WLPP No.	Item 1
DA No.	DA-2019/284
Proposal	Residential - demolition of existing structures and tree removals, construction of multi dwelling housing - ten (10) townhouses, associated landscaping and infrastructure
Property	58-60 Murphys Avenue, KEIRAVILLE NSW 2500 Lots 2 & 3 DP 589693
Applicant	ADM Architects
Responsible Team	Development Assessment and Certification – City Wide Planning Team (JS)

ASSESSMENT REPORT AND RECOMMENDATION

Executive Summary

Reason for consideration by Local Planning Panel - Determination

The proposal has been referred to the WLPP for **determination** pursuant to part 2 of Schedule 2 of the Local Planning Panels Direction, as the Development Application is considered contentious development, having received more than 10 unique submissions by way of objection.

Proposal

The proposal seeks consent for the demolition of the existing dwelling houses and ancillary structures and the construction of multidwelling housing comprising 10 x 2 storey dwelling houses each with double garages and associated landscaping and infrastructure.

The proposal was identified as Integrated Development pursuant to the Water Management Act 2000 as works are proposed within 40m of a watercourse. The Natural Resources Access Regulator (NRAR) provided a response on 4 June 2019 advising that for the purposes of the Water Management Act 2000, a controlled activity approval would not be required for the proposed development.

Permissibility

Multi dwelling housing is permissible in the R2 Low Density Residential zone. Demolition is permissible on land to which the WLEP 2009 applies.

Consultation

The proposal was exhibited in accordance with Appendix 1 of the Wollongong Development Control Plan 2009 notified between the 5 April and 3 May 2019. 24 submissions were received during this period.

Upon submission of additional information and amended plans, the proposal was re exhibited between the 24 July and 23 August 2019. Those who provided a submission during the original exhibition period were directly notified and the amended proposal was published in the newspaper. 23 submissions were received during this period.

The submissions received are discussed at section 2.5 of the assessment report

The proposal has been referred to Council's Stormwater, Traffic, Environment, Landscape and Community Safety Officers, with conditionally satisfactory referral advice provided in each instance.

Main Issues

The main issues arising from the development assessment process are:-

- Traffic and amenity impacts
- Consistency of the development with the character of the area
- Variation request to dwelling mix and waste storage requirements

RECOMMENDATION

Development Application DA-2019/284 be approved subject to the conditions contained in Attachment 8.

1 APPLICATION OVERVIEW

1.1 PLANNING CONTROLS

The following planning controls apply to the proposal:

State Environmental Planning Policies:

- SEPP No. 55 – Remediation of Land
- SEPP (Building Sustainability Index: BASIX) 2004

Local Environmental Planning Policies:

- Wollongong Local Environmental Plan (WLEP) 2009

Development Control Plans:

- Wollongong Development Control Plan (WDCP) 2009

Other policies

- Wollongong City-Wide Development Contributions Plan 2018 (section 7.12 of EP&A Act 1979)
- Biodiversity Conservation Act 2016

1.2 DETAILED DESCRIPTION OF PROPOSAL

The proposal comprises the following:

- Demolition of the existing structures including two dwelling houses and associated ancillary structures including the removal of a pool;
- Tree removal;
- Construction of multidwelling housing comprising 10 two storey dwellings, each with 3 bedrooms and double garages. The dwellings are proposed in three blocks across the site.
- Construction of a new common driveway area, visitor car parking, landscaping and communal open space areas.
- OSD within the driveway area with drainage to the street.
- Deep soil zone to the rear of the site.

A condition is recommended requiring the consolidation of the two existing properties prior to the issue of any Occupation Certificate.

1.3 BACKGROUND

The development history of the site is as follows:

Application No	Description	Date	Decision
58 Murphys Avenue			
BA-1978/2568	Additions	7/11/1978	Refused
DA-1978/924	Additions To Dwelling & Garage	26/10/1978	Approved
60 Murphys Avenue			
BA-1975/2644	Dwelling	14/11/1975	Approved
BA-1984/871	Brick veneer dwelling	29/6/1984	Approval

A prelodgement meeting was not held in relation to the subject proposal.

Customer service actions:

There are no outstanding customer service requests of relevance to the development, at the time of preparing this report.

1.4 SITE DESCRIPTION

The site is located at 58-60 Murphys Avenue, Keiraville and the title references are Lots 2 & 3 DP 589693. The site is comprised of two lots, each currently comprising a dwelling house and ancillary structures. 58 Murphys Avenue is accessed via a 25m driveway from Murphys Avenue, and the existing dwelling house sits behind 60 Murphys Avenue.

Combined, the sites have an irregular shape with a total area of 2603.5m^2 by survey.

The sites are surrounded by residential properties, generally comprising single dwelling houses.

Property constraints

- Flood Risk Precinct - Uncategorised

There are no restrictions on the title of Lot 3.

Lot 2 is burdened by an easement for sewerage purposes and two restrictions as to user, as per the below:

Easement for sewerage purposes over existing line of pipe

This easement burdens Lot 2 and benefits Lot 3, providing a sewerage connection to Lot 3 at the rear, over Lot 2. As part of the proposed development, this sewer line will be decommissioned and new sewer infrastructure installed appropriate for the sewer demand resulting from the development of the site. The Metropolitan Water Sewerage and Drainage board (now known as Sydney Water) is identified as the authority to release, vary or modify the easement. Sydney Water were notified of the proposed development and provided a response on 7 August 2019 advising no objection to the proposal, subject to conditions. Notwithstanding, the development has been sited to be clear of the easement.

Restriction as to user

This restriction as to user relates to the Easement for sewerage purposes over existing line of pipe discussed above and requires that no building or other structure be erected, constructed or placed on the land affected by the Easement for sewerage purposes over existing line of pipe without the prior written consent of the Metropolitan Water Sewerage and Drainage board. The Metropolitan Water Sewerage and Drainage board (now known as Sydney Water) is identified as the authority to release, vary or modify the restriction. Sydney Water were notified of the proposed development and provided a response on 7 August 2019 advising no objection to the proposal, subject to conditions.

Restriction as to user

The terms of this restriction require:

a) That no building shall be placed on any lot burdened unless it shall be constructed of new materials and that main building shall not be used for any purpose other than a single family dwelling house.

b) That during the ownership of any adjoining land owned by Kathleen Armstrong her successors and assigns other than purchasers on sale no dividing fence shall be erected on any lot burdened to divide it from such adjoining land without the consent of Kathleen Armstrong her successors and assigns but such consent shall not be withheld if such fence is to be erected without expense to Kathleen Armstrong her successors and assigns other than

purchasers on sale and in favour of any person dealing with any transferee of a burdened lot such consent shall be deemed to have been given in respect of any fence for the time erected.

Evidence that the above restriction as to user has been extinguished has been provided to Council as part of the application submission.

Figure 1: Aerial photograph

1.5 SUBMISSIONS

The proposal was exhibited in accordance with Appendix 1 of the Wollongong Development Control Plan 2009 notified between the 5 April and 3 May 2019. 24 submissions were received during this period.

Upon submission of additional information and amended plans, the proposal was re exhibited between the 24 July and 23 August 2019. Those who provided a submission during the original exhibition period were directly notified and the amended proposal was published in the newspaper. 23 submissions were received during this period.

The issues identified are discussed below.

Table 1: Submissions

Concern	Comment
1. Traffic and Car Parking – 2 visitors' spaces are insufficient for a development of this scale and will result in	The visitor's car parking provided meets the requirements of Chapter E3 of the WDCP 2009, which requires that 0.2 visitor spaces

additional cars being parked on the street. – The surrounding streets are already at capacity during university hours. – The proposal will result in room by room letting which will only exacerbate the existing problem. – The waste collection arrangement proposed will result in a further reduction in on street parking and it would be dangerous for the truck to be stationary emptying these bins for long periods. – The driveway would be located in an existing dip in the road, making it difficult for vision. – The driveway as proposed is unsafe and would require cars to be reversing out of the way on a number of occasions. – The Traffic Impact Assessment report is irrelevant as the surveys were conducted outside of university semester periods. – The TIA refers to the speed limit as 50km/hr and bases the required sight distance from this. No one does 50km/hr in this street. – The TIA refers to 55 parking spaces being available on the street between Andrew Avenue and Robsons Road, but these spaces are located in front of a further 25 properties which should also be entitled to use them. – The site is not located in close proximity to any amenities and will require people to use their cars more.	be provided for each dwelling. As 10 dwellings are proposed, 2 visitors' spaces are required and are provided for in the design. The applicant was requested to provide a Traffic Impact Assessment (TIA) given the proximity of the site to the University of Wollongong, Botanic Gardens and the potential for the rooms to be separately let. The TIA is provided at Attachment 4. This TIA has been reviewed by Councils Traffic Engineer who indicated no objection to the findings of the report. The report considers traffic generation and movements per hour as a result of the development, and anticipates an additional 65 vehicle movements per day, 7 in the peak hour to result. The TIA also considered the potential for each bedroom within the development to be separately let. As 30 bedrooms and a total of 20 resident car parking spaces are proposed (each dwelling being provided with a double garage), this would result in an additional 10 cars associated with the development. The TIA found that there was sufficient capacity within the existing on street parking area in the vicinity of the site to accommodate these vehicles if this situation arises. The proposed on-street waste collection arrangement complies with Chapter E7 of the WDCP 2009. When the bins are brought to the street for collection, they would comprise less than 50% of the frontage of the development. Although the proposal will result in a minor increase in traffic flow from the site, Murphys Avenue and the surrounding road network is considered to be capable of absorbing this increase without resulting in unacceptable impacts on the local road network. Sight distance and manoeuvring within the site have been considered by Councils Traffic Engineer and are satisfactory. Traffic issues associated with speeding drivers and the proximity of the site to UOW is a wider traffic management issue for the police and Councils Traffic Committee to separately consider. Traffic counts were undertaken from the 10th

	to 17th June 2019. The UOW key dates have been reviewed and the traffic study dates fell within mid Trimester 2. The key dates information advise that the Trimester 2 lecture period is 20 May – 26 July. The site is located approximately 250m from bus stops located on Murphys Avenue and 300m to bus stops located on Robsons Road. The site is also approximately 500m from UOW land and 1km from the entrance to the library building. The site is approximately 650m from the Keiraville Village centre.
2. The proposal is out of character with the surrounding area – The proposal is an overdevelopment of the site. – The development does not respect the context of the existing street. – The proposal is inappropriate and does not comply with the guidelines of the SEPP No. 65 Design Quality of Residential Flat Development. – Concern is raised that the proposal will set a precedent for similar inappropriate developments to occur in the area. – The surrounding area is primarily comprised of owner-occupier, single family dwelling houses where a good degree of community exists. The proposal is contrary to that. – The proposal will result in a significant change in the character of the suburb to the detriment of the current residents. – The ratio of amount of open space to population is out of character with the surrounding area. – The units will result in congested university housing. – The need to more lower cost housing to service the need of the general public and students is obvious, however this development should only be approved if it is re-planned with a reduced footprint and fewer units, preferably single storey. – The proposal is contrary to the Keiraville Neighbourhood Forum Plan to keep the suburb as a low density area. – The development has been designed to push the limits of every control. – The area should be rezoned to not allow for any	The proposal is permissible development in the R2 Low Density Residential zone and complies with all WLEP 2009 development standards including floor space ratio and height. Unit 1 has been designed with direct frontage to Murphys Avenue. Clause 4 of SEPP 65 provides that the policy applies only to the erection of a building which is at least 3 or more storeys and contains at least 4 dwellings. The development is a maximum of 2 storeys, and therefore SEPP 65 does not apply to the proposal. The WDCP 2009 Character Statement for Keiraville outlines that additional medium density developments are likely to occur within reasonable walking distance to the University. Despite the area immediately surrounding the subject site being comprised of single dwelling houses, it is expected that over time additional multi dwelling developments will occur in the area. The proposal complies with WDCP 2009 controls with regard to landscaped area, communal open space and deep soil zone provision. The proposal complies with all WDCP 2009 controls with regard to number of storeys and side and rear setbacks. The Keiraville Neighbourhood Forum Plan is noted and discussed further within Attachment 7. This Plan provides 10 vision statements for the area. The proposal would

further development such as the proposed.	not be considered inconsistent with these statements. Attachment 7 provides a breakdown of the development with regard to all applicable WDCP 2009 controls. The applicant has responded to the existing and desired future character statement for the suburb, as provided at Attachment 3.
3. Tree removal – The scale of tree removal proposed is not appropriate and will substantially impact on and detract from the natural, leafy setting of the suburb. – The proposal will result in the removal of 25 out of 29 mature healthy trees, 18 of which are native species. – A number of trees identified for retention as part of the proposal are located on adjoining properties. The actual number of trees to be retained on the site is only 5. – All of the trees that are required to be removed to allow for the development, contradicting the developers reference as to the 'leafy' nature of the suburb. – Many houses in the area, due to the hilly nature of the land overlook the subject site which will change from a leafy outlook containing 44 trees to a view of densely packed double storey houses with little vegetation. – Of the 25 trees proposed to be provided as compensatory planting on the site, only 12 can be feasibly planted. Several are shown as being located only 1.5m from boundary fences. This is inconsistent with Councils own requirements for an area of 4x4m to be provided for the planting area of a tree. This is not consistent with Councils Urban Greening Strategy. – The amended plans indicate transplanting of five palms. The proposed transplanting and compensatory plantings are inadequate. – No usable common space is provided. – Tree 39 is a Weeping Willow. The trunk of this tree is firmly located in the front yard of No. 62 Murphys Avenue – how can the developer remove the neighbours tree?	Councils Landscape Architect has reviewed the proposal and provided a conditionally satisfactory referral response. In total, 44 trees were identified in the submitted Arborists Report. The Report is provided at Attachment 5. Of these 44, 35 were located on the subject site and 9 on adjoining properties. A total of 30 trees were identified as native species. 24 trees are proposed to be retained or relocated on the site, 12 of which are native species. In total, 20 trees are proposed for removal, 5 of which are exotic species. Councils Landscape Officer has recommended conditions requiring compensatory plantings totalling 22x 100L container trees. The proposal is not envisaged to result in adverse visual impacts. The impact of the development on trees on adjoining properties has been considered within the submitted Arborists report. Councils Landscape Architect has advised that the proposal would not result in adverse impacts on trees located outside of the property boundaries. The submitted Landscape Plan demonstrates appropriate areas are to be maintained on the site. A condition is recommended which requires a final landscape plan including species lists to be provided prior to the issue of the Construction Certificate at Attachment 8. Communal open space is proposed centrally on the site, in excess of the minimum area required by the WDCP 2009. The location of the trunk of Tree 39 has been identified by survey and is located within the

	property boundaries of 60 Murphys Avenue. Consideration of the proposal with regard to the Biodiversity Conservation Act 2016 is provided at Section 2 below, and within Attachment 7.
4. Amenity Impacts – The significant increase in the density of residents on the land will result in a significant increase in noise – The species of trees proposed on the boundary will overhang and drop leaves and seeds into adjoining properties – The proximity of the dwellings to the boundary and large first floor windows will result in overlooking to adjoining properties pool and private open space areas. – The shadow diagrams indicate that the proposal will result in the overshadowing of 56 and 62 Murphys Ave, even though it falls within acceptable levels. – The design of the development itself is poor, with units 8, 9 & 10 having living areas and courtyards that face south and receive little or no sunlight, and the upper floor of units 9 & 10 have been designed with ensuites and walk in robes that face north and block light into the bedrooms. – The development will likely be rented room by room, resulting in heightened concerns regarding amenity impacts. – The location of the driveway is directly in line with bedroom and lounge room windows on the other side of the street which will result in impacts in terms of light spill and noise. – It is likely that the buildings to be demolished will contain asbestos.	Multi dwelling housing is permissible development in the R2 Low Density Residential zone. The proposal complies with all side and rear setback requirements. The site is proposed to be substantially landscaped along all boundaries to reduce potential amenity impacts on adjacent properties. Conditions are recommended as provided at Attachment 8 with regard to revised species selections. First floor bedroom windows of proposed Units 5, 6, 7, 9 and 10 are proposed to be screened with slatted aluminium privacy screens over the windows to reduce the potential for overlooking. Obscure glazing is proposed to all first-floor bathroom and ensuite windows for Units 4-10. Windows to living rooms and private open space areas of adjoining properties would retain in excess of 3 hours of solar access on June 21. Shadow diagrams have been provided which demonstrate that the private open space and living areas of 7 of the 10 units (70%) will receive in excess of 3 hours of direct sunlight on June 21. This is compliant with WDCP 2009 controls. The road reserve area of Murphys Avenue is approximately 20m. Light spill from headlights is generally expected to be around 25m with a height of not more than 1m at the far extent, and therefore would not be expected to unreasonably impact properties on the southern side of Murphys Avenue. Conditions are recommended with regard to the management of asbestos throughout the demolition works.
5. Non-compliance – There are a number of aspects of the proposal which do not comply with or do not adequately consider planning requirements or resident	See advice at 1.6.1 and 1.6.2 from Councils Stormwater Engineer and the Natural Resources Access Regulator with regard to

concerns. – The submitted statement refers to the development as being 'medium density' however the land use zoning is for low density only. – The LEP states 'to encourage buildings which integrate with the streetscape and the natural setting whilst maintaining the visual amenity of the area' and 'significant trees are to be maintained on the site'. – The proposal breaches the WDCP 2009 control which requires development within 8m of the rear boundary to be single storey. – The design does not include any ecological design features. – The development identifies more as a boarding house. – The design of the driveway would not allow for fire brigade servicing.	proximity to watercourses and flooding. A hydrant is proposed to be installed within the property for fire servicing purposes. The proposed driveway widths comply with AS2890.1 minimum requirements. The proposed side and rear setbacks comply with WDCP 2009 controls. See WDCP 2009 compliance table at Attachment 7. Garbage collection is proposed to be managed via bin storage within either the garage or courtyard area of each unit, with on street collection. See Chapter E7 at Attachment 7. The proposal relates to a multi dwelling housing development, which is a permissible land use in the R2 Low Density Residential Zone as discussed at 2.1.3 below. The quoted objectives are located within the WDCP 2009 Chapter B1, not the WLEP 2009. See Attachment 7 for an assessment against the WDCP 2009. The control requiring development in the rear 8m of the site does not apply to multidwelling housing developments. The rear setbacks proposed comply with the WDCP 2009 controls, as demonstrated at Attachment 7. The applicant has provided a BASIX Certificate as required via SEPP BASIX 2004. Ecologically sustainable design has been addressed by the applicant as addressed at Attachment 3.
6. Flooding – The site is flood affected. – The applicant's statement that no further consideration with regard to flooding impact is warranted should be reviewed. – The statement does not consider the increased flood impact that the development would have on adjoining properties. – The dwelling previously located at 64 Murphys Avenue was demolished due to flooding. If the drainage concern has not been rectified, the dwelling at 62 Murphys Avenue would be subject to increased risk.	The site is identified within Councils land information record management system as being affected by uncategorised flood risk. Councils Stormwater Engineer reviewed the application submission and requested additional information including a flood model from the applicant. The model has been received and reviewed by Councils Stormwater Engineer, who has advised that the proposed development would not be located within the floodplain extents. The 1 in 100 year and Probable Maximum Flood (PMF) extents do not encroach on the subject site area, with the exception of an area of

– The proposal will result in increased urban runoff. – The additional information provided now notes the proximity of past flooding in the area, but this does not mean that there will not be bigger floods in the future. The development should be considered in the context of the review of all flood studies across Wollongong with consideration of climate change and predicted increases in flood frequency and intensity.	approximately 2.5sqm in the south western corner of the site. No earthworks are proposed within this area, and no impacts are expected. Runoff from the site is proposed to be captured by the On-Site Detention (OSD) system proposed within the driveway area. Flows from the site would then be discharged to the street at the pre-development rate. The flood model provided meets the requirements as outlined in Chapter E13 Floodplain Management of the WDCP 2009. Conditions are recommended as provided at Attachment 8 with regard to the detailed drainage design, the acceptance and catering for flows from adjoining properties in the drainage design and the works not resulting in any adverse runoff impacts to adjoining properties.
7. Heritage The site is within 80m of the Illawarra Escarpment Area and could conflict with the WLEP with regard to heritage conservation as it is in the near vicinity of a heritage item. The development would result in impacts on landscape views across the base of Mount Keira.	The site is not considered to be in the immediate vicinity of the Illawarra Escarpment Conservation Area and as such, would not be considered to result in adverse impacts on the significance of the area.

Matter	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Round 1 submissions	21	21	9	10	4	7	1
Round 2 submissions	22	21	10	7	4	10	1

1.6 CONSULTATION

1.6.1 INTERNAL CONSULTATION

Council's Stormwater, Environment, Landscape and Traffic Officers have reviewed the application submission and provided satisfactory referral comments. Conditions of consent were recommended in each instance.

1.6.2 EXTERNAL CONSULTATION

Natural Resources Access Regulator

The proposal was originally identified as Integrated Development pursuant to the Water Management Act 2000 as works are proposed within 40m of a watercourse. The Natural Resources Access Regulator (NRAR) provided a response on 4 June 2019 advising that for the purposes of the Water Management Act 2000, a controlled activity approval would not be required for the proposed

development. This response is provided at Attachment 6. Subsequently, the proposal is not considered Integrated Development pursuant to section 4.46 of the Environmental Planning and Assessment Act 1979.

2 OTHER LEGISLATION

2.1 NSW BIODIVERSITY CONSERVATION ACT 2016

Section 1.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) provides that Act has effect subject to the provisions of Part 7 of the *Biodiversity Conservation Act 2016* (BC Act).

