max, compact with poker vibrator, allow time to settle between lifts.
B9– Flexible masonry anchors must be in at every fourth (4h) course.
B10– Wall ties to be built in a flexed to the timber frame 200 side of the Expansion Joint at every (3rd) course.
B11– Site maintenance is the responsibility of the home owner.

TIMBER NOTES:

T1– All timber design, construction and material to be to AS1720.1 and AS1720.2.
T2– AS1684 shall be applied to domestic construction in sheltered locations.
T3– Softwood to be minimum grade F7 or MGP10 U.N.O. Hardwood to be minimum grade F11.
T4– All bolts in timber construction to be minimum M16 U.N.O. Bolt holes to be drilled exact size. Washers under heads and nuts to be at least 2.5 times bolt diameter.
T5– Timber dimensions on the finished width and thickness to be:
Seasoned Softwood +5, –0mm
Unseasoned Softwood >F7+3, –3mm
less than or equal to F7+2, –4mm
Seasoned Softwood +2, –0mm
Unseasoned Softwood +3, –3mm (see also clause 1.6.2 in AS2082)
T6– All timber joint and notches are to be 100mm minimum away from loose knots, severe sloping grain, gum veins or other minor defects.

STRUCTURAL STEEL NOTES:

S1– All Work and Materials to be in accordance with AS 4100
S2– Unless noted otherwise
a.Use 10mm thick gusset, fin and end plates welded all round.
b. All welds 6mm continuous fillet UNO.
c. All bolts are to be 20 mm dia. UNO.
d. All bolts including holding down bolts are to be hot dip galvanised.
e. All fillet welds to be category GP UNO.
f. Butt weld all flanges at end plates and at all mitre cuts. Butt weld all stiffener plates to flanges only.
g. All connections to have a minimum of 2 bolts.
h. Studs fabricated to AS1554.2
All shear studs (composite slab to steel) grade 410 MPa.
All threaded studs (steel to steel) grade 380 MPa.
S3– Butt welds where shown on drawings shall be complete penetration butt welds to AS1554.
S4– Bolting categories are identified on the drawings in the following manner.
4.6/S Commercial bolts of grade 4.6 snug tightened.
8.8/S high strength bolts of grade 8.8 snug tightened.
8.8/TB high strength bolts of grade 8.8 fully tensioned to AS4100 as a bearing type joint.
8.8/TF high strength bolts of grade 8.8 fully tensioned to AS4100 as a friction type joint with facing surfaces left uncoated.
Note: Grade 8.8 bolts are NOT to be welded.
S5– Chip all welds free of slag.
S6– Provide temporary bracing to maintain stability of steelwork during construction.
S7– Do not grout under base plates until first level steelwork is plumb and fixed by welding or bolting.
S8– All Structural Steel shall have a surface treatment in accordance with AS2312:2002. Generally internal steel should be wire brush cleaned and painted with a suitable paint. External steel should be galvanised or applied with a suitable paint in accordance with manufactures specification (usually sand blast clean surface treatment) and guaranteed for a minimum of 10 years.
S9– Concrete encased steelwork shall be wrapped with WS wire @ 150 centres with min 50 cover U.N.O.
S10– The contractor shall provide all cleats and drill all holes necessary for fixing members whether detailed on plans or not.
S11– All holding down bolts shall be hot dip galvanized.Other bolts to receive same surface treatment as adjacent steelwork.
S12– Minimum yield stress of steel beam/columns is 300 MPa.
S13– All external beams and columns must be hot dip galv.

FRAMING AND BRACING NOTES:

TF1– Roof – Diagonal speed bracing throughout roof, screw fix to each purlin and securely fasten to top plate/beam at ends.
TE2– Stud walls – Strap top & bottom plate to a minimum of every second stud secure floor plate to slab below with M12 anchors or secure every second stud to floor bearers below
TF3– Masonry walls – Fasten top plate to brickwork using roof straps similar to brunswick mfa22 at a minimum of 1200mm spacing anchored 10 courses down. Provide straps each side of all openings provide additional hold downs as detailed
TF4– Vertical bracing – Provide vertical bracing in accordance with AS1684, provide additional vertical bracing where shown and as detailed on these drawings.

DRAINAGE NOTES:

D1– All levels are in (m) and to AHD Datum.
All levels are shown as spot levels and/or contours.
D2– Runoff is calculated using Rational Formula with time of concentration of 5 min. and 100 year ARI. Rainfall Intensity is 299 mm/hr.
D3– Drainage design complies with AS3500.
D4– All drainage pipes are to be min. 100 mm dia. with min. 1% fall UNO.
D5– Ensure all drainage pipeline have min. 100 mm cover from the top of the pipe to the finished ground level or to the underside of the concrete driveway.
Any pipelines that have less than 100mm cover to the underside of the concrete driveway/slab must be galvanized steel pipeline.
D6– Basix commitments shall be complied with for both the rainwater tank size and connection of dp to the tanks ensuring minimum area of roof is connected to the rainwater tank as specified in Basix certificate.
D7– OSD (Onsite Detention Basin) Where provided shall be kept clean of all rubbish and green waste that may fall into the basin. The basin should be checked by the owner every 6 months by removing the lockable grate and cleaning and checking both parts of the basin. pipes should never be allowed to be blocked.
D8– Overflow pipes form the rainwater tanks are to be connected into the stormwater system
D9– Finished surface levels are shown as 45.25
D10– Charged pipeline from down pipes (dp) to rainwater tank are shown as ——— · ——— · ———
D11– Pipelines from rainwater tanks, pits, OSD etc. which are discharging into Council stormwater system or watercourse are shown as. ——— — ———

POOL NOTES:

P1– 1. All pool fences and gates to be installed is per BCA requirements.
P2– 2. All pool fences and gates must isolate the pool room the dwelling and other structures.
P3– 3 No doors can open into the pool area.
P4– 4.All windows that open into the pool area must have Crimsafe mesh installed to prevent entry and comply with AS1926.1–2007.
P5– 5. If a boundary fence is used as a pool fence. it must have a minimum height of 1.8m.
P6– 6. provide minimum 900mm no climb zone around pool boundary fence inside and out.
P7– 7. The filter box is to be minimum 900mm from boundary fence and housed in a sound proof enclosure.

AMENDMENTS

ADD DESIGN & CONSULTING
CONSULTING CIVIL – STRUCTURAL ENGINEERS
P.O. Box 4058 Shellharbour NSW 2529
e: anthonydragovic@gmail.com Mobile (0401) 478 254

DRAINAGE PLANS FOR
MR. T. CROSSLING
18 HOPETOUN STREET
WOONONA

DESIGNED A.D.D.	CODE hoped.dwg
DRAWN A.D.D.	DATUM A.H.D
CHECKED	SCALE 1:100
DATE 11/2017	SHEET 1 OF 6
JOB No. 17/298	REVISION 11

MW

Roof gutter and downpipes have been designed for 100 year ARI 5 min. tc of 299mm/hr. Downpipes to be min. 100mm dia. PVC pipe downpipes as shown. Roof gutter cross sectional area to be min. 7300mm^2 with a slope of 1:500 or steeper.

Tank A:
Rainwater tank &
tank overflow pipeline.
100mm dia. outlet pipe
@ 9.5% fall.
Base of tank. R.L. 32.25 AHD
Pipe Inv. R.L. 31.95 AHD

Tank B:
Rainwater tank &
tank overflow pipeline.
100mm dia. outlet pipe
@ 9.5% fall.
Base of tank. R.L. 32.20 AHD
Pipe Inv. R.L. 31.90 AHD

Tank C:
Rainwater tank &
tank overflow pipeline.
100mm dia. outlet pipe
@ 3.3% fall.
Base of tank. R.L. 30.25 AHD
Pipe Inv. R.L. 29.95 AHD

Tank D:
Rainwater tank &
tank overflow pipeline.
100mm dia. outlet pipe
@ 24.4% fall.
Base of tank. R.L. 28.75 AHD
Pipe Inv. R.L. 28.45 AHD

Proposed 2.7m long level spreader to ensure that 100 year OSD weir overflow is not concentrated.
Grate R.L. 28.65 AHD

Proposed OSD tank
3.0x2.4x1.0m deep
Vol. = 7.02 m^3
Inv. R.L. 27.60 AHD
Grate R.L. 28.75 AHD

Min. 1.0m wide drainage easement shown hatched.

Ensure all pipelines have minimum 100mm of cover from the top of pipe to the finished ground level or underside of concrete.

150mm dia. pipe @ 10% fall to OSD pit.

150mm dia. pipe @ 8% fall to Pit D.

100mm dia. pipe @ 9.5% fall to dp 22.

Q = 40.42 l/s
150mm dia. outlet pipe
@ 7.5% fall to Pit E.

Tank D

RWT (under POS)

Proposed Unit 4
Garage FL RL 29.900
Entry FL RL 30.086
Ground FL RL 29.398
First FL RL 33.086

Proposed Unit 3
Garage FL RL 30.00
Entry FL RL 30.086
Ground FL RL 29.398
First FL RL 33.086

Proposed Unit 2
Garage FL RL 32.240
Ground FL RL 32.068
First FL RL 35.068

Proposed Unit 1
Garage FL RL 32.756
Ground FL RL 33.100
First FL RL 36.100

Tank B Tank A

Pit A Pit B Pit C Pit D

Provide 100mm high kerb

100mm dia. pipe @ 5.1% fall to Pit C.

Tributary area shaded

100mm dia. pipe @ 3.1% fall to Pit D.

12
DP6454

Pit A:
300mm square pit.
Inv. R.L. 32.65 AHD
Grate R.L. 33.00 AHD

Pit B:
450mm square pit.
Inv. R.L. 31.80 AHD
Grate R.L. 32.250 AHD

Pit C:
450mm square pit.
Inv. R.L. 30.75 AHD
Grate R.L. 31.20 AHD

Pit D:
450mm square pit.
Inv. R.L. 29.40 AHD
Grate R.L. 29.85 AHD

STAINED TIMBER OR POWDER COATED ALUMINIUM SLATS

HOPETOUN STREET

— · — Charged pipeline

——— Proposed pipeline

dp – Proposed downpipe

Ensure all drainage pipelines have min. 100mm cover from the top of the pipe to the finished ground level or to the underside of the concrete driveway. Any pipelines that have less than 100mm of cover to the underside of the concrete driveway/slab must be galv. steel pipelines.

All drainage pipelines are min. 100mm dia. @ min. 1% fall. U.N.O.

CONCEPT DRAINAGE PLAN

ADD DESIGN & CONSULTING
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e: anthonydragovic@gmail.com Mobile (0401) 478 254

DRAINAGE PLANS FOR
MR. T. CROSSLING
18 HOPETOUN STREET
WOONONA

DESIGNED A.D.D.	CODE hoped.dwg
DRAWN A.D.D.	DATUM A.H.D
CHECKED	SCALE 1:250
DATE 11/2017	SHEET 2 OF 6
JOB No. 17/298	REVISION 11

AMENDMENTS

RCP

22.08 GRATED PIT
20.05 INVERT OF PIT
PIT 1E

PIT 1F

22.15 GRATED PIT
19.95 INVERT OF PIT

Location of ridge in the kerb and gutter. Using survey equipment found 50mm of fall from house number 97 to 93.

Existing kerb and gutter gully pit.

22.31 GRATED PIT
21.48 INVERT 300Ø RCP (INLET)
21.46 INVERT 300Ø RCP (OUTLET)

FARRELL ROAD

Connect 2/100x150mm RHS pipes into existing kerb & gutter and make good.
Inv. R.L. 22.20 AHD

300Ø RCP @ 1% fall

Direction of gutter flow

Direction of gutter flow

PIT 1B

Pit E

Q = 40.42 l/s
450mm square pit with sealed concrete lid and debris screen.
Inv. R.L. 22.35 AHD
Grate R.L. 22.70 AHD
100x150mm RHS pit outlet pipes @ 1% fall connected into existing kerb

105 | 103 | 101 | 99 | 97 | 95 | 93 | 91 | 89 | 87

Existing dwelling

150mm dia. pipe @ 7.5% fall.

7 D.P. 6454 | 8 D.P. 6454 | 9 D.P. 6454 | 10 D.P. 6454 | 11 D.P. 6454 | 12 D.P. 6454 | 13 D.P. 6454 | 14 D.P. 6454

Existing 300mm dia. pipe @ 7.7% fall connected into existing kerb and gutter gully pit.

Existing garage to be demolished

Proposed Min. 1.0m wide drainage easement shown hatched.

300Ø RCP

12 DP6454

PIT 1A

27.64 GRATED PIT
26.88 INVERT OF 150Ø PVC (INLET)
26.58 INVERT OF 300Ø RCP (INLET)
26.57 INVERT OF 300Ø RCP (OUTLET)

150Ø PVC

28.20 GRATED PIT
27.77 INVERT OF 150Ø PVC (INLET)
26.73 INVERT OF 150Ø PVC (OUTLET)

300Ø RCP

27.68

27.50 GRATED PIT
26.86 INVERT OF 150Ø PVC (INLET)
26.77 INVERT OF 300Ø RCP(OUTLET)

26A

SP 17653

29.20

30.91

PITTMAN LANE

821 D.P. 1189652

820 D.P. 1189652

D.P. 1189651

1 D.P. 508018

2 D.P. 508018

A D.P. 157627

Proposed Unit 2
Garage FL. RL. 32398
Ground FL. RL. 32494
First FL. RL. 35484

Proposed Unit 1
Garage FL. RL. 32828
Ground FL. RL. 33176
First FL. RL. 36176

HOPETOUN STREET

HOPETOUN STREET

BENCH MARK
T of K
R.L.34.33

CONCEPT DRAINAGE PLAN

ADD DESIGN & CONSULTING
CONSULTING CIVIL - STRUCTURAL ENGINEERS
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DRAINAGE PLANS FOR
MR. T. CROSSLING
18 HOPETOUN STREET
WOONONA

DESIGNED A.D.D.	CODE hoped.dwg		
DRAWN A.D.D.	DATUM A.H.D		
CHECKED	SCALE 1:500	SHEET 3 OF 6	
DATE 11/2017	JOB No. 17/296	REVISION 11	

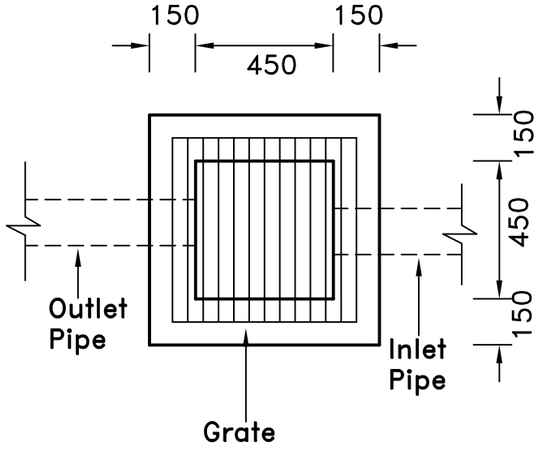
AMENDMENTS

OSD – DATA & CALCULATIONS

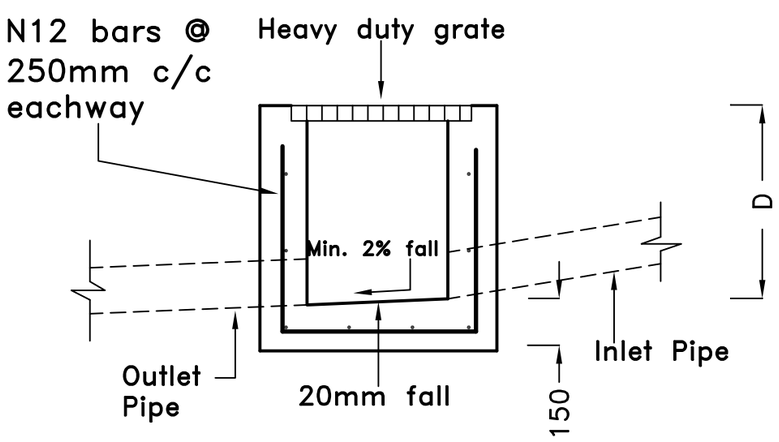
File		FACTORS	VALUE
Site Area (m^2)	1298	$F1_5$	1.087
Tributary Area (m^2)	995	$F1_{100}$	1.070
Existing Impervious Area (m^2)	250	F2	1.114
Developed Impervious Area (m^2)	823	I_1^{50}	103
STEP 1			
PSD_5 (=F1xF2x2.67xArea/10000xI_1^{50}) (l/s)	33.14		
PSD_{100}(=F1xF2x4.67xArea/10000xI_1^{50}) (l/s)	56.90	**STEP 1**	
SSR_5 (=F3xF4x2.25xPSD_5/F2) (m^3)	6.59	F3	0.176
SSR_{100}(=F3xF4x2.25xPSD_{100}/F2) (m^3)	11.33	F4	0.561
STEP 2			
PSD_5 (=F2x2.67xArea/10000xI_1^{50}) (l/s)	30.49		
PSD_{100}(=F2x4.67xArea/10000xI_1^{50}) (l/s)	53.33	**STEP 2**	
SSR_5 (=F3xF4x2.25xPSD_5/F2) (m^3)	2.49	F3	0.072
SSR_{100}(=F3xF4x2.25xPSD_{100}/F2) (m^3)	4.36		

OROFICE PLATE	VALUE	
$Q = C\ A\ \sqrt{(2gh)}$ (l/s)	30.49	
C	0.6	
A = Area (sq. mm) => dia.	15829	Adopt orifice 142mm dia.
5 year head (mm)	513	Q = 30.15 l/s
100 year head (mm)	922	Q = 40.42 l/s
WEIR FLOW	**VALUE**	
Q (l/s)	12.91	53.33 – 40.42 = 12.91
HW (mm)	22	
L (mm)	2700	
C	1.7	
$Q = CLH^{1.5}$	14.98	OK

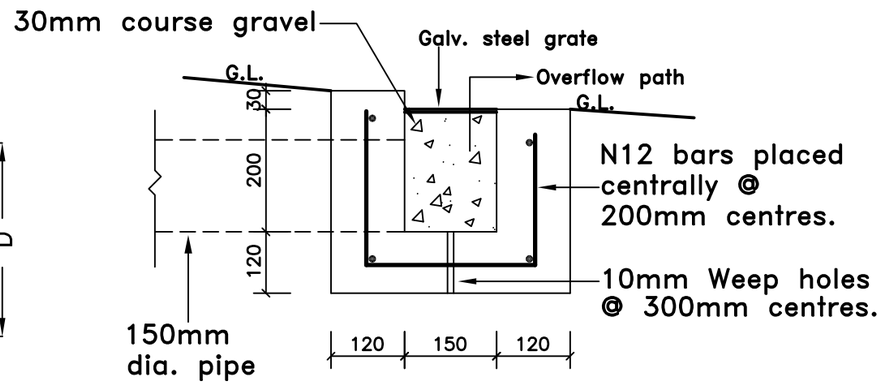
FINAL SSR (STEP1–STEP2)	VALUE	
SSR_5 (= 6.59 – 2.49) (m^3)	4.10	Final SSR is STEP 1
SSR_{100} (= 11.33 – 4.36) (m^3)	6.97	– STEP 2.
FINAL PSD		
PSD_5 (=F2x2.67xArea/10000xI_1^{50}) (l/s)	30.49	Final PSD is PSD for
PSD_{100} (=F2x4.67xArea/10000xI_1^{50}) (l/s)	53.33	STEP 2.



450mm SQUARE PIT PLAN
Scale 1:20



450mm SQUARE PIT SECTION
Scale 1:20



LEVEL SPREADER
Scale 1:10

AMENDMENTS
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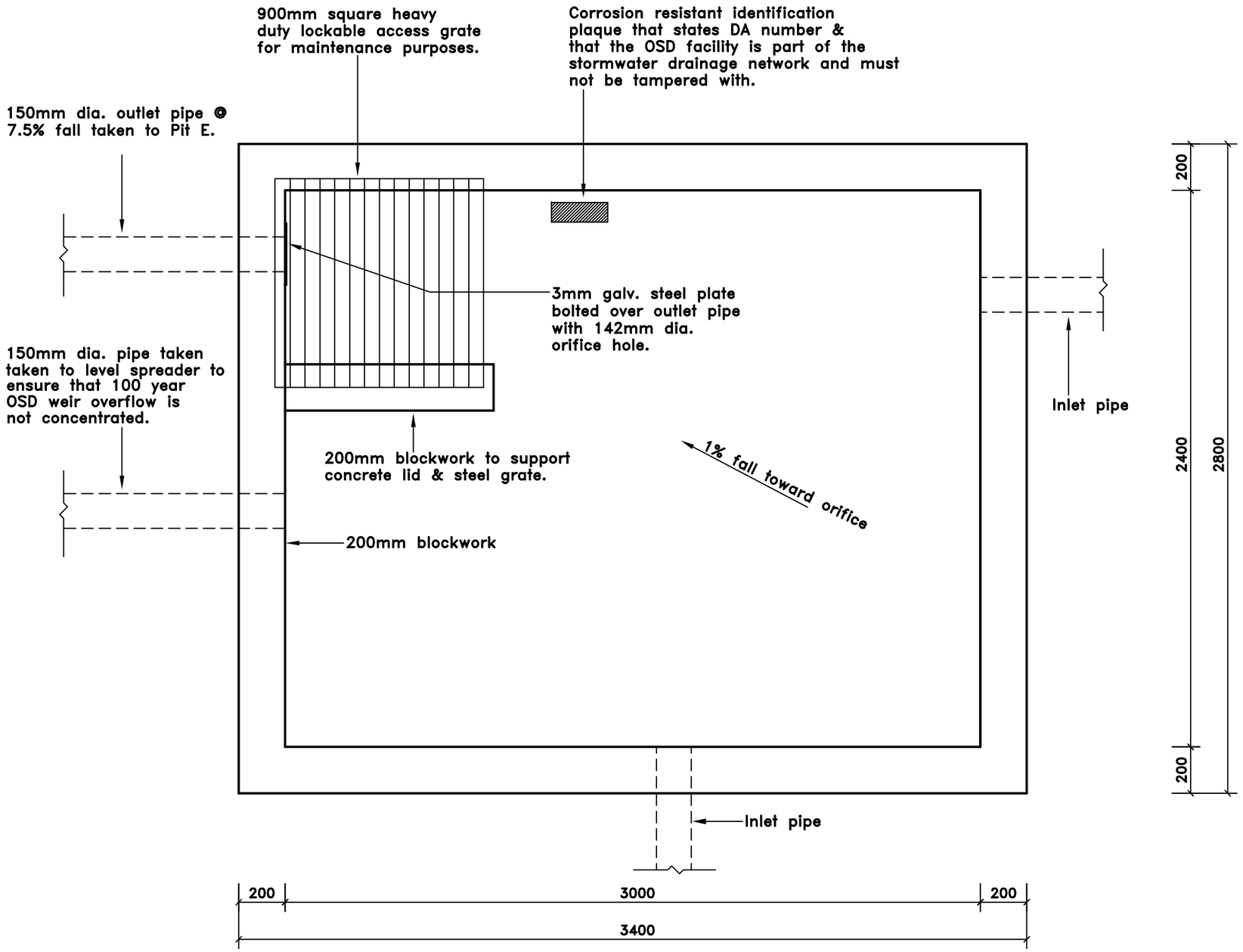
DRAINAGE PLANS FOR
MR. T. CROSSLING
18 HOPETOUN STREET
WOONONA

DESIGNED A.D.D.	CODE hoped.dwg
DRAWN A.D.D.	DATUM A.H.D
CHECKED	SCALE 1:20;1:10
DATE 11/2017	SHEET 4 OF 6
JOB No. 17/298	REVISION 11



OSD PIT PLAN
Scale 1:20

Maintenance Schedule
The detention basin must be kept clean of all rubbish and greenwaste that may fall into the basin. The basin should be checked by the owner every 6 months by removing the lockable grate and cleaning/checking both parts of the basin. The pipes should never be allowed to be blocked.