Part 7 of the BC Act relates to Biodiversity assessment and approvals under the EP&A Act where it contains additional requirements with respect to assessments, consents and approvals under this Act.

Clause 7.2 of the Biodiversity Conservation Regulation 2017 provides the minimum lot size and area threshold criteria for when the clearing of native vegetation triggers entry of a proposed development into the NSW Biodiversity offsets scheme. For the subject site, entry into the offset scheme would be triggered by clearing of an area greater than 0.25 hectares based upon the minimum lot size of the WLEP 2009 R2 zoned land (i.e. less than 1 hectare minimum lot size).

An approximate area of 0.0151 hectares of native vegetation (151sqm consisting of 12 trees) is proposed to be cleared for the development. The minimum subdivision lot size for the land under WLEP 2009 is 449sqm. Therefore the proposal does not trigger the requirement for a biodiversity offset scheme.

The site is not identified as being of high biodiversity value on the Biodiversity Values Map.

Council's Environmental Assessment Officer has considered whether the development site would potentially provide suitable habitat for any threatened species and the test of significance and has concluded that the proposed development is not expected to likely significantly affect threatened species or ecological communities, or their habitats. The development proposed would not be considered a key threatened process.

None of the trees on the site were identified as containing hollows.

The development would therefore not be considered to result in adverse impacts on biodiversity and is consistent with the provisions of the *Biodiversity Conservation Act 2016*.

Notwithstanding, conditions are recommended as provided at Attachment 8 which require consideration of fauna during the tree removal works.

3 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 – 4.15 EVALUATION

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

3.1.1 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.

A desktop audit of previous land uses does not indicate any historic use that would contribute to the contamination of the site, with the properties being used for residential purposes since the 1940's. Minor earthworks are required and the proposal does not comprise a change of use. No concerns are raised regarding contamination as relates to the intended use of the land and the requirements of clause 7. Councils Environment Officer has reviewed the proposal and has not raised any concerns with regard to contamination. As such it is considered Clause 7 matters are satisfied.

3.1.2 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. Conditions are recommended in this regard, as provided at Attachment 8.

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

3.1.3 WOLLONGONG LOCAL ENVIRONMENTAL PLAN 2009

Part 1 Preliminary

Clause 1.4 Definitions

Multi dwelling housing means 3 or more dwellings (whether attached or detached) on one lot of land, each with access at ground level, but does not include a residential flat building.

Clause 1.9A Suspension of covenants, agreements and instruments

As discussed at Section 1.4 above, Lot 2 is burdened by an easement for sewerage purposes and two restrictions as to users. In accordance with the provisions of this clause, any agreement, covenant or other similar instrument that restricts the carrying out of that development does not apply to the extent necessary to serve that purpose. Notwithstanding, the easement and restrictions as to user are considered satisfied by way of correspondence from Sydney Water and evidence that the second restriction as to user has been extinguished being provided.

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, as demonstrated by Figure 2 below.

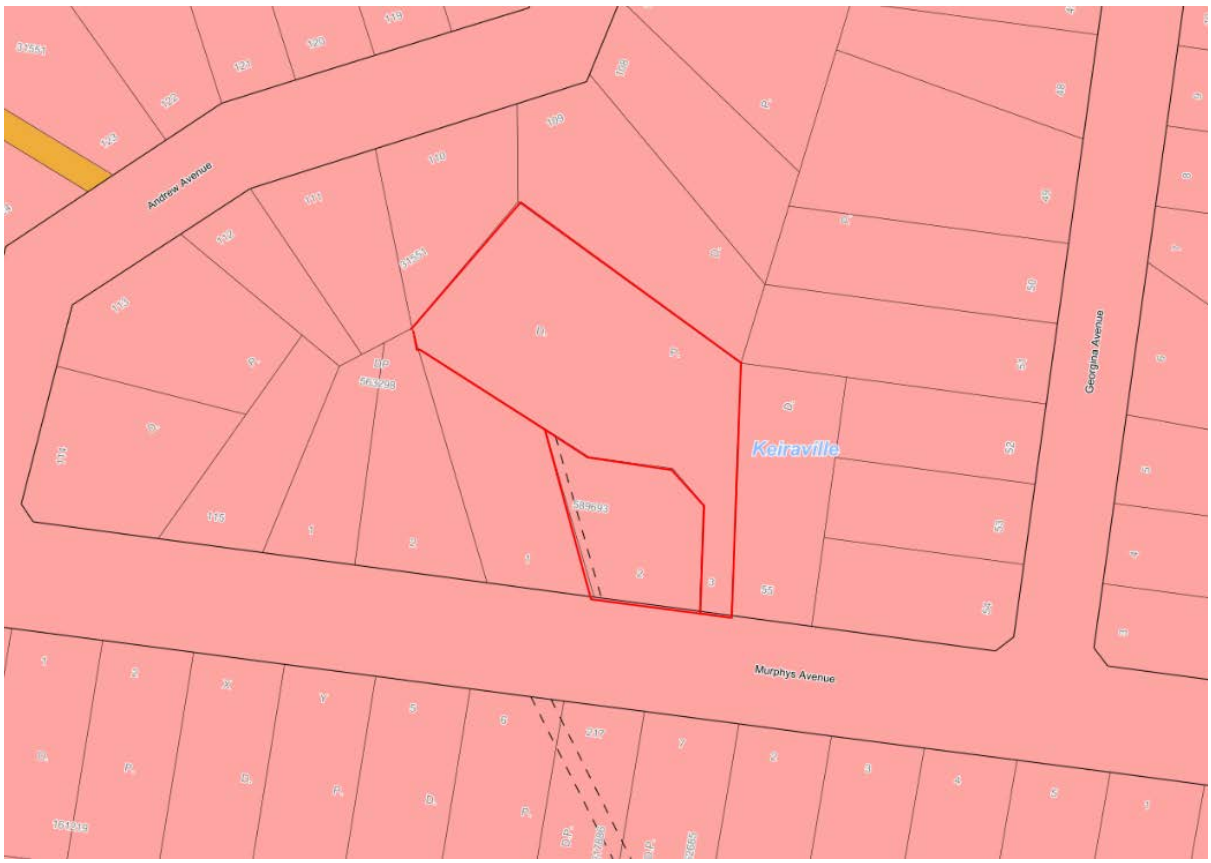


Figure 2: WLEP 2009 zoning map

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 would be considered satisfactory with regard to the above objectives as it would provide for additional housing opportunities in a low density environment.

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 ***Multi dwelling housing*** as defined above and is permissible in the R2 zone with development consent.

Clause 2.7 Demolition requires development consent

Consent for the demolition of the existing dwelling houses and ancillary structures are sought as part of the subject application. Conditions are recommended in this regard to manage such works, including asbestos management.

Part 4 Principal development standards

Clause 4.3 Height of buildings

The proposed maximum building height of 7.93m 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**	
Combined Site area:	2603.5m^2	
Units 1, 2 and 3	Ground floor	346.7
	First floor	169.4
Units 4, 5, 6 and 7	Ground floor	376.3
	First floor	277.3
Units 8, 9 and 10	Ground floor	305
	First floor	185.4
Exclusions	36x10 (garages)	
GFA	1300.1	
FSR	1300.1/2603.5 **0.49:1**	

Part 5 Miscellaneous provisions

Not applicable

Part 6 Urban release areas

Not applicable

Part 7 Local provisions – general

Clause 7.1 Public utility infrastructure

The existing site improvements are already serviced by electricity, water and sewage services. It is expected that these services will be capable of augmentation to meet the needs of the development. Conditions are recommended in this regard requiring evidence from the relevant authorities prior to the issue of the Construction Certificate.

Clause 7.3 Flood planning area

The proposed development has been considered by Council's Stormwater Engineer who originally sought additional information including a flood model from the applicant. The model has been received and reviewed by Councils Stormwater Engineer, who has advised that the proposed development would not be located within the floodplain extents. One On Site Detention System is proposed at the front of the property within the driveway to limit flows to Murphys Avenue to reflect the existing flows resulting from the existing site improvements. The proposal is therefore not expected to unreasonably impact on flood behaviour, or increase the flood risk of adjoining properties.

Clause 7.4 Riparian Lands

The Riparian Land Map identifies riparian land approximately 30m from the development site which generally aligns with a piped watercourse which traverses 66 and 64 Murphys Avenue. A site

inspection has revealed that there is no remaining bed or channel located in the vicinity of the development site, and the area is indicated to be a drainage asset within Councils property information system. The development is considered to have been appropriately located with regard to the piped watercourse and there would be no opportunities for rehabilitation of the watercourse in this case.

Clause 7.6 Earthworks

The proposal would require minor earthworks consisting of site scraping to provide the required building platforms. The earthworks themselves are not expected to result in unreasonable impacts on environmental functions and processes, neighbouring properties or the features of surrounding land.

Clause 7.14 Minimum site width

The proposal involves multi-dwelling housing. The subject site consists of two (2) lots with an overall frontage of 26.095m at the front boundary, 31.045m along the north western and 51.780m along the north eastern boundaries. A condition as per Attachment 8 requires the consolidation of the two (2) lots prior to the issue of the Occupation Certificate. The submitted plans indicate that no part of the proposed development is located on a part of the site with a minimum site width of less than 18m.

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

None relevant.

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

3.3.1 WOLLONGONG DEVELOPMENT CONTROL PLAN 2009

The development has been assessed against the relevant chapters of WDCP 2009 and compliance tables can be found at Attachment 7 to this report.

The proposal seeks variations to WDCP 2009 Chapter B1 part 5.13.2 Additional control for multi dwelling housing – dwelling mix and layout and Chapter E7 part 5.4.3 Communal Waste Facilities. The variation requests are discussed below:

Chapter B1: Residential Development

Part 5.13 Additional Control for Multi Dwelling Housing – Dwelling Mix and Layout

Part 5.13.2 of Chapter B1 of WDCP 2009 requires that where multi dwelling housing comprising more than 10 units is proposed, that a mix of dwelling sizes and layouts are provided. The subject proposal seeks consent for 10 x 3 bedroom dwellings, and as such does not provide any variation in the number of bedrooms proposed.

Control	Comment
1. The variation statement must address the following points:	
a) The control being varied; and	The applicant's variation request statement at Attachment 2 identifies the control being varied as 5.13 of Chapter B1 of WDCP 2009.
b) The extent of the proposed variation and the unique circumstances as to why the variation is requested; and	The variation is sought as the proposal seeks to construct only 3 bedroom dwellings and as such not providing any variation in the number of bedrooms. The dwellings do however provide differences in layout and gross floor areas, with some units having

	bedrooms on the ground floor, some with secondary living areas on the first floor and a mix of living/kitchen/dining area layouts. The applicant has also presented additional justification of the variation with regard to ABS data for the suburb. The data indicates that in addition to students, the suburb contains a high number of families who have on average 1.9 children, slightly greater than the 1.6 children per family rate across Wollongong. As such, 3 bedrooms would provide the required number of rooms for families, as well as for students.
c) Demonstrate how the objectives are met with the proposed variations; and	The objectives of the control are as follows: *a. To provide variety in dwelling sizes and layouts to cater for a range of household types and to assist housing affordability initiatives.* *b. To ensure that the internal arrangement of dwellings is functional and satisfies occupant's needs.* *c. To design dwellings to promote resident amenity and adaptability of use.* The applicant has indicated that they consider the development consistent with the above objectives. <u>Council comment:</u> The development is not considered to be inconsistent with the above objectives. The proposal includes a range of dwelling sizes and layouts, which despite all comprising 3 bedrooms, do provide a range of options for household types and adaptability.
d) Demonstrate that the development will not have additional adverse impacts as a result of the variation.	<u>Council comment:</u> There development is not considered to result in adverse impacts as a result of the variation.
Comment: The requested variation is considered capable of support.	

<u>Chapter E7 Waste Management</u>

<u>Part 5.4 Multi dwelling housing (Villas and Townhouses)</u>

Part 5.4.3 of Chapter E7 of WDCP 2009 requires that where multi dwelling housing comprising more than 6 dwellings is proposed, that a communal waste storage area must be provided. The proposal seeks consent for 10 dwellings and proposes bin storage either within the courtyard area (outside of the defined POS area) or within the garage areas of each dwelling. As such, the development is non-compliant with the requirements of this clause.

Control	Comment
2. The variation statement must address the following points:	
a) The control being varied; and	The applicant's variation request statement at Attachment 2 identifies the control being varied as 5.4.3 of Chapter E7 of WDCP 2009.
b) The extent of the proposed variation and the unique circumstances as to why the variation is requested; and	The applicant provided the following explanation with regard to the variation: *To allow for the storage and collection of ongoing waste, each unit will be provided with a 120L waste, 240L recycling and 120L compost bin. Bins will be stored either within the garage or to the side or rear of the unit and will be wheeled kerbside by each individual owner on collection day. 10 x 120L and 10 x 240L bins will occupy 10.65m of the site on collection day (i.e. 580mm x 10 + 485mm x 11), which is less than 50% of the site width (26.095m).* *Variation is sought to the requirement for a communal waste facility as the layout of the development can adequately cater for individual waste bins and the site frontage is of sufficient width to accommodate bin storage on collection day.* *It is considered that the method of storage will result in a lesser impact on the streetscape which is characterised by detached dwellings.*
c) Demonstrate how the objectives are met with the proposed variations; and	There are no specific objectives for part 5.4 of the Chapter. The objectives of Chapter E7 are: a) *To minimise the volume of waste generated during the demolition and construction phases of development, through reuse and recycling and the efficient selection and use of resources;* b) *To minimise demolition waste by promoting adaptability in building design and focussing upon end of life deconstruction;* c) *To encourage development which facilitates waste minimisation and complements waste services offered by Council or private contractors;* d) *To reduce the demand for waste disposal;* e) *To maximise reuse and recycling of building materials and household, industrial and commercial waste;* f) *To provide appropriately located, sized and accessible waste storage facilities;* g) *To assist applicants in planning for sustainable waste management, through the preparation of a site waste minimisation and management*

	plan at the Development Application stage; h) *To provide guidance with regard to the minimum storage requirements, amenity and management facilities;* i) *To ensure waste management systems are compatible with collection services;* j) *To support the principles of Ecologically Sustainable Development (ESD); and* k) *To avoid illegal dumping of waste* The applicant has indicated that they consider the development consistent with the above objectives. <u>Council comment:</u> The development is not considered to be inconsistent with the above objectives. A communal waste storage area is not considered warranted for the development as proposed.
d) Demonstrate that the development will not have additional adverse impacts as a result of the variation.	<u>Council comment:</u> There development is not considered to result in adverse impacts as a result of the variation.
Comment: The requested variation is considered capable of support.	

3.3.2 WOLLONGONG CITY-WIDE DEVELOPMENT CONTRIBUTIONS PLAN 2018

The estimated cost of works is >$100,000 ($2,225,300) and a levy of 1% is applicable under this plan as the threshold value is $200,000. A condition is recommended in this regard, as provided at Attachment 8 to this report.

3.4 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.

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

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

Conditions of consent are recommended with regard to demolition including asbestos management.

<u>93 Fire safety and other considerations</u>

Conditions of consent are recommended requiring compliance with the BCA/National Construction Code with regard to fire safety.

94 Consent authority may require buildings to be upgraded

Not applicable.

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

Context and Setting:

In regard to the matter of context, the planning principle in Project Venture Developments v Pittwater Council [2005] NSWLEC 191 is relevant in that it provides guidance in the assessment of compatibility. The two major aspects of compatibility are physical impact and visual impact. In assessing each of these the following questions should be asked:

- Are the proposals physical impacts on surrounding development acceptable? The physical impacts include constraints on the development potential of surrounding sites.
- Is the proposals appearance in harmony with the buildings around it and the character of the street?

In response to the first question, matters such as overshadowing, privacy concerns, bulk scale and setbacks are relevant. The proposal is within the allowable Floor Space Ratio and Building Height for the site and proposes front, side and rear setbacks in excess of the minimum requirements. The development will not result in unreasonable overshadowing of any adjoining property, or the development potential of any nearby site.

With regard to the visual impact, the development is not considered to be inconsistent with the desired future character of the area, as discussed at Attachments 3 and 7. The area is currently predominately made up of single dwelling houses, however is likely to be subject to additional higher density development in time given the height and FSR maximums for the area, and age of some surrounding housing stock. The development would not be considered to result in an unreasonable visual impact.

In summary, the proposal has been assessed with regard to the amenity impacts from the development, the zoning, permissible height and FSR for the land, and existing and future character of the area, and is not considered to be incompatible with the context and setting or existing and future desired character of the local area.

Access, Transport and Traffic:

The development provides for the required number of car parking spaces and adequate manoeuvring areas. Councils 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 to provide for a positive contribution to the public domain, with Unit 1 presenting to Murphys Avenue as a single dwelling house. Conditions requiring the planting of street trees are also recommended as provided at Attachment 8 to this report.

Utilities:

The proposal would not be envisaged to place an unreasonable demand on utilities supply. Conditions are recommended in this regard as provided at Attachment 8.

Heritage:

The site is not located in the visual catchment of any nearby built form heritage items

Other land resources:

The proposal would not be envisaged to impact upon valuable land resources.

Water:

The site is presently serviced by Sydney Water, which is expected to be capable of extension to meet the requirements of the proposed development.

The proposal would not be envisaged to have unreasonable water consumption.

Soils:

Contamination, excavation and filling of the site have been addressed as discussed throughout the report. The site is not identified as contaminated land and minimal earthworks are proposed.

Air and Microclimate:

The proposal would not be expected to result in negative impacts on air or microclimate.

Flora and Fauna:

Conditions are recommended with regard to tree removal, retention and compensatory planting as provided at Attachment 8. Chapter E6 and E18 within Attachment 7 also provides for additional discussion regarding the proposed tree removal and the *Biodiversity Conservation Act 2016* (BC Act). The site is not identified within Councils land information system as being known to contain any threatened fauna species or habitat. None of the trees on the site were recorded as containing hollows. The proposal is considered satisfactory with regard to the requirements of the BC Act 2016.

Waste:

A condition is recommended requiring that an appropriate receptacle be in place for any waste generated during the construction. On street collection is proposed to be relied upon for the occupation of the development and is considered appropriate.

Energy:

The proposal would not be envisaged to have unreasonable energy consumption. See BASIX considerations at section 2.1.2 above.

Noise and vibration:

Conditions are recommended requiring that nuisance be minimised during any construction, demolition, or works.

Natural hazards:

Council records list the site as uncategorised flood affected. A flood model has been received and reviewed by Councils Stormwater Engineer, who has advised that the proposed development would not be located within the floodplain extents. The 1 in 100 year and Probable Maximum Flood (PMF) extents do not encroach on the subject site area, with the exception of an area of approximately 2.5sqm in the south western corner of the site. No earthworks are proposed within this area, and no impacts are expected. Runoff from the site is proposed to be captured by the On-Site Detention (OSD) system proposed within the driveway area. Flows from the site would then be discharged to the street at the pre-development rate.

Technological hazards:

The site is not affected by any technological hazard which would result in adverse impacts on the development.

Safety, Security and Crime Prevention:

This application would not be expected to 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 would not be envisaged to result in negative economic impacts.

Site Design and Internal Design:

The application does not result in any departures from WLEP 2009 development standards as discussed throughout the report. The proposal does seek variations to development controls relating to requirements for a mix of dwelling sizes and layouts and a communal waste storage area. The requests have been considered and are considered capable of support in this instance, as discussed at section 2.3.1 above.

Private open space, residential amenity, vehicular manoeuvring and pedestrian access have been accounted for in the design and site layout.

Construction:

Conditions are recommended in relation to construction impacts for 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:

The proposal is not expected to result in negative cumulative impacts

Ecologically Sustainable Development Considerations

The proposed development is not considered to be inconsistent with ESD principles as evidenced by the assessment commentary provided throughout the report.

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

Does the proposal fit in the locality?

The design of the proposal is considered an appropriate response to the site constraints and is not expected to result in increased adverse impacts on the character of the locality or amenity of adjoining developments.

Are the site attributes conducive to development?

There are no site constraints that would prevent the proposal.

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

See section 1.5 above.

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

The development is not expected to result in unreasonable impacts on the environment or the amenity of the locality. It is considered appropriate with consideration to the zoning and the expected future character of the locality and is therefore considered to be in the public interest.

4 CONCLUSION

This application has been assessed as satisfactory having regard to the Heads of Consideration under Section 4.15 of the Environmental Planning and Assessment Act 1979.

It is considered that the applicant has provided adequate justification for the variations sought to WDCP 2009 as relates to requirements for a mix of dwelling sizes and layouts and a communal waste storage area to be provided. The variations are considered capable of support.

All relevant internal and external referrals are conditionally satisfactory.

Some of the issues raised in submissions though technically unresolved, are considered to be adequately addressed either through design or by way of conditions. Any remaining issues are not considered to be sufficient to refuse the application.

No adverse internal referral matters were raised, and there are no outstanding issues.

It is considered that the proposed development has been designed appropriately given the constraints and characteristics of the site, is not inconsistent with the existing and desired future character of the locality and is unlikely to result in significant adverse impacts on the amenity of the surrounding area

5 RECOMMENDATION

Development Application DA-2019/284 be approved, subject to the conditions contained in Attachment 8.

6 ATTACHMENTS

1 Architectural Plans, landscape plan, drainage plan and site survey

2 WDCP 2009 Variation request statements

3 Additional Information Response – character of the area and ecologically sustainable development

4 Traffic Impact Assessment

5 Arborists Report

6 Natural Resources Access Regulator Correspondence

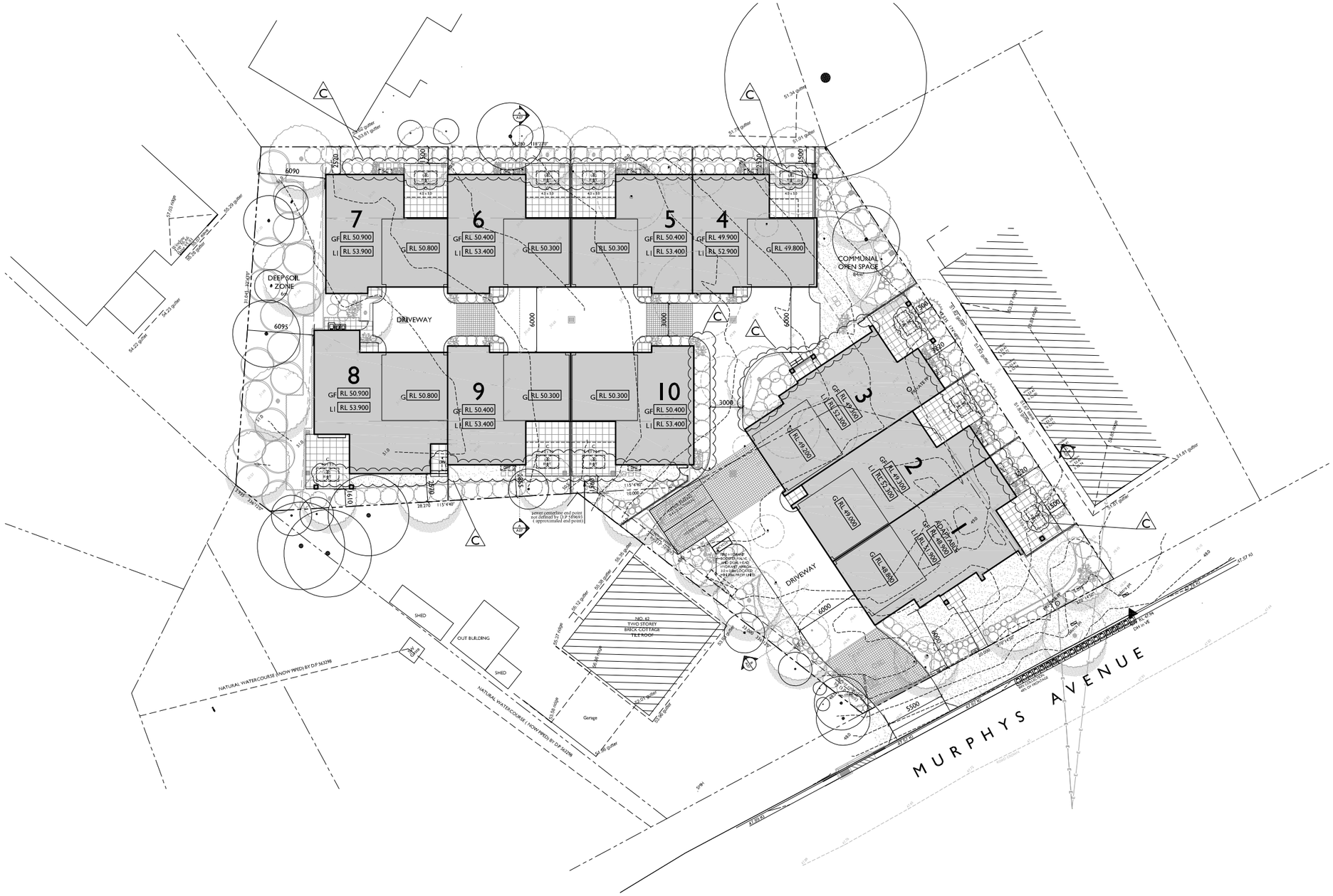
7 WDCP 2009 compliance table

8 Conditions

Attachment 1: Architectural Plans

ISSUE	DATE	DESCRIPTION
A	11.03.19	ISSUED FOR DEVELOPMENT APPLICATION
B	17.06.19	RE-ISSUED FOR DEVELOPMENT APPLICATION
C	09.08.19	RE-ISSUED FOR DEVELOPMENT APPLICATION

NOT FOR CONSTRUCTION



SITE PLAN

REFER TO CIVIL ENGINEER'S DOCUMENTATION FOR STORMWATER COLLECTION & ALL EXTERNAL SURFACE LEVELS.

REFER TO LANDSCAPE ARCHITECTS DOCUMENTATION FOR ALL PAVING & PLANTING DETAILS.

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Project
PROPOSED RESIDENTIAL DEVELOPMENT
COMPRISING OF 10 TOWNHOUSES
WITH DOUBLE GARAGES

At
LOTS 2 & 3 DP 589693
58-60 MURPHYS AVENUE
KEIRAVILLE

For
ABS PROPERTY PTY LTD

Title
DEVELOPMENT APPLICATION
SITE PLAN

Scale	Date
1:200 @ A1 1:400 @ A3	AUGUST 2019
Drawn	Checked
MC	ADM

Project No.	Drawing No.	Issue
2018-34	A02	C

ISSUE	DATE	DESCRIPTION
A	11.03.19	ISSUED FOR DEVELOPMENT APPLICATION
B	17.06.19	RE-ISSUED FOR DEVELOPMENT APPLICATION
C	09.08.19	RE-ISSUED FOR DEVELOPMENT APPLICATION

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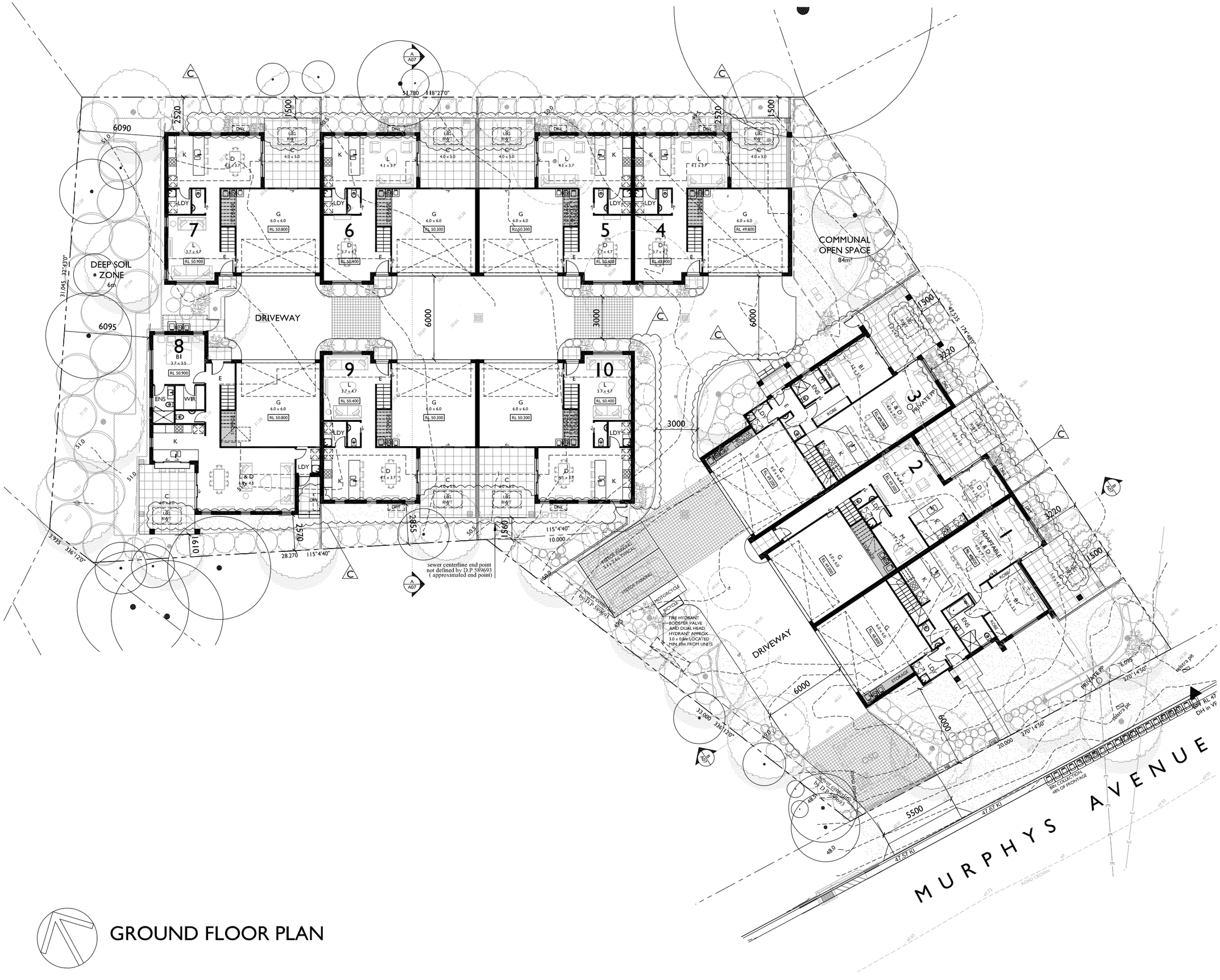

GROUND FLOOR PLAN

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For
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Title
DEVELOPMENT APPLICATION
GROUND FLOOR PLAN

Scale	Date
1:125 @ A1 1:250 @ A3	AUGUST 2019
Drawn	Checked
MC	ADM

Project No.	Drawing No.	Issue
2018-34	A03	C

ISSUE	DATE	DESCRIPTION
A	01.03.19	ISSUED FOR DEVELOPMENT APPLICATION
B	17.06.19	RE-ISSUED FOR DEVELOPMENT APPLICATION
C	09.08.19	RE-ISSUED FOR DEVELOPMENT APPLICATION

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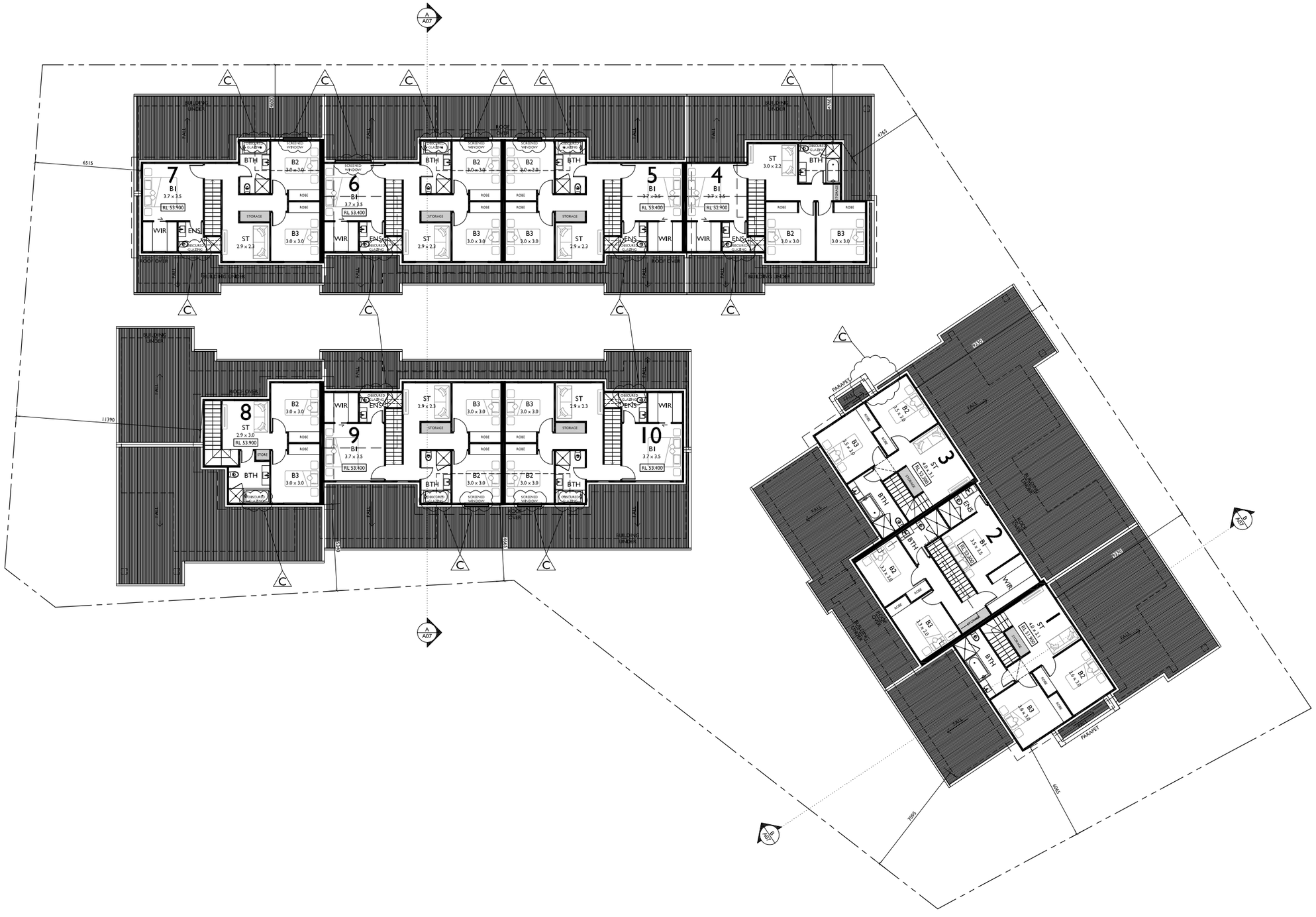

LEVEL 1 FLOOR PLAN

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For
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Title
DEVELOPMENT APPLICATION
LEVEL 1 FLOOR PLAN

Scale	Date
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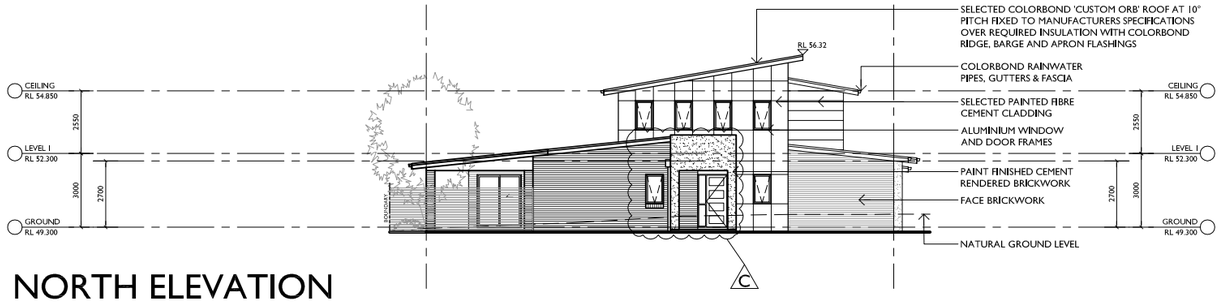
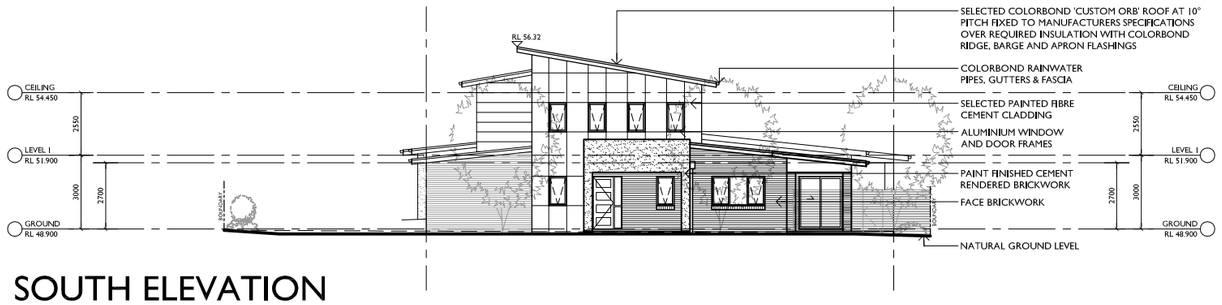
Drawn	Checked
MC	ADM

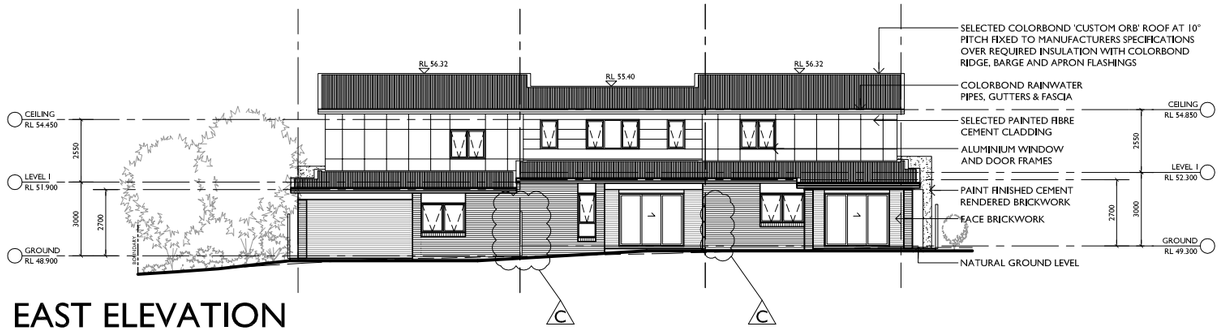
Project No.	Drawing No.	Issue
2018-34	A04	C



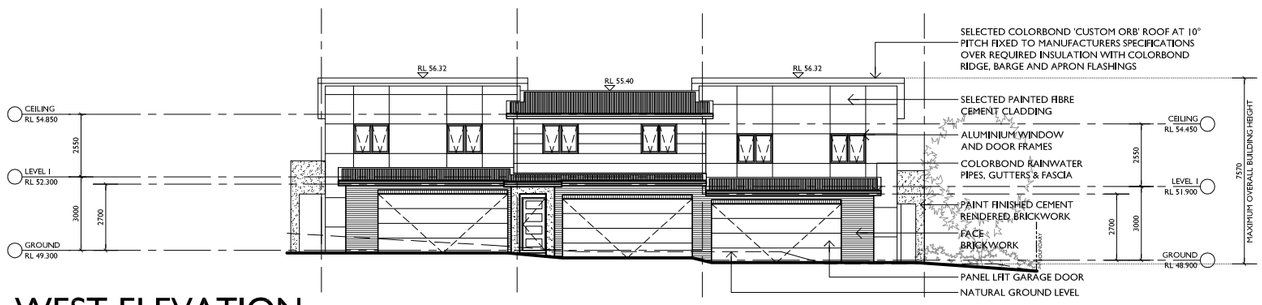
NORTH ELEVATION
UNITS 1-3



SOUTH ELEVATION
FROM MURPHYS AVENUE
UNITS 1-3



EAST ELEVATION
UNITS 1-3



WEST ELEVATION
UNITS 1-3

ISSUE	DATE	DESCRIPTION
A	01.03.19	ISSUED FOR DEVELOPMENT APPLICATION
B	17.06.19	RE-ISSUED FOR DEVELOPMENT APPLICATION
C	09.08.19	RE-ISSUED FOR DEVELOPMENT APPLICATION

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WITH DOUBLE GARAGES

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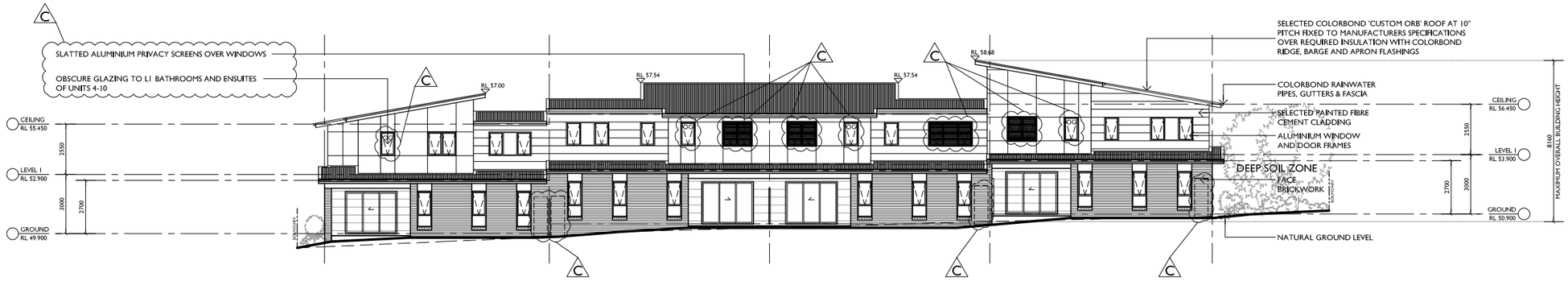
For
ABS PROPERTY PTY LTD