AMENDMENTS

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DRAINAGE PLANS FOR
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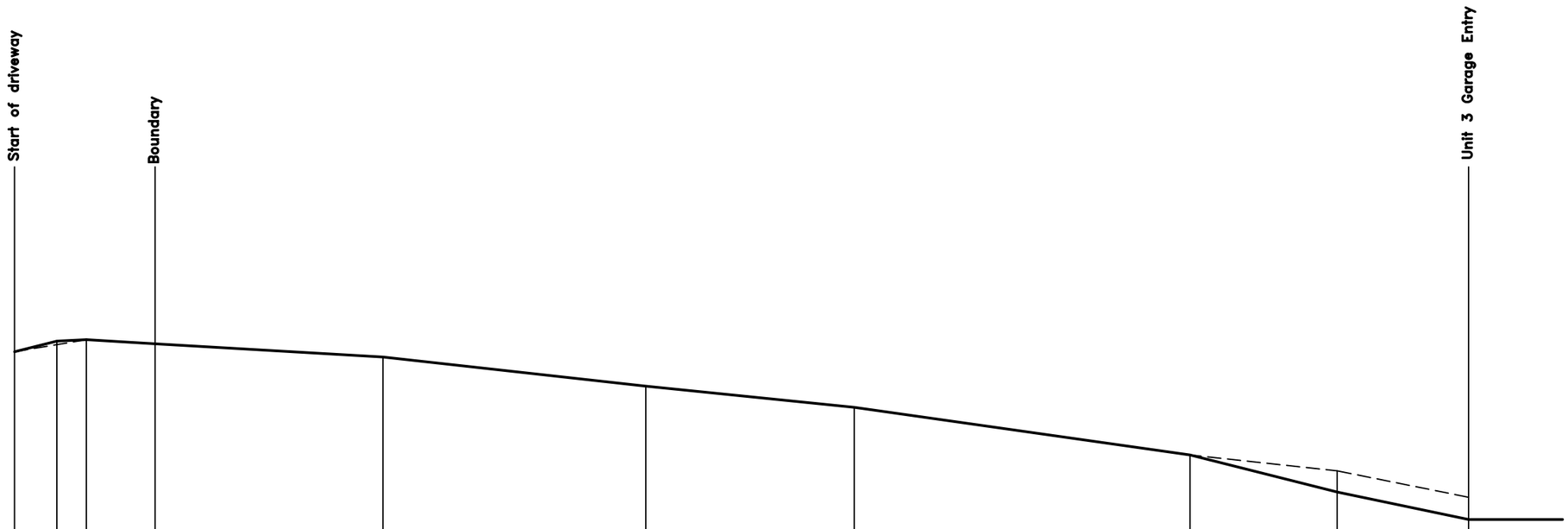

	12.5%	2.5%	3.1%	2.9%	5.5%	5.1%	7.1%	12.6%	10.4%	Flat
Datum AHD	26.00									
Proposed R.L.	33.15	33.35	33.38	33.30	33.05	32.50	32.10	31.20	30.50	29.98
Existing R.L.	33.15	33.28	33.38	33.30	33.05	32.50	32.10	31.20	30.90	30.40
Chainage (m)	0.0	1.6	2.72	5.32	13.94	23.88	31.76	44.46	50.03	55.00

DRIVEWAY LONG SECTION

Horizontal Scale 1:200
Vertical Scale 1:100

AMENDMENTS

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DRAINAGE PLANS FOR
MR. T. CROSSLING
18 HOPETOUN STREET
WOONONA

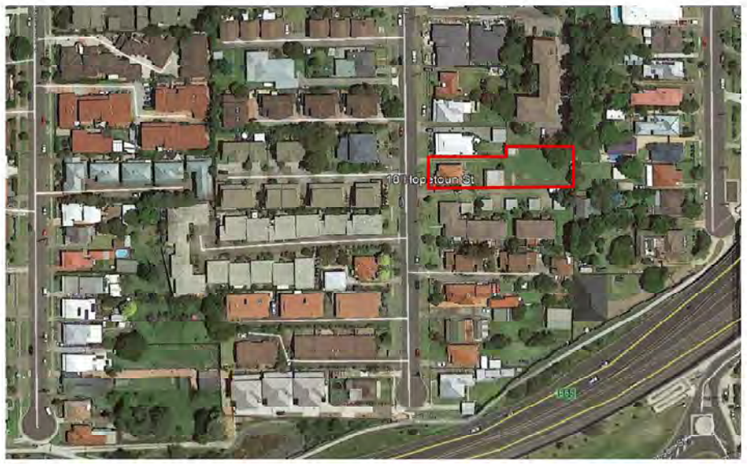
DESIGNED A.D.D.	CODE hoped.dwg
DRAWN A.D.D.	DATUM A.H.D
CHECKED	SCALE 1:100;1:200
DATE 11/2017	SHEET 6 OF 6
JOB No. 17/298	REVISION 11

PROPOSED DEVELOPMENT

DEVELOPMENT APPLICATION LANDSCAPE DOCUMENTATION

No 18 HOPETOUN STREET WOONONA NSW

PREPARED FOR: Itsbuilt
PREPARED BY: CAPTIVATE LANDSCAPE DESIGN & ARCHITECTURE



Site Location
N.T.S

DRAWING SCHEDULE:

DRAWING	PAGE No	SCALE
Title Page	1	As Shown @ A3
Landscape Plan 1	2	1:100 @ A3
Landscape Plan 2	3	1:100 @ A3
Landscape Plan 3	4	1:100 @ A3

LANDSCAPE CALCULATIONS:

SITE AREA - LOT 1	
TOTAL	= 611.6m²
Required Landscape	= 110m² + 30% >600m²
	= 123.48m²
	(Deep Soil Zone) = 61.74m²
Garden Areas	= 72.123m²
Turf Areas	= 10.411m²
Deep Soil Zones	= 70.639m²
Total	= 153.17m²
SITE AREA - LOT 2	
TOTAL	= 686.5m²
Required Landscape	= 110m² + 30% >600m²
	= 145.95m²
	(Deep Soil Zone) = 72.98m²
Garden Areas	= 72.551m²
Turf Areas	= 124.806m²
Deep Soil Zones	= 75.51m²
Total	= 272.87m²

South Elevation
1:200

Full Site Plan
1:500

LEGEND

- EXISTING TREES To Be Retained and Protected Refer to Arborist Report
- EXISTING TREES To Be Removed Refer to Arborist Report
- EXISTING TREE To Be Transplanted Refer to Arborist Report
- PLAIN CONCRETE
- COLOURED CONCRETE
- STAMPED CONCRETE
- TILES / PAVING
- TIMBER DECK
- TURF / GARDEN EDGE Timber Edge
- 1800mm HIGH COLORBOND FENCE
- EXISTING TURF AREAS
- PROPOSED TURF AREAS
- COMPACTED GRANITE
- WASTE BINS / CLOTHES DRYING
- STEPPING PADS

For Development Application Only

A 14/07/2020 Revised Site Plans

NO. DATE NOTE

THE BUILDER IS RESPONSIBLE FOR THE SETTING OUT OF THE WORKS, THE CHECKING OF ALL DIMENSIONS AND LEVELS ON SITE, AND THE REPORTING OF ANY DISCREPANCIES TO THE PROPRIETOR PRIOR TO COMMENCEMENT OF WORK. DO NOT SCALE FROM DRAWINGS.

Client
Itsbuilt

Address
No 18 Hopetoun Street
Woonona NSW

Project
Proposed Subdivision

Drawing
Title Page

Captivate
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PO Box 702 Kiama NSW 2533
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Scale @A3
As Shown

Date
12.3.20

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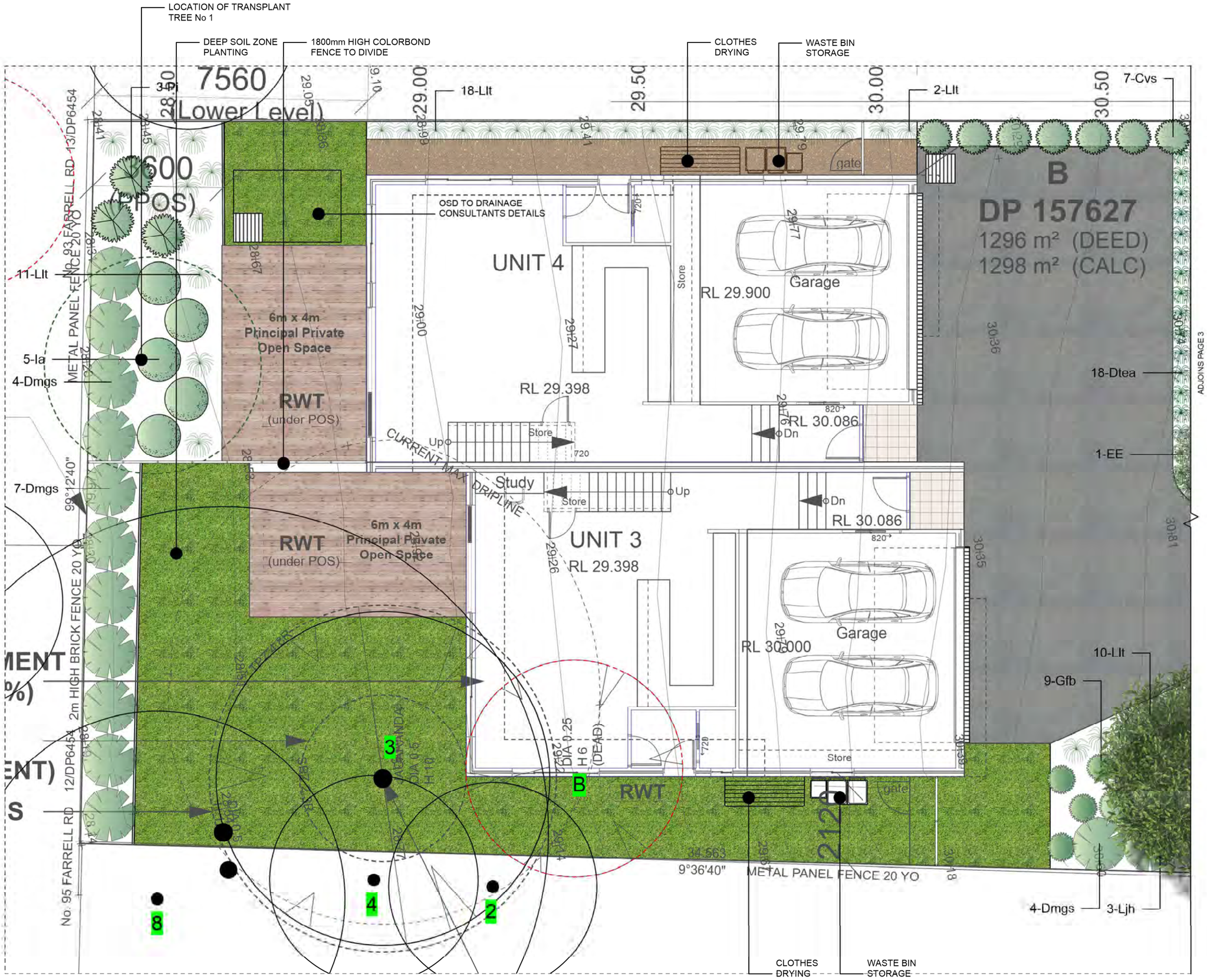

Part Site Plan
1:100

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NO.	DATE	NOTE
A	14/07/2020	Revised Site Plans

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Address
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Project
Proposed Subdivision

Drawing
Landscape Plan 1

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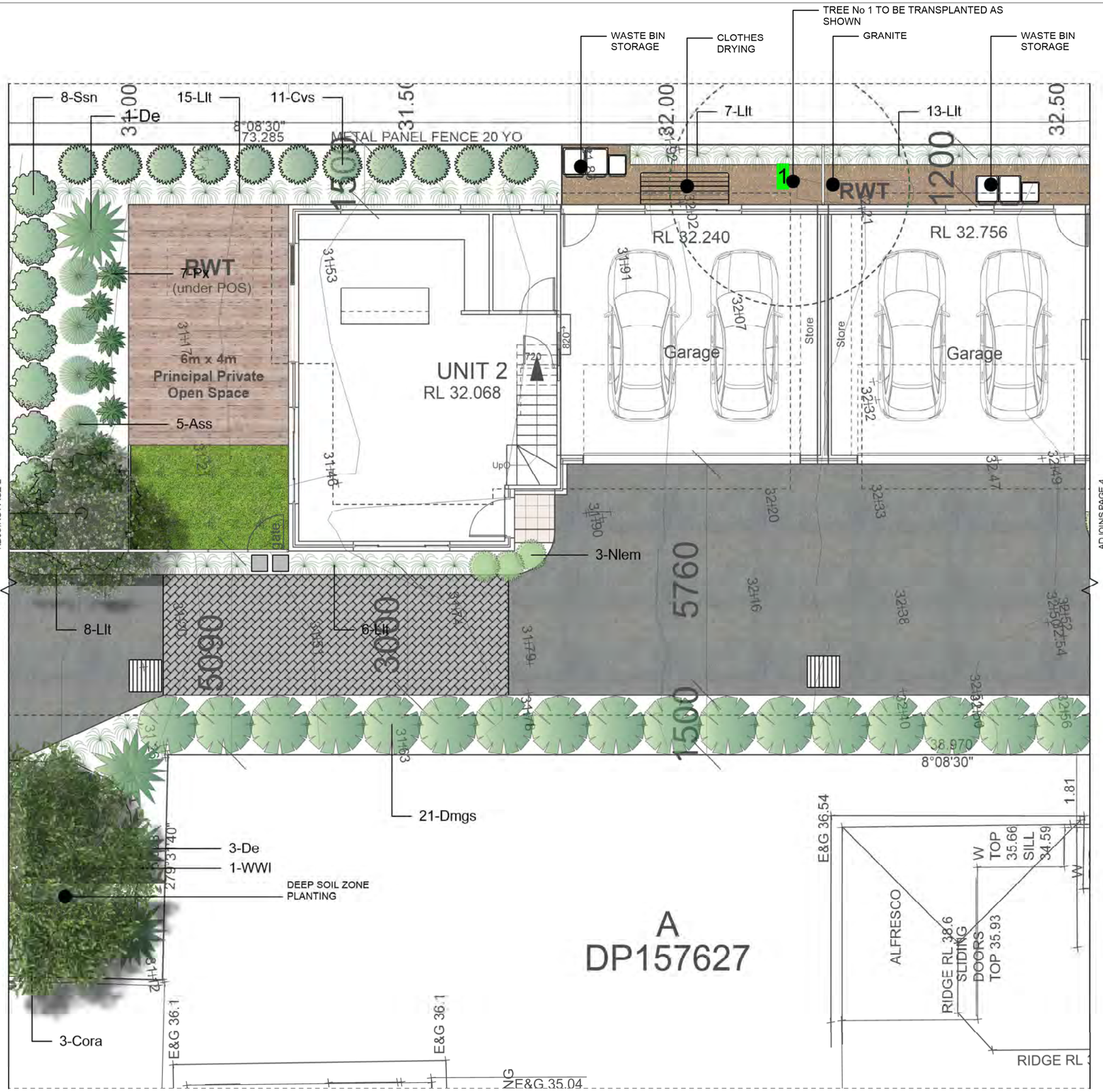

Part Site Plan
1:100

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A 14/07/2020 Revised Site Plans

NO. DATE NOTE

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Address
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Project
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Drawing
Landscape Plan 2

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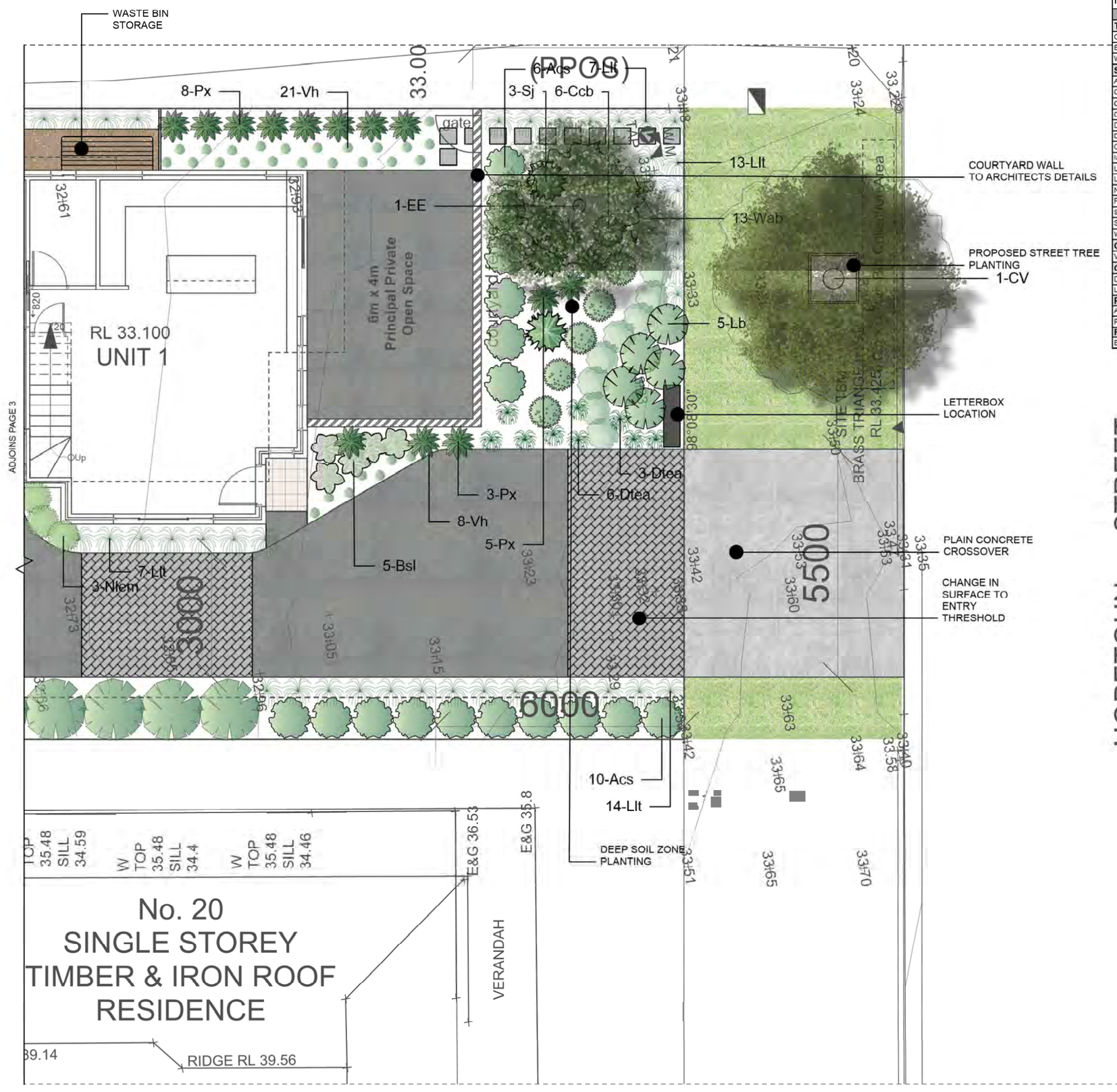

Part Site Plan
1:100

Indicative Planting Schedule						
ID	Qty	Common Name	Botanical Name	Scheduled Size	Mature Height	Mature Spread
Trees						
CV	1	Weeping Bottlebrush	Callistemon viminalis	200Lt	3 - 5m	3.5 - 6m
EE	2	Smoothed leaved Quandong	Elaeocarpus eumundi	45Lt	5 - 10m	2.0 - 3.5m
WWI	1	Weeping Lilly Pilly	Waterhousia floribunda 'Whisper'	75Lt	8m	5m
Shrubs						
Aca	16	Lilly Pilly	Acema smithii 'Cherry Surprise'	200mm	1.5m	1m
Cvs	18	Slim Bottlebrush	Callistemon viminalis 'Slim'	200mm	3m	1.3m
Cora	3	White Correa	Correa alba	200mm	0.9 - 1.5m	0.9 - 1.2m
Ccb	6	Correa	Correa 'Canberra Bells'	200mm	1m	1m
Dmgs	36	Hopseed Bush	Dodonaea viscosa 'Mr Green Sheen'	200mm	2m	2m
De	4	Gymea Lily	Doryanthes excelsa	200mm	1.5 - 3m	1.2 - 2.0m
Gfb	9	Grevillea	Grevillea 'Fire Cracker'	200mm	0.4m	0.8m
Ia	5	Australian Indigo	Indigofera australis	200mm	1.5m	1.5m
Ljh	3	Leucadendron	Leucadendron 'Jack Harre'	200mm	1.5m	1m
Lb	5	Cusion Bush	Leucophyta brownii	140mm	1m	1.2m
Nlem	6	Lemlim Nandina	Nandina domestica alba 'Lemlim'	200mm	0.7-0.9m	0.7-0.9m
Pi	3	Cut Leaf Mint Bush	Prostanthera incisa	200mm	1.5m	1.5m
Sj	3	Narrow-leaved Bird of Paradise	Strelitzia juncea	400mm	1.2 - 2m	1m
Ssn	8	Lilly Pilly	Syzygium australe 'Straight and Narrow'	200mm	5-8m	1-1.5m
Wab	13	Coastal Rosemary	Westringia fructicosia 'Aussie Box'	200mm	0.8m	0.8m
Ground Covers						
Vh	29	Native Violet	Viola hederacea	140mm	0.1 - 0.15m	1m
Grasses						
Dtea	27	Daniella	Daniella Tasmanica 'Emerald Arch'	140mm	0.55m	0.55m
Llt	131	Fine Leaf Mat Rush	Lomandra longifolia 'Tanika'	140mm	0.45 - 0.6m	0.6 - 0.9m
Perennials						
Ass	5	Silver Astelia	Astelia chathamica 'Silver Spear'	200mm	1-2m	0.6-1m
Px	23	Xanadu Philodendron	Philodendron 'Xanadu'	200mm	0.5-0.8m	0.8-1m
Ferns						
Bsl	5	Silver lady fern	Blechnum gibbum 'Silver Lady'	200mm	0.6 - 1m	0.6 - 1m