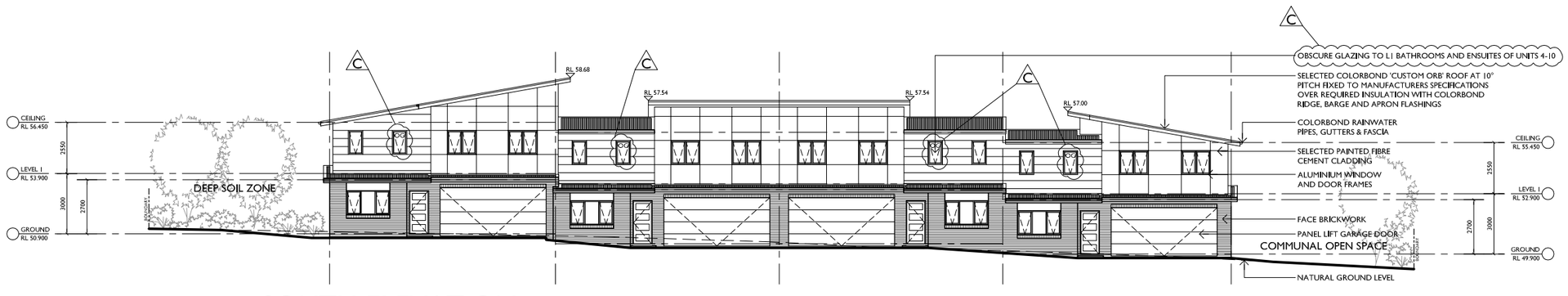
Title
DEVELOPMENT APPLICATION
ELEVATIONS

Scale	Date
1:125 @ A1 1:250 @ A3	AUGUST 2019
Drawn	Checked
MC	ADM

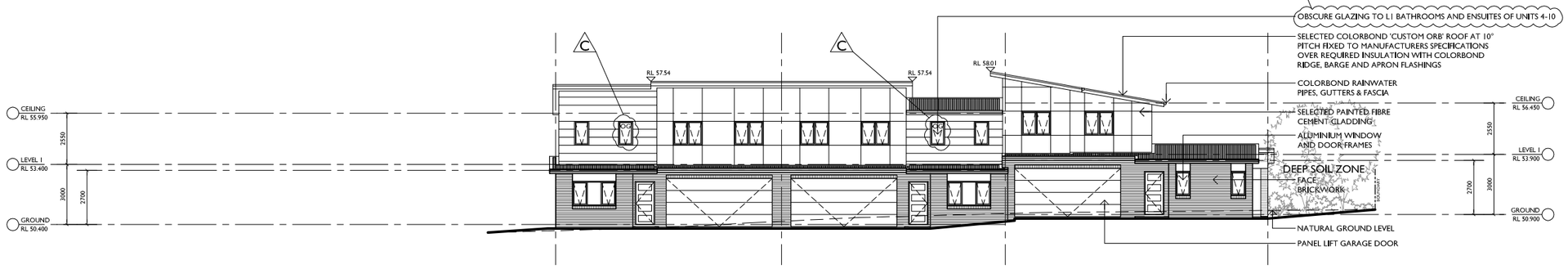
Project No.	Drawing No.	Issue
2018-34	A05	C



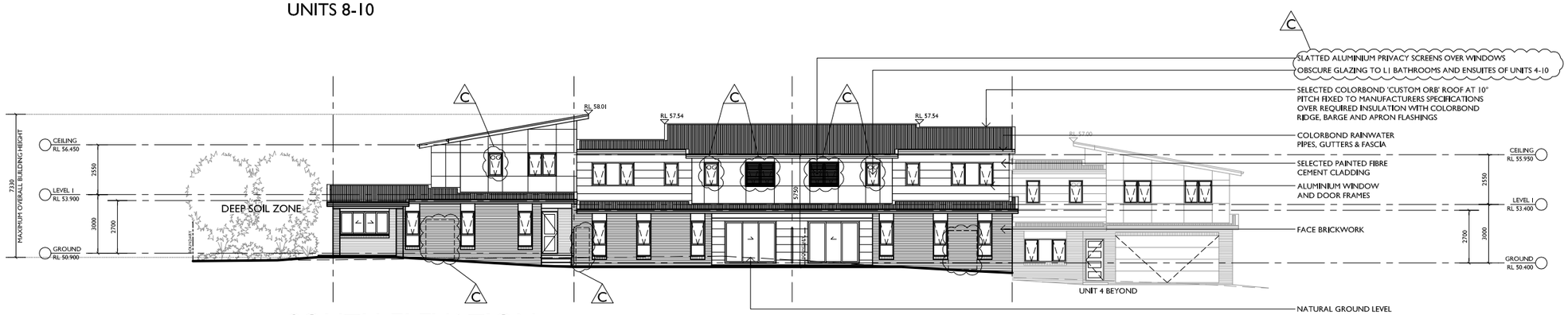
NORTH ELEVATION
UNITS 4-7



SOUTH ELEVATION
UNITS 4-7



NORTH ELEVATION
UNITS 8-10



SOUTH ELEVATION
UNITS 8-10

ISSUE	DATE	DESCRIPTION
A	01.03.19	ISSUED FOR DEVELOPMENT APPLICATION
B	17.06.19	RE-ISSUED FOR DEVELOPMENT APPLICATION
C	09.08.19	RE-ISSUED FOR DEVELOPMENT APPLICATION

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Project
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KEIRAVILLE

For
ABS PROPERTY PTY LTD

Title
DEVELOPMENT APPLICATION
ELEVATIONS

Scale	Date
1:125 @ A1 1:250 @ A3	AUGUST 2019
Drawn	Checked
MC	ADM

Project No.	Drawing No.	Issue
2018-34	A06	C

ISSUE	DATE	DESCRIPTION
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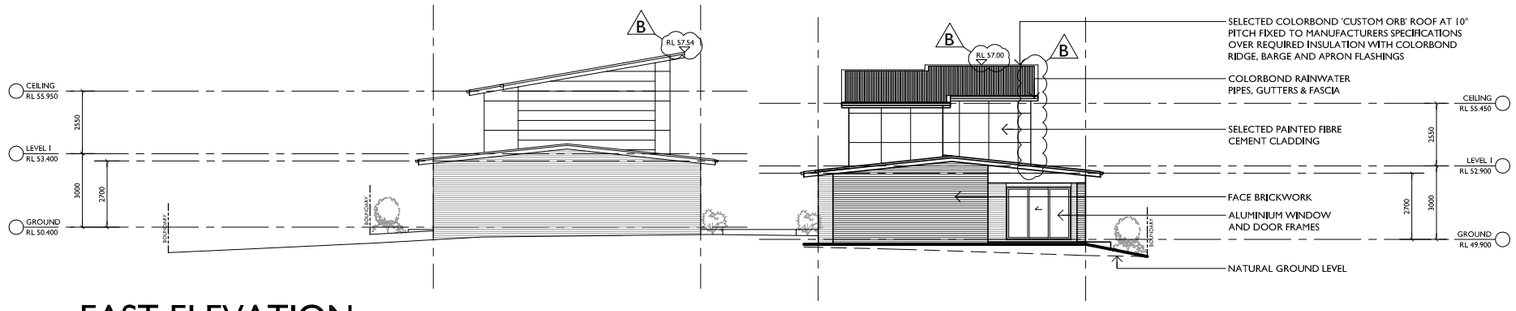
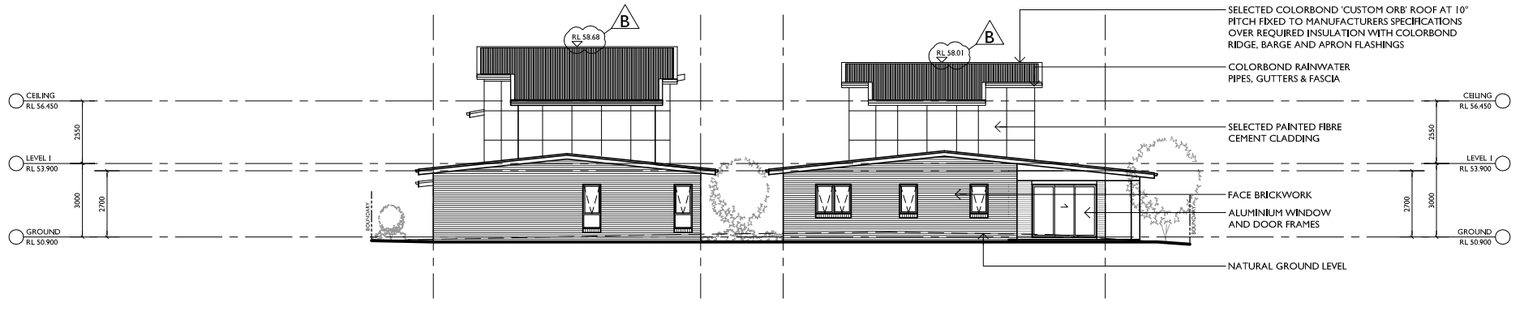
B	17.06.19	RE-ISSUED FOR DEVELOPMENT APPLICATION

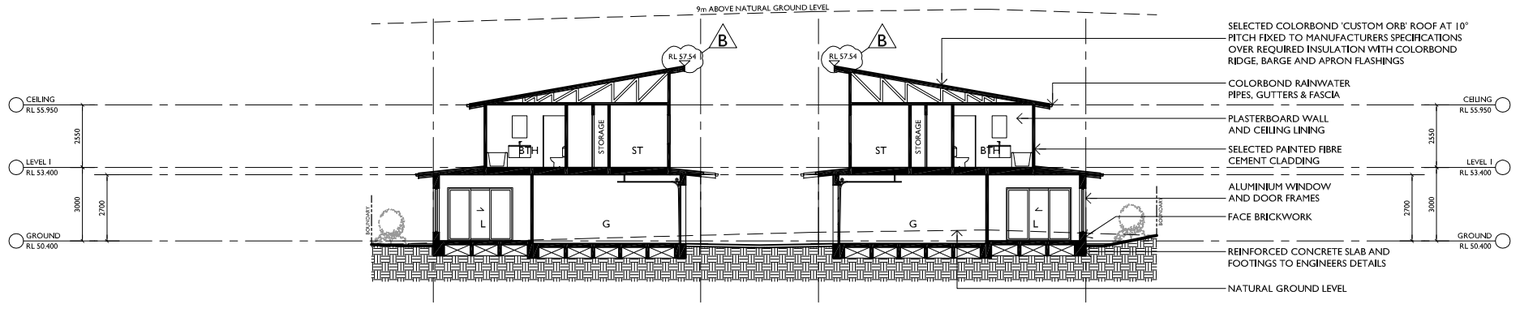
NOT FOR CONSTRUCTION



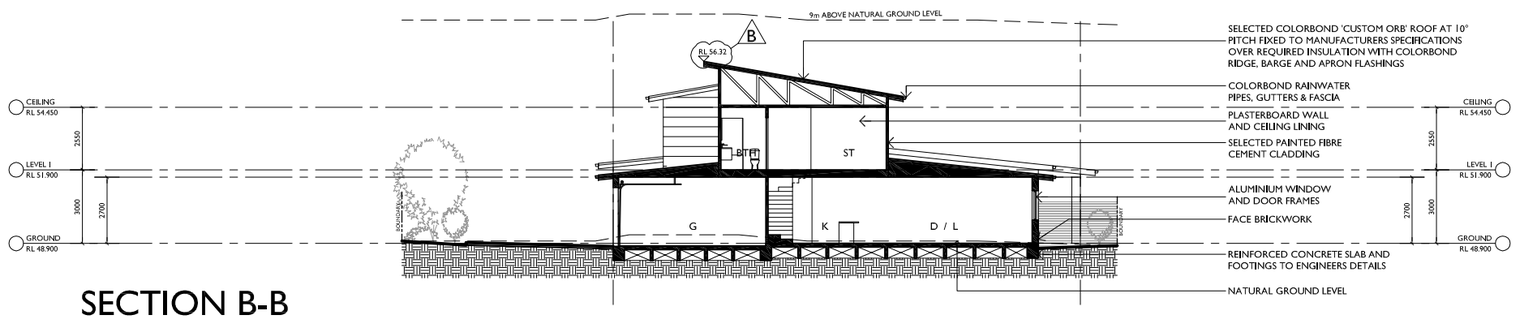
EAST ELEVATION
UNITS 4-10



WEST ELEVATION
UNITS 4-10



SECTION A-A



SECTION B-B

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Project
PROPOSED RESIDENTIAL DEVELOPMENT
COMPRISING OF 10 TOWNHOUSES
WITH DOUBLE GARAGES

At
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58-60 MURPHYS AVENUE
KEIRAVILLE

For
ABS PROPERTY PTY LTD

Title
DEVELOPMENT APPLICATION
ELEVATIONS & SECTIONS

Scale	Date
1:125 @ A1 1:250 @ A3	JUNE 2019
Drawn	Checked
MC	ADM

Project No.	Drawing No.	Issue
2018-34	A07	B

ISSUE	DATE	DESCRIPTION
A	01.03.19	ISSUED FOR DEVELOPMENT APPLICATION

NOT FOR CONSTRUCTION

COLOURS & MATERIALS SCHEDULE
TYPICAL ELEVATION

1 DARK GREY
BRICK WORK

2 LIGHT GREY
CLADDING

3 DARK GREY
CEMENT RENDER

4 OFF-WHITE
PANEL CLADDING

5 TIMBER LOOK
ENTRY DOORS & GARAGE DOORS

6 GREY
ROOFING, DOWNPIPES & GUTTERS

7 ALUMINIUM
WINDOW & DOOR FRAMES

8 CLEAR GLAZING

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Project
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KEIRAVILLE

For
ABS PROPERTY PTY LTD

Title
DEVELOPMENT APPLICATION
COLOURS & MATERIALS SCHEDULE

Scale	Date
NTS	MARCH 2019
Drawn	Checked
MC DQ	ADM

Project No.	Drawing No.	Issue
2018-34	A08	A

ISSUE	DATE	DESCRIPTION
A	01.03.19	ISSUED FOR DEVELOPMENT APPLICATION

NOT FOR CONSTRUCTION

9am

12pm

3pm

SHADOW ANALYSIS - 21ST OF JUNE

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Project
PROPOSED RESIDENTIAL DEVELOPMENT
COMPRISING OF 10 TOWNHOUSES
WITH DOUBLE GARAGES

At
LOTS 2 & 3 DP 589693
58-60 MURPHYS AVENUE
KEIRAVILLE

For
ABS PROPERTY PTY LTD

Title
DEVELOPMENT APPLICATION
SHADOW ANALYSIS

Scale	Date
NTS	MARCH 2019
Drawn	Checked
MC DQ	ADM

Project No.	Drawing No.	Issue
2018-34	A09	A

9am

10am

11am

12pm

SOLAR ACCESS STUDY - 21ST OF JUNE

INDICATES REQUIRED 20m^2 P.O.S (5 X 4m)

ISSUE	DATE	DESCRIPTION
A	01.03.19	ISSUED FOR DEVELOPMENT APPLICATION

NOT FOR CONSTRUCTION

adm ARCHITECTS
94 Kembla St, Wollongong NSW 2500 PO Box 3061 Wollongong
ph: 02 4228 6400 fax: 02 4228 6455 www.admarchitects.com.au

Project
PROPOSED RESIDENTIAL DEVELOPMENT
COMPRISING OF 10 TOWNHOUSES
WITH DOUBLE GARAGES

At
LOTS 2 & 3 DP 589693
58-60 MURPHYS AVENUE
KEIRAVILLE

For
ABS PROPERTY PTY LTD

Title
DEVELOPMENT APPLICATION
SOLAR ACCESS STUDY 1 OF 2

Scale	Date
NTS	MARCH 2019
Drawn	Checked
MC DQ	ADM

Project No.	Drawing No.	Issue
2018-34	A10	A

ISSUE	DATE	DESCRIPTION
A	01.03.19	ISSUED FOR DEVELOPMENT APPLICATION

NOT FOR CONSTRUCTION

1pm

2pm

3pm

SOLAR ACCESS SUMMARY

UNIT	SOLAR ACCESS TO 50% OF P.O.S		COMPLIANCE
1	9am - 12pm	3 HOURS	✓
2	9am - 11am	2 HOURS	✗
3	9am - 1pm	4 HOURS	✓
4	9am - 1pm	4 HOURS	✓
5	9am - 1pm	4 HOURS	✓
6	9am - 1pm	4 HOURS	✓
7	9am - 1pm	4 HOURS	✓
8	12pm - 3pm	3 HOURS	✓
9	-	-	✗
10	-	-	✗
			70%

SOLAR ACCESS STUDY - 21ST OF JUNE

INDICATES REQUIRED 20m^2 P.O.S (5 X 4m)

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Project
PROPOSED RESIDENTIAL DEVELOPMENT
COMPRISING OF 10 TOWNHOUSES
WITH DOUBLE GARAGES

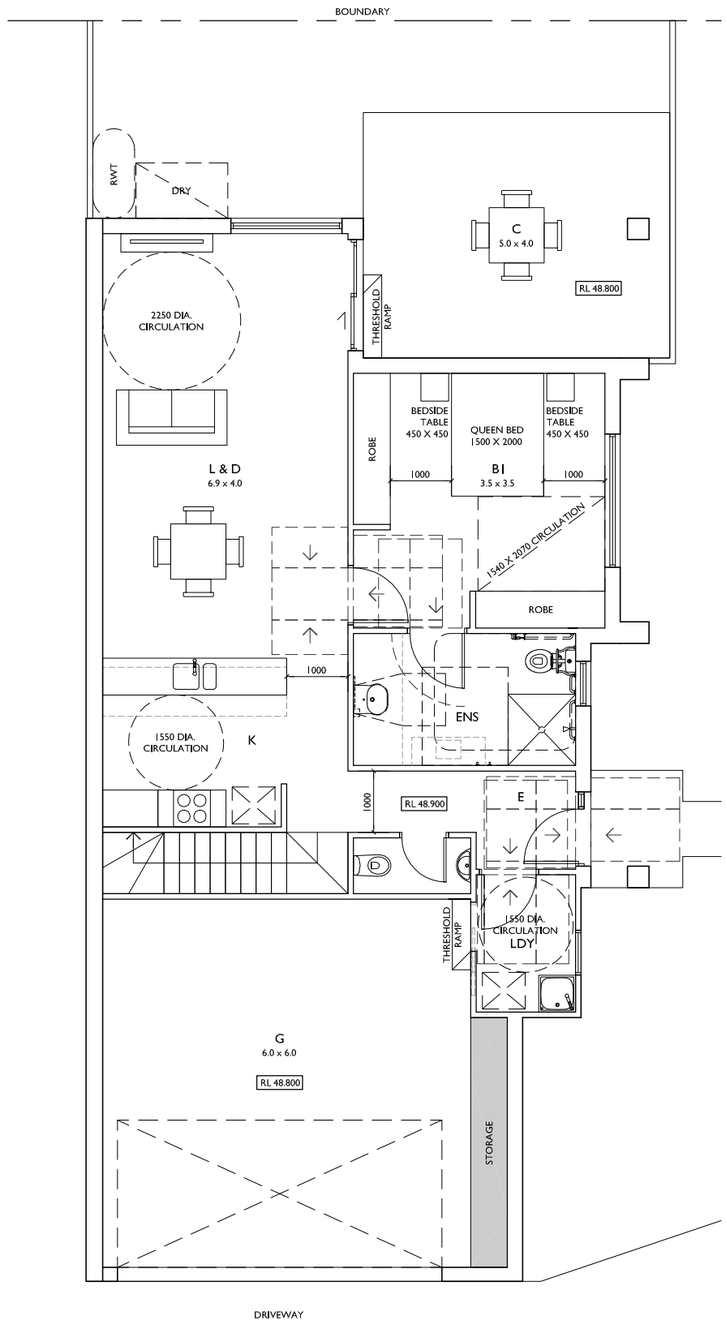
At
LOTS 2 & 3 DP 589693
58-60 MURPHYS AVENUE
KEIRAVILLE

For
ABS PROPERTY PTY LTD

Title
DEVELOPMENT APPLICATION
SOLAR ACCESS STUDY 2 OF 2

Scale	Date
NTS	MARCH 2019
Drawn	Checked
MC DQ	ADM

Project No.	Drawing No.	Issue
2018-34	A11	A



GROUND FLOOR

UNIT 1 POST-ADAPTATION PLAN

REFER DRAWINGS A03 & A04 FOR PRE-ADAPTATION PLANS.
REFER ACCESS CONSULTANTS REPORT.