For Development Application Only

NO.	DATE	NOTE
A	14/07/2020	Revised Site Plans

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Client
Itsbuilt

Address
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Woonona NSW

Project
Proposed Subdivision

Drawing
Landscape Plan 3

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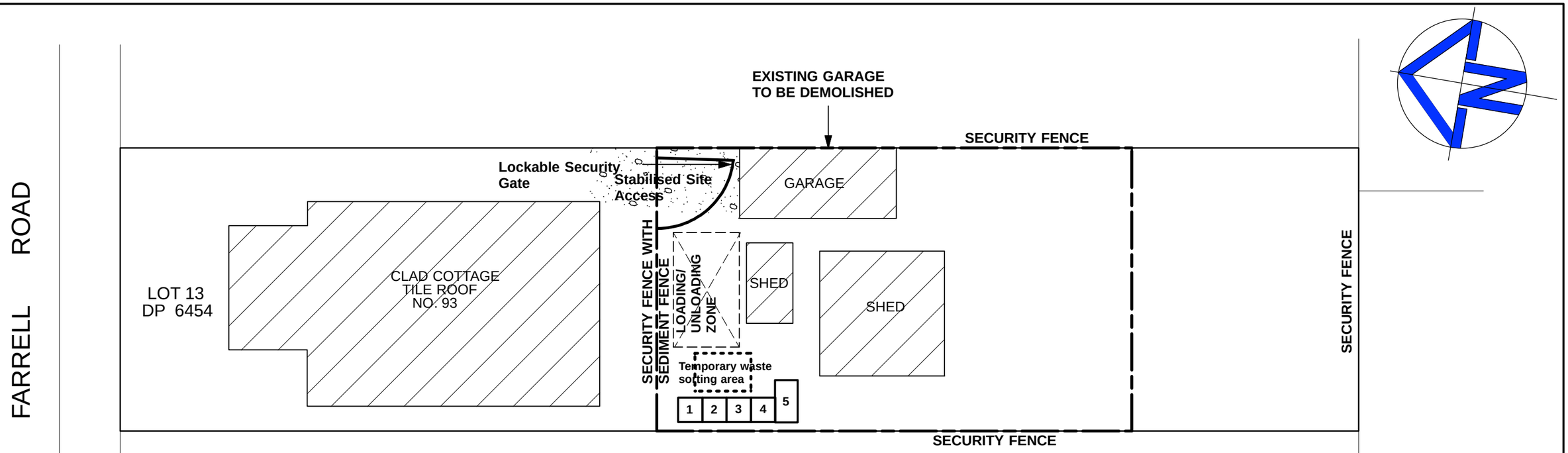


SITE DEMOLITION/WASTE MANAGEMENT/ SOIL EROSION PLAN

SCALE 1:200 @A3

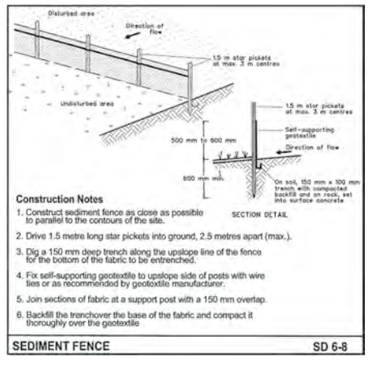
NOTES:

1. The existing garage to be demolished in accordance with the provisions of AS 2601-2001 “The Demolition of Structures” by contractors experienced in this class of work and holding current permits and licenses as necessary. In regards to the existing garage, the roofing and fascia materials will be removed first, followed by any doors and windows. The walls of the structure will then be demolished, together with the flooring and footings. This work will be carried out in accordance with the requirements of the NSW WorkCover Authority and the NSW Occupational Health and Safety Act, 2000.
2. The installation of stormwater infrastructure within the proposed easement will be subject to arborist review and recommendations, prior to any construction commencing. It is recommended that a condition of consent be imposed to this effect. It is likely that any stormwater infrastructure to be installed within proximity of an TPZ/SRZ will require under boring or excavation utilising hand tools as instructed by the arborist. All works located in the area of a TPZ/SRZ must occur with a Project arborist on-site to supervise, and offer instruction for the viability of root severance and mitigation. After completion of the excavation works and backfilling of the trench, irrigation and a soil conditioner (e.g., Seasol) shall be used over the area of the TPZ’s for each tree, and ensure the backfilled area of the trench is well irrigated.

WASTE BAYS

1. BRICK / CONCRETE WASTE BAY
2. TIMBER WASTE BAY
3. PLASTERBOARD WASTE BAY
4. METAL WASTE BAY
5. GENERAL WASTE BAY

WASTE BAYS 1-4 ARE TO BE CONSTRUCTED USING SHADE CLOTH OR SEDIMENT FENCING. WHERE THE WASTE STREAM IS MADE UP OF LIGHT MATERIAL SUCH AS PAPER AND CARDBOARD, THE WASTE BAYS MUST CONSIST OF A CONTAINER FOR THE STORAGE OF THIS MATERIAL.



NOTES:

1. Site works will not start until erosion and sediment control works outlined in clauses 2 to 4 below, are installed and functional.
2. The entry to and departure of vehicles from the site will be confined to one stabilised point. Barrier fencing will be used to restrict all vehicular movements to that point. Stabilisation will be achieved by constructing a stabilised site access following SD 6-14.
3. Sediment fences will be installed as shown on this plan.
4. Top soil from the construction area will be stripped and stockpiled in the location shown for later use in landscaping the site.
5. Approved bins for all waste types will be provided and arrangements made for regular collection and disposal.
6. Guttering to be connected to water tank and stormwater system as soon as practicable.
7. Topsoil to be spread and all disturbed areas to be stabilised within 4 weeks of completion of works.
8. All erosion and sediment controls to be checked at least weekly and after rain to ensure tey are maintained in a fully functional condition.

CLIENT: Itsbuilt	JOB ADDRESS: 93 FARRELL ROAD, BULLI	JOB NUMBER:	20200001
		DATE:	08/03/2020
		ISSUE:	A
			SHEET 1 of 1

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Ingenuity Home Design

ALLIED TREE
CONSULTANCY
Level 5 and 8 Arboriculturist

Arboricultural Impact Assessment Report

For the site address
Lot B (D.P. 157627)
No. 18 Hopetoun Street,
WOONONA, NSW

Prepared for
Itsbuilt Pty Limited

AUTHOR
Warwick Varley

STATUS

Draft	February 2020
Final	February 2020

REFERENCE D3841

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TABLE OF CONTENTS

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1.0 Introduction

1.1 Allied Tree Consultancy (ATC) has been commissioned by *Itsbuilt* to prepare an Arboricultural Impact Assessment for the development proposal at No. 18 Hopetoun Street, Woonona. This proposal includes two lot Torrens subdivision and the construction of two dual occupancy, residential dwelling development. This report includes six (6) trees located on and adjacent to the lot and discusses the viability of these trees based on the proposed works.

1.2 This report will address for these trees, the:

- species' identification, location, dimensions, and condition;
- SULE (Safe Useful Life Expectancy) and STARS (Significance of a Tree Assessment Rating System) rating;
- discussion and impact of the proposed works on each tree;
- tree protection zones and protection specifications for trees recommended for retention.

1.3 The subject site resides within Woonona; for this reason, Wollongong City Council is the consenting authority for any tree works recommended in this report.

2.0 Standards

2.1 Allied Tree Consultancy provides an ethical and unbiased approach to all assignments, possessing no association with private utility arboriculture or organisations that may reflect a conflict of interest.

2.2 This report must be made available to all contractors during the tendering process so that any cost associated with the required works for the protection of trees can be accommodated.

2.3 It is the responsibility of the project manager to provide the requirements outlined in this report relative to the Protection Zones, Measures (Section 7.0), and Specifications (Section 8.0) to all contractors associated with the project before the initiation of work.

2.4 All tree-related work outlined in this report is to be conducted in accordance with the:

- Australian Standard – AS4373; Pruning of Amenity Trees.
- Guide to Managing Risks of Tree Trimming and Removal Work[1].

[1] Safe Work Australia; July 2016; Guide to Managing Risks of Tree Trimming and Removal Work, Australia

- All tree works must be carried out at a tertiary level (minimum Certificate-level 3) qualified and experienced (minimum five years) arboriculturist.
- For any works in the vicinity of electrical lines, the arboriculturist must possess the ISSC26 endorsement (Interim guide for operating cranes and plant in proximity to overhead powerlines).

2.5 As a minimum requirement, all trees recommended for retention in this report must have removed all dead, diseased, and crossing limbs and branch stubs to be pruned to the branch collar. This work must comply with the local government tree policy (Wollongong City Council) and Section 2.4.

2.6 Any tree stock subject to conditions for works carried out in this report must be supplied by a registered Nursery that adheres to the AS 2303; 2015[2].

- All tree stock must be of at least 'Advanced' size (minimum 75lt) unless otherwise requested.
- All tree stock requested must be planted with adequate protection. This may include tree guards (protect stem and crown) and if planted in a lawn area, a suitable barrier (planter ring) of an area, at least, $1m^2$ to prevent grass from growing within the area adjacent to the stem.

3.0 Disclosure Statement

Trees are living organisms and, for this reason, possess natural variability. This cannot be controlled. However, risks associated with trees can be managed. An arborist cannot guarantee that a tree will be safe under all circumstances, nor predict the time when a tree will fail. To live or work near a tree involves some degree of risk, and this evaluation does not preclude all the possibilities of failure.

4.0 Methodology

4.1 The following tree assessment was undertaken using criteria based on the guidelines laid down by the International Society of Arboriculture.

4.2 The format of the report is summarised below;

4.2.1 **Plan 1;** Tree Location Relative to Site: This is an unscaled plan reproduced from the Survey Plan as referenced in Section 4.4.1, depicting the area of assessment.

[2] Australian Standard; 2015, AS2303, Tree stock for landscape use, Australia

4.2.2 Table 1; This table compiles the tree species, dimensions**,** brief assessment (history, structure, pest, disease or any other variables subject to the tree), significance, allocation of the zones of protection (i.e., Tree Protection Zone[3] ;TPZ and Structural Root Zone; SRZ) for each tree illustrated in Plan 1, Section 5.0. All measurements are in meters.

4.2.3 Discussion relating to the site assessment and proposed works regarding the trees.

4.2.4 Protection Specification; This Section (Section 8.0) details the requirements for that area designated as the Tree Protection Zone (TPZ), for those trees recommended for retention.

4.3 The opinions expressed in this report, and the material, upon which they are based, were obtained from the following process and data supplied:

4.3.1 Site assessment on the 19th and 23rd April 2018 using the method of the Visual Tree Assessment[4]. This has included a Level 2 risk assessment, being a *Basic Assessment*[5]. The assessment has been conducted by Matthew Reed[6] and Warwick Varley[7] on behalf of *Allied Tree Consultancy*. A follow up assessment for tree No. 3, *Jacaranda mimosifolia* occurred on the 9th August, 2019 by Warwick Varley.

4.3.2 The assessment on the 9th August, 2019 disclosed that two trees had been removed from the initial assessment and contained in this report. These are trees No. 5 and 6. Based on this, these trees have been removed from the Table 1 and indicated on the Plan 1, although the numbering has been retained for consistency with past documentation.

4.3.3 Trees included in this report are those that conform to the description of a prescribed tree by the local government policy.

4.3.4 All measurements, unless specified otherwise are taken from the tree centre.

[3] Australian Standard, 4970; 2009 – Protection of Trees on Development Sites, Australia
[4] Mattheck, C. Breloer, H.,1994, The Body Language of Trees – A handbook for failure analysis The Stationary Office, London
[5] Dunster J.A., 2013, Tree Risk Assessment Manual, International Society of Arboriculture, 2013, USA
[6] Consulting Arborist, Diploma of Arboriculture (level 5)
[7] Consulting Arborist, Graduate Certificate and Diploma of Arboriculture (level 8 and 5)

4.3.5 Raw data from the preliminary assessment including the specimen's dimensions were compiled by the use of a diameter tape, height clinometer, angle finder, compass, steel probes, Teflon hammer, binoculars and recording instruments.

4.4 Documentation provided

The following documentation has been provided to Allied Tree Consultancy and utilised within the report.

4.4.1 Surveyor

Drawn by *Wild Geospatial*
Date: 15 January 2020
Reference: (Project) 859
Drawing No: Sheet 2 of 2

4.4.2 Design

Drawn by *Ingenuity Home Designs*
Date: 20 February 2020
Reference: (Job No.) 20200001
Drawing No: Sheet 3 of 15 (Issue A)
Note 2: See Section 4.5.1

4.5 Limitations of the assessment/discussion process

4.5.1 Trees No. 1, 2, 7, and 8 have not been included within this drawing, therefore have been transposed by Allied Tree Consultancy. The tree location was established by scaling from the survey drawing. Therefore discrepancies that can affect the actual impact on the trees can exist.

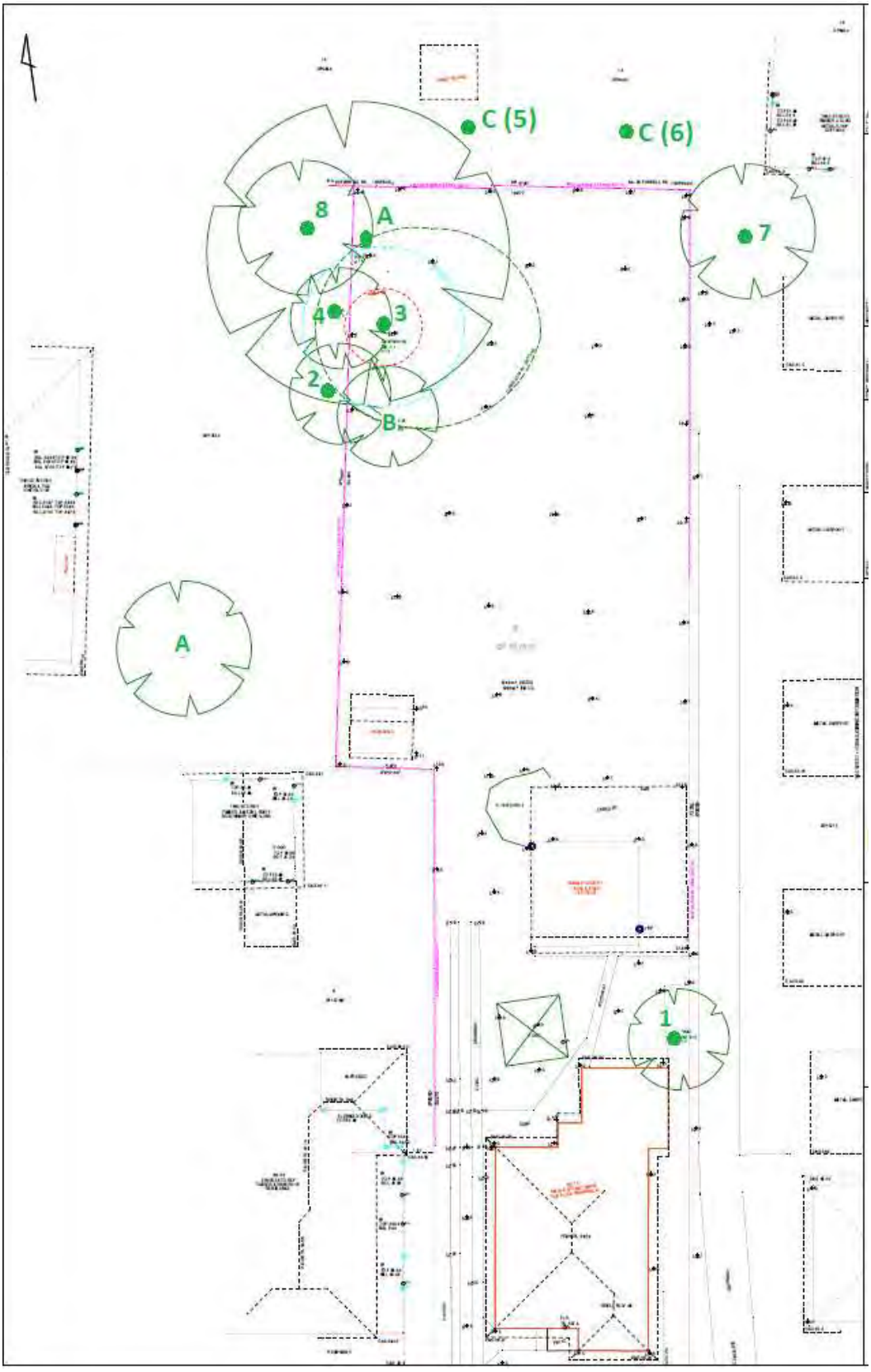
4.5.2 The assessment has considered only those target zones that are apparent to the author and the visually apparent tree conditions, during the time of assessment.

4.5.3 Any tree regardless of apparent defects would fail if the forces applied to exceed the strength of the tree or its parts, for example, extreme storm conditions.

4.5.4 The assessment has been limited to that part of the tree, which is visible, existing from the ground level to the crown. Root decay can exist and in some circumstances provide no symptoms of the presence. This assessment responds to all the symptoms provided by a tree, however, cannot provide a conclusive recommendation regarding any tree that may have extensive root

decay that leads to windthrow without the appropriate symptoms.

5.0 Plan 1; Area of assessment illustrating tree location



Not to scale
Trees labelled A-C, see Section 7.0.
Source: Adapted from *Wild Geospeatial Surveying,* see Section 4.4.1

6.0 Table 1 – Tree Species Data

Terminology/references provided in Appendix A.

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality	SULE Rating	STARS Rating	TPZ	SRZ
1	*Howea forsteriana* Kentia Palm	6	0.16	2 x 2	M	D	Sym.	A	**A1**	**MEDIUM**	**2.0**	**1.5**
Assessment This tree displays habit typically for the species and normal vitality. **Proposed works**; See Section 7.1.2												
2	*Lagerstroemia indica* Crepe Myrtle	7	0.30[C]	5 x 3	M	C	Sym.	A	**A2**	**HIGH**	**3.6**	**2.1**
Assessment This tree resides in neighbouring lot being no. 26A Pitman Lane is codominant at ground level with multiple stems otherwise displays habit typical for the species and normal vitality. Crown ingress is 2m between the heights of 2-5m. **Proposed works**; See Section 7.1.3												
3	*Jacaranda mimosifolia* Jacaranda	9	0.40[B]	11 x 12	M	C	E	A	**A1**	**MEDIUM**	**4.8**	**2.3**
Assessment This tree provides the habit typical for the species although a bias crown, a result of the codominant class. The tree divides into two leaders at 1m and the primary crotch is excluded. **Proposed works**; See Section 7.1.3												
4	*Livistona australis* Cabbage Palm	8	0.30[C]	2 x 2	M	I	Sym.	A	**A1**	**HIGH**	**3.0**	**1.5**
Assessment This tree resides in neighbouring lot being no. 26A Pitman Lane and displays habit typically for the species and normal vitality. **Proposed works**; See Section 7.1.1												
Trees No. 5 and 6, See Section 4.3.2												
7	*Melaleuca quinquenervia* Broad-Leaf Paperback	15	0.20-0.50 [C]	8 x 7	M	D	Sym.	A	**A2**	**HIGH**	**9.1**	**3.1**

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality	SULE Rating	STARS Rating	TPZ	SRZ
Assessment This tree resides in neighbouring lot being no. 16 Hopetoun Street. Composed of five leaders that share a common root crown, the specimen is typical of many urban grown trees of this species. The vitality is normal. **Proposed works**; See Section 7.1.3												
8	*Grevillea robusta* Silky Oak	14	0.70	10 x 10	O	I	Sym.	A	**A3**	**MEDIUM**	**8.4**	**2.9**
Assessment This tree resides in neighbouring lot being no. 97 Farrell Rd. This tree displays habit typical for the species and normal vitality, however, is in senescence. **Proposed works**; See Section 7.1.1												

A. Incomplete identification of species due to insufficiently available plant material
B. Diameter taken below 1.4m due to low stem bifurcation
C. estimate due to the overgrown area and/or limited access
D. deciduous species, void of foliage at the time of assessment
E. Level 3 assessment required to determine the accurate rating

7.0 Site Assessment

The area of assessment comprises an 'L' shaped lot, which contains a consistent mild gradient with a northern aspect. The existing dwelling is single-story brick and is serviced by a concrete drive that extends through to the backyard on the western side of the lot. A shed exists in the rear yard. The verge is grass-covered and void of a footpath. The trees are all planted species. The rear yard is a predominately maintained lawn. The assessment has extended to the adjoining lots due to trees located close (within 10m) to the boundary. The planting in this area is dense.

The trees labeled as A, B, and C, that have been included in the survey drawing (Plan 1) however excluded from this report because of the failure to conform to the description of a prescribed tree based on the Wollongong Councils Development Control Plan.

Tree A: trees that occur on or adjacent to the lot proposed for development and are exempt species[8].

Tree B: dead trees

Tree C: Trees that have been removed since the initial assessment (referred to as trees No. 5 and 6) See Section 4.3.2.

7.1 Proposed development

The proposed development consists of the demolition of existing site structures and construction of two dual occupancy (four units) development, drive access, and drainage infrastructure. No stormwater drawings have been included as part of the document set. The calculations included in the following discussion has not considered subsurface utilities that have not been included in the design or work methods related to construction (stockpiling, site sheds, scaffolding) unless otherwise specified. These may also increase the encroachment and impact on the opportunity for tree retention.

This report discusses the impact of the proposed design on the trees. Six (6) trees have been listed within this report based upon the vicinity of the proposed works. This has included neighbouring trees where any part of the zones of protection; Tree Protection Zone (TPZ), and Structural Root Zone (SRZ) to encroach into the lot. Recommendations based on the tree significance and condition, together with the impact on these trees regarding the development for this lot follow;

[8] Wollongong City Council, Wollongong Development Control Plan, 2009, Chapter E17; Preservation & Management of Trees and Vegetation, Appendix 1: Exempt Tree Species List, page 20

7.1.1 Trees and zones of protection (TPZ/SRZ) outside of the proposed design

Trees No. 4 and 8

None of the proposed works conflict with the location of these trees or respective zones of protection. These trees can be retained without impact by the proposed design.

7.1.2 Trees directly conflicting with the design

Tree No. 1

This tree is located in the footprint of the proposed design and would require removal based on this premise alone. The conflict is the footprint of the proposed parking area, unit two. This palm could be transplanted.

7.1.3 Trees subject to a minor encroachment

Trees No. 2, 3 and 7

These trees are not directly located in the footprint of the proposed design, however, are subject to a *minor encroachment*. That is, the proportion (<10%) of encroachment provided by design will not adversely impact on the tree. These trees could be retained relative to the design.

Tree No. 3 will have a dripline that extends marginally over the footprint. Some pruning may be required to accommodate the encroachment. This pruning must subscribed to Section 2.4.

7.2 Sub-surface utilities

No drawings have been provided for the proposed route of sub-surface utilities. Any trenching, other than what has been allowed for should be avoided within the area of the TPZ's for any tree nominated for retention. Any proposed route shall be re-routed outside of the TPZ. Under boring may be required if a limitation for the route of a service is restricted to an area that falls within the TPZ from any tree. Any excavation in the area of a TPZ must be authorised and conditioned by the project arborist.

7.3 Protection measures

The following protection measures are required to be implemented for the following trees before initiation of site works (including demolition/excavation) and retained until the landscaping works are required unless otherwise specified.

7.3.1 Protective fence: Trees No. 2-8

A protective fence is required to be installed to protect the TPZ from all site-related work and are recommended to be located in accordance with the requirements of the AS 4970, listed in Appendix C. The fence is required to be secured to the ground with pegs to avoid movement during construction. This must be installed prior to the commencement of any

demolition, excavation or construction works and shall be maintained throughout the entire construction phase of the development, and until landscaping works and installation of the drive/cross-overs is required.

7.3.2 Conditions for compliance

The following conditions are required before any works proceed on site.

Site induction; All workers related to the construction process and before entering the site must be briefed about the requirements/conditions outlined in this report relative to the zone of protection, measures, and specifications before the initiation of work. This is required as part of the site induction process.

Project Arborist; A project arborist who conforms to the requirements of the AS 4970 is required to be nominated immediately after a *Notice of Determination* is issued, and they are to be provided with all related site documents.

7.4 Compliance Documentation

The following stages will require assessment and documentation (report, letter, certification) by the project arborist or person responsible for the specific work type, and the related documentation is to be issued to the principal certifying agent.

7.4.1 Table 2; Assessment/Certification stages

Stage	Work type	Document required
Pre-demolition	Installation of the protection measures, Section 7.3	Certificate*
During construction	Pruning of tree No. 3. Project arborist must be present.	Certificate*
During construction	Any further works required within the area of the TPZ, or decline related to the trees that have not been covered by this report.	Report Brief
During construction	Any crown modification including pruning or root disturbance.	Report Brief

Construction refers to the time between the initiation of demolition and until an occupation certificate is issued.

***Mandatory**

8.0 Protection Specification

The retention and protection of trees provide for the requirement of the Tree Protection Zone (TPZ) to conform to the conditions outlined below. These

conditions provide the limitations of work permitted within the area of the Tree Protection Zone (TPZ) and must be adhered to unless otherwise stated.

1. Foundation/footing types should not be strip type, but utilise footing types that are sympathetic towards retaining root system that is, screw, pier, etc. Slab on the ground can be accommodated in some circumstances and will be nominated by the project arborist. The extent of encroachment will be dependent upon the tree species, soil type (texture and profile) and gradients.

2. Subsurface utilities can extend through the TPZ and Structural Root Zone (SRZ), however, are limited to the method of installation. That is under boring is permitted, however trenching is limited and depends on the proposed route within the TPZ. No trenching is permitted within the area of the TPZ unless stipulated by the project arborist.

3. Crown pruning can be accommodated, however, must conform to the AS 4373; *Pruning of Amenity Trees*, and not misshape the crown nor remove in excess of 10-15% of the existing crown, pending on the species, and vitality. The opportunity for, type and proportion of pruning will be required to be nominated by the project arborist.

4. Soil levels within the TPZ must remain the same. Any excavation within the TPZ must have been previously specified and allowed for by the project arborist:

   a) So it does not alter the drainage to the tree.

   b) Under specified circumstances,

      - Added fill soil does not exceed 100mm in depth over the natural grade. Construction methodologies exist that can allow grade increases in excess of 100mm, via the use of an impervious cover, an approved permeable material or permanent aeration system or other approved methods.

      - Excavation cannot exceed a depth of more than 50mm within the area of the TPZ, not including the SRZ. The grade within the SRZ cannot be reduced without the consent from a project arborist.

5. No form of material or structure, solid or liquid, is to be stored or disposed of within the TPZ.

6. No lighting of fires is permitted within the TPZ.

7. All drainage runoff, sediment, concrete, mortar slurry, paints, washings, toilet effluent, petroleum products, and any other toxic wastes must be prevented from entering the TPZ.

8. No activity that will cause excessive soil compaction is permitted within the TPZ. That is, machinery, excavators, etc. must refrain from entering the area of the TPZ unless measures have been taken, and with consultation with the project, arborist to protect the root zone.

9. No site sheds, amenities or similar site structures are permitted to be located or extend into the area of the TPZ unless the project arborist provides prior consent.

10. No form of construction work or related activity such as the mixing of concrete, cutting, grinding, generator storage or cleaning of tools is permitted within the TPZ.

11. No part of any tree may be used as an anchorage point, nor should any noticeboard, telephone cable, rope, guy, framework, etc. be attached to any part of a tree.

12. (a) All excavation work within the TPZ will utilise methods to preserve root systems intact and undamaged. Examples of methods permitted are by hand tools, hydraulic, or pneumatic air excavation technology.

(b) Any root unearthed which is less than 50mm in diameter must be cleanly cut and dusted with a fungicide, and not allowed to dry out, with minimum exposure to the air as possible.

(c) Any root unearthed which is greater than 50mm in diameter must be located regarding their directional spread and potential impact. A project arborist will be required to assess the situation and determine future action regarding retaining the tree in a healthy state.

Project Arborist: person nominated as responsible for the provision of the tree assessment, arborist report, consultation with stakeholders, and certification for the development project. This person will be adequately experienced and qualified with a minimum of a level 5 (AQF); Diploma in Horticulture (Arboriculture)[9].

[9] Based upon the definition of a 'consulting arborist' from the AS 4970; Protection of trees on development sites; 2009, Section 1.4.4, p 6.

9.0 Summary of tree impact

Based on the design supplied, the following summary provides the impacts imposed on the trees included in this report.

9.1 Trees No. 2-4 and 7-8

These trees are not adversely impacted by the design, that is, they conform to a minor encroachment or less and the nominated zones of protection (TPZ, SRZ) based on the requirements of the Protection Specification, Section 8.0. The proposed design does not adversely affect these trees.

Tree No. 3 will have a dripline that extends marginally over the footprint. Some pruning may be required to accommodate the encroachment. This pruning must subscribe to Section 2.4. Any such works will not adversely impact on the vitality (health) of this tree.

9.2 Tree No. 1

The proposed design will impact adversely on this tree, and it is unable to be retained based on the design.
This tree could be transplanted.

9.3 Sub-surface utilities

No drawings have been provided for the proposed route of sub-surface utilities. Any trenching, other than what has been allowed for should be avoided within the area of the TPZ's for any tree nominated for retention. Any proposed route shall be re-routed outside of the TPZ. Under boring may be required if a limitation for the route of a service is restricted to an area that falls within the TPZ from any tree. Any excavation in the area of a TPZ must be authorised and conditioned by the project arborist.

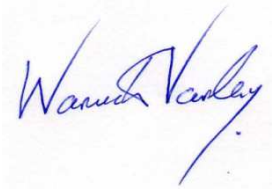
9.4 Protection measures

Protection measures (outlined in Section 7.3 and 7.4) are required to be implemented for the trees nominated for retention (referenced in Section 9.1) and installed before initiation of site works (including demolition/excavation) and retained until the landscaping works are required unless otherwise specified.

All workers related to the construction process and before entering the site must be briefed about the requirements/conditions outlined in this report relative to the zone of protection, measures, and specifications before the initiation of work.

A project arborist is required to be nominated, and the stages and related certification or similar documentation is to be issued to the principal certifying agent.

The opinions expressed in this report by the author have been provided within the capacity of a Consulting Arborist. Any further explanation or details can be provided by contacting the author.



Warwick Varley
Consulting Arborist
Level 5 and 8; Arboriculture
MIACA; Reg. #18
MISA
MIAH; Reg. # 32

Accredited member of
INSTITUTE OF AUSTRALIAN
CONSULTING ARBORICULTURISTS ®

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10.0 Appendix A- Terminology Defined

Height
Is a measure of the vertical distance from the average ground level around the root crown to the top surface of the crown, and on palms - to the apical growth point.

DBH
Diameter at Breast Height – being the stem diameter in meters, measured at 1.4m from ground level, including the thickness of the bark.; Mult. refers to multiple stems, that is in excess of 4 stems.

Crown Spread
A two-dimension linear measurement (in metres) of the crown plan. The first figure is the north-south span, the second being the east-west measurement.

Age
Is the estimate of the specimen's age based upon the expected lifespan of the species. This is divided into three stages.

Young (Y)	Trees less than 20% of life expectancy.
Mature (M)	Trees aged between 20% to 80% life expectancy.
Over-mature (O)	Trees aged over 80% of life expectancy with probable symptoms of senescence.

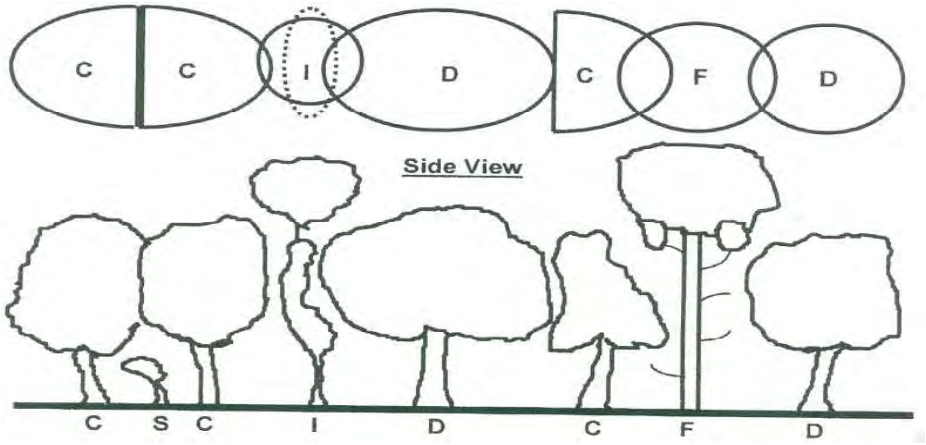
Crown Aspect
In relation to the root crown, this refers to the aspect the majority of the crown resides in. This will be either termed Symmetrical (Sym.) where the centre of the crown resides over the root crown or the cardinal direction the centre of the crown is biased towards, being either North (N), South (S), East (E) or West (W).

Vitality Rating
Is a rating of the health of the tree, irrespective and independent of the structural integrity, and defined by the 'ability for a tree to sustain its life processes' ((Draper, Richards, 2009). This is divided between three variables, and based on the assessment of symptoms including, but not limited to; leaf size, colour, crown density, woundwood development, adaptive growth formation, and epicormic growth.
A: Normal vitality, typical for the species
B: Below average vitality, possibly temporary loss of health, partial symptoms.
C: Poor vitality; obvious decline, potentially irreversible

Crown Class
Is the differing crown habits as influenced by the external variables within the surrounding environment. They are:

D	– *Dominant*	Crown is receiving uninterrupted light from above and sides, also known as emergent.
C	– *Codominant*	Crown is receiving light from above and one side of the crown.
I	– *Intermediate*	Crown is receiving light from above but not the sides of the crown.
S	– *Suppressed*	Crown has been shadowed by the surrounding elements and receives no light from above or sides.
F	– *Forest*	Characterised by an erect, straight stem (usually excurrent) with little stem taper and virtually no branching over the majority of the stem except for the top of the tree which has a small concentrated branch structure making up the crown.

Top View



D C, I & S, and side view, after (Matheny, N. & Clark, J. R. 1998, Trees Development, Published by International Society of Arboriculture, P.O. Box 3129, Champaign IL 61826-3129 USA, p.20, adapted from the Hazard Tree Assessment Program, Recreation and Park Department, City of San Francisco, California).

Levels of assessment

Level 1: Limited visual: a visual tree assessment to manage large populations of trees within a limited period and in order to identify obvious faults which would be considered imminent.

Level 2: Basic assessment: a standard performed assessment providing for a detailed visual assessment including all parts of the tree and surrounding environment and via the use of simple tools.

Level 3: Advanced assessment: specific type assessments conducted by either arborist who specialise with specific areas of assessment or via the use of specialised equipment. For example, aerial assessment by use of an EWP or rope/harness, or decay detection equipment.

TPZ; Tree Protection Zone

Is an area of protection required for maintaining the trees vitality and long-term viability. Measured in meters as a radius from the trees centre. The requirements of this zone are outlined within the Protection Specification, Section 8.0, and are to be adhered to unless otherwise stated.

The size of the Tree Protection Zone (TPZ) has been calculated from the *Australian Standard, 4970; 2009* – Protection of Trees on Development Sites

The TPZ does not provide the limit of root extension, however, offers an area of the root zone that requires predominate protection from development works. The allocated TPZ can be modified by some circumstances; however will require compensation equivalent to the area loss, elsewhere and adjacent to the TPZ.

SRZ; Structural Root Zone

Is the area around the tree containing the woody roots necessary for stability. Measured in meters as a radius from the trees centre. The requirements of this zone are outlined within the Protection Specification, Section 8.0, and are to be adhered to unless otherwise stated.

Protection Measures

These are required for the protection of trees during demolition/construction activities.
Protective barriers are required to be installed before the initiation of demolition and/or construction and are to be maintained up to the time of landscaping. Samples of the recommended protection measures are illustrated in Appendix C.

All other definitions are referenced from;

Draper D.B., Richards P.A., 2009, Dictionary for Managing Trees in Urban Environments
CSIRO Pub., Australia

Significance Rating, Significance of a Tree Assessment Rating System (S.T.A.R.S), IACA, 2010[10]

Tree Significance – Assessment Criteria

1. High Significance in landscape

- The tree is in good condition and good vitality;
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa in situ – tree is appropriate to the site conditions.

2. Medium Significance in landscape

- The tree is in fair-good condition and good or low vitality;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa in situ.

3. Low Significance in landscape

- The tree is in fair-poor condition and good or low vitality;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences,

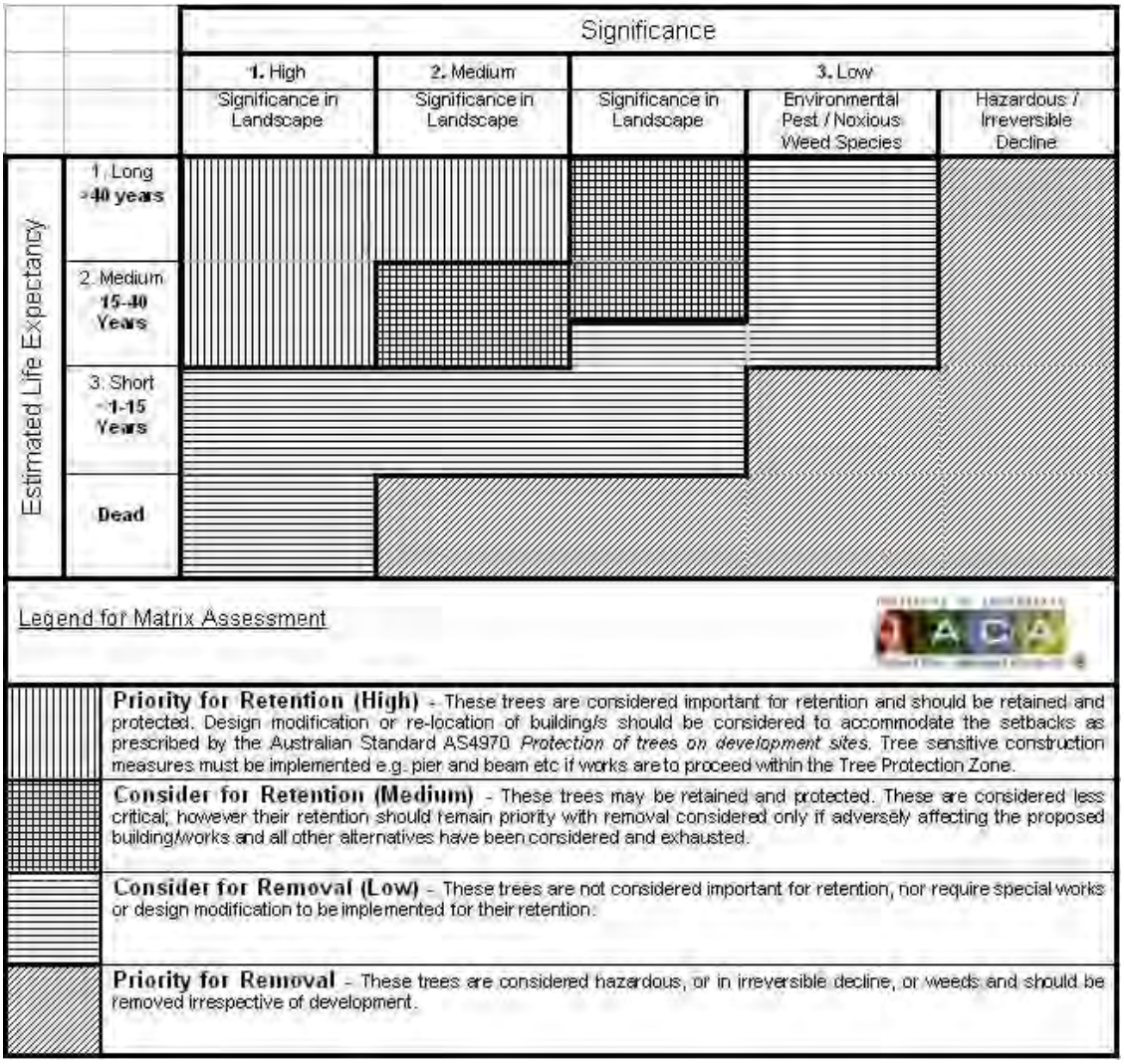
[10] IACA, 2010, IACA Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au

unlikely to reach dimensions typical for the taxa in situ – tree is inappropriate to the site conditions,
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.
Environmental Pest / Noxious Weed Species
- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.
Hazardous/Irreversible Decline
- The tree is structurally unsound and/or unstable and is considered potentially dangerous, - The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short-term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g.

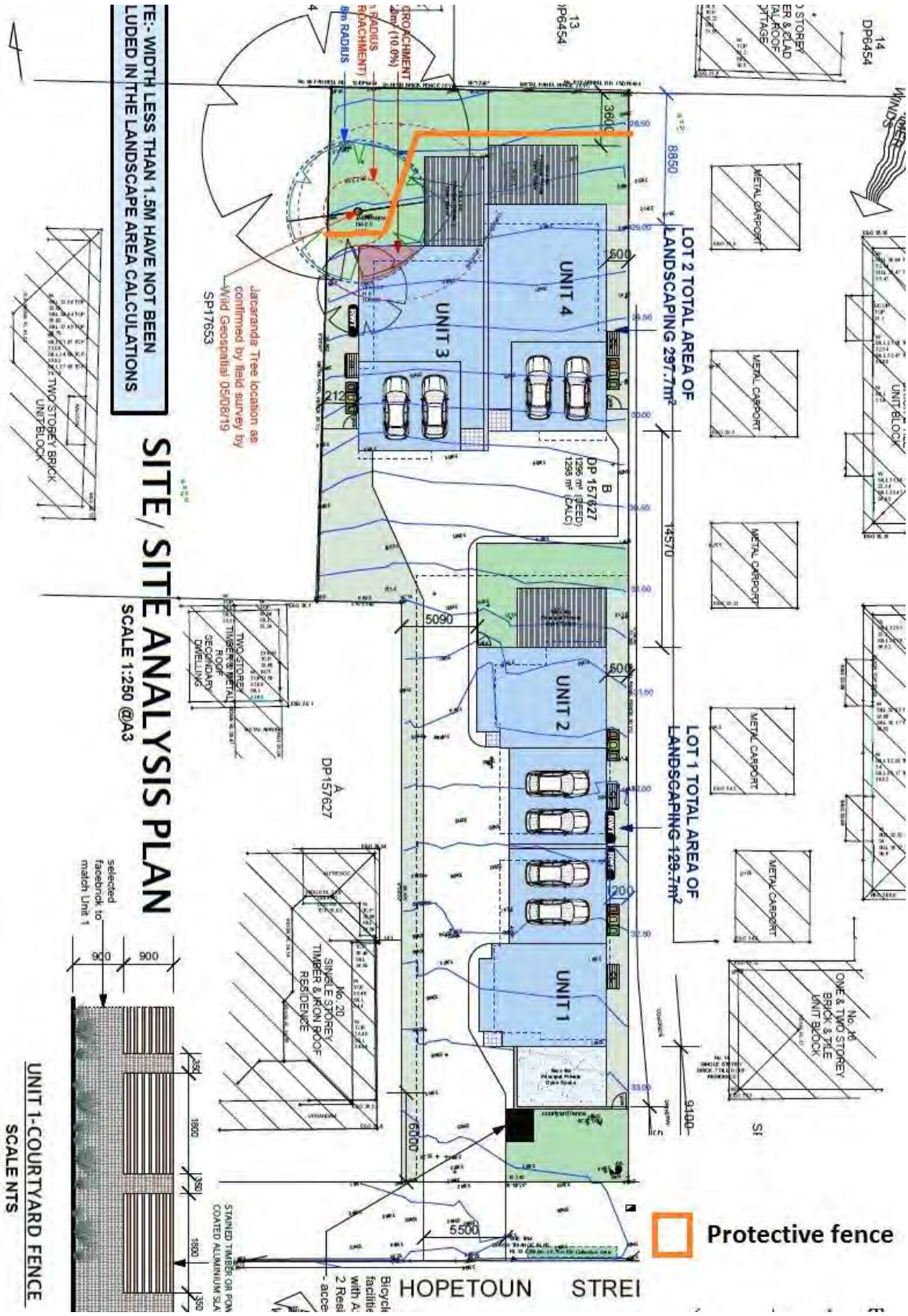
Table 3; Tree Retention Value – Priority Matrix.



Safe Useful Life Expectancy – S.U.L.E (Barell 1995)

	1. Long	2. Medium	3. Short	4. Removal	5. Moved or Replaced
	Trees that appeared to be retainable at the time of assessment for more than 40 years with an acceptable level of risk.	Trees that appeared to be retainable at the time of assessment for 15 – 40 years with an acceptable level of risk.	Trees that appeared to be retainable at the time of assessment for 5 – 15 years with an acceptable level of risk.	Trees that should be removed within the next 5 years.	Trees which can be reliably moved or replaced.
A	Structurally sound trees located in positions that can accommodate future growth.	Trees that may only live between 15 and 40 years.	Trees that may only live between 5 and 15 more years.	Dead, dying, suppressed or declining trees through disease or inhospitable conditions.	Small trees less than 5m in height.
B	Trees that could be made suitable for retention in the long term by remedial tree care.	Trees that may live for more than 40 years but would be removed for safety or nuisance reasons.	Trees that may live for more than 15 years but would be removed for safety or nuisance reasons.	Dangerous trees through instability on recent loss of adjacent trees.	Young trees less than 15 years old but over 5m in heights
C	Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long term retention.	Trees that may live for more than 40 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting.	Trees that may live for more than 15 years but should be removed to prevent interference with more suitable individuals or to provide space for new planting.	Damaged trees through structural defects including cavities, decay, included bark, wounds or poor form.	Trees that have been pruned to artificially control growth.
D		Trees that could be made suitable for retention in the medium term by remedial tree care.	Trees that require substantial remedial tree care and are only suitable for retention in the short term.	Damaged trees that are clearly not safe to retain.	
E				Trees that may live for more than 5 years but should be removed to prevent interference with more suitable individuals or to provide space for new plantings.	
F				Trees that are damaging or may cause damage to existing structures within 5 years.	
G				Trees that will become dangerous after removal of other trees for reasons given in (A) to (F).	