ISSUE	DATE	DESCRIPTION
A	01.03.19	ISSUED FOR DEVELOPMENT APPLICATION

NOT FOR CONSTRUCTION

adm ARCHITECTS
94 Kembla St, Wollongong NSW 2500 PO Box 3061 Wollongong
ph: 02 4228 6400 fax: 02 4228 6455 www.admarchitects.com.au

Project
PROPOSED RESIDENTIAL DEVELOPMENT
COMPRISING OF 10 TOWNHOUSES
WITH DOUBLE GARAGES

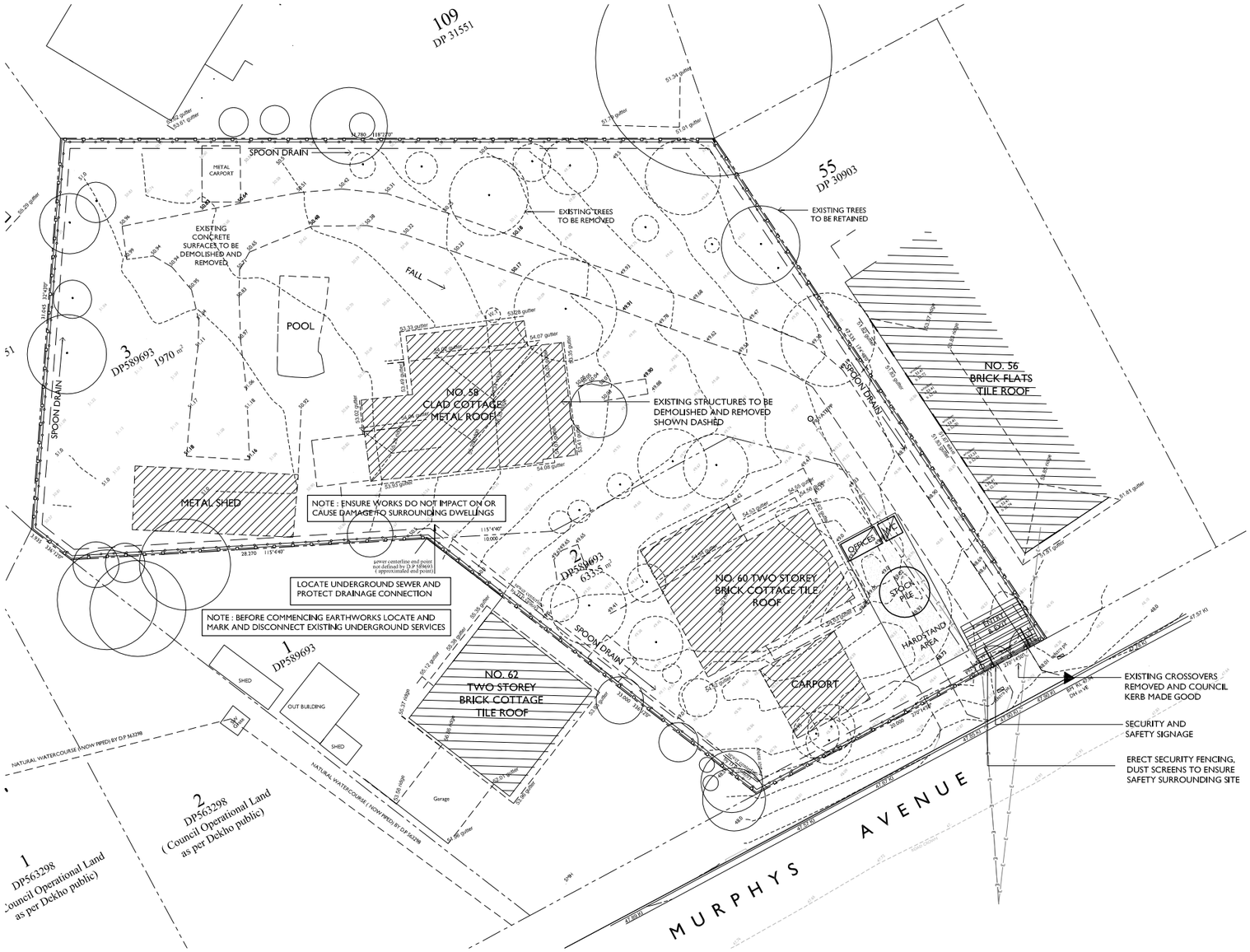
At
LOTS 2 & 3 DP 589693
58-60 MURPHYS AVENUE
KEIRAVILLE

For
ABS PROPERTY PTY LTD

Title
DEVELOPMENT APPLICATION
UNIT 1 POST-ADAPTATION PLAN

Scale	Date
1:50 @ A1 1:100 @ A3	MARCH 2019
Drawn	Checked
MC	ADM

Project No.	Drawing No.	Issue
2018-34	A12	A



LEGEND

- SEDIMENT FENCE
- SAFETY SECURITY FENCE CONTRACTORS COMPOUND
- HARD STAND AREA
- TO BE DEMOLISHED & REMOVED
- TREE TO BE REMOVED

DEMOLITION AND CONTAMINATION

The builder is to carry out necessary demolition and on-site clearance and preparation of the site for the specified construction works.
This is applicable to demolition of existing buildings, structures ans services including planning and execution of the work, protection and support of adjacent structures and removal of demolished material. Demolished materials, hazardous materials (flammable, explosive, radiation, noxious) and asbestos shall be removed from the site prior to any new construction work taking place on the site. If hazardous materials are encountered, appropriate and qualified personel shall be employed to remove from site and dispose of such materials in an approved manner in accordance with the provisions of all applicable legislation and with any relevant recommendations published by the National Occupational Health and Safety Commission (Worksafe Australia). The builder shall be responsible for maintaining security fencing around the perimeter of the demolition site and for taking any additional precautionary measures as may be necessary to prevent unauthorised entry to the site at all times during the demolition period. Safe access to and egress from adjoining properties shall be maintained at all times for the duration of the demolition work. The builder is to carry out the work in accordance with AS 2601 (Demolition of Structures). In the event that the site is found to be contaminated, the builder is to follow the directions and recommendation of the site contamination consultant to ensure that the site is un-contaminated prior to any building works taking place on the site.

DEMOLITION & SITE MANAGEMNT PLAN

NO. 58 CLAD COTTAGE METAL ROOF TO BE DEMOLISHED

NO. 60 TWO STOREY BRICK COTTAGE TILE ROOF TO BE DEMOLISHED

GENERAL NOTES

1. Trade waste to be separated to recycle products, timber, glass and paper.
2. Builder to relocate site shed, amenities, storage facilities, etc. as required during the construction process.
3. Additional carparking to be provided on site following construction of basement carparking area.
4. All vehicles to leave the site in a forward direction.
5. No vehicles to be parked on the footpath reserve.

DEMOLITION, SITE CLEARING & CONTAMINATION

The Contractor is to carry out necessary demolition and on-site clearance in accordance with AS 2601 (Demolition of Structures) on the subject site. This is applicable to demolition of existing buildings, structures and services including planning and execution of the work, protection and support of adjacent structures and removal of demolished material. Demolished materials, hazardous materials (particularly if found in the renovations to the existing structures) and asbestos shall be removed from site prior to any new construction work taking place on site.

If hazardous materials are encountered, appropriate and qualified personnel shall be employed to remove from site and dispose of such materials in approved manner in accordance with the provisions of all applicable legislation and with any relevant recommendations published by the National Occupational Health and Safety Commission (Worksafe Australia). If hazardous materials are encountered underground, appropriate and qualified personnel shall be employed to remove from site and dispose of such materials in approved manner in accordance with the provisions of all applicable legislation and with any relevant recommendations published by the National Occupational Health and Safety Commission (Worksafe Australia).

The Contractor shall be responsible for maintaining security fencing around the perimeter of the site and any additional precautionary measures taken as may be necessary to prevent unauthorised entry to the site at all times during the demolition period. Safe access to and egress from adjoining properties shall be maintained at all times for the duration of the demolition work. In the event that the site is found to be contaminated the Contractor is to follow the directions and recommendations of a site contamination consultant to ensure that the site is un-contaminated prior to any building works taking place on site.

CONSTRUCTION MANAGEMENT POINTS

1. Note that all proposed works will be undertaken whilst the building and site is vacant;
2. All site fencing and sediment control used during demolition phase shall be retained for the construction phase and shall be extended as detailed on drawings;
3. A new hard stand area and shaker grid shall be constructed on corkwood circuit frontage during all phases of the project. All to confirm with the requirements of the local council and RTA;
4. During construction phase as area is set aside on site for use of mobile crane or concrete pump;
5. All construction materials are to be stored on site. A designated area has been allowed;
6. All site accommodation and amenities as required will be located within the site. Some site sheds maybe relocated on the podium level in the final phase of construction; and
7. A dilapidation survey will be carried out by the contractor before the commencement of any work on site.

Applicable Australian Standards
AS2601 - Demolition of structures
AS2436 - Guide to noise control...demolition sites
AS3798 - Guide to earthworks.....residential developments
AS1289 - Methods of testing soils for engineering purposes
AS1725 - Galvanised rafless chainwire security fencing
Exit/Entrance - Access Point
The exit/entrance to the site will be constructed of a bed of 50-75mm aggregate, 200mm deep, for the vehicular exit/entrance width and to a length of 5.0 metres from the street kerb, so as to ensure soil and excavated materials are not transported off-site.
Storage Areas
Storage areas will be front yard open space.
Rubbish Disposal
Trade waste will be contained on site until removal.
Silt Barrier
Sediment will be prevented from washing off-site by geotextile fabric with metal support and/or continuous straw bales, placed in 100mm deep trench and fixed with stakes. All silt barriers are to be wholly with the site area.
Existing Paving and Vegetation
Existing pavement and vegetation will be retained as much as possible to minimise the amount of exposed soil.

Material Stockpiles
Stockpiles of loose materials (gravel, sand, etc.) will be contained undercover and water courses and within a suitable barrier. Footpaths and road surfaces will not be used for material stockpiles.
Cleaning of Tools and Equipment
Tools and equipments will be cleaned away form drainage lines, road and pavement.

SOIL & WATER MANAGEMENT
This plan shall be read in conjunction with the engineering plans, and any other plans or written instructions that may be issued relating to the future development at the subject site. The contractor shall ensure that all soil and water management works are located as indicated on this drawing. All sub-contractors shall be made aware of their responsibilities in minimising the potential for soil erosion and pollution to down-slope lands and water ways. Where practical, the soil erosion hazard on the site shall be kept as low as possible to this end. Works should be undertaken in the following sequence:
a) install any necessary security/boundary fences for this site;
b) construct silt fencing as detailed along boundaries and contours.

During windy weather, large unprotected areas shall be kept moist (not wet) by sprinkling with water to keep the dust under control. Final site landscaping shall be undertaken as soon as possible, and within 20 working days from completion of construction activities. Any sand used in the concrete curing process (spread over the surface) shall be removed as soon as possible, and within 10 working days from placement. Water shall be prevented from entering the permanent drainage system, unless it is sediment free; i.e. - the catchment area has been permanently landscaped and/or any likely sediment has been filtered through an approved structure.

Temporary soil and water management structures shall be removed only after the lands they protected are rehabilitated. The contractors shall provide acceptable receptors for concrete and mortar slurries, paints acid washings, lightweight waste materials and litter. Receptors for concrete and mortar slurries, paints, acid washings, light-weight waste materials and litter are to be emptied as necessary. Disposal of waste shall be in a manner approved by the site superintendent.

At least weekly the contractor shall inspect the site, providing particular attention to the following matters:
c) ensure drains operate freely, and initiate repair or maintenance as required;
d) remove spilled sand (or other materials) from hazard areas, including lands closer than 2 metres from likely areas of concentrated or high-velocity flows such as waterways, gutters, paved areas and driveways;
e) construct additional erosion and/or sediment works as necessary to ensure the desired protection is given to downslope lands and waterways i.e. make ongoing changes to the plan;
f)pme maintain erosion and sediment control measures in a functioning conditioning condition until all earthwork activities are completed and the site rehabilitated; and
g) Remove temporary soil conservation structures as a last activity in the rehabilitation programme.

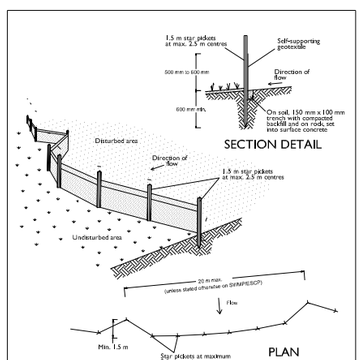
The contractor shall keep a log book, making entries at least weekly, and after rainfall and/or site closure record:
h) the volume of any rainfall events (check water bureau);
i) the conditions of any soil and water management works;
j) remedial work
The book shall be kept on site and made available to any authorised person on request.

EROSION AND SEDIMENTATION CONTROL NOTES

The Contractor shall provide sediment fencing material during construction to be installed inside site fencing on low sides of site to contain all site water run off and prevent erosion. The sediment fencing material to security fencing. Sediment control fabric shall be an approved material (e.g. humes propex silt stop) standing 500mln above ground and extending 150 below ground. Silt barriers, silt traps, saltation screens and the like shall be constructed with geotextile sediment fabric attached to steel star pickets or security fencing, or with Hessian bags. All to conform with the requirements of the local council and RTA.

Existing drains located within the site shall be isolated by sediment control. No parking or stock piling of material is permitted in the public domain unless stated. Grass verges shall be maintained as much as practical to provide a buffer zone to the construction site. Construction entry/exits shall be located as per dwg.

The Contractor shall ensure all droppable soil and sediment is removed prior to construction traffic exiting the site. Builder shall ensure all construction traffic entering and leaving the site do so in a forward direction as much as possible. Site security fencing to consist of 1800mm high galvanised chain mesh panels fixed to galvanised pipe frame and supported on concrete "feet".



SEDIMENT FENCE NOTES

1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

ISSUE	DATE	DESCRIPTION
A	01.03.19	ISSUED FOR DEVELOPMENT APPLICATION

NOT FOR CONSTRUCTION

adm ARCHITECTS
94 Kembla St, Wollongong NSW 2500 PO Box 3061 Wollongong
ph: 02 4228 6400 fax: 02 4228 6455 www.admarchitects.com.au

Project
PROPOSED RESIDENTIAL DEVELOPMENT
COMPRISING OF 10 TOWNHOUSES
WITH DOUBLE GARAGES

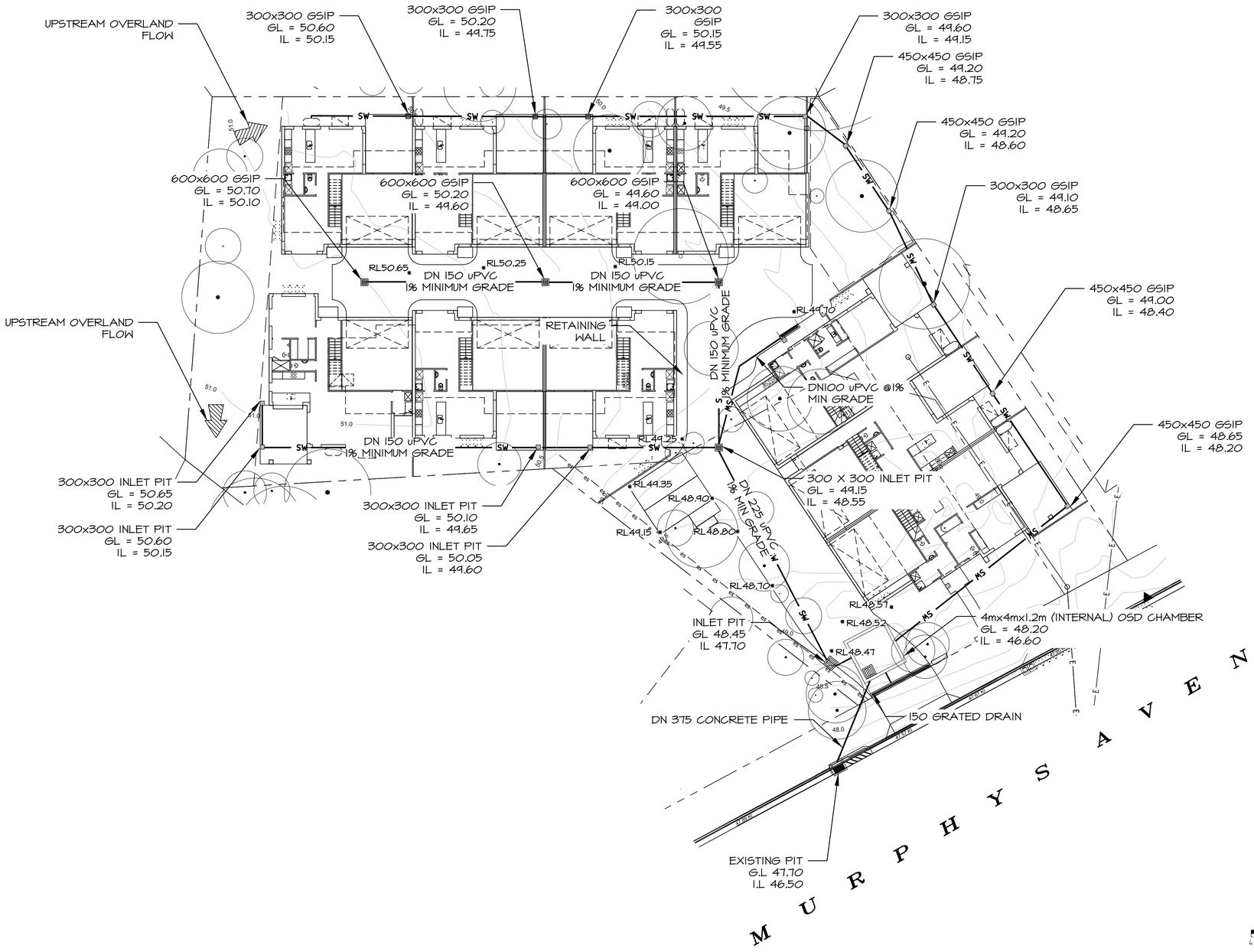
At
LOTS 2 & 3 DP 589693
58-60 MURPHYS AVENUE
KEIRAVILLE

For
ABS PROPERTY PTY LTD

Title
DEVELOPMENT APPLICATION
DEMOLITION & SITE MANAGEMENT PLAN

Scale	Date
NTS	MARCH 2019
Drawn	Checked
MC DQ	ADM

Project No.	Drawing No.	Issue
2018-34	A13	A



AMDT	DATE	BY	DESCRIPTION	AMDT	DATE	BY	DESCRIPTION
P3	05.07.19	DJ	ISSUED FOR DA				
P2	14/02/19	DJ	ISSUED FOR DA				
P1	23/01/19	DJ	PRELIMINARY ISSUED FOR REVIEW				

ISO 9001 Quality Management | ISO 14001 Environmental Management | AS/NZS 4801 Occupational Health & Safety Management

CIVIL • STRUCTURAL • BUILDING SERVICES

JONES NICHOLSON CONSULTING ENGINEERS
WWW.JONESNICHOLSON.COM.AU ABN: 51 003 316 032

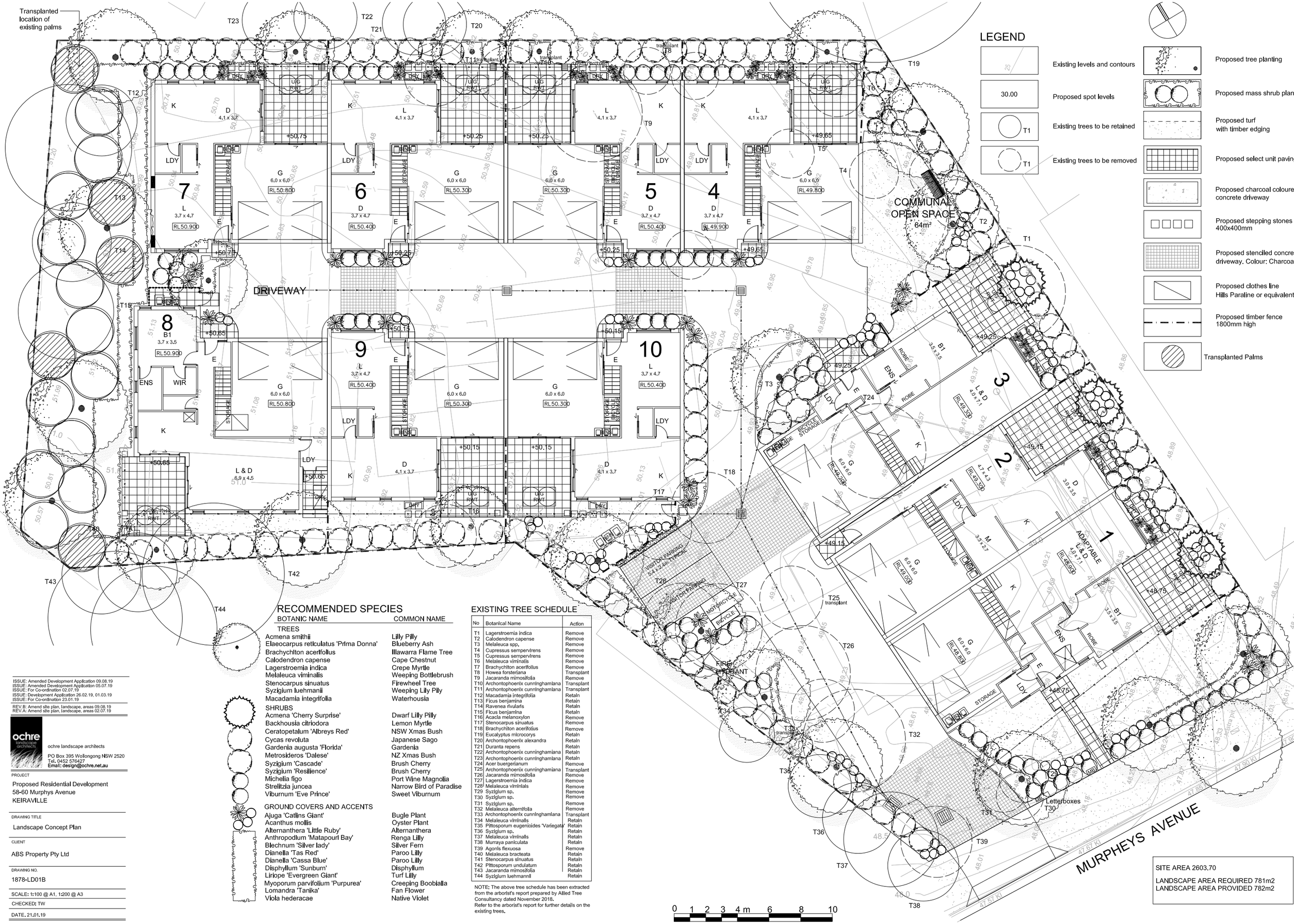
DESIGN : SR
DRAWN : DJ
DATE : JAN 19
DRG SIZE : A1
SCALE : NTS
PROJECT MGR : SF

CIVIL DESIGN STORMWATER PLAN

PROPOSED RESIDENTIAL UNIT DEVELOPMENT
58- 60 MURPHY'S AVENUE, KEIRAVILLE NSW, 2500
ABS PROPERTY PTY LTD

18020085 C01 P3

PRELIMINARY NOT TO BE USED FOR CONSTRUCTION



RECOMMENDED SPECIES

BOTANIC NAME	COMMON NAME
TREES	
Acmena smithii	Lilly Pilly
Elaeocarpus reticulatus 'Prima Donna'	Blueberry Ash
Brachychiton acerifollus	Illawarra Flame Tree
Calodendron capense	Cape Chestnut
Lagerstroemia indica	Crepe Myrtle
Melaleuca viminalis	Weeping Bottlebrush
Stenocarpus sinuatus	Firewheel Tree
Syzigium luehmanii	Weeping Lily Pily
Macadamia integrifolia	Waterhousia
SHRUBS	
Acmena 'Cherry Surprise'	Dwarf Lilly Pilly
Backhousia citriodora	Lemon Myrtle
Ceratopetalum 'Albreys Red'	NSW Xmas Bush
Cycas revoluta	Japanese Sago
Gardenia augusta 'Florida'	Gardenia
Metrosideros 'Dalese'	NZ Xmas Bush
Syzigium 'Cascade'	Brush Cherry
Syzigium 'Resilience'	Brush Cherry
Michelia figo	Port Wine Magnolia
Strelitzia juncea	Narrow Bird of Paradise
Viburnum 'Eve Prince'	Sweet Viburnum
GROUND COVERS AND ACCENTS	
Ajuga 'Catlins Giant'	Bugle Plant
Acanthus mollis	Oyster Plant
Alternanthera 'Little Ruby'	Alternanthera
Anthropodium 'Matapouri Bay'	Renga Lilly
Blechnum 'Silver lady'	Silver Fern
Dianella 'Tas Red'	Paroo Lilly
Dianella 'Cassa Blue'	Paroo Lilly
Disphyllum 'Sunburn'	Disphyllum
Liriope 'Evergreen Giant'	Turf Lilly
Myoporum parvifolium 'Purpurea'	Creeping Boobialla
Lomandra 'Tanika'	Fan Flower
Viola hederacae	Native Violet