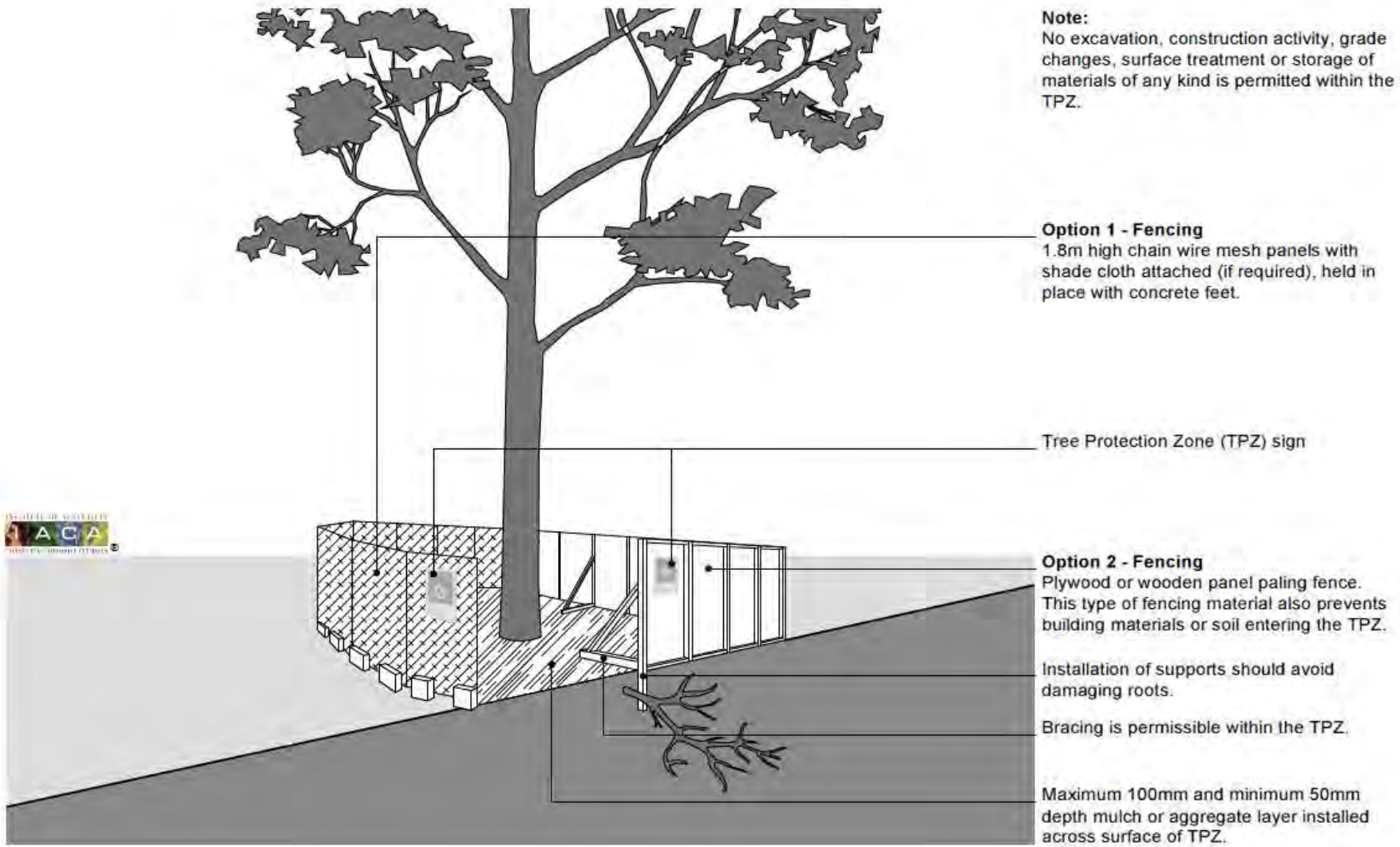
Appendix B- Plan 2; Zones and measures of protection



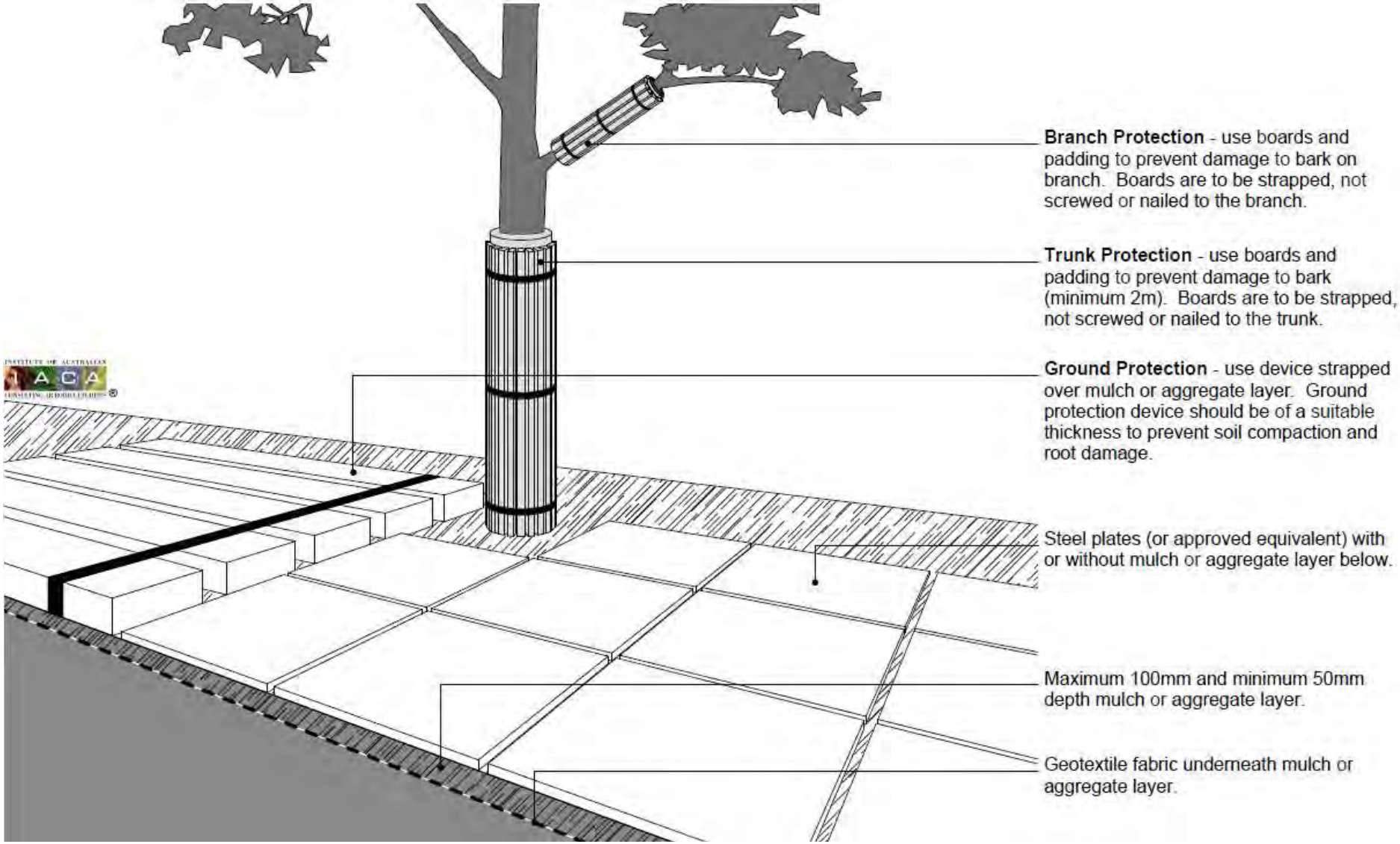
Not to scale

Source: Adapted from *Ingenuity Home Designs,* Drawing No: Sheet 3, See Section 4.4.2

Appendix C- Protection measures;
Protective fence



Stem and Ground protection



ALLIED TREE
CONSULTANCY
Level 5 and 8 Arboriculturist

Arboricultural Impact Assessment Report

For the development proposal for the site
Lot B (D.P. 157627)
No. 18 Hopetoun Street,
WOONONA, NSW

Works proposed for easement servicing the development proposal located at
Lot 14 (D.P. 6454),
No. 91 Farrell Road,
WOONONA, NSW

Prepared for
Itsbuilt P/L

AUTHOR
Warwick Varley and Geoff Beisler

STATUS
Final July 2020

REFERENCE D4200

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1.0 Introduction

1.1 *Allied Tree Consultancy* (ATC) has been commissioned by *Itsbuilt* to prepare an Arboricultural Impact Assessment for the easement propsed to service the development proposal at No. 18 Hopetoun Street, Woonona. The easement is proposed to extend through the lot adjoining No. 18 Hopetoun Street on the northern boundary, and provides the address, No. 91 Farrell Road. This proposal includes the easement and infrastructure, being stormwater pipes contained within. This report includes nine trees located adjacent to the lots, and discusses the viability of these trees based on the proposed works.

1.2 This report will address for these trees, the:

- species' identification, location, dimensions, and condition;
- SULE (Safe Useful Life Expectancy) and STARS (Significance of a Tree Assessment Rating System) rating;
- discussion and impact of the proposed works on each tree;
- tree protection zones and protection specifications for trees recommended for retention.

1.3 The subject site resides within Woonona; for this reason, Wollongong City Council is the consenting authority for any tree works recommended in this report.

2.0 Standards

2.1 Allied Tree Consultancy provides an ethical and unbiased approach to all assignments, possessing no association with private utility arboriculture or organisations that may reflect a conflict of interest.

2.2 This report must be made available to all contractors during the tendering process so that any cost associated with the required works for the protection of trees can be accommodated.

2.3 It is the responsibility of the project manager to provide the requirements outlined in this report relative to the Protection Zones, Measures (Section 7.0) and Specifications (Section 8.0) to all contractors associated with the project before the initiation of work.

2.4 All tree-related work outlined in this report is to be conducted in accordance with the:

- Australian Standard – AS4373; Pruning of Amenity Trees.
- Guide to Managing Risks of Tree Trimming and Removal Work[1].

[1] Safe Work Australia; July 2016; Guide to Managing Risks of Tree Trimming and Removal Work, Australia

- All tree works must be carried out at a tertiary level (minimum Certificate-level 3) qualified and experienced (minimum five years) arboriculturist.
- For any works in the vicinity of electrical lines, the arboriculturist must possess the ISSC26 endorsement (Interim guide for operating cranes and plant in proximity to overhead powerlines).

2.5 As a minimum requirement, all trees recommended for retention in this report must have removed all dead, diseased, and crossing limbs and branch stubs to be pruned to the branch collar. This work must comply with the local government tree policy (Wollongong City Council) and Section 2.4.

2.6 Any tree stock subject to conditions for works carried out in this report must be supplied by a registered Nursery that adheres to the AS 2303; 2015[2].

- All tree stock must be of at least 'Advanced' size (minimum 75lt) unless otherwise requested.
- All tree stock requested must be planted with adequate protection. This may include tree guards (protect stem and crown) and if planted in a lawn area, a suitable barrier (planter ring) of an area, at least, $1m^2$ to prevent grass from growing within the area adjacent to the stem.

3.0 Disclosure Statement

Trees are living organisms and, for this reason, possess natural variability. This cannot be controlled. However, risks associated with trees can be managed. An arborist cannot guarantee that a tree will be safe under all circumstances, nor predict the time when a tree will fail. To live or work near a tree involves some degree of risk, and this evaluation does not preclude all the possibilities of failure.

4.0 Methodology

4.1 The following tree assessment was undertaken using criteria based on the guidelines laid down by the International Society of Arboriculture.

4.2 The format of the report is summarised below;

4.2.1 **Plan 1;** Tree Location Relative to Site: This is an unscaled plan reproduced from the Survey Plan as referenced in Section 4.4.1, depicting the area of assessment.

[2] Australian Standard; 2015, AS2303, Tree stock for landscape use, Australia

4.2.2 Table 1; This table compiles the tree species, dimensions**,** brief assessment (history, structure, pest, disease or any other variables subject to the tree), significance, allocation of the zones of protection (i.e., Tree Protection Zone[3] ;TPZ and Structural Root Zone; SRZ) for each tree illustrated in Plan 1, Section 5.0. All measurements are in metres.

4.2.3 Discussion relating to the site assessment and proposed works regarding the trees.

4.2.4 Protection Specification; Section 8.0 details the requirements for that area designated as the Tree Protection Zone (TPZ), for those trees recommended for retention.

4.3 The opinions expressed in this report, and the material, upon which they are based, were obtained from the following process and data supplied:

4.3.1 Site assessment on the 2nd July 2020 using the method of the Visual Tree Assessment[4]. This has included a Level 2 risk assessment, being a *Basic Assessment*[5]. The assessment has been conducted by Geoff Beisler[6] on behalf of *Allied Tree Consultancy*.

4.3.2 Trees included in this report are those that conform to the description of a prescribed tree by the local government policy.

4.3.3 Tree numbering is sequential and followed through from the previous Arboricultural Impact Assessment issued for the design, being referenced D3841, dated February 2020.

4.3.4 All measurements, unless specified otherwise are taken from the tree centre.

4.3.5 Raw data from the preliminary assessment including the specimen's dimensions was compiled by the use of a diameter tape, height clinometer, angle finder, compass, steel probes, Teflon hammer, binoculars and recording instruments.

[3] Australian Standard, 4970; 2009 – Protection of Trees on Development Sites, Australia
[4] Mattheck, C. Breloer, H.,1994, The Body Language of Trees – A handbook for failure analysis The Stationary Office, London
[5] Dunster J.A., 2013, Tree Risk Assessment Manual, International Society of Arboriculture, 2013, USA
[6] Consulting Arborist, Diploma of Arboriculture (level 5)

4.4 Documentation provided

The following documentation has been provided to Allied Tree Consultancy and utilised within the report.

4.4.1 Engineering (Stormwater)

Drawn by *Add Design and Consulting*
Date: November 2017
Reference: 17/298
Drawing No: (Sheet) 3 of 6, revision 11
Note 1: See Section 4.5.1

4.5 Limitations of the assessment/discussion process

4.5.1 Trees 1-9 have been omitted from the plans provided, however, are required for inclusion because they conform to the definition of a prescribed tree within the local government tree policy. The tree location has been plotted onto the Plan 1 by *Allied Tree Consultancy*. The tree location was established by measuring from known points and scaling onto the drawing. *Allied Tree Consultancy* is not a registered surveyor and, however, the accuracy of the survey is attempted; the true position of the trees may marginally deviate. Any such deviation provides the potential for changing the actual impact (encroachment) provided to a tree.

4.5.2 The trees have not been included within this drawing, therefore have been transposed by Allied Tree Consultancy. The tree location was established by scaling from the survey drawing. Therefore discrepancies that can affect the actual impact on the trees can exist.

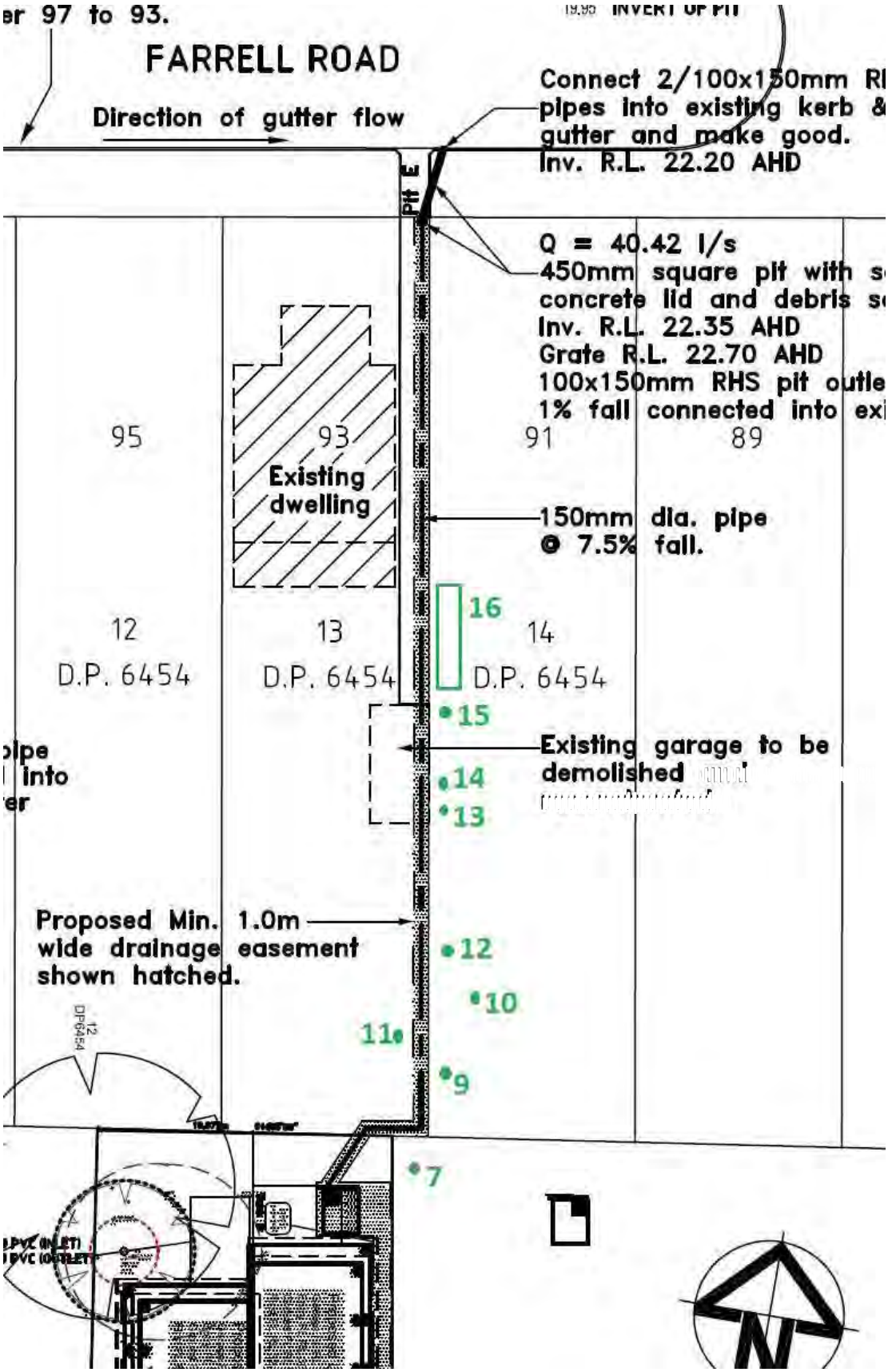
4.5.3 The assessment has considered only those target zones that are apparent to the author and the visually apparent tree conditions, during the time of assessment.

4.5.4 Any tree regardless of apparent defects would fail if the forces applied to exceed the strength of the tree or its parts, for example, extreme storm conditions.

4.5.5 The assessment has been limited to that part of the tree which is visible, existing from the ground level to the crown. Root decay can exist and in some circumstances provide no symptoms of the presence. This assessment responds to all the symptoms

provided by a tree, however, cannot provide a conclusive recommendation regarding any tree that may have extensive root decay that leads to windthrow without the appropriate symptoms.

5.0 Plan 1; Area of assessment illustrating tree location



Not to scale

Source: Adapted from *Add Design and Consulting,* see Section 4.4.1

6.0 Table 1 – Tree Species Data

Terminology/references provided in Appendix A.

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality	SULE Rating	STARS Rating	TPZ	SRZ
7	*Melaleuca quinquenervia* Broad Leaved Paperbark	15	0.20-0.50[C]	8 x 7	M	D	Sym.	A	**A2**	**HIGH**	**9.1**	**3.1**
Assessment This large and significant neighbouring tree presents as typical for the species. May have future minor conflicts with the dwelling to the north east. Limited assessment due to lack of access. **Proposed works**; See Section 7.1.2												
9	*Michelia figo* Port Wine Magnolia	5	0.40 [BC]	4 x 6	M	I	Sym.	A	**A2[C]**	**Medium**	**4.8[C]**	**2.3[C]**
Assessment This neighbouring tree presents as typical for the species. Limited assessment due to lack of access. **Proposed works**; See Section 7.1.2												
10	*Eucalyptus elata* [A] River Peppermint	10	0.65 [BC]	11 x 13	M	D	W	B-C	**A3/D2[C]**	**LOW**	**7.8[C]**	**2.8[C]**
Assessment This neighbouring tree presents partial crown density and twiggy decline. Limited assessment due to lack of access. **Proposed works**; See Section 7.1.1 and 7.1.2												
11	*Banksia integrifolia* Coast Banksia	6	0.11 0.08	2 x 3	M	I	W	A	**B1**	**Medium**	**2.0**	**1.5**
Assessment This neighbouring tree. Experiencing minor conflict with the western crown of tree No. 2. Limited assessment due to lack of access. **Proposed works**; See Section 7.1.2												
12	*Ulmus spp.* [A] Elm	6	0.30 [BC]	5 x 6	M	S	W	_ [D]	**A2[C]**	**Medium**	**3.6[C]**	**2.0[C]**
Assessment This neighbouring tree. This deciduous tree was void of foliage to confirm the identification. Limited assessment due to lack of access. **Proposed works**; See Section 7.1.2												

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality	SULE Rating	STARS Rating	TPZ	SRZ
13	*Archontophoenix cunninghamiana* Bangalow Palm	11	0.26 [C]	4 x 4	M	C	Sym.	A	**A1 [C]**	**HIGH**	**2.0**	**1.0**
Assessment This neighbouring palm presents as typical for the species, however minor wind burn is evident on several fronds. Limited assessment due to lack of access. **Proposed works**; See Section 7.1.2												
14	*Archontophoenix cunninghamiana* Bangalow Palm	11	0.26 [C]	4 x 4	M	C	Sym.	A	**A1 [C]**	**HIGH**	**2.0**	**1.0**
Assessment This neighbouring palm presents as typical for the species, however minor wind burn is evident on several fronds. Limited assessment due to lack of access. **Proposed works**; See Section 7.1.2												
15	*Melaleuca quinquenervia* Broad Leaved Paperbark	11	0.40 [BC]	4 x 5	M	D	Sym.	A	**A1 [C]**	**HIGH**	**4.8 [C]**	**2.3 [C]**
Assessment This neighbouring tree. Limited assessment due to lack of access. **Proposed works**; See Section 7.1.2												
16	*Syzygium spp.* [A] Lilly Pilly	4-7	0.15 [C] (Average)	2 x 2 (Average)	M	C	Sym.	A	**A2 [C]**	**Medium**	**4.0**	**2.0**
Assessment This is a linear planting of neighbouring trees, predominantly *Syzygium*, however also contains *Murraya, Camelia* and Golden Cane Palm (*Dypsis lutescens*). Limited assessment due to lack of access. The most southerly *Syzygium* has been lopped at approximately 4m, however has a DBH of approximately 0.40m **Proposed works**; See Section 7.1.2												

A. Incomplete identification of species due to insufficiently available plant material
B. Diameter taken below 1.4m due to low stem bifurcation
C. Estimate due to the overgrown area and/or limited access
D. Deciduous species, void of foliage at the time of assessment

7.0 Site Assessment

The areas of assessment are as follows;

- The eastern periphery of No. 93 Farrell Road (the lot accessed)
- The western periphery of No. 91 Farrell Road.
- The northwestern corner of No. 16 Hopetoun Street.