EXISTING TREE SCHEDULE

No	Botanical Name	Action
T1	Lagerstroemia indica	Remove
T2	Calodendron capense	Remove
T3	Melaleuca spp.	Remove
T4	Cupressus sempervirens	Remove
T5	Cupressus sempervirens	Remove
T6	Melaleuca viminalis	Remove
T7	Brachychiton acerifolius	Remove
T8	Howea forsteriana	Transplant
T9	Jacaranda mimosifolia	Remove
T10	Archontophoenix cunninghamiana	Transplant
T11	Archontophoenix cunninghamiana	Transplant
T12	Macadamia integrifolia	Retain
T13	Ficus benjamina	Retain
T14	Ravenea rivularis	Retain
T15	Ficus benjamina	Retain
T16	Acacia melanoxylon	Remove
T17	Stenocarpus sinuatus	Remove
T18	Brachychiton acerifolius	Remove
T19	Eucalyptus microcorys	Retain
T20	Archontophoenix alexandra	Retain
T21	Duranta repens	Retain
T22	Archontophoenix cunninghamiana	Retain
T23	Archontophoenix cunninghamiana	Retain
T24	Acer buergerianum	Remove
T25	Archontophoenix cunninghamiana	Transplant
T26	Jacaranda mimosifolia	Remove
T27	Lagerstroemia indica	Remove
T28	Melaleuca viminals	Remove
T29	Syzigium sp.	Remove
T30	Syzigium sp.	Remove
T31	Syzigium sp.	Remove
T32	Melaleuca alternifolia	Remove
T33	Archontophoenix cunninghamiana	Transplant
T34	Melaleuca viminalis	Retain
T35	Pittosporum eugenioides 'Variegata'	Retain
T36	Syzigium sp.	Retain
T37	Melaleuca viminalis	Retain
T38	Murraya paniculata	Retain
T39	Agonis flexuosa	Remove
T40	Melaleuca bracteata	Retain
T41	Stenocarpus sinuatus	Retain
T42	Pittosporum undulatum	Retain
T43	Jacaranda mimosifolia	Retain
T44	Syzigium luehmannii	Retain

NOTE: The above tree schedule has been extracted from the arborist's report prepared by Allied Tree Consultancy dated November 2018. Refer to the arborist's report for further details on the existing trees.

SITE AREA 2603.70

LANDSCAPE AREA REQUIRED 781m2
LANDSCAPE AREA PROVIDED 782m2

ISSUE: Amended Development Application 09.08.19
ISSUE: Amended Development Application 05.07.19
ISSUE: For Co-ordination 02.07.19
ISSUE: Development Application 26.02.19, 01.03.19
ISSUE: For Co-ordination 23.01.19

REV.B: Amend site plan, landscape, areas 09.08.19
REV.A: Amend site plan, landscape, areas 02.07.19

ochre landscape architects
PO Box 395 Wollongong NSW 2520
Tel. 0452 576427
Email: design@ochre.net.au

PROJECT
Proposed Residential Development
58-60 Murphys Avenue
KEIRAVILLE

DRAWING TITLE
Landscape Concept Plan

CLIENT
ABS Property Pty Ltd

DRAWING NO.
1878-LD01B

SCALE: 1:100 @ A1, 1:200 @ A3

CHECKED: TW

DATE. 21.01.19

IMPORTANT NOTE

1. This plan was prepared for the sole use of the client for the specific purpose of producing a detailed site survey for level purposes. This plan is strictly limited to that purpose and does not apply directly or indirectly and will not be used for any other application, use or matter. The plan is presented without the assumption of a duty of care to any other person (other than the Client) ("Third Party") and may not be relied on by Third Party.
2. Contours are interpolated from accurate spot levels as shown and should be used as a guide only. Do not re-interpolate contours.
3. Bearings and distances are by title/ or deed only. No boundary investigation has been carried out. Relationship of improvements to boundaries is diagrammatic only. Where offsets are critical they should be confirmed by further survey.
4. Services shown heron have been determined from visual evidence only. prior to any demolition, design, excavation or construction on site the relevant authority should be contacted to establish detailed location and depth.
5. Masters Surveying will not be liable (in negligence or otherwise) for any direct or indirect loss, damage, liability or claim arising out of or incidental to:
   a. a Third Party publishing, using or relying on the plan;
   b. Masters Surveying relying on information provided to it by the Client or a Third Party where the information is incorrect, incomplete, inaccurate, out-of-date or unreasonable;
   c. any inaccuracies or other faults with information or data sourced from a Third Party;
   d. Masters Surveying relying on surface indicators that are incorrect or inaccurate;
   e. the Client or any Third Party not verifying information in this plan where recommended by Masters Surveying
   f. lodgment of this plan with any local authority, against the recommendation of Masters Surveying
6. Without limiting paragraph 1 or 2 above, this plan may not be copied, distributed, or reproduced by any process unless this note is clearly displayed on the plan.
7. For reasons of plan presentation, not all of the information can be shown on this plan.

Rev.	Reason for Issue or Amendment	Date	Drawn	Checked	Surveyed
0	Original Issue for information	25-10-2018	AC DB	NB	AC

MASTERS SURVEYING
116 Corrimal Street, Wollongong NSW 2500 P 02 4228 9911 masterssurveying.com.au
Wollongong CADASTRAL CONSTRUCTION ENGINEERING

Project: 58-60 Murphys Avenue Keiraville- Lots 2 & 3 D.P 589693	Masters Job No: W18175		Scale: 1:200 at A1
Title: Detailed Site Survey	Level Datum: AHD	Origin: SSM 114674	Co-ord System: N/A
Client: ABS Property Pty Ltd	Masters Drawing No: W18175-1	Revision: 0	Sheet: 1 of 1

7.2.5 Parking, Traffic and Access

The proposed units are accessed from one combined access/egress driveway point from Murphys Avenue near the south-western corner frontage (currently two (2) separate driveway points are provided from the site). The driveway crossover is located a minimum 1.5 metres from side boundaries and is provided with landscaping beds. An internal access driveway with maximum width of 3.0- 6.0m will allow for manoeuvring to access and egress from all garages and the two (2) visitor car parking spaces provided on the site, opposite unit 3, which complies with the requirements of Schedule 1 of Chapter E3 (Car parking, Access, Servicing, Loading and Traffic Management). Bicycle spaces for each unit have been accommodated within the double garages, with 1 visitor bicycle space and 1 visitor motorcycle space also provided adjacent to the visitor parking spaces.

7.2.6 Unit Mix - Variation Statement

Clause 5.13 of Chapter B1 (Residential Development) of WDCP 2009 specifies the following with respect to unit mix within a multi-unit development:

> *"Provide a mix of dwelling sizes and layouts within larger multi-dwelling developments having ten (10) or more dwellings. This could include both variation in the number of bedrooms and gross floor areas of apartments, variety in the internal design or incorporating one, two and three bedroom dwellings to accommodate various resident requirements."*

The objectives of this control are:

> *"(a) To provide variety in dwelling sizes and layouts to cater for a range of household types and to assist housing affordability initiatives.*
>
> *(b) To ensure that the internal arrangement of dwellings is functional and satisfies occupant's needs.*
>
> *(c) To design dwellings to promote resident amenity and adaptability of use."*

Variation is sought to this requirement to provide a mix of dwelling types, to allow only 3 bedroom dwellings. This request is considered to be justified having regard to the demographics of this neighbourhood which, in addition to the student population, demonstrates a high number of families with children. According to ABS data from the 2016 Census, families within the Keiraville area have, on average, 1.9 children per family, compared to the lower rate for the Wollongong area of 1.6 children per family. This supports the provision of additional three (3) bedroom dwellings to support the needs of both students and young families in this locality. Furthermore, the proposed dwelling design offers a degree of flexibility, with variation in the internal layouts and gross floor areas across dwellings, with a number also containing a study. Accordingly, the unit mix is considered to be appropriate for this location and approval for this variation is sought.

7.2.7 Access for Disabled Persons

One (1) adaptable unit is required by the Council's DCP (representing 10% of all dwellings). One residential unit (being No. 1) is provided as an adaptable unit, as illustrated in the Post Adaptation Plan prepared by ADM Architects (dwg. no. A09). A Statement of Compliance Access for People with a Disability, prepared by Accessible Building Solutions, accompanies the application and confirms the proposal can achieve compliance with the essential requirements of AS4299-Adaptable Housing. The statement notes that under the BCA the building is classified as "Class 1a (townhouses)" and there are no accessibility requirements under the BCA.

7.2.8 Vegetation/Tree Removal and Landscaping (Chapters E3 and E17)

An Arborist Report has been prepared by Allied Tree Consultancy (dated February 2019), which confirms the proposed removal of twenty-five (25) trees within the subject site. The Arborist Report includes analysis of all trees proposed for removal as well as required Tree Protection Zones required for existing trees to be retained.

Landscaping is also proposed adjacent to all property boundaries, including within the front setback area to minimise streetscape impacts of the front facing Unit 1 and the driveway access point. The entire property is 2603.5m^2, of which 791m^2 will comprise landscaped area (30.38%), including the rear deep soil area. This exceeds the minimum of 30% of the site required to be landscaped areas in compliance with the DCP. Refer to the Landscape Concept Plan prepared by Ochre Landscape Architects.

7.2.9 Stormwater and Water Sensitive Urban Design (Chapters E13, E14 and E15)

Stormwater will be treated in accordance with the Civil Design Plans provided in association with the application, prepared by Jones Nicolson and prepared in line with WDCP requirements. The Stormwater Concept Plan details the stormwater drainage design from the proposed dwellings and driveway surface, including the provision and location of stormwater pipes for each dwelling, the location beneath the driveway of stormwater pits and stormwater in relation to the communal open space area. An OSD tank will be located below the driveway in the south-western part of the site. Each dwelling will be equipped with individual rainwater tank (min 1500L) for gardening and laundry. Stormwater is proposed to be discharged to the street.

7.2.10 Safety and Security, and Accessibility (Chapter E2)

This chapter seeks to promote the creation of safer places through environmental design in the planning, design and management of development. The principles aim to encourage and guide public and private developments to include CPTED principles in the planning and design stages of buildings and public spaces. This chapter provides details such as lighting, natural surveillance and sightlines, signage, building design and landscaping.

Dwelling entrances are clearly defined and entrances to dwellings and living areas are provided from dedicated entries from the internal driveway or through garages (with the exception of Unit 1, which has frontage to Murphys Avenue and has pedestrian access to the entry foyer from this frontage). Storage areas are located within lockable garages. Landscaping does not obscure entry points off the driveway area. The orientation of bedrooms at the upper levels of each unit will provide overlooking/natural surveillance and sightlines towards the street (Unit 1), to the driveway areas (all units), and to the communal open space area (Unit 3).

7.2.11 Demolition and Asbestos Management (WDCP Chapters E21)

A Demolition Plan (Drawing No.A13) and a Site Waste Minimisation and Management Plan accompany the development application for demolition, site works, construction and ongoing waste generation for the development (prepared by ADM Architects). The existing dwellings (one x two-storey brick cottage with tile roof and one x single-storey clad cottage with metal roof) and various ancillary structures are proposed to be demolished and are to be assessed for asbestos at the time of demolition and, if found, are to be disposed of in accordance with the relevant WorkCover standards and guidelines.

7.2.12 Waste Management (WDCP Chapters E7) – Variation Statement

Clause to be varied

Clause 5.4.3 of Chapter E7 specifies the following with regards to the provision of communal waste facilities:

1. A communal waste facility must be provided for:

- *Development incorporating more than six (6) dwellings; or*
- *Multi-dwelling housing developments where the number of bins proposed cannot be accommodated within 50% of the development's frontage on collection day; or*
- *Developments where site constraints make access to the street difficult for individual occupants; or*
- *Developments with frontage to a major road, where on-site garbage collection is required.*

There are no objectives to this clause.

Justification for variation

To allow for the storage and collection of ongoing waste, each unit will be provided with a 120L waste, 240L recycling and 120L compost bin. Bins will be stored either within the garage (for Units 1 and 2) or to the side or rear of the unit (for Units 3 - 10) and will be wheeled kerbside by each individual owner on collection day. 10 x 120L and 10 x 240L bins will occupy 10.65m of the site on collection day (i.e. 580mm x 10 + 485mm x 11), which is less than 50% of the site width (26.095m). Variation is sought to the requirement for a communal waste facility as the layout of the development can adequately cater for individual waste bins and the site frontage is of sufficient width to accommodate bin storage on collection day. It is considered that the method of storage will result in a lesser impact on the streetscape which is characterised by detached dwellings.

7.2.13 Cumulative Impact

There is unlikely to be any adverse cumulative impacts as a result of the proposed development, given that the proposal is consistent with the WLEP 2009, and with the principal controls of WDCP 2009.

7.3 Suitability of the Site for the Development – Section 4.15(1)(c)

The subject site is zoned R2 Low Density Residential zone and has been designed having regard to the provisions of Wollongong LEP 2009 and DCP 2009, and is considered to a suitable development for the site. There are no site constraints which would render the site incapable of accommodating the proposed development.

Unit 5,
174-182 Gipps Rd,
Gwynneville NSW 2500
T 02 4228 7833
F 02 4228 7844
reception@tcgplanning.com.au

The General Manager,
Wollongong City Council,
records@wollongong.nsw.gov.au

4 July 2019

Attention: Jessica Saunders
Senior Development Project Officer

Dear Jessica

Additional Information for Development Application DA-2019/284
Construction of Multi Dwelling Housing – Ten (10) Townhouses
at Nos. 58-60 Murphys Avenue, Keiraville

TCG Planning has been engaged by the applicant, ADM Architects, to address Items 3.3 (Ecologically Sustainable Development) and 3.7 (Character) of Council's correspondence of 30 May 2019, which seeks the submission of additional information in respect of DA 2019/284 for a multi unit development at 58 Murphys Ave, Keiraville. Specifically, such matters pertain to the consistency of the proposed multi-dwelling development with the principles of ecologically sustainable development and the relationship of the development with the existing and future desired character of the Keiraville area, as prescribed in the Wollongong Development Control Plan (WDCP) 2009. We note that a response to other matters identified in this correspondence will be provided by ADM Architects and other consultants under separate cover.

1 Ecologically Sustainable Development

3.3 The applicant is to provide further justification as to how the development addresses the objectives and sustainability principles of Chapter A2 Ecologically Sustainable Development of the Wollongong Development Control Plan 2009, and relevant controls provided within Chapter B1 which relate to sustainability.

In addressing the provisions of State Environmental Planning Policy (Building Sustainability Index: BASIX 2004) the development application was accompanied by a BASIX Certificate (No. 996350M_02) and Thermal Assessor Certificate (No. 0003658710) prepared by Building Sustainability Assessments (dated 4 March 2019), which confirmed that the proposed BASIX commitments achieve the SEPP requirements for thermal comfort and water and energy efficiencies. Each dwelling is provided with a minimum 1,500L rainwater tank, which is connected to garden taps and the laundry to reduce potable water use.

Further, the development will meet the objectives and sustainability principles of Chapter A2 of WDCP 2009 and the relevant controls in Chapter B1 which relate to sustainability in the following manner:

- Dwellings will be provided with a recycling bin to reduce the amount of general waste produced and encourage recycling. Green waste bins will also be available to allow reuse/recycling of green waste off site.
- The provision of a water tank for each dwelling will reduce potable water usage and encourage water recycling.
- All units are naturally cross ventilated reducing reliance on energy for cooling purposes.
- The majority of the units have north facing living spaces, allowing for warmth in winter months and a lower level of energy consumption for heating purposes.
- 70% of the courtyards for the townhouses are north or north-easterly facing, thereby maximising solar access throughout the year.
- The development meets the requirement for a minimum of 30% of landscaping of the total site area, including the rear deep soil zone, to enable water infiltration. As outlined in the Landscape Concept Plan prepared by Ochre Landscape Architects (Drawing No.1878-LD01) submitted with the application, compensatory planting includes a wide variety of native plant species, including Illawarra Flame Tree, Blueberry Ash, Lemon Myrtle, and Native Violet.
- The development will allow for compensatory tree planting within the rear deep soil zone, contributing to birdlife habitat. The positioning of the deep soil zone at the rear of the site will allow for future connectivity with deep soil zones on adjacent sites.

2 Existing and Future Desired Character

3.7 A number of submissions have been received with concerns raised in relation to the development being out of character with the surrounding area, as there are no other townhouse developments in the immediate surrounds of the site and the development proposes the removal of a significant number of trees.
The applicant is to provide further justification as to how the proposal could be considered consistent with the existing and future desired character of the area, noting the area immediately surrounding the site is predominately comprised of single dwelling houses in landscaped settings.

In reviewing the 22 unique submissions received in relation to the proposed development, we note the following key objections to the development with regards to the issues of existing and future desired character, development density and tree removal, as identified at point 3.7 in Council's letter:

- The proposed development is inconsistent with the streetscape character;
- The proposed development is inconsistent with the neighbourhood character;
- The proposed development comprises two-storeys, which is inconsistent with the predominantly single-storey housing stock in the immediate vicinity;
- The proposed number of dwellings (10) constitutes an overdevelopment of the site;
- The development type will facilitate a change in the social character of the area – the neighbourhood community is predominantly owner-occupied, dwelling design and density targeted at short-term university student rental, which changes the social fabric;
- There is a no townhouse development in the vicinity;
- The proposed extensive removal of trees contradicts neighbourhood character as a "leafy suburb";
- The proposed tree removal compounds privacy and overlooking issues to adjoining dwellings;
- The proposed development is likely to impact on trees on adjacent properties;
- Many of the trees proposed to be removed are mature natives which provide habitat.

In addressing the existing and future desired character of the Keiraville area we refer to section 6.1 of the Statement of Environmental Effects (dated 27 March 2019) also prepared by TCG Planning in association with the application. In the statement, we referenced an extract from Chapter D1: 'Character Statements' clause 3.28 ('Keiraville'), which outlined Council's vision for the existing and desired future character as follows:

> ***Existing Character***
>
> *Keiraville has a natural leafy setting and is characterised by a mix of housing types, including detached dwelling-houses on varied residential lot sizes as well as boarding-houses, villas, townhouses and walk up residential flat buildings. The detached dwelling-houses are predominantly single storey to two storey in height and are of a face brick or weatherboard construction with tiled hipped roof forms.*
>
> ***Desired Future Character***
>
> *Keiraville will remain a leafy suburb with a mix of housing types ranging from detached dwelling-houses, boarding-houses, villas, townhouses and some residential flat buildings. In this regard, additional medium density developments are likely to occur within reasonable walking distance to the University of Wollongong, especially in residential precincts directly to the east and south of the Wollongong Botanic Gardens.*

The proposed development comprises a two-storey townhouse development, which is consistent with both the existing and desired future character as described in WDCP 2009. Council's desired future character for this locality acknowledges the proximity of the development to the University of Wollongong, and accepts that within this location, additional multi unit housing will be required to meet future demands. It is noted that the subject site is situated approximately 1.3km, or an 18-minute walk, from the University of Wollongong library (the library being located centrally to the campus), this being considered a reasonable walking distance. Further, the subject site is located in close proximity to the 'Gwynneville-Keiraville' (GK) shuttle route, a free bus service provided by the university, which links the Wollongong Campus with Keiraville, Gwynneville, the Wollongong CBD and Wollongong Station. The subject site is located in close proximity to bus stops serviced by the GK shuttle on Robsons Road, being approximately 230m or a 4-minute walk to the east of the site.

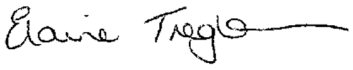
The suburb of Keiraville can also be described as an 'inner' suburb of Wollongong, being in close proximity to the range of commercial and retail services and facilities offered by the CBD; to recreational facilities at Beaton Park; and to outdoor recreational facilities at the Wollongong foreshore. It is anticipated that this locality will also have an increased level of demand by a broader demographic, which also contribute to housing demand in this locality.

Whilst it is acknowledged that the amount of multi unit development in Murphys Avenue in proximity to the site is currently limited, it is noted that an increasing number of multi unit developments are currently evident in the broader locality, particularly along Robsons Rd to the immediate east. It is also emphasised that WLEP 2009 permits multi unit development on the site. Further, the proposed development accords with Council's intended vision for this locality, through the provision of multi unit housing in the form of two storey townhouses. Unit 1, which fronts Murphys Ave provides a street address with direct access from Murphys Avenue, to reflect the character of existing dwellings in this locality.

Whilst approval is sought for the removal of trees, it is noted that the proposed development meets the requirement for a minimum of 30% of landscaping of the total site area, including the rear deep soil zone. As outlined in the Landscape Concept Plan prepared by Ochre Landscape Architects submitted with the application, compensatory planting includes a wide variety of native plant species, comprising trees, shrubs and ground covers, and includes Illawarra Flame Tree, Blueberry Ash, Lemon Myrtle, and Native Violet, amongst others.

We trust that the above information addresses the matters of consistency with the principles of ecologically sustainable development and existing and future desired character and request Council progress the application. Please do not hesitate to contact the applicant in the first instance, or the undersigned if further clarification is sought.

Yours Faithfully,



_____

Elaine Treglown
Director
TCG Planning

Traffic Statement for Proposed Residential Development at Murphys Avenue

Prepared for ABS Property Pty Ltd

JN
Responsive Engineering

CRPT-18020085.01A

Revision History

REVISION	DATE	BY	CHECKED	COMMENTS
A	05/07/2019	SR	SF	Support Council AIR

The recipient of the latest issue as noted above will be responsible for superseding/destroying all previous documents.

Contents

1. Introduction

Jones Nicholson has been engaged to prepare this Traffic Impact Assessment to support a development application for the proposed residential development on Lots 2 & 3 DP 589693 being 58-60 Murphys Avenue Keiraville. This report has been prepared referencing the following available information:

- Wollongong City Council Additional Information Request (dated 30 May 2019);
- Architectural Drawings prepared by ADM Architects (Job No. 2018-34).

2. Site Details

The site (Lots 2 & 3 DP 589693) has a total area of approximately 2610m2. The site is currently zoned as R2 residential and contains existing residential dwellings.

The area of the development is bound by other residential development to the north, east & west. To the south is Murphys Avenue. It has a site area of approximately 0.26 hectares. Traffic access to the proposed development will be via Murphys Avenue.

Figure 1. Site Location

Source: https://maps.six.nsw.gov.au/

3. Pre-development Conditions

3.1. Road Network

Surrounding the site are urban roads with bitumen sealed formation. Stormwater drainage inlets are located within the kerb and gutter.

Murphys Avenue runs into Robsons Road providing connectivity with the Princes Motorway to the south and to the north via Northfields Avenue. Georgina Avenue is the first street providing connectivity to the site from Murphys Avenue and is located directly to the east. Andrew Avenue provides connectivity to the site for vehicles traveling west on Murphys Avenue.

Murphys Avenue is classified as a local road with 2-way operation and 50km/h limited speed zone

Figure 2. Surrounding Network

Source: google maps

3.2. Traffic Movement

To analyse the existing traffic movement Jones Nicholson engaged CFE Information Technologies to complete a traffic count from 10th June 2019 to 17th June 2019 at the main intersection of Murphys Avenue and Robsons Road. Additional survey of the intersection of Murphys Avenue and Georgina was taken to complement the statistical analysis. Traffic data summaries can be found in Appendix A of this report.

The AM Peak Hourly Traffic movement for the intersection of Murphys Avenue and Robsons Road was found to be from 8am to 9am. The PM Peak Hourly Traffic movement for the intersection of Murphys Avenue and Robsons Road was found to be from 5pm to 6pm.

The survey data obtained at the intersection of Murphys Avenue and Robsons Road provides a weekly sample of traffic movements. The AM and PM Peak Hour Traffic movements derived from the survey data are shown in Table 1.

Traffic Murphys Avenue and Robsons Road	**AM PEAK**	**PM PEAK**
Robsons Road North/South	287 (southern approach)	253 (northern approach)
Murphys Avenue East/West	110 (eastern approach)	303 (eastern approach)

Table 1 – Peak Hour Movements

3.3. Existing Level of Service

As part of the analysis of the traffic data obtained at the intersections, a SIDRA analysis of the Level of Service was undertaken.

The following levels of service are defined by the highest average delay per vehicle in seconds:

Level of Service	**Delays**	**Classification**
A	0 to 14.5	Good
B	14.5 to 28.5	Good with minimal delays and spare capacity
C	28.5 to 42.5	Satisfactory with spare capacity
D	42.5 to 55	Satisfactory but operating at capacity
E	55 to 70.5	At capacity and incidents will cause excessive delays
F	Greater than 70.5	Unsatisfactory and requires additional capacity

Table 2 – Level of Ratings

The SIDRA analysis for the existing intersection of Murphys Avenue and Robsons Road yielded the following levels of service for the AM peak period.

Approach Leg	Vehicles/Hr	Level of Service	Degree of Saturation	Max Queue Distance (m)
Murphys: Westbound	110	A	0.093	3.3
Murphys: Eastbound	67	A	0.068	2.3
Robsons: Southbound	96	A	0.088	3
Robsons: Northbound	287	A	0.214	8.7

Table 3 – Existing Level of Service at Intersection of Murphys and Robson Road – AM Peak

The SIDRA analysis for the existing intersection of Murphys Avenue and Robsons Road yielded the following levels of service for the PM peak period.

Approach Leg	Vehicles/Hr	Level of Service	Degree of Saturation	Max Queue Distance (m)
Murphys: Westbound	303	A	0.293	12.3
Murphys: Eastbound	72	A	0.065	2.2
Robsons: Southbound	253	A	0.213	8.3
Robsons: Northbound	188	A	0.143	5.7

Table 4 – Existing Level of Service at Intersection of Murphys and Robson Road – PM Peak

4. Post-development Conditions

4.1. Traffic Generation from the Proposed Development

In consideration of the impact of the development on the existing road network, Jones Nicholson has referenced the RTA '*Guide to Traffic Generating Developments – Version 2.2*' in determining traffic generation from the site.

The proposal is to construct a series of residential townhouse buildings with 3 bedrooms. The unit breakdown in Table 5 below has been adopted for the purposes of this traffic assessment.

Description	Number of Townhouses
1 bedroom	0
2 bedroom	0
3 bedroom	10
Total	10

Table 5 – Unit yield breakdown

Referencing the RTA 'Guide to Traffic Generating Developments – Version 2.2' traffic generation figures for medium density residential, Table 6 provides the peak hourly vehicle movements expected to be generated from the development.

Description	Number of Units	Peak Hour Vehicle Trip Rate	Peak Hour Vehicle Trips
Residential Units up to 3 bedrooms or more	10	0.5 -0.65 / dwelling	10 x 0.65 = 6.5
Total			**7 vehicles/hour**

Table 6 – Peak hourly vehicle movements

Daily traffic generation rates for medium density residential have been sourced from the RTA '*Guide to Traffic Generating Developments – Version 2.2*'. Table 7 provides daily traffic generation figures for the development.

Description	Number of Units	Daily Vehicle Trip Rate	Daily Vehicles
Residential Units up to 3 bedrooms or more	10	5-6.5 / dwelling	10 x 6.5 = 65
Total			**65**

Table 7 – Daily traffic generation

4.2. Post-development Level of Service

The SIDRA analysis for the existing intersection of Murphys Avenue and Robsons Road yielded the following levels of service for the AM peak period.

Approach Leg	Vehicles/Hr	Level of Service	Degree of Saturation	Max Queue Distance (m)
Murphys: Westbound	110	A	0.090	3.3
Murphys: Eastbound	72	A	0.073	2.5
Robsons: Southbound	79	A	0.072	2.5
Robsons: Northbound	287	S	0.214	8.6

Table 8 – Proposed Level of Service at Intersection of Murphys and Robson Road – AM Peak

The SIDRA analysis for the existing intersection of Murphys Avenue and Robsons Road yielded the following levels of service for the PM peak period.

Approach Leg	Vehicles/Hr	Level of Service	Degree of Saturation	Max Queue Distance (m)
Murphys: Westbound	304	A	0.294	12.4
Murphys: Eastbound	74	A	0.067	2.3
Robsons: Southbound	253	A	0.213	8.3
Robsons: Northbound	188	A	0.144	5.7

Table 9 – Proposed Level of Service at Intersection of Murphys and Robson Road – PM Peak

The results of the analysis suggest that the intersections will continue to operate at the optimal level of service post development. The increased traffic generated by the proposed development will not decrease the level of service of the existing intersections.

4.3. Car Parking Provisions

4.3.1. Parking comparison under Wollongong DCP Chapter E3

An assessment under the terms of Chapter E3 has been performed. The DCP assessment results in the following car, motorcycle and bicycle parking requirements shown in Table 10.

Description	Number of Dwellings	Car Space Rate	Total Parks Under E3
Small Unit	0 (<70m2)	1 space per dwelling	0
Medium Unit	0 (>70m2<110m2)	1.5 space per dwelling	0
Large Unit	10 (>110m2)	2 spaces per dwelling	20
Visitors	10	0.2 spaces per dwelling	2
Bicycle	10	1 per 3 units	4
Motorcycle		1 per 15 units	1
TOTAL			**22 car spaces** **4 bicycle spaces** **1 motorcycle spaces**

Table 10 – Parking requirements under Wollongong *Councils DCP Chapter E3*

Referencing the site plan prepared by ADM Architects, a total of 22 car parking spaces and 1 motorcycle has been provided under the proposed development. 1 visitor bicycle parking space has been provided with all other bicycle parking proposed to be contained within each unit.

4.4. Parking Compliance

The 22 car parking, 1 motorcycle park and 4 bicycle parking spaces required by Council has been provided within the proposed development.

4.5. Road Network and Site Access

The driveway access off Murphys Avenue will convey vehicles to the proposed off-street car parking. The access driveway has been designed in accordance with the requirements of AS2890.1 for a Category 1 access driveway.

The driveway and car parking area allow vehicles to enter and leave the development in a forward direction from Murphys Avenue.

4.5.1. Access Driveway Sight Distance

The distance of clear line of sight for vehicles looking east is the distance between the access driveway and the Robsons Road intersection. This distance is 150m with Georgina Avenue located part way along this road at a distance of 60m from the driveway access.

The distance of clear line of sight for vehicles looking west is the distance between the access driveway and the Andrew Avenue intersection. This distance is 120m.

The official speed limit in Murphys Avenue is 50km/hr.

Referencing AS2890.1, Figure 3.2 requires that for a 50km/h road speed, a minimum safe sight distance of 45m shall be achieved. As the development has clear line of site greater than this in both directions, the development is compliant with Figure 3.2 of AS2890.1.

4.5.2. Access Driveway - Pedestrian Sight Lines

Referencing AS2890.1, section 3.2.4 (b) and Figure 3.3, a 2.5m x 2m sight triangle is required at the property boundary for a line of sight to pedestrians. Architectural drawings prepared by ADM comply with this requirement to enable clear lines of sight.

4.5.3. Existing On-Street Car Parking

Murphys Avenue has a formation width of 13m from kerb to kerb. This width of formation is sufficient to permit kerbside parking on the northern and southern sides of Murphys Avenue. Currently there is no restriction on kerbside car parking within Murphys Avenue.

As outlined in the determination of compliant car parking under the requirements of Chapter E3 of the Wollongong DCP, twenty resident parking spaces, two visitor car spaces, one visitor motorcycle space and 1 visitor bicycle space are provided on-site.

In determining the likely impact of the development on the existing car parking situation JN has completed this assessment based upon the assumption that Council is specifically seeking to resolve the impact if separate letting of rooms to students/unrelated persons were to occur within the development.

The probable maximum parking demand for the development would be on the assumption that every bedroom within the development was let to students/unrelated persons. For 10 x 3 bedroom units at 1 car space per bedroom, this would require 30 car parking spaces for residents. This is an additional 10 spaces above that currently determined as compliant with the requirements of Chapter E3 of the Wollongong DCP.

A review of the available kerbside parking in Murphys Avenue from Andrew Avenue to Robsons Road, it has been calculated that there is an opportunity for 55 car parking spaces along this portion of Murphys Avenue. Considering the maximum parking demand requires an additional 10 car parking spaces, there is sufficient capacity within the existing on-street parking area in the immediate vicinity of the site to accommodate these vehicles.

4.5.4. Waste Collection

Waste collection via on-street collection is proposed for the development. Waste bins will be allocated to the kerbside where sufficient space is available to accommodate the waste bins.

As noted on the drawings prepared by ADM, the waste bins can occupy 48% of the Murphys Avenue site frontage. Given the compliance of the car parking requirements with Chapter E3, normal operation of the proposed development will have car parking contained within the development site and kerb frontage available for waste collection.

5. Conclusion

Following the analysis of the proposed development, we provide the following summary of findings:

- The proposed development will not impact upon the existing level of service at the Robsons Road/Murphys Avenue roundabout;
- Adequate car parking is provided on site in accordance with Chapter E3 of the Wollongong Development Control Plan 2009;
- Sight distances at access driveways conforms with Figure 3.2 of AS2890.1. Sight distances along Murphys Avenue are satisfactory;
- The access driveway has been designed in accordance with the requirements of AS2890.1 for a Category 1 access driveway.
- Pedestrian sight lines are compliant with AS2890.1, section 3.2.4 (b) and Figure 3.3;
- Existing on-street car parking capacity for 55 vehicles is sufficient to accommodate a probable maximum demand for the development that would require a maximum of 10 vehicles allocated to on-street kerbside parking;
- Waste collection from the kerbside of Murphys Avenue is achievable under normal operation of the development;
- Access, servicing arrangements and internal car park and manoeuvring areas are in accordance with the requirements of AS2890 Part 1;

Report prepared by

Stephen Falkner

Project Engineer (Civil)

Reviewed:

Scott Robinson

Design Engineer (Civil)

MOVEMENT SUMMARY

Site: Murphy - Robson - AM - Existing

Murphy - Robson
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Robson											
1	L2	14	0.0	0.214	5.1	LOS A	1.2	8.7	0.21	0.55	52.4
2	T1	158	0.0	0.214	5.1	LOS A	1.2	8.7	0.21	0.55	53.3
3	R2	115	0.0	0.214	8.1	LOS A	1.2	8.7	0.21	0.55	52.9
Approach		287	0.0	0.214	6.3	LOS A	1.2	8.7	0.21	0.55	53.1
East: Murphy											
4	L2	55	0.0	0.093	5.3	LOS A	0.5	3.3	0.25	0.54	52.7
5	T1	33	0.0	0.093	5.3	LOS A	0.5	3.3	0.25	0.54	53.6
6	R2	22	0.0	0.093	8.3	LOS A	0.5	3.3	0.25	0.54	53.2
Approach		110	0.0	0.093	5.9	LOS A	0.5	3.3	0.25	0.54	53.1
North: Robson											
7	L2	16	0.0	0.088	5.8	LOS A	0.4	3.0	0.35	0.53	52.7
8	T1	79	0.0	0.088	5.8	LOS A	0.4	3.0	0.35	0.53	53.6
9	R2	1	0.0	0.088	8.7	LOS A	0.4	3.0	0.35	0.53	53.2
Approach		96	0.0	0.088	5.8	LOS A	0.4	3.0	0.35	0.53	53.4
West: Murphy											
10	L2	5	0.0	0.068	6.4	LOS A	0.3	2.3	0.44	0.58	52.1
11	T1	53	0.0	0.068	6.4	LOS A	0.3	2.3	0.44	0.58	53.0
12	R2	9	0.0	0.068	9.4	LOS A	0.3	2.3	0.44	0.58	52.6
Approach		67	0.0	0.068	6.8	LOS A	0.3	2.3	0.44	0.58	52.9
All Vehicles		560	0.0	0.214	6.2	LOS A	1.2	8.7	0.27	0.55	53.1

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Murphy - Robson - PM - Existing

Murphy - Robson
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Robson											
1	L2	30	0.0	0.143	5.1	LOS A	0.8	5.7	0.19	0.54	52.6
2	T1	98	0.0	0.143	5.1	LOS A	0.8	5.7	0.19	0.54	53.5
3	R2	60	0.0	0.143	8.1	LOS A	0.8	5.7	0.19	0.54	53.1
Approach		188	0.0	0.143	6.0	LOS A	0.8	5.7	0.19	0.54	53.3
East: Murphy											
4	L2	258	0.0	0.293	6.4	LOS A	1.8	12.3	0.49	0.63	52.4
5	T1	40	0.0	0.293	6.4	LOS A	1.8	12.3	0.49	0.63	53.3
6	R2	5	0.0	0.293	9.4	LOS A	1.8	12.3	0.49	0.63	52.9
Approach		303	0.0	0.293	6.5	LOS A	1.8	12.3	0.49	0.63	52.6
North: Robson											
7	L2	39	0.0	0.213	5.5	LOS A	1.2	8.3	0.32	0.52	52.8
8	T1	209	0.0	0.213	5.5	LOS A	1.2	8.3	0.32	0.52	53.7
9	R2	5	0.0	0.213	8.5	LOS A	1.2	8.3	0.32	0.52	53.3
Approach		253	0.0	0.213	5.6	LOS A	1.2	8.3	0.32	0.52	53.5
West: Murphy											
10	L2	8	0.0	0.065	5.7	LOS A	0.3	2.2	0.33	0.58	52.1
11	T1	35	0.0	0.065	5.7	LOS A	0.3	2.2	0.33	0.58	52.9
12	R2	29	0.0	0.065	8.6	LOS A	0.3	2.2	0.33	0.58	52.5
Approach		72	0.0	0.065	6.9	LOS A	0.3	2.2	0.33	0.58	52.7
All Vehicles		816	0.0	0.293	6.1	LOS A	1.8	12.3	0.35	0.57	53.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Murphy - Robson - AM - Proposed

Murphy - Robson
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Robson											
1	L2	16	0.0	0.214	5.1	LOS A	1.2	8.6	0.21	0.55	52.4
2	T1	156	0.0	0.214	5.1	LOS A	1.2	8.6	0.21	0.55	53.3
3	R2	115	0.0	0.214	8.1	LOS A	1.2	8.6	0.21	0.55	52.9
Approach		287	0.0	0.214	6.3	LOS A	1.2	8.6	0.21	0.55	53.1
East: Murphy											
4	L2	55	0.0	0.090	5.2	LOS A	0.5	3.3	0.22	0.54	52.8
5	T1	33	0.0	0.090	5.2	LOS A	0.5	3.3	0.22	0.54	53.7
6	R2	22	0.0	0.090	8.2	LOS A	0.5	3.3	0.22	0.54	53.3
Approach		110	0.0	0.090	5.8	LOS A	0.5	3.3	0.22	0.54	53.2
North: Robson											
7	L2	16	0.0	0.072	5.8	LOS A	0.4	2.5	0.35	0.53	52.7
8	T1	62	0.0	0.072	5.8	LOS A	0.4	2.5	0.35	0.53	53.6
9	R2	1	0.0	0.072	8.8	LOS A	0.4	2.5	0.35	0.53	53.2
Approach		79	0.0	0.072	5.8	LOS A	0.4	2.5	0.35	0.53	53.4
West: Murphy											
10	L2	5	0.0	0.073	6.4	LOS A	0.4	2.5	0.44	0.58	52.1
11	T1	58	0.0	0.073	6.4	LOS A	0.4	2.5	0.44	0.58	53.0
12	R2	9	0.0	0.073	9.4	LOS A	0.4	2.5	0.44	0.58	52.6
Approach		72	0.0	0.073	6.7	LOS A	0.4	2.5	0.44	0.58	52.9
All Vehicles		548	0.0	0.214	6.2	LOS A	1.2	8.6	0.26	0.55	53.1

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Murphy - Robson - PM - Proposed

Murphy - Robson
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Robson											
1	L2	32	0.0	0.144	5.1	LOS A	0.8	5.7	0.20	0.54	52.6
2	T1	96	0.0	0.144	5.1	LOS A	0.8	5.7	0.20	0.54	53.5
3	R2	60	0.0	0.144	8.1	LOS A	0.8	5.7	0.20	0.54	53.1
Approach		188	0.0	0.144	6.0	LOS A	0.8	5.7	0.20	0.54	53.2
East: Murphy											
4	L2	258	0.0	0.294	6.4	LOS A	1.8	12.4	0.49	0.63	52.4
5	T1	41	0.0	0.294	6.4	LOS A	1.8	12.4	0.49	0.63	53.3
6	R2	5	0.0	0.294	9.4	LOS A	1.8	12.4	0.49	0.63	52.9
Approach		304	0.0	0.294	6.5	LOS A	1.8	12.4	0.49	0.63	52.6
North: Robson											
7	L2	39	0.0	0.213	5.5	LOS A	1.2	8.3	0.32	0.52	52.8
8	T1	207	0.0	0.213	5.5	LOS A	1.2	8.3	0.32	0.52	53.6
9	R2	7	0.0	0.213	8.5	LOS A	1.2	8.3	0.32	0.52	53.2
Approach		253	0.0	0.213	5.6	LOS A	1.2	8.3	0.32	0.52	53.5
West: Murphy											
10	L2	9	0.0	0.067	5.6	LOS A	0.3	2.3	0.33	0.58	52.1
11	T1	35	0.0	0.067	5.6	LOS A	0.3	2.3	0.33	0.58	52.9
12	R2	30	0.0	0.067	8.6	LOS A	0.3	2.3	0.33	0.58	52.5
Approach		74	0.0	0.067	6.9	LOS A	0.3	2.3	0.33	0.58	52.7
All Vehicles		819	0.0	0.294	6.2	LOS A	1.8	12.4	0.36	0.57	53.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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ALLIED TREE CONSULTANCY
Level 5 and 8 Arboriculturist

Arboricultural Impact Assessment Report

For the site address
Lots 2 and 3 (D P 589693)
No 58-60 Murphys Avenue,
KEIRAVILLE, NSW

Prepared for
ABS Property Pty Ltd.
C/- ADM Architects

AUTHOR
Warwick Varley and Geoff Beisler

STATUS

Draft	November 2018
Final	February 2019

REFERENCE D3590

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TABLE OF CONTENTS

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1.0 Introduction

1.1 The following Arborist report has been requested by *ADM Architects* for the development proposal at No. 58-60 Murphys Avenue, Keiraville. This development includes the construction of a multi-residential dwelling development. This report includes forty-four 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;
- recommendations for the removal, retention and/or pruning;
- tree protection zones and protection specifications for trees recommended for retention.