These adjoining, suburban lots present a consistent slight – medium gradient, with a northerly aspect.

The lot of No. 93 Farrell Road (the lot proposed for the easement) contains a single story weather board dwelling located centrally in the northern portion of the lot. The detached garage to the southeast of the dwelling is serviced by a concrete driveway on the eastern side of the dwelling. The western edge of the neighbouring dwelling to the east appears to be located on, or extremely close to the apparent boundary line. The detached garage located on the lot of No. 93 Farrell Road has limited the assessment of trees No. 5-7. Fences and lack of access have limited the assessment of all trees except tree No. 3. Several small trees and palms are located in the lot of No. 91 Farrell Road, however they have not been included as they are contained within the TPZ's of larger trees or less than 3m in height.

7.1 Proposed development

The proposed development consists of the installation of drainage infrastructure (via the nominated easement), along the eastern boundary of No. 93 Farrell Road, to service the proposed development at No. 18 Hopetoun Street, Woonona. The easement is proposed to be 1000mm wide, and contain a single pipe, 150mm in diameter. An OSD tank is proposed to occur within the northeastern corner of No. 18 Hopetoun Road, and adjacent to the boundary, and forms a junction point between the easement and proposed Units. The depth of the pipe within the easement has been generically proposed to cater for a minimum depth of 100mm[7] (to the top of the pipe). Therefore a trench forming the sum of the pipe diameter and minimum depth, being 250mm, is required, although likely require trenching up to 300mm. This depth has been considered the required extent of encroachment for the calculations for the tree encroachment. Although the pipe can be located anywhere within the 1000mm width of the easement, the calculations for encroachment have considered a trench to be flush with the boundary, being the greatest extent of impact.

The calculations included in the following discussion have not considered;

- subsurface utilities that have not been included in the design,

[7] *Add Design and Consulting* , Sheet 1, Drainage Notes; Part D4, see Section 4.4.1

- Work methods related to subsurface utilities, for example concrete encasing or replacement of existing lines
- or work methods related to construction (stockpiling, site sheds, scaffolding) unless otherwise specified.

These may also increase the encroachment and tree impact and, therefore, the opportunity for tree retention.

Neighbours trees; Trees No. 7, 9, 10, and 12-16 are located in the neighbours lot, therefore constitute ownership by a second party. Any proposed works within the zones of protection for these trees must not adversely impact these zones, and the trees shall be retained and protected from any site works unless permission for removal is granted by the tree owner and Wollongong City Council.

This report discusses the impact of the proposed design on the trees. Nine (9) trees have been listed within this report based upon the vicinity of the proposed works. This has included any tree where any part of the zones of protection; Tree Protection Zone (TPZ), and Structural Root Zone (SRZ) encroach into the area proposed for work. Recommendations based on the tree significance and condition, together with the impact on these trees regarding the proposed development (based on the documents contained in Section 4.4) and mitigation where available follow.

7.1.1 Trees providing a limited useful life expectancy

Tree No. 10

This tree provides low significance based on the species, habit, and rating and could potentially be removed due to the low amenity value and limited useful life expectancy. However, this would require permission from both tree owner and Wollongong City Council.

7.1.2 Trees subject to a major encroachment

Trees No. 7 and 9-16

These trees are not directly located in the footprint of the proposed design, however, are located close and adjacent to the design footprint and subject to a *major encroachment*, that is, in excess of 10% of the TPZ. The extent and type of encroachment for each tree are discussed and the relative implications within Table 2; Summary of encroachment

Table 2; Summary of encroachment.

Tree No.	SRZ Encroachment	Encroachment (%)	Type	Mitigation
7	Yes	28%	U4,Pipe,OSD	See Section 7.1.3, Part 3
9	Yes	37%	Pipe	See Section 7.1.3, Part 2

10	No	12%	Pipe	See Section 7.1.3, Part 1
11	Yes	37%	Pipe	See Section 7.1.3, Part 4
12	Yes	33%	Pipe	See Section 7.1.3, Part 2
13	No	20%	Pipe	See Section 7.1.3, Part 2
14	No	20%	Pipe	See Section 7.1.3, Part 2
15	Yes	30%	Pipe	See Section 7.1.3, Part 2
16	Yes	31%	Pipe	See Section 7.1.3, Part 2

7.1.3 Mitigation

1. The encroachment on this tree is two percentage points over a minor encroachment and allows for tree retention with minimal impact, although a potential for short term effect on the vitality.
2. The encroachment is predominately high where pending the extent of root mass that extends into the lot, the trenching proposed can offer an adverse impact on a tree, therefore significantly reduce the life expectancy for these trees. Although, the potential depth of the excavation (up to 300mm) coupled with the opportunity for root regrowth into the area of disturbance can allow for both some root retention and ability to regenerate. That is, the work does not remove the area from the ability to support root growth. Based on this premise, the following conditions will be required to allow for the pipe installation.

   2a. The pipe can be installed via underboring which will allow for the reduced impact on all trees and allow for the retention of tree 11. Although the placement of the exit and entry pits will need to be outside the SRZ for any tree. The project arborist will need to be involved with this work. The viability for underboring will need to be confirmed, however if unviable, an alternative method which will offer some impact but is capable for retaining these trees is described in Parts 2b and 2c.

   2b. The pipe excavation will need to be moved to the westernmost edge of the easement to reduce the impact on the root system.

   2c. The excavation within the TPZ for any tree, being the majority of the area within the rear yard of No. 93 Farrell Street, will require to be excavated by hand tools or air spade. These methods of excavation will allow judicious retention of roots and severing of other roots via a methodology that reduces the impact on the tree. The following requirements during this exercise shall be adhered to;

   a) During the excavation exercise, any woody roots smaller than 25mm in diameter that interferes with the route can be severed. These must be cleanly cut (not torn), with a pruning saw, loppers or secateurs and the cut ends dusted with a fungicide (sulphur).

b) Any woody roots that are greater than 25mm in diameter that is unearthed and possibly conflicting shall have the presence of the project arborist to assess any further mitigation. The option for the pipe to be placed under or if available around these roots, should be considered.

c) After completion of the excavation works and backfilling of the trench, irrigation, and implement a soil conditioner (e.g., Seasol™) and root hormone shall be used over the area of the TPZ's for each tree, and ensure the backfilled area of the trench is well irrigated.

d) The application of a soil conditioner and root hormone must be employed once a month for four months after completion of installation.

e) All works located in the area of the TPZ must occur with a project arborist on-site to supervise, offer instruction for the viability of root severance and mitigation.

3. The encroachment on tree No. 7, has been in excess of 40%, although amendment of the storm water drawing (revision 10) has reduce this figure. The encroachment is composed of the Unit 4 (4 percentage points), OSD (5 percentage points), and remaining 19 percentage points is the pipe. Based on the tolerance exhibited by this common urban planting[8], the encroachment is not considered to pose an adverse impact. Although measures can be undertaken to reduce the impact. The encroachment provided by the pipe is nominated to be mitigated for the same discussion as for Part 2. Within this circumstance, the prescribed mitigation is consistent with Parts 2a, 2b and 2c.

4. Based on the recommendation to reduce the impact on the neighbouring trees by moving the pipe route to west of the easement, the location of this tree (No. 93) will likely be in the route of excavation and remove the opportunity for retaining this tree. That is, this tree will likely require removal to accommodate the pipe.

7.2 Protection measures

The following protection measures are required to be implemented for the following trees before initiation of site works (including demolition/excavation) and retained until the landscaping works are required unless otherwise specified.

[8] University of Melbourne, 2013, Burnley Plant Guide, Data Sheet; *Melaleuca quiquenervia*, Australia

7.2.1 Protective fence: Trees No. 7 and 9-16

The existing boundary fence provides for sufficient protection for the above parts of each tree.

7.2.2 Conditions for compliance

The following conditions are required before any works proceed on site.

Site induction; All workers related to the construction process and before entering the site must be briefed about the requirements/conditions outlined in this report relative to the zone of protection, measures, and specifications before the initiation of work. This is required as part of the site induction process.

Project Arborist; A project arborist who conforms to the requirements of the AS 4970 is required to be nominated immediately after a *Notice of Determination* is issued, and they are to be provided with all related site documents.

7.3 Compliance Documentation

The following stages will require assessment and documentation (report, letter, certification) by the project arborist or person responsible for the specific work type, and the related documentation is to be issued to the principal certifying agent.

7.3.1 Table 2; Assessment/Certification stages

Hold Points	Work type	Document required
During Construction	Excavation for the pipe, Project arborist must be on site, before and during excavation works that occur within the TPZ for any tree.	Certificate*
During construction	Any further works required within the area of the TPZ, or decline related to the trees that have not been covered by this report.	Report Brief
During construction	Any crown modification including pruning or root disturbance.	Report Brief
After construction	Application of the soil conditioner/root hormone must be employed once a month for four months after completion of installation.	Receipts for purchase/dates of application included in Certification

Construction refers to the time between the initiation of demolition and until an occupation certificate is issued.

***Mandatory**

8.0 Protection Specification

The retention and protection of trees provide for the requirement of the Tree Protection Zone (TPZ) to conform to the conditions outlined below. These conditions provide the limitations of work permitted within the area of the Tree Protection Zone (TPZ) and must be adhered to unless otherwise stated.

1. Foundation/footing types should not be strip type, but utilise footing types that are sympathetic towards retaining root system that is, screw, pier, etc. Slab on the ground can be accommodated in some circumstances and will be nominated by the project arborist. The extent of encroachment will be dependent upon the tree species, soil type (texture and profile) and gradients.

2. Subsurface utilities can extend through the TPZ and Structural Root Zone (SRZ), however, are limited to the method of installation. That is under boring is permitted, however trenching is limited and depends on the proposed route within the TPZ. No trenching is permitted within the area of the TPZ unless stipulated by the project arborist.

3. Crown pruning can be accommodated, however, must conform to the AS 4373; *Pruning of Amenity Trees*, and not misshape the crown nor remove in excess of 10-15% of the existing crown, pending on the species, and vitality. The opportunity for, type and proportion of pruning will be required to be nominated by the project arborist.

4. Soil levels within the TPZ must remain the same. Any excavation within the TPZ must have been previously specified and allowed for by the project arborist:

   a) So it does not alter the drainage to the tree.

   b) Under specified circumstances,

   - Added fill soil does not exceed 100mm in depth over the natural grade. Construction methodologies exist that can allow grade increases in excess of 100mm, via the use of an impervious cover, an approved permeable material or permanent aeration system or other approved methods.

   - Excavation cannot exceed a depth of more than 50mm within the area of the TPZ, not including the SRZ. The grade within the SRZ cannot be reduced without the consent from a project arborist.

5. No form of material or structure, solid or liquid, is to be stored or disposed of within the TPZ.

6. No lighting of fires is permitted within the TPZ.

7. All drainage runoff, sediment, concrete, mortar slurry, paints, washings, toilet effluent, petroleum products, and any other toxic wastes must be prevented from entering the TPZ.

8. No activity that will cause excessive soil compaction is permitted within the TPZ. That is, machinery, excavators, etc. must refrain from entering the area of the TPZ unless measures have been taken, and with consultation with the project, arborist to protect the root zone.

9. No site sheds, amenities or similar site structures are permitted to be located or extend into the area of the TPZ unless the project arborist provides prior consent.

10. No form of construction work or related activity such as the mixing of concrete, cutting, grinding, generator storage or cleaning of tools is permitted within the TPZ.

11. No part of any tree may be used as an anchorage point, nor should any noticeboard, telephone cable, rope, guy, framework, etc. be attached to any part of a tree.

12. (a) All excavation work within the TPZ will utilise methods to preserve root systems intact and undamaged. Examples of methods permitted are by hand tools, hydraulic, or pneumatic air excavation technology.

(b) Any root unearthed which is less than 50mm in diameter must be cleanly cut and dusted with a fungicide, and not allowed to dry out, with minimum exposure to the air as possible.

(c) Any root unearthed which is greater than 50mm in diameter must be located regarding their directional spread and potential impact. A project arborist will be required to assess the situation and determine future action regarding retaining the tree in a healthy state.

Project Arborist: person nominated as responsible for the provision of the tree assessment, arborist report, consultation with stakeholders, and certification for the development project. This person will be adequately experienced and qualified with a minimum of a level 5 (AQF); Diploma in Horticulture (Arboriculture)[9].

[9] Based upon the definition of a 'consulting arborist' from the AS 4970; Protection of trees on development sites; 2009, Section 1.4.4, p 6.

9.0 Summary of tree impact by design

Based on the design supplied, the following summary provides the impacts imposed on the trees included in this report.

9.1 Trees No. 7 and 9-16

The proposed design has the capacity to impact adversely on these trees; however, are predominately neighbouring trees, therefore, must be retained and protected. For this reason, the mitigation outlined in Section 7.1.3 must be implemented as part of the installation/design. The mitigation allows for the long term retention of these trees by retaining structure and vitality (health).

The location of the OSD has been amended to reduce the impact on tree No. 7.

An opportunity for underboring the pipe within the easement takes precedence and offers the least impact on the neighbouring trees. However if this method is unviable, then an opportunity for installation via trenching exists and based on the conditions provided in Section 7.1.3.

9.2 Protection measures

Protection measures (outlined in Section 7.2 and 7.3) are required to be implemented for the trees nominated for retention (referenced in Section 9.1) and installed before initiation of site works (including demolition/excavation) and retained until the landscaping works are required unless otherwise specified.

All workers related to the construction process and before entering the site must be briefed about the requirements/conditions outlined in this report relative to the zone of protection, measures, and specifications before the initiation of work.

A project arborist is required to be nominated, and the stages and related certification or similar documentation is to be issued to the principal certifying agent.

The opinions expressed in this report by the author have been provided within the capacity of a Consulting Arborist. Any further explanation or details can be provided by contacting the author.

Assessed and Prepared by Geoff Beisler
Consulting Arborist
Level 5 Arborist
ISA Tree Risk Assessment Qualification

Prepared and checked by Warwick Varley
Consulting Arborist; Principal
Level 5 and 8; Arborist
ISA Tree Risk Assessment Qualification
IACA and ISA Member

10.0 Appendix A- Terminology Defined

Height
Is a measure of the vertical distance from the average ground level around the root crown to the top surface of the crown, and on palms - to the apical growth point.

DBH
Diameter at Breast Height – being the stem diameter in meters, measured at 1.4m from ground level, including the thickness of the bark.; Mult. refers to multiple stems, that is in excess of 4 stems.

Crown Spread
A two-dimension linear measurement (in metres) of the crown plan. The first figure is the north-south span, the second being the east-west measurement.

Age
Is the estimate of the specimen's age based upon the expected lifespan of the species. This is divided into three stages.

Young (Y)	Trees less than 20% of life expectancy.
Mature (M)	Trees aged between 20% to 80% life expectancy.
Over-mature (O)	Trees aged over 80% of life expectancy with probable symptoms of senescence.

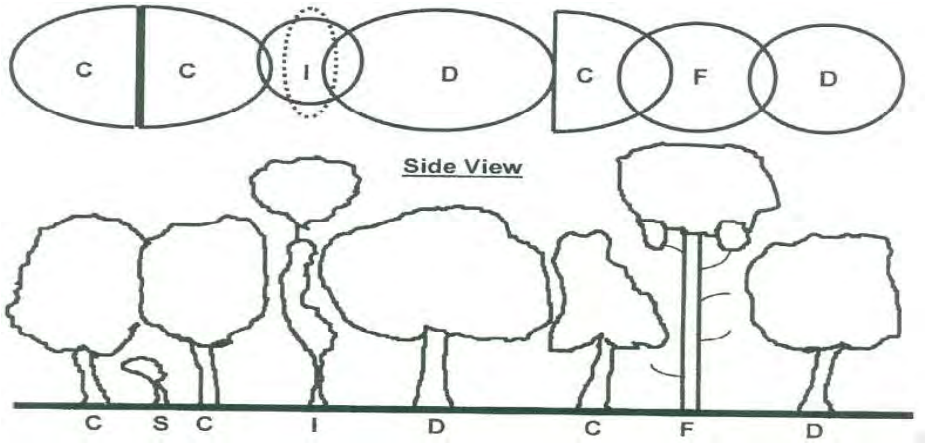
Crown Aspect
In relation to the root crown, this refers to the aspect the majority of the crown resides in. This will be either termed Symmetrical (Sym.) where the centre of the crown resides over the root crown or the cardinal direction the centre of the crown is biased towards, being either North (N), South (S), East (E) or West (W).

Vitality Rating
Is a rating of the health of the tree, irrespective and independent of the structural integrity, and defined by the 'ability for a tree to sustain its life processes' ((Draper, Richards, 2009). This is divided between three variables, and based on the assessment of symptoms including, but not limited to; leaf size, colour, crown density, woundwood development, adaptive growth formation, and epicormic growth.
A: Normal vitality, typical for the species
B: Below average vitality, possibly temporary loss of health, partial symptoms.
C: Poor vitality; obvious decline, potentially irreversible

Crown Class
Is the differing crown habits as influenced by the external variables within the surrounding environment. They are:

D	– *Dominant*	Crown is receiving uninterrupted light from above and sides, also known as emergent.
C	– *Codominant*	Crown is receiving light from above and one side of the crown.
I	– *Intermediate*	Crown is receiving light from above but not the sides of the crown.
S	– *Suppressed*	Crown has been shadowed by the surrounding elements and receives no light from above or sides.
F	– *Forest*	Characterised by an erect, straight stem (usually excurrent) with little stem taper and virtually no branching over the majority of the stem except for the top of the tree which has a small concentrated branch structure making up the crown.

Top View



D C, I & S, and side view, after (Matheny, N. & Clark, J. R. 1998, Trees Development, Published by International Society of Arboriculture, P.O. Box 3129, Champaign IL 61826-3129 USA, p.20, adapted from the Hazard Tree Assessment Program, Recreation and Park Department, City of San Francisco, California).

Levels of assessment

Level 1: Limited visual: a visual tree assessment to manage large populations of trees within a limited period and in order to identify obvious faults which would be considered imminent.

Level 2: Basic assessment: a standard performed assessment providing for a detailed visual assessment including all parts of the tree and surrounding environment and via the use of simple tools.

Level 3: Advanced assessment: specific type assessments conducted by either arborist who specialise with specific areas of assessment or via the use of specialised equipment. For example, aerial assessment by use of an EWP or rope/harness, or decay detection equipment.

TPZ; Tree Protection Zone

Is an area of protection required for maintaining the trees vitality and long-term viability. Measured in meters as a radius from the trees centre. The requirements of this zone are outlined within the Protection Specification, Section 8.0, and are to be adhered to unless otherwise stated.

The size of the Tree Protection Zone (TPZ) has been calculated from the *Australian Standard, 4970; 2009* – Protection of Trees on Development Sites

The TPZ does not provide the limit of root extension, however, offers an area of the root zone that requires predominate protection from development works. The allocated TPZ can be modified by some circumstances; however will require compensation equivalent to the area loss, elsewhere and adjacent to the TPZ.

SRZ; Structural Root Zone

Is the area around the tree containing the woody roots necessary for stability. Measured in meters as a radius from the trees centre. The requirements of this zone are outlined within the Protection Specification, Section 8.0, and are to be adhered to unless otherwise stated.

Protection Measures

These are required for the protection of trees during demolition/construction activities.
Protective barriers are required to be installed before the initiation of demolition and/or construction and are to be maintained up to the time of landscaping.

All other definitions are referenced from;

Draper D.B., Richards P.A., 2009, Dictionary for Managing Trees in Urban Environments
CSIRO Pub., Australia

Significance Rating, Significance of a Tree Assessment Rating System (S.T.A.R.S), IACA, 2010[10]

Tree Significance – Assessment Criteria

1. High Significance in landscape

- The tree is in good condition and good vitality;
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa in situ – tree is appropriate to the site conditions.

2. Medium Significance in landscape

- The tree is in fair-good condition and good or low vitality;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa in situ.

3. Low Significance in landscape

- The tree is in fair-poor condition and good or low vitality;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences,

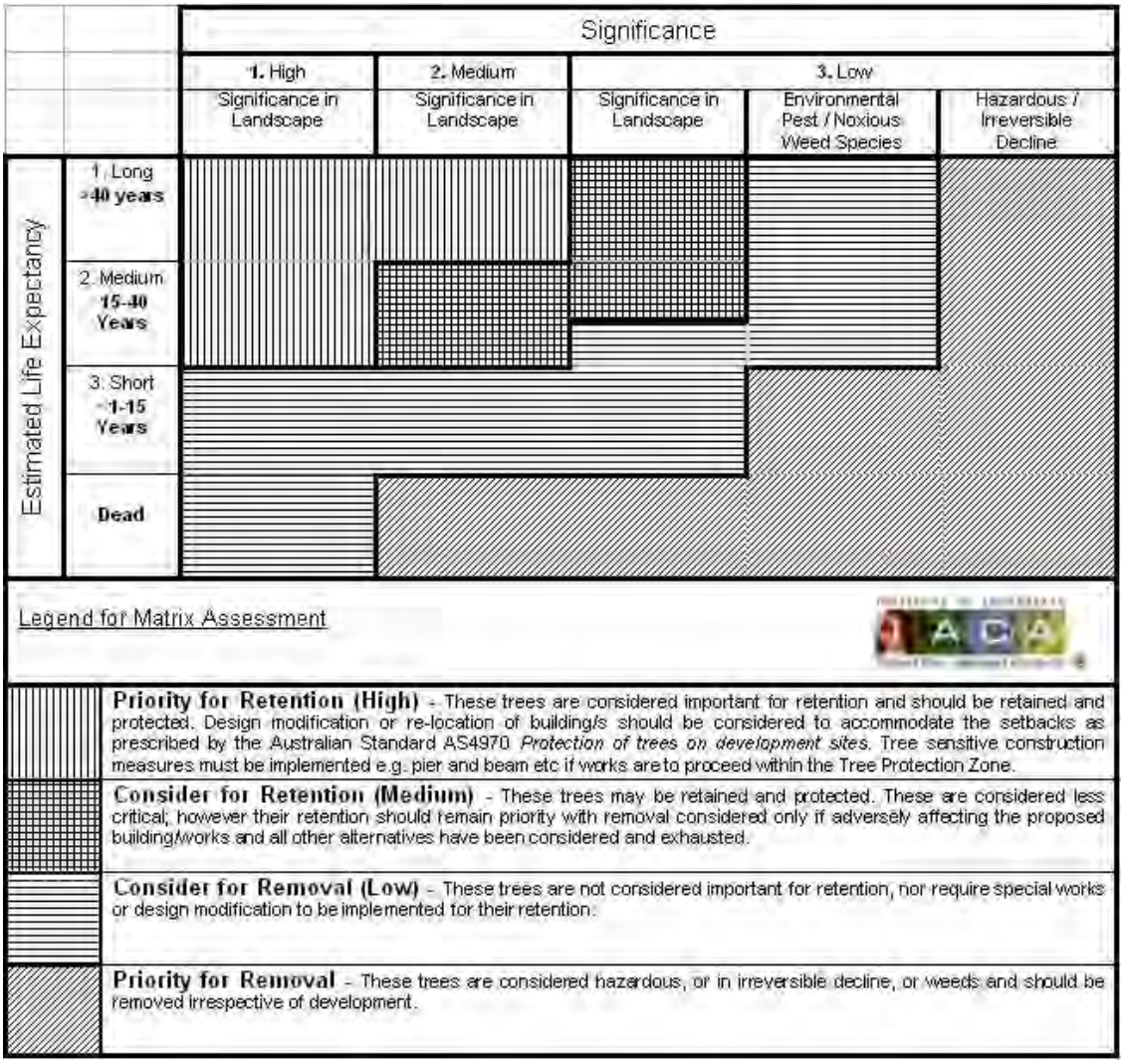
[10] IACA, 2010, IACA Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au

unlikely to reach dimensions typical for the taxa in situ – tree is inappropriate to the site conditions,
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.
Environmental Pest / Noxious Weed Species
- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.
Hazardous/Irreversible Decline
- The tree is structurally unsound and/or unstable and is considered potentially dangerous, - The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short-term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g.

Table 3; Tree Retention Value – Priority Matrix.



Safe Useful Life Expectancy – S.U.L.E (Barell 1995)

	1. Long	2. Medium	3. Short	4. Removal	5. Moved or Replaced
	Trees that appeared to be retainable at the time of assessment for more than 40 years with an acceptable level of risk.	Trees that appeared to be retainable at the time of assessment for 15 – 40 years with an acceptable level of risk.	Trees that appeared to be retainable at the time of assessment for 5 – 15 years with an acceptable level of risk.	Trees that should be removed within the next 5 years.	Trees which can be reliably moved or replaced.
A	Structurally sound trees located in positions that can accommodate future growth.	Trees that may only live between 15 and 40 years.	Trees that may only live between 5 and 15 more years.	Dead, dying, suppressed or declining trees through disease or inhospitable conditions.	Small trees less than 5m in height.
B	Trees that could be made suitable for retention in the long term by remedial tree care.	Trees that may live for more than 40 years but would be removed for safety or nuisance reasons.	Trees that may live for more than 15 years but would be removed for safety or nuisance reasons.	Dangerous trees through instability on recent loss of adjacent trees.	Young trees less than 15 years old but over 5m in heights
C	Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long term retention.	Trees that may live for more than 40 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting.	Trees that may live for more than 15 years but should be removed to prevent interference with more suitable individuals or to provide space for new planting.	Damaged trees through structural defects including cavities, decay, included bark, wounds or poor form.	Trees that have been pruned to artificially control growth.
D		Trees that could be made suitable for retention in the medium term by remedial tree care.	Trees that require substantial remedial tree care and are only suitable for retention in the short term.	Damaged trees that are clearly not safe to retain.	
E				Trees that may live for more than 5 years but should be removed to prevent interference with more suitable individuals or to provide space for new plantings.	
F				Trees that are damaging or may cause damage to existing structures within 5 years.	
G				Trees that will become dangerous after removal of other trees for reasons given in (A) to (F).	

12th August 2020

General Manager
Wollongong City Council
Locked Bag 8821
WOLLONGONG DC NSW 2500
ATTENTION: JACOB WILLIAMS

Dear Jacob,

RE: DEVELOPMENT APPLICATION NO. DA-2020/297
PROPOSED 2-LOT TORRENS TITLE SUBDIVISION & CONSTRUCTION OF A DUAL OCCUPANCY RESIDENTIAL DEVELOPMENT ON EACH
18 HOPETOUN STREET, WOONONA

We refer to the above-mentioned Development Application (DA) and the various public submissions and Council internal department file note referrals received, which have been obtained for our review under the *Government Information Public Access Act 2009*. Whilst we understand Council have not requested any additional information in response to matters raised within these documents, we have taken it upon ourselves (as applicants) to refine the application package in order to address certain issues and/or inconsistencies. We supply this updated documentation in good faith and for clarity purposes.

We have reviewed the matters in question, and the following key changes/refinements are noted in response to those particular matters raised by the community and Council:-

- The architectural site plans and BASIX certificate has been updated to reflect the current site area as shown on the survey plan.
- The BASIX certificate has been updated to correct the car spaces typo (now 8 spaces stated instead of 9 previous).
- The sill heights of the upper level rumpus and bedroom 4 windows to the northern façade of Dwellings 3 and 4 have been increased to 1700mm to remove any

opportunity for overlooking to properties to north.

- Additional setback dimensions have been added to the architectural site plan to clearer delineate lower and upper building lines setbacks.
- The tree removal/retention legend shown on the landscape plan has been updated to rectify inconsistency with architectural plans and arborist report.
- The arborist report has been updated to reflect current site conditions (additional tree identified on-site and neighbouring trees subsequently removed since original report date)
- An additional arborist report has been prepared to review the impacts of the stormwater easement proposed along the eastern boundary of 93 Farrell Road, in respect of trees located on adjoining 91 Farrell Road. Findings are consistent with the Council recommendations within landscape department referral.
- The draft proposed subdivision plan has been updated to incorporate drainage easements likely to be implemented.
- Driveway dimensions have been added to the architectural site plan.
- The proposed stormwater drainage line at the rear of Dwelling 3 (under the TPZ of Tree 3 – Jacaranda) has been removed altogether to eliminate conflict.
- The landscaped areas shown on the architectural site plan have been removed. Only shown on landscape concept plan now for consistency purposes.

These changes made to the design concept are reflected in the updated Architectural Plans prepared by Ingenuity Home Design. In addition to this, updated civil, landscape, and arborist documentation is also provided for Council's consideration, as supplement to the development corrections made.

In direct response to the main matters raised by the community within their submissions, the following is noted:

Matters Raised	**Comment**
Traffic Matters	
Proposed driveway layout not sufficient to enable storage of one car in each dual occupancy.	Driveway accommodates two-way movements in accordance with Australian Standards.
Manoeuvring plan – referral to deficiencies	The manoeuvring plan shows all vehicles can enter and exit the site in a forward direction.

Not enough on street parking due to existing residents and presence of Fernwood Gym which provides no client/member parking.	Parking on-site accords with Council standards.
Bin collection (too much on street parking)	Appropriate street frontage available for kerbside collection purposes.
No visitor parking onsite	None required for dual occupancy developments
Driveway widths – not shown on plans, does not meet 3m width.	Driveway dimensions now shown on the site plan, which achieves minimum 3m.
Driveway does not provide a minimum 6m wide driveway reserve/carriageway which is required for a battle-axe access handle WDCP Ch B1 5.6.2 Cl 5	This clause relates to multi-dwelling housing requirements, and is not applicable to the proposed development.
Height, bulk and scale, character Proposed modern design and construction of the development will detract from the 'classic appearances/heritage street' of existing houses/miners cottages of Farrell Road.	Appearance is modern and scale reflects other products within the locality. Adequate building separation from the rear boundary is provided in excess of requirements, in order to not detract from heritage cottages. Landscape buffer is also provided at the rear.
Dwelling houses on battle-axe allotments are restricted to one storey according to WDCP – the proposal is asking for double storey.	A variation is provided for this request, in light of site context and space planning. The rear portion of the site is located directly adjacent to a three-storey development at 6 Pitman Lane and, therefore, is not out of context. Additionally, no undue overshadowing or overlooking impacts will be created as a result of the two-storey products.
Construction related impacts Overdevelopment	The proposed land use is permitted with Council's consent and is consistent with development standards in terns of lot size, height and FSR.
Referral to original DA rejection	The previous proposal was for a multi dwelling housing development, under a different set of

	controls and development criteria. The previous application has no bearing on the assessment of this new subdivision and dual occupancies DA.
Development proposes removal of existing Jacaranda tree.	Jacaranda Tree is to be retained. Inconsistencies within landscape concept plan legend have been adjusted.
Heritage Proposed stormwater trenching, as well as removal of the driveway of 93 Farrell Road, will have a major impact on the structural integrity of the Heritage listed house at 91 Farrell Road – the driveway to be removed is in the immediate proximity to the footings of the house.	The proposed stormwater trenching works are minor in terms of depth and extent, and are not expected to affect the structural integrity of any of the dwellings located at both 91 or 93 Farrell Road. It is noted that Council's heritage officer has not advised any concerns to this effect.
What is the heritage significance of the garage to be demolished at 93 Farrell Road?	Councils aerial imagery suggests that the existing garage was constructed sometime between the 1950s and 1960s, well after the establishment of the initial dwelling. Being a later addition, there is believed to be no heritage significance associated with this garage.
What is the design of the replacement garage?	No replacement garage is proposed at this stage. Any proposal for a new garage at 93 Farrell Road will be subject to a separate application.
Landscape Calculation of landscaped area is incorrect – garden beds are less than 1.5mtrs wide. Figures supplied by the developer on landscape plan differ to those figures on the site analysis plan.	These described landscape areas are only now shown on the landscape concept plan for consistency purposes.
Overshadowing Unacceptable amenity impacts on adjoining properties.	Proposed development provides for compliant setbacks to all boundaries, and overshadowing impacts to adjoining properties are limited throughout the day.
Removal of north facing window on second storey,	The sill heights of the upper level rumpus and

now four windows (2 each for units 3 & 4)	bedroom 4 windows to the northern façade of Dwellings 3 and 4 have been increased to 1700mm to remove any opportunity for overlooking to properties to north.
Unit 1 POS does not meet solar access requirements.	There is no requirement for solar access to Unit 1 POS. Notwithstanding, part of this POS will get solar access in the early morning and afternoon periods nonetheless.
Proposed clothesline for Unit 1 will not receive adequate sunlight.	The proposed clothesline will receive adequate solar access in the morning period prior to midday.
POS of Unit 1 is located in the front yard which is not permitted according to WDCP Ch B1 4.6.2 Cl 1(b)	A variation request has been submitted with regards to the location of this POS. Despite it being within the front yard, is setback 5.1 metres (compliant with front building line criteria for being no greater than 900 mm forward of the 6 metre building line setback) and is well screened through appropriate deep soil landscaping to this frontage. The location is justifiable.
Balcony of Unit 1 extends forward of the front building line by greater than 900mm – this is not allowed according to WDCP Ch B1 4.6.2 Cl 1(b)	The upper-level balcony of Unit 1 is only 900 mm in front of the building line, as shown in the architectural site plan with updated dimensions.
Setbacks	
Unit 4 less than 8mtrs from rear boundary.	Unit 4 is setback 7.56 metres at the lower ground level and is in excess of 8 metres at the upper floor level. Both setbacks are compliant with council controls.
No rear setbacks shown on DA plans.	Updated dimensions are shown on the architectural site plan for assistance.
Torrens Title Subdivision	
According to the WDCP Ch B1 4.10.2 Cl II access to rear dwelling must be provided by a dedicated access corridor attached to the same ownership of the rear property (Lot 2).	The proposed subdivision provides for both legal and functional access arrangements to Proposed Lot 2, typical of many subdivisions of this nature. A dedicated 1 metre wide battle-axe handle is provided

	for legal frontage and services, whilst access arrangements are secured via right of carriageway arrangements to be created as a restriction on title. There is no legal requirement for the complete access handle to be dedicated to the rear lot in this instance.
Torrens title subdivision must show existing easements. In the SEE (p17) of previous DA an existing sewer line bisection the block west to east, midway through the block is mentioned, no diagram is provided	The Torrens title subdivision plan has been updated to show likely dedicated easements. The location of sewer is irrelevant with regards to easement requirements.
Arborist Report states 2 page survey had been done on the property on 15th January 2020. Tree No 6 was not there as it was removed in August 2019 – questioning whether the survey was actually done on 15th January 2020.	The arborist report has been updated to reflect the current on-site conditions, as it is evident that neighbours have remove trees following initial inspection works by the arborist.
Proposed OSD tank is located in TPZ also.	Impacts of the OSD have been reviewed by the arborist and updated within the relevant report and stormwater plans.
No drawings have been provided for the proposed route of sub-surface utilities.	The arborist has been provided with updated stormwater drawings which is reflected in their updated report.
Jacaranda Tree drip line extends onto Units 3 & 4. Major pruning to the point of removing the west to east branch will be in excess of the 15% allowed.	The impacts of the Jacaranda tree are justifiable and the design of Unit 3 reflects recommendations for this tree to be healthily retained.
Stormwater Concerns stormwater easement will run through SRZs of multiple trees on 91 Farrell Rd.	An updated arborist report has been provided with regards to the proposed stormwater easement.
Tree No 7 has a TPZ of 9.1mtrs – concerns that the trenching for the stormwater easement will encroach this TPZ.	The impacts of Tree 7 have been reviewed by the arborist and found to be acceptable.

Drainage problem issues with property that backs onto subject property.	Proposed stormwater arrangements will capture all overland flow upstream of the Farrell Road property and improve drainage conditions at this time.
Architectural / Plans Inconsistencies on numerous plans/reports:- - Survey - Site analysis plan - Lower floor plan - Upper floor plan - Is FSR correct - BASIX report indicates 9 spots – proposal is for 8	These inconsistencies have been revised accordingly.

With regards to the internal Council referrals and memos received from various departments, we have reviewed the matters raised and it is apparent the majority incorporate proposed conditions of consent. In general, we have no objections to the proposed conditions imposed under the referrals of traffic, subdivision, stormwater and landscape. It is noted that the heritage referral identifies some minor concerns with regards to the streetscape presentation for a double storey built form and POS to Unit 1, as well as rear Colorbond fencing to the neighbouring Farrell Road properties.

With regards to the Hopetoun Street frontage, whilst Unit 1 is proposed to be two-storeys, it is well setback behind the current front building lines of the properties either side. Many of the properties in close proximity are of two-storey built form, and the proposed development is responsive with the streetscape. The provision of the POS area forward of the building line to Unit 1 is ideal to offer passive surveillance opportunities towards the street frontage, but at the same time respond to privacy considerations through the implementation of deep soil landscaped planting at this interface. By setting back the building line further than the minimum requirements in order to supplement this space with POS area and low scale fencing will ensure no negative impact on the streetscape appearance or adjoining properties.

In relation to the rear fencing of Units 3 and 4, there is no proposal to change the existing Colorbond fencing located along this edge. Therefore there will be no impact to existing conditions.

We trust this information satisfactorily assists with Council's assessment, and we look forward to discussing further with Council in working towards a favourable determination of the subject DA. Please feel free to contact the undersign should you require any further information and/or discussion.

Yours faithfully,
MARTIN MORRIS & JONES PTY LTD

LUKE ROLLINSON BUrbRegPlan DipArchTech MPIA
DIRECTOR – TOWN PLANNER

ATTACHMENT 3 – Conditions

Conditions imposed by Council as part of this Integrated Development Consent are:

(i) **The Development Consent shall not operate until Council has been satisfied as to the following matters:**

a **Registered Easement**
The developer must obtain a minimum one (1) metre wide easement to drain stormwater over Lot 13 DP 6454 for the purpose of stormwater disposal to benefit Lot B DP 157627. Evidence that the easement has been registered with NSW Land Registry Services must be submitted to Council.

(ii) The developer must satisfy Council, within 12 months of the date shown on the top of this consent, that the matters specified in condition number (i) have been complied with. Failure to satisfy Council within that time period will lapse this development consent.

(iii) If compliance with the matters contained in condition number (i) results in a substantial variation to the development approved deferred commencement, a new development application must be submitted.

Once Council is satisfied that the matters contained in condition number (i) have been complied with and the developer has been notified in writing of such compliance, the following conditions shall apply in respect of the approved development:

Approved Plans and Specifications

1 The development shall be implemented substantially in accordance with the details and specifications set out on Job No 20200001 Drawing sheet 3-B to 5-B, 7-B to 11-B, 13-B to 17-B and 21-B dated 1 July 2020 prepared by Ingenuity Home Design and any details on the application form, and with any supporting information received, except as amended by the conditions specified and imposed hereunder.

General Matters

2 **Phasing of Development**
The development shall be phased in the following manner:

Phase 1: Demolition, installation/construction of stormwater infrastructure, access and two (2) lot Torrens title subdivision of Lot B DP 157627.
Phase 2: Construction of a dual occupancy on each created lot.

3 **Building Work - Compliance with the Building Code of Australia**
All building work must be carried out in compliance with the provisions of the Building Code of Australia.

4 **Construction Certificate**
A Construction Certificate must be obtained from Council or a Registered Certifier prior to work commencing.

A Construction Certificate certifies that the provisions of Clauses 139-147 of the Environmental Planning and Assessment Regulation 2000 have been satisfied, including compliance with all relevant conditions of Development Consent and the Building Code of Australia.

Note: The Certifier must cause notice of its determination to be given to the consent authority, and to the council, by forwarding to it, within two (2) days after the date of the determination, the plans and documentation referred to in clause 142 (2) of the Environmental Planning and Assessment Regulation 2000.

5 **Mailboxes**
The developer must install mailboxes along street frontage of the property boundary in accordance with Australia Post Guidelines. Prominent house numbers are to be displayed, with a minimum number size of 150 mm in height for each number and letter in the alphabet. The developer must

install minimum two (2 No.) reflective paint house number on face of kerb along street frontage of the property to assist emergency services/deliveries/visitors.

6 **Occupation Certificate**

An Occupation Certificate must be issued by the Principal Certifier prior to occupation or use of the development. In issuing an Occupation Certificate, the Principal Certifier must be satisfied that the requirements of section 6.9 of the Environmental Planning and Assessment Act 1979, have been complied with as well as all of the conditions of the Development Consent.

7 **Tree Management**

The developer shall retain existing trees indicated on Concept Landscape Plan by Captivate Dwg. No DA-1714/1 dated 12 March 2020 consisting of tree numbered 3 a *Jacaranda mimosifolia* Jacaranda in NW corner and trees 2, 4, 5, 6, 7 and 8 on adjacent properties. Total number: seven (7 No.).

Any branch or root pruning which has been given approval, must be carried out by a qualified arborist in accordance with Australian Standard AS4373 (2007).

All tree protection measures are to be installed in accordance with Australian standard AS4970-2009 Protection of Trees on development Sites.

Recommendations in arborist's report Ref. No. D3841 dated February 2020 Final by Allied Tree Consultancy Author Warwick Varley to be implemented including and not restricted to: establishing Tree Protection Zones (TPZs), project arborist being present during work within Structural Root Zones (SRZs) and supervising work within TPZs, site induction with reference to tree protection, referring matters to project arborist, re routing of sub surface utilities to avoid TPZs, hand excavation within TPZs near tree roots, remedial tree pruning, deadwooding, fencing and signage, sediment buffer, stem protection, mulching and watering and root hormone application if required. Soil levels within the TPZ must remain the same. In addition, arboricultural supervision is required for all works within easement for drainage works in 93 Farrell Road with established trees in adjacent property, No. 91.

The developer shall transplant tree numbered 1 Total number: One (1 No.) to an appropriate location on site by an experienced and qualified contractor.

The developer shall remove existing vegetation labelled B and a *Schleffera actinophylla* Umbrella tree in NW corner. Total number: two (2 No.). No other trees shall be removed without prior written approval of Council.

8 **Site Facilities**

Site facilities, such as air-conditioning units, satellite dishes and other ancillary structures are to be adequately setback from neighbouring properties, located away from the street frontage and not in a place where they are a skyline feature. The house number must be displayed in a prominent position and the mailbox installed in accordance with Australia Post Guidelines. Site addressing shall comply with Council's Property Addressing Policy (as amended).

Prior to the Issue of the Construction Certificate

9 The Construction Certificate for the dual occupancies on each created lot shall not be issued until the two (2) lot subdivision is registered.

10 **Present Plans to Sydney Water**

Approved plans must be submitted online using Sydney Water Tap, available through www.sydneywater.com.au to determine whether the development will affect Sydney Water's sewer and water mains, stormwater drains and/or easements, and if further requirements need to be met.

The Principal Certifier must ensure that Sydney Water has issued an approval receipt prior to the issue of a Construction Certificate.

Visit www.sydneywater.com.au or telephone 13 20 92 for further information.

11 **Obscure Glazing for all Bathroom and WC Windows**

The bathroom and WC windows for each dwelling in the development shall be frosted or opaque glass. This requirement shall be reflected on the Construction Certificate plans.

12 **Fencing**

The development is to be provided with fencing and screen walls at full cost to the applicant/developer as follows:

a where a screen wall faces the road, pedestrian walkway, reserve or public place that wall shall be constructed of the same brickwork as that used in the external wall of the building with horizontal aluminium/timber slats incorporated;

b rear and side property boundaries (behind the building line) and private rear courtyards are to be provided with minimum 1.8 metre high brick, timber lapped and capped, palisade or colorbond fences;

c Any new fences or screens constructed on the site shall be of a type that will not obstruct the free flow of surface runoff from adjoining properties and be compatible with stormwater drainage requirements; and;

d fencing to suit character of local area.

This requirement is to be reflected on the Construction Certificate plans.

13 **Car Parking and Access**

The development shall make provision for a total of eight (8) car parking spaces. This requirement shall be reflected on the Construction Certificate plans. Any change in above parking numbers shown on the approved plans shall be dealt with via a section 4.55 modification to the development. The approved car parking spaces shall be maintained to the satisfaction of Council, at all times.

14 **Landscaping**

The submission of a final Landscape Plan to the Principal Certifier, prior to the release of the Construction Certificate. The final Landscape Plan shall address the following requirements:

a planting of indigenous plant species typical of the Illawarra Region such as: *Syzygium smithii* (formerly Acmena smithii) Lilly pilly, *Archontophoenix cunninghamiana* Bangalow palm, *Backhousia myrtifolia* Grey myrtle, *Elaeocarpus reticulatus* Blueberry ash, *Glochidion ferdinandii* Cheese tree, *Livistona australis* Cabbage palm tree, B*rachychiton acerifolius* Illawarra Flame Tree. A further list of suitable suggested species for the Woonona area may be found in Wollongong Development Control Plan 2009 – Chapter E6: Landscaping;

b a schedule of proposed planting, including botanic name, common name, expected mature height and staking requirements as well as number of plants and pot sizes;

c the location of all proposed and existing overhead and underground service lines. The location of such service lines shall be clear of the dripline of existing and proposed trees;

d any proposed hard surface under the canopy of an existing trees shall be permeable and must be laid such that the finished surface levels match the existing level. Permeable paving is to be installed in accordance with the manufacturer's recommendations;

e the developer shall ensure that proposed planting is child friendly and must **not** include any of the types of plants listed below: **i)** plants known to produce toxins; **ii)** plant with high allergen properties; **vi)** any weed or potential weed species;

f with limited existing open space consideration be given for incorporating 'green walls' with the use of trellis and climbing plants trained over to make use of bare vertical walls and fencing;

g where turf is proposed adjacent to built structures and garden beds the applicant shall install a 110mm wide brick mowing edge with concrete footing to minimise maintenance;

h cottage style planting to be incorporated into planting of Unit 1 such as Lavender, Azalea, Camellia, Gardenia, Geranium, Rosemary and the like;

i any fill material should not cover topsoil. Topsoil shall be removed, stockpiled, ameliorated and replaced over any fill material to a minimum depth of 100mm; and;

j plan to indicate stormwater easement.

The completion of the landscaping works as per the final approved Landscape Plan is required, prior to the issue of Occupation Certificate or commencement of the development.

15 The submission of certification from a suitably qualified and experienced landscape designer and drainage consultant to the Principal Certifier prior to the release of the Construction Certificate, confirming that the landscape plan and the drainage plan are compatible.

16 The implementation of a landscape maintenance program in accordance with the approved Landscape Plan for a minimum period of 12 months to ensure that all landscape work becomes well established by regular maintenance. Details of the program must be submitted with the Landscape Plan to the Principal Certifier prior to release of the Construction Certificate.

17 **Compensatory Planting**
The developer must make compensatory provision for the trees required to be removed as a result of the development. In this regard, two (2 No.) 75 litre container advanced mature plant stock shall be placed within the property boundary of the site in appropriate locations. The suggested species are to be selected from the following list: *Elaeocarpus reticulatus* Blueberry ash, *Melaleuca styphelioides* Prickly leaved paperbark, or B*rachychiton acerifolius* Illawarra Flame Tree. In addition, a min 400 lt Lagerstroemia indica x fauriei 'Natchez' White Crepe myrtle is to be installed at front of property near Unit 1. A further list of suitable suggested species may be found in Wollongong Development Control Plan 2009 – Chapter E6: Landscaping. Details are to be shown on the plans submitted with the Construction Certificate.

18 **Tree Protection Measures**
The existing trees are to be retained upon the subject property and any trees on adjoining properties shall not be impacted upon during the excavation or construction phases of the development. This will require the installation and maintenance of appropriate tree protection measures, including (but not necessarily limited to) the following:

a Installation of Tree Protection Fencing - Protective fencing shall be 1.8 metre cyclone chainmesh fence, with posts and portable concrete footings. Details and location of protective fencing must be indicated on the architectural and engineering plans to be submitted to the Principal Certifier prior to release of the Construction Certificate.
b Mulch Tree Protection Zone: Areas within a Tree Protection Zone are to be mulched with minimum 75 mm thick 100% recycled hardwood chip/leaf litter mulch.
c Irrigate: Areas within the Tree Protection Zone are to be regularly watered in accordance with the arborist's recommendations.

The submission of a final Site Plan to the Principal Certifier indicating required tree protection fencing is required, prior to the release of the Construction Certificate.

19 **Engineering Plans and Specifications - Retaining Wall Structures Greater than One (1) Metre**
The submission of engineering plans and supporting documentation of all proposed retaining walls greater than 1m to the Principal Certifier for approval prior to the issue of the Construction Certificate. The retaining walls shall be designed by a suitably qualified and experienced civil and/or structural engineer. The required engineering plans and supporting documentation shall include the following:

a A plan of the wall showing location and proximity to property boundaries;
b An elevation of the wall showing ground levels, maximum height of the wall, materials to be used and details of the footing design and longitudinal steps that may be required along the length of the wall;
c Details of fencing or handrails to be erected on top of the wall;
d Sections of the wall showing wall and footing design, property boundaries, subsoil drainage and backfill material. Sections shall be provided at sufficient intervals to determine the impact of the wall on existing ground levels. The developer shall note that the retaining wall, subsoil drainage and footing structure must be contained wholly within the subject property;
e The proposed method of subsurface and surface drainage, including water disposal. This is to include subsoil drainage connections to an inter-allotment drainage line or junction pit that discharges to the appropriate receiving system;
f The assumed loading used by the engineer for the wall design.

g Flows from adjoining properties shall be accepted and catered for within the site. Finished ground and top of retaining wall levels on the boundary shall be no higher than the existing upslope adjacent ground levels.

20 **Walls Between Units**

The walls between the sole occupancy units shall extend from the footings to the underside of the roofing material and have a minimum fire resistance level of 60/60/60. Roof battens up to 75 mm x 50 mm may cross the separating wall subject to the gaps being fire stopped. At the intersection of the separating wall and an external brick veneer wall, the gap shall not exceed 50 mm and shall be fire stopped and flashed.

21 **Property Addressing Policy Compliance**

Prior to the issue of any construction certificate, the developer must ensure that any site addressing complies with Council's **Property Addressing Policy** (as amended). Where appropriate, the developer must also lodge a written request to Council's **Infrastructure Systems & Support – Property Addressing (propertyaddressing@wollongong.nsw.gov.au),** for the site addressing prior to the issue of the construction certificate. Please allow up to 3-5 business days for a reply. Enquiries regarding property addressing may be made by calling 4227 8660.

22 **Street Trees**

The developer must address the street frontage by installing street tree planting. The number and species for this development is one (1 No.) *Callistemon viminalis* Bottlebrush 200 litre container size, in accordance with AS 2303:2015 Tree stock for landscape use. Street trees are to be installed in accordance with Wollongong Development Control Plan 2009 – Chapter E6: Landscaping. 'Dial Before You Dig' must be consulted prior to any excavation on site. Pot holing must be carried out to determine service location. Tree pits must be adequately mulched, plants installed and staking installed to the satisfaction of WCC Manager of Works. Staking is to consist of min. 3 x 2400 x 50 x 50mm hardwood stakes driven min 600mm into firm ground. Hessian webbing is to be utilised to secure plant stock to industry standard.

These requirements shall be reflected on the Construction Certificate plans and any supporting documentation.

23 **Council Footpath Reserve Works – Driveways and Crossings**

All redundant vehicular crossings and laybacks rendered unnecessary by this development must be reconstructed to normal kerb and gutter or existing edge of carriageway treatment to match the existing. The verge from the back of kerb to the boundary must be removed and the area appropriately graded, topsoiled and turfed in a manner that conforms with adjoining road reserve. The area forward of the front boundary must be kept smooth, even and free from any trip hazards. All alterations of public infrastructure where necessary are at the developer's expense.

All new driveway laybacks and driveway crossings must be designed in accordance with Wollongong City Council Standards. Details and locations are to be shown on the Construction Certificate Plans.

24 **Development Contributions**

Pursuant to Section 4.17 of the Environmental Planning and Assessment Act 1979 and the Wollongong City-Wide Development Contributions Plan, a monetary contribution of $8,950.00 (subject to indexation) must be paid to Council towards the provision of public amenities and services, prior to the release of any associated Construction Certificate.

This amount has been calculated based on the estimated cost of development and the applicable percentage rate.

The contribution amount will be subject to indexation until the date of payment. The formula for indexing the contribution is:

Contribution at time of payment = $C x (CP2/CP1)

Where:

$C is the original contribution as set out in the Consent

CP1 is the Consumer Price Index; All Groups CPI; Sydney at the time the consent was issued

CP2 is the Consumer Price Index; All Groups CPI; Sydney at the time of payment

Details of CP1 and CP2 can be found in the Australian Bureau of Statistics website – Catalogue No. 6401.0 - Consumer Price Index, Australia.

The following payment methods are available:

METHOD	HOW	PAYMENT TYPE
Online (Full payment only)	http://www.wollongong.nsw.gov.au/applicationpayments Your Payment Reference: 1216268	• Credit Card
In Person	Wollongong City Council Administration Building - Customer Service Centre Ground Floor 41 Burelli Street, WOLLONGONG	• Cash • Credit Card • Bank Cheque
PLEASE MAKE BANK CHEQUE PAYABLE TO: Wollongong City Council (Personal or company cheques are not accepted)		

A copy of the Wollongong City-Wide Development Contributions Plan and accompanying Fact Sheet may be inspected or obtained from the Wollongong City Council Administration Building, 41 Burelli Street, Wollongong during business hours or on Council's web site at www.wollongong.nsw.gov.au

Prior to the Commencement of Works

25 **Appointment of Principal Certifier**

Prior to commencement of work, the person having the benefit of the Development Consent and a Construction Certificate must:

a Appoint a Principal Certifier (PC) and notify Council in writing of the appointment irrespective of whether Council or a Registered Certifier is appointed; and

b notify Council in writing of their intention to commence work (at least two days notice is required).

The Principal Certifier must determine when inspections and compliance certificates are required.

26 **Residential Building Work – Compliance with the Requirements of the Home Building Act 1989**

Building work involving residential building work within the meaning of the Home Building Act 1989 must not be carried out unless the Principal Certifier for the development to which the work relates:

a in the case of work to be done by a licensee under that Act:

i has been informed in writing of the licensee's name, contractor license number and contact address details (in the case of building work undertaken by a contractor under the Home Building Act 1989); and

ii is satisfied that the licensee has complied with the requirements of Part 6 of the Home Building Act 1989; or

b in the case of work to be done by any other person:

i has been informed in writing of the persons name, contact address details and owner-builder permit number; and

ii has been given a declaration signed by the property owner(s) of the land that states that the reasonable market cost of the labour and materials involved in the work is less than the amount prescribed for the purposes of the definition of owner-builder work in Section 29 of the Home Building Act 1989 and is given

appropriate information and declarations under paragraphs (a) and (b) whenever arrangements for the doing of the work are changed in such a manner as to render out of date any information or declaration previously given under either of those paragraphs.

Note: A certificate issued by an approved insurer under Part 6 of the Home Building Act 1989 that states that the specific person or licensed contractor is the holder of an insurance policy issued for the purposes of that Part of the Act is, for the purposes of this condition, sufficient evidence that the person has complied with the requirements of that Part of the Act.

27 **Sign – Supervisor Contact Details**

Before commencement of any work, a sign must be erected in a prominent, visible position:

a stating that unauthorised entry to the work site is not permitted;
b showing the name, address and telephone number of the Principal Certifier for the work; and
c showing the name and address of the principal contractor in charge of the work site and a telephone number at which that person can be contacted at any time for business purposes.

This sign shall be maintained while the work is being carried out and removed upon the completion of the construction works.

28 **Temporary Toilet/Closet Facilities**

Toilet facilities are to be provided at or in the vicinity of the work site on which work involved in the erection or demolition of a building is being carried out at the rate of one toilet for every 20 persons or part of 20 persons employed at the site.

Each toilet provided must be:

a a standard flushing toilet; and
b connected to either:
  i the Sydney Water Corporation Ltd sewerage system or
  ii an accredited sewage management facility or
  iii an approved chemical closet.

The toilet facilities shall be provided on-site, prior to the commencement of any works.

29 **Structural Engineer's Details**

Structural engineer's details for all structurally designed building works such as reinforced concrete footings, reinforced concrete slabs and structural steelwork must be submitted to the Principal Certifier, prior to the commencement of any works on the site.

30 **Enclosure of the Site**

The site must be enclosed with a suitable security fence to prohibit unauthorised access, to be approved by the Principal Certifier. No building work is to commence until the fence is erected.

31 **Temporary Sediment Fences**

Temporary sediment fences (eg haybales or geotextile fabric) must be installed on the site, prior to the commencement of any excavation, demolition or construction works in accordance with Council's guidelines. Upon completion of the development, sediment fencing is to remain until the site is grassed or alternatively, a two (2) metre strip of turf is provided along the perimeter of the site, particularly lower boundary areas.

32 **All-weather Access**

An all-weather stabilised access point must be provided to the site to prevent sediment leaving the site as a result of vehicular movement. Vehicular movement should be limited to this single accessway.

33 **Tree Protection Implementation**

The existing trees are to be retained upon the subject property and any trees on adjoining properties shall not be impacted upon during the excavation or construction phases of the

development. This will require the installation and maintenance of appropriate tree protection measures, including (but not necessarily limited to) the following:

a installation of Tree Protection Fencing - Protective fencing shall be 1.8 m cyclone chainmesh fence, with posts and portable concrete footings;
b mulch Tree Protection Zone: Areas within a Tree Protection Zone are to be mulched with minimum 75 mm thick 100% recycled hardwood chip/leaf litter mulch;
c irrigate: Areas within the Tree Protection Zone are to be regularly watered in accordance with the arborist's recommendations.

The tree protection fencing shall be installed prior to the commencement of any demolition, excavation or construction works and shall be maintained throughout the entire construction phases of the development.

34 **Supervising Arborist – Tree Inspection and Installation of Tree Protection Measures**
Prior to the commencement of any demolition, excavation or construction works, the supervising arborist must certify in writing that tree protection measures have been inspected and installed in accordance with the arborist's recommendations and relevant conditions of this consent.

35 **Works in Road Reserve - Minor Works**
Approval, under Section 138 of the Roads Act must be obtained from Wollongong City Council's Development Engineering Team prior to any works commencing or any proposed interruption to pedestrian and/or vehicular traffic within the road reserve caused by the construction of this development.

The application form for Works within the Road Reserve – Section 138 Roads Act can be found on Council's website. The form outlines the requirements to be submitted with the application, to give approval to commence works under the roads act. It is advised that all applications are submitted and fees paid, five (5) days prior to the works within the road reserve are intended to commence. The Applicant is responsible for the restoration of all Council assets within the road reserve which are impacted by the works/occupation. Restoration must be in accordance with the following requirements:

a All restorations are at the cost of the Applicant and must be undertaken in accordance with Council's standard document, "Specification for work within Council's Road reserve".
b Any existing damage within the immediate work area or caused as a result of the work/occupation, must also be restored with the final works.

36 **Demolition Works**
The demolition of the existing structures shall be carried out in accordance with Australian Standard AS 2601-2001: The Demolition of Structures or any other subsequent relevant Australian Standard and the requirements of the SafeWork NSW.

No demolition materials shall be burnt or buried on-site. The person responsible for the demolition works shall ensure that all vehicles leaving the site carrying demolition materials have their loads covered and do not track soil or waste materials onto the road. Hazardous and/or intractable wastes shall be disposed of to the satisfaction of Council. In the event that the demolition works may involve the obstruction of any road reserve/footpath or other Council owned land, a separate application shall be made to Council to enclose the public place with a hoarding or fence over the footpath or other Council owned land.

37 **Demolition Notification to Surrounding Residents**
Demolition must not commence unless at least two (2) days written notice has been given to adjoining residents of the date on which demolition works will commence.

38 **Asbestos Hazard Management Strategy**
An appropriate hazard management strategy shall be prepared by a suitably qualified and experienced licensed asbestos assessor pertaining to the removal of contaminated soil, encapsulation or enclosure of any asbestos material. This strategy shall ensure any such proposed demolition works involving asbestos are carried out in accordance with SafeWork NSW requirements (<http://www.safework.nsw.gov.au>). The strategy shall be submitted to the

Principal Certifier and Council (in the event that Council is not the Principal Certifier prior to the commencement of any works.

The approved strategy shall be implemented and a clearance report for the site shall be prepared by a licensed asbestos assessor and submitted to the Principal Certifier and Council (in the event that Council is not the Principal Certifier), prior to the issue of an Occupation Certificate or commencement of the development. The report shall confirm that the asbestos material has been removed or is appropriately encapsulated based on visual inspection plus sampling if required and/or air monitoring results and that the site is rendered suitable for the development.

39 **Consultation with SafeWork NSW – Prior to Asbestos Removal**
A licensed asbestos removalist must give written notice to SafeWork NSW at least five (5) days before licensed asbestos removal work is commenced.

40 **Protection of Public Infrastructure**
Council must be notified in the event of any existing damage to any of its infrastructure such as the road, kerb and gutter, road shoulder, footpath, drainage structures and street trees fronting the development site, prior to commencement of any work.

Adequate protection must be provided for Council infrastructure prior to work commencing and during building operations.

Any damage to Council's assets shall be made good, prior to the issue of any Occupation Certificate or commencement of the operation.

41 **Tree Protection**
Prior to commencement of any work on the site, including any demolition, all trees not approved for removal as part of this consent that may be subjected to impacts of this approved development must be protected in accordance with Section 4 of the Australian Standard Protection of Trees on Development Sites (AS 4970-2009).

Tree protection zones must be established prior to the commencement of any work associated with this approved development.

No excavation, construction activity, grade changes, storage of materials stockpiling, siting of works sheds, preparation of mixes or cleaning of tools is permitted within Tree Protection Zones.

During Demolition, Excavation or Construction

42 **Piping of Stormwater to Existing Stormwater Drainage System**
Stormwater for the land must be piped to the inter-allotment drainage system.

43 **Copy of Consent to be in Possession of Person carrying out Tree Removal**
The applicant must ensure that any person carrying out tree removal is in possession of this development consent and the approved landscape plan, in respect to the vegetation which has been given approval to be removed in accordance with this consent.

44 **Restricted Hours of Construction Work**
The developer must not carry out any work, other than emergency procedures, to control dust or sediment laden runoff outside the normal working hours, namely, 7.00 am to 5.00 pm, Monday to Saturday, without the prior written consent of the Principal Certifier and Council. No work is permitted on public holidays or Sundays.

Any request to vary these hours shall be submitted to the **Council** in writing detailing:

a the variation in hours required (length of duration);
b the reason for that variation (scope of works);
c the type of work and machinery to be used;
d method of neighbour notification;
e supervisor contact number;
f any proposed measures required to mitigate the impacts of the works.

Note: The developer is advised that other legislation may control the activities for which Council has granted consent, including but not limited to, the Protection of the Environment Operations Act 1997.

45 **Asbestos – Removal, Handling and Disposal Measures/Requirements Asbestos Removal by a Licensed Asbestos Removalist**
The removal of any asbestos material must be carried out by a licensed asbestos removalist if over 10 square metres in area of non-friable asbestos, or if any type of friable asbestos in strict accordance with SafeWork NSW requirements (<http://www.safework.nsw.gov.au>).

46 **Asbestos Waste Collection, Transportation and Disposal**
Asbestos waste must be prepared, contained, transported and disposed of in accordance with SafeWork NSW and NSW Environment Protection Authority requirements. Asbestos waste must only be disposed of at a landfill site that can lawfully receive this this type of waste. A receipt must be retained and submitted to the Principal Certifier, and a copy submitted to Council (in the event that Council is not the Principal Certifier), prior to commencement of the construction works.

47 **Excavation/Filling/Retaining Wall Structures**
Any proposed filling on the site must not:

a encroach onto the adjoining properties, and
b adversely affect the adjoining properties with surface run-off.

48 All proposed cut and filling works must be adequately retained with all battered slopes being no steeper than 2H: 1V and comply with Council's "Policy for Development on Sloping Sites".

49 **Provision of Waste Receptacle**
The developer must provide an adequate receptacle to store all waste generated by the development, pending disposal. The receptacle must be regularly emptied and waste must not be allowed to lie or accumulate on the property other than in the receptacle. Consideration should be given to the source separation of recyclable and re-usable materials.

50 **BASIX**
All the commitments listed in each relevant BASIX Certificate for the development must be fulfilled in accordance with Clause 97A(2) of the Environmental Planning & Assessment Regulation 2000.

A relevant BASIX Certificate means:

- A BASIX Certificate that was applicable to the development when this development consent was granted (or, if the development consent is modified under section 4.55 of the Environmental Planning & Assessment Act 1979, a BASIX Certificate that is applicable to the development when this development consent is modified); or
- if a replacement BASIX Certificate accompanies any subsequent application for a construction certificate, the replacement BASIX Certificate; and
- BASIX Certificate has the meaning given to that term in the Environmental Planning & Assessment Regulation 2000."

51 **Provision of Taps/Irrigation System**
The provision of common taps and/or an irrigation system is required to guarantee that all landscape works are adequately watered. The location of common taps and/or irrigation system must be implemented in accordance with the approved Landscape Plan.

52 **Screen Planting**
To mitigate impact to adjoining dwellings a continuous hedge is to be established along north boundary for the length of property boundary. Recommended species: *Dodonea viscosa* 'Mr Green Sheen', *Callistemon viminalis 'Slim'*, *Photinia glabra Rubens, Viburnum tinus, Syzygium australe Aussie Southern, Syzygium, 'Resiliance', Viburnum odoratissimum Dense Fence or Waterhousea floribunda Sweeper.* Minimum spacing 1000mm. Minimum pot size 5 lt. A further list of suitable suggested species may be found in Wollongong Development Control Plan 2009 – Chapter E6: Landscaping.

Prior to the Issue of the Occupation Certificate

53 **BASIX**

An Occupation Certificate must not be issued unless accompanied by the BASIX Certificate applicable to the development. The Principal Certifier must not issue the final occupation certificate unless satisfied that selected commitments have been complied with as specified in the relevant BASIX Certificate. NOTE: Clause 154B of the Environmental Planning and Assessment Regulation 2000 provides for independent verification of compliance in relation to certain BASIX commitments.

54 **Completion of Landscape Works**

The completion of the landscaping works as per the final approved Landscape Plan is required prior to the issue of Occupation Certificate.

Prior to the Issue of the Subdivision Certificate

55 **Existing Easements**

All existing easements must be acknowledged on the final subdivision plan.

56 **Existing Restriction as to Use**

All existing restriction on the use of land must be acknowledged on the final subdivision plan.

57 **Encroaching Pipes**

A minimum one (1) metre wide easement to drain water shall be created over any encroaching drainage pipes.

For all drainage easements proposed over the subject lots, a works as executed/survey plan of all stormwater drainage within the site is to be submitted with the Subdivision Certificate Application to confirm this.

58 **Encroaching Services**

A minimum one (1) metre wide easement for services must be created over any encroaching utility service.

59 **88B Instrument Easements/Restrictions**

Any easements or restrictions required by this consent must nominate Wollongong City Council as the authority to vary, modify or release/extinguish the easements or restrictions. The form of the easement(s) or restriction(s) created as a result of this consent must be in accordance with the standard format for easements and restrictions as accepted by NSW Land Registry Services.

60 **Final Documentation Required Prior to Issue of Subdivision Certificate**

The submission of the following information/documentation to the Principal Certifier, prior to the issue of a Subdivision Certificate:

a Completed Subdivision Certificate application form and fees in accordance with Council's fees and charges;
b Certificate of Practical completion from Wollongong City Council or a Principal Certifier (if applicable);
c Administration sheet prepared by a registered surveyor;
d Section 88B Instrument covering all necessary easements and restrictions on the use of any lot within the subdivision;
e Final plan of Subdivision prepared by a registered surveyor plus one (1) equivalent size paper copies of the plan;
f Original Subdivider/Developer Compliance Certificate pursuant to Section 73 of the Water Board (Corporatisation) Act 1994 from Sydney Water;
g Original Notification of Arrangement from an Endeavour Energy regarding the supply of underground electricity to the proposed allotments;
h Original Compliance Certificate from Telstra or another Telecommunications Service Provider which confirms that the developer has consulted with the Provider with regard to the provision of telecommunication services for the development.
i Payment of section 94 fees (Pro rata) (if applicable).

61 **Access Restriction on Title – 88B Instrument**

The applicant must establish a restriction on title for onsite manoeuvrability on the lots created under this consent. The following terms must be included on an 88B instrument for approval of Council:

"The registered proprietor of the lot burdened must provide sufficient hard stand manoeuvring area for a B85 vehicle (Australian Standard classification). All car parking spaces are to manoeuvre on site to enter and leave the site via the accessway in the forward direction, without the need to make more than a three-point turn".

Operational Phases of the Development/Use of the Site

62 **Loading/Unloading Operations/Activities**

All loading/unloading operations are to take place at all times wholly within the confines of the site or within the road reserve under an approved traffic control plan.