1.3 The subject site resides within Keiraville; 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].
- 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).

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

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.

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. An 'Action' is included and provides the nomination for retention/removal based on the tree location relative to the proposed design (drawing set, Section 4.4.2).

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

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

[3] *Australian Standard, 4970; 2009* – Protection of Trees on Development Sites, Australia

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 20th November 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 Geoff Beisler[6] on behalf of *Allied Tree Consultancy*.

4.3.2 Trees included in this report are those that are 3m or greater in height.

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

4.3.4 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.

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 *Masters Surveying*
Date: 25 October 2018
Reference: Job No. W18175
Drawing No: Sheet 1 of 1
Note 1: See Section 4.5.1

4.4.2 Design
Drawn by *ADM Architects*
Date: February 2019
Reference: 2018-34
Drawing No: A00 – A13 (Issue P4)
Note 2: See Section 4.5.2

4.4.3 Engineer
Drawn by *Jones Nicholson Consulting Engineers*
Date: September 2018

[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)

Reference: 18020085
Drawing No: C00, C01, C02 C03 P1
Note 2: See Section 4.5.2

4.5 Limitations of the assessment/discussion process

4.5.1 Trees No. 1, 6, 10, 11, 12, 14, 17, 19, 20, 21, 22, 23, 24, 25, 26, 28, 32, 33, 34, 35, 36, 37, 38, 40, 41, 43 and 44 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 all drawings, therefore have been transposed onto the required drawings 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 occur.

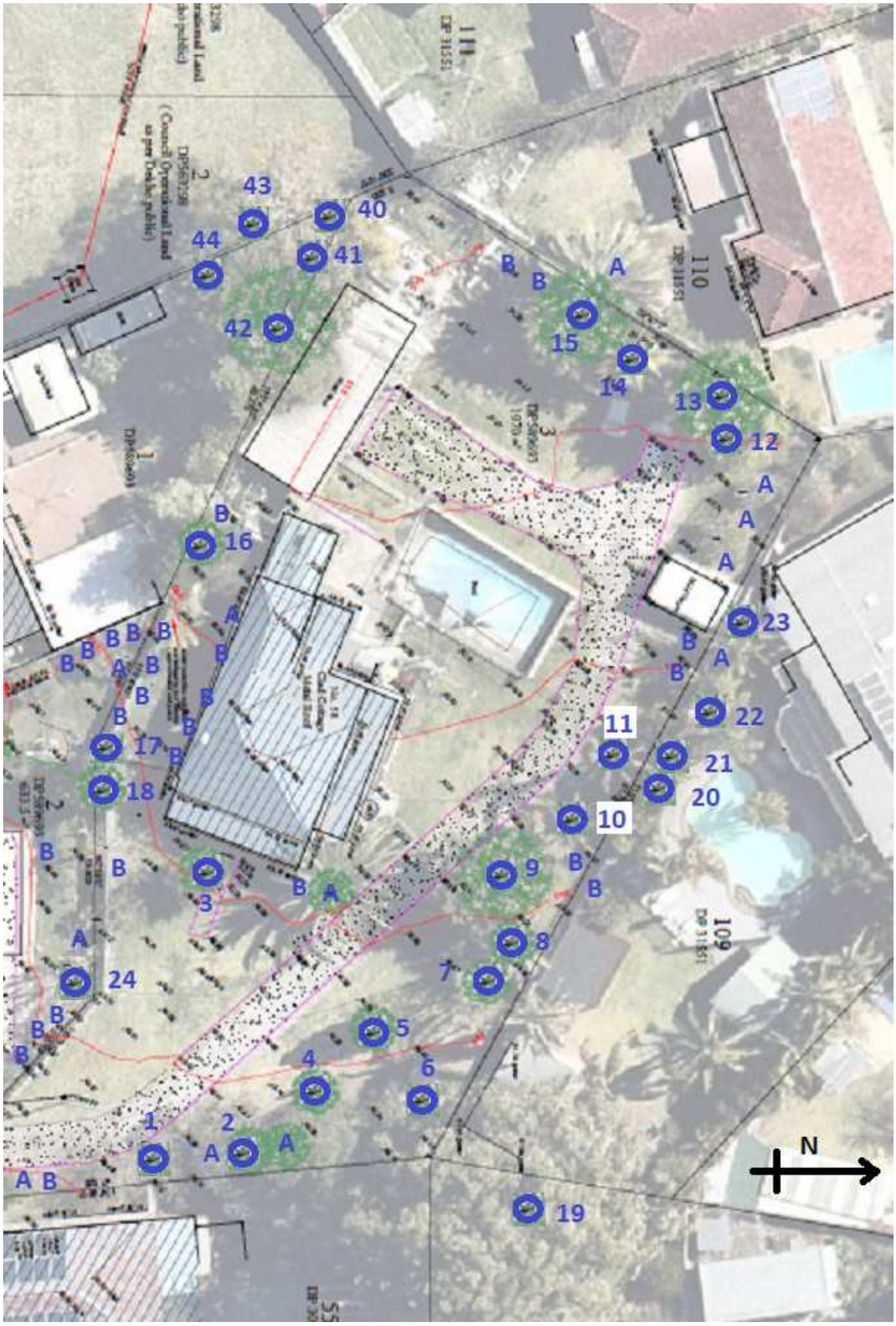
4.5.3 The assessment has considered only those target zones that are apparent to the author and the visually apparent tree conditions, during the time of assessment.

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

No. 58 Murphy's Avenue/ northern portion of the site

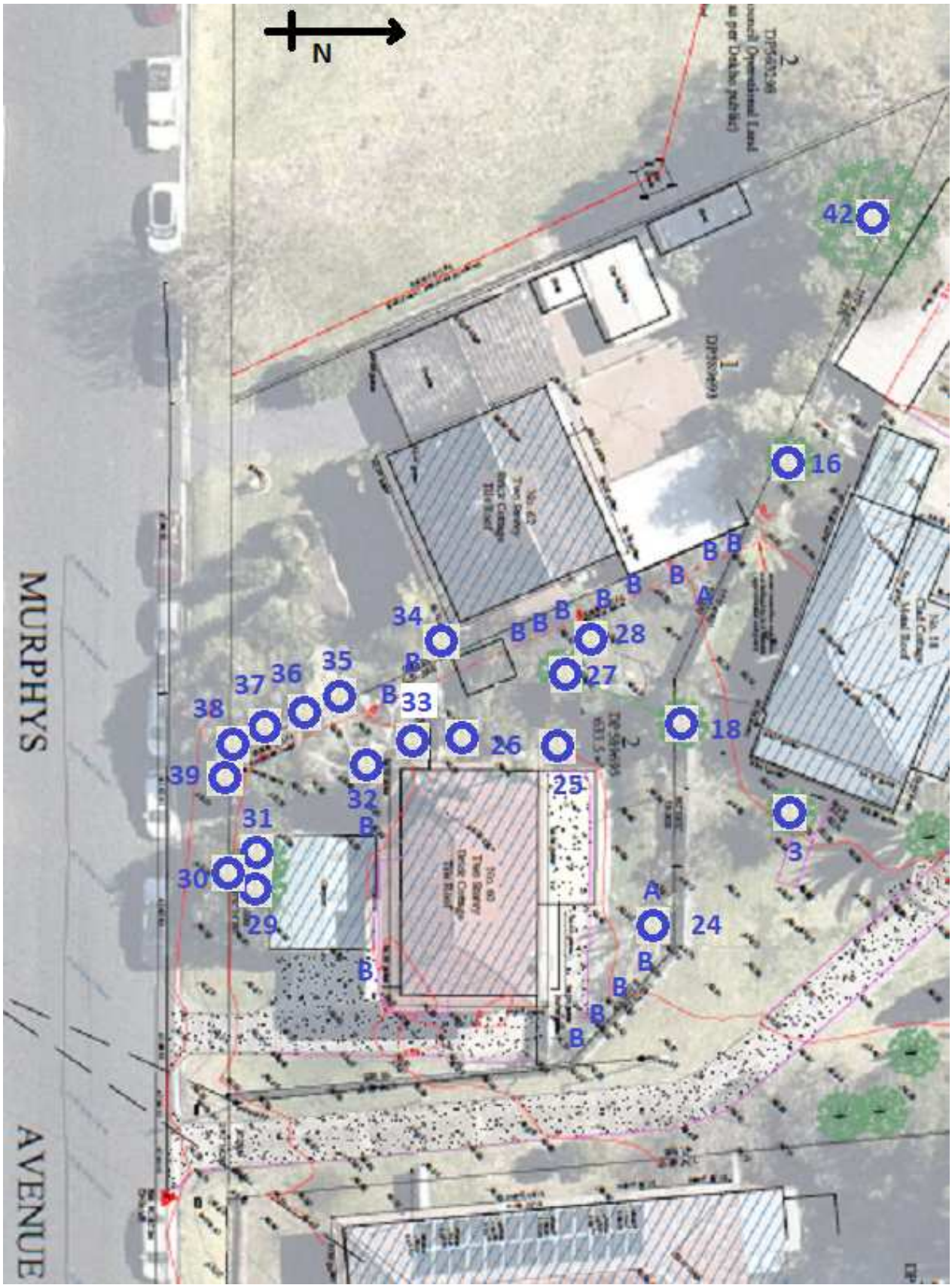


Not to scale

Source: Adapted from *Masters Surveys,* see Section 4.4.1

5.1 Plan 2; Area of assessment illustrating tree location

No. 60 Murphy's Avenue/ SOUTHERN portion of the site



Not to scale

Source: Adapted from *Masters Surveys,* 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	*Lagerstroemia indica* *Crepe Myrtle*	4	0.15 0.14 0.10 0.08	6 x 6	M	C	NE	B	**A2**	**MEDIUM**	**2.8**	**1.8**
Assessment		Presents as typical for the species, however the upper crown presents partial density. The western side has been lopped to provide clearance to the driveway. Stubs and epicormic growths present.									REMOVE Section 7.1.4	
2	*Calodendrum capense* Cape Chestnut	5	0.35 [B]	7 x 7	M	C	East	A	**A2**	**MEDIUM**	**4.2**	**2.2**
Assessment		Multiple poor pruning events, stubs and epicormic growths present.									REMOVE Section 7.1.2	
3	*Melaleuca spp.* Bottle Brush	4	0.20 [B]	4 x 4	M	D	Sym.	A	**A2**	**MEDIUM**	**2.0**	**1.5**
Assessment		Multiple poor pruning events, stubs and epicormic growths present.									REMOVE Section 7.1.2	
4	*Cupressus sempervirens* Mediterranean Cypress	4	0.10 0.08 0.08	1 x 1	M	I	Sym.	A	**A2**	**LOW**	**2.0**	**1.5**
Assessment		Poor form.									REMOVE Section 7.1.2	
5	*Cupressus sempervirens* Mediterranean Cypress	6	0.24 [B]	2 x 2	M	D	Sym.	A	**A1**	**MEDIUM**	**2.8**	**1.8**
Assessment		Tree presents as typical of the species.									REMOVE 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
6	*Melaleuca viminalis* Weeping Red Bottlebrush	4	0.19	3 x 4	M	S	South	B	**A3**	**LOW**	**2.0**	**1.5**
	Assessment	This suppressed tree present partial crown density.									REMOVE Section 7.1.2	
7	*Brachychiton acerifolius* Illawarra Flame Tree	8	0.30	4 x 5	M	D	Sym.	B	**A3**	**MEDIUM**	**3.6**	**2.0**
	Assessment	This tree presents partial crown density and small foliage.									REMOVE Section 7.1.2	
8	*Howea forsteriana* *Kentia Palm*	5	0.14	5 x 5	M	C	Sym.	A	**A2**	**MEDIUM**	**2.0**	**1.5**
	Assessment	Presents as typical for the species.									REMOVE Section 7.1.2	
9	*Jacaranda mimosifolia* Jacaranda	7	0.30 0.30	7 x 8	M	C	S/W	-[D]	**A2**	**MEDIUM**	**5.1**	**2.3**
	Assessment	Co-dominant at 1m, this tree has been completely lopped at 5m. All growth is epicormic.									REMOVE Section 7.1.2	
10	*Archontophoenix cunninghamiana* Bangalow Palm	7	0.20	4 x 4	M	D	Sym.	A	**A2**	**MEDIUM**	**2.0**	**1.5**
	Assessment	Presents as typical of the species.									REMOVE Section 7.1.2	
11	*Archontophoenix cunninghamiana* Bangalow Palm	7	0.20	4 x 4	M	D	Sym.	A	**A2**	**MEDIUM**	**2.0**	**1.5**
	Assessment	Presents as typical of the species.									REMOVE 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
12	*Macadamia integrifolia* Macadamia Nut	4	0.19 0.15	4 x 5	M	I	NE	B	**A2**	**MEDIUM**	**2.8**	**1.8**
Assessment		Tree presents as typical of the species, however foliage is chlorotic.									RETAIN Section 7.1.1	
13	*Ficus benjamina* Weeping Fig	8	0.22 0.20 0.09	8 x 8	M	D	Sym.	A	**A2**	**MEDIUM**	**3.7**	**2.1**
Assessment		Co-dominant at the base/ has a basal inclusion. Multiple exposed surface roots north side.									RETAIN Section 7.1.1	
14	*Ravenea rivularis* Majestic Palm	7	0.42	5 x 5	M	D	Sym.	A	**A2**	**MEDIUM**	**2.5**	**1.0**
Assessment		Presents as typical of the species.									RETAIN Section 7.1.1	
15	*Ficus benjamina* Weeping Fig	7	0.40 [B]	7 x 7	M	C	East	A	**A2**	**MEDIUM**	**4.8**	**2.3**
Assessment		Tree presents as typical of the species. Multiple lopping events to 1st order limbs, west side.									RETAIN Section 7.1.1	
16	*Acacia melanoxylon* Blackwood	6	0.19	4 x 4	M	D	North	A	**A2**	**MEDIUM**	**2.0**	**1.5**
Assessment		Tree presents as typical of the species. Co-dominant at 3m, the inclusion is weeping an exudate.									REMOVE Section 7.1.3	
17	*Stenocarpus sinuatus* Firewheel Tree	6	0.20	4 x 4	M	D	Sym.	A	**A1**	**MEDIUM**	**2.0**	**1.5**
Assessment		Tree presents as typical of species.									REMOVE 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
18	*Brachychiton acerifolius* Illawarra Flame Tree	7	0.23	4 x 5	M	D	North	B	**A1**	**MEDIUM**	**2.7**	**1.8**
Assessment		This tree presents partial crown density and small foliage. Mite infestation.									REMOVE Section 7.1.2	
19	*Eucalyptus microcorys* Tallowwood	15[C]	1.2[C]	15 x 16 [C]	M	D	Sym.	A	**A1**[C]	**HIGH**	**14.4**	**3.6**
Assessment		This large and significant neighbouring tree presents as typical of the species. Limited assessment due to lack of access.									RETAIN Section 7.1.3	
20	*Archontophoenix alexandra*[A] Bangalow Palm	7	0.20 [C]	5 x 5[C]	M	D	Sym.	A	**A1**[C]	**MEDIUM**	**2.0**	**1.5**
Assessment		This neighbouring palm is located approximately 2500mm from the boundary fence. Limited assessment due to lack of access.									RETAIN Section 7.1.1	
21	*Duranta repens* Duranta 'Sheena's Gold'	4	0.10 [C] average	2 x 4	M	C	Sym.	A	**A2** [C]	**LOW**	**2.0**	**1.5**
Assessment		This group of two neighbouring trees, typical of the species. Both lopped at 2m, all foliage is epicormic. Limited assessment due to lack of access.									RETAIN Section 7.1.1	
22	*Archontophoenix cunninghamiana* Bangalow Palm	6	0.15 [C]	4 x 4	M	D	Sym.	A	**A1**[C]	**MEDIUM**	**2.0**	**1.5**
Assessment		This neighbouring palm presents as typical for the species. Limited assessment.									RETAIN Section 7.1.1	
23	*Archontophoenix cunninghamiana* Bangalow Palm	5	0.14 [C]	4 x 4	M	D	Sym.	A	**A1**[C]	**MEDIUM**	**2.0**	**1.5**
Assessment		This neighbouring palm presents as typical for the species. Limited assessment.									RETAIN Section 7.1.1	

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
24	*Acer buergerianium* Trident Maple	6	0.30[B]	6 x 6	M	D	East	A	**A2**	**MEDIUM**	**3.6**	**2.0**
	Assessment	Tree presents as typical of the species. Several stubs from poor pruning events present in the lower, northern crown.									REMOVE Section 7.1.2	
25	*Archontophoenix cunninghamiana* Bangalow Palm	11	0.24	4 x 4	M	D	Sym.	A	**A2**	**HIGH**	**2.8**	**1.8**
	Assessment	This large and significant palm presents as typical for the species.									REMOVE Section 7.1.2	
26	*Jacaranda mimosifolia* Jacaranda	6	0.39	6 x 6	M	D	North	A	**A2**	**MEDIUM**	**4.7**	**2.3**
	Assessment	Presents as typical for the species. Entirely lopped at 4m- all growth is epicormic.									REMOVE Section 7.1.2	
27	*Lagerstroemia indica Crepe Myrtle*	5	0.12 average	5 x 6	M	C	North	A	**A2**	**MEDIUM**	**2.0**	**1.5**
	Assessment	Tree presents as typical of the species.									REMOVE Section 7.1.2	
28	*Melaleuca viminalis* Weeping Red Bottlebrush	6	0.18	4 x 6	M	C	North	A	**A2**	**MEDIUM**	**2.2**	**1.6**
	Assessment	Tree presents as typical of the species.									REMOVE Section 7.1.4	
29	*Syzygium sp.* Lilly Pilly	4	0.19	2 x 4	M	C	East	A	**D2**	**MEDIUM**	**2.3**	**1.6**
	Assessment	This tree is part of a group planting and typical of species. It is rubbing on the roof of the carport.									REMOVE Section 7.1.4	

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
30	*Syzygium sp.* Lilly Pilly	4	0.25 [B]	3 x 6	M	C	South	B	**D2**	**MEDIUM**	**3.0**	**1.8**
Assessment		This tree is part of a group planting and typical of species, however the lower crown presents partial density.									REMOVE Section 7.1.4	
31	*Syzygium sp.* Lilly Pilly	4	0.19	2 x 4	M	C	west	A	**D2**	**MEDIUM**	**2.3**	**1.6**
Assessment		This tree is part of a group planting and typical of species. It is rubbing on the roof of the carport.									REMOVE Section 7.1.2	
32	*Melaleuca alternifolia* Narrow Leafed Paperbark	6	0.48	5 x 8	M	C	Sth	B	**A2**	**MEDIUM**	**5.7**	**2.4**
Assessment		This once large and significant Paperbark has been completely lopped at 6m. What is left of the crown presents partial density.									REMOVE Section 7.1.2	
33	*Archontophoenix cunninghamiana* Bangalow Palm	7	0.19	4 x 4	M	D	Sym.	A	**A2**	**MEDIUM**	**2.3**	**1.6**
Assessment		Presents as typical for the species. Touching the gutter of the dwelling during wind events.									REMOVE Section 7.1.2	
34	*Melaleuca viminalis* Weeping Red Bottlebrush	5	0.16 0.10 [C]	3 x 4	M	C	West	A	**A1**	**MEDIUM**	**2.3**	**1.6**
Assessment		Presents as typical for the species. Neighbouring tree									RETAIN Section 7.1.1	
35	*Pittosporum eugenioides 'Variegata'* Variegated Pittosporum	5	0.20 [B]	4 x 4	M	C	Sym.	A	**A2**	**MEDIUM**	**2.4**	**1.7**

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		Typical of species. Growing on the boundary line, this tree presents multiple stubs in the lower half of the tree.									RETAIN Section 7.1.1	
36	*Syzygium sp.* Lilly Pilly	5	0.08 average	4 x 5	M	C	Sym.	A	**A1**	**MEDIUM**	**2.0**	**1.5**
Assessment		This tree presents as coppiced re-growth. Growing on the boundary line									RETAIN Section 7.1.1	
37	*Melaleuca viminalis* Weeping Red Bottlebrush	4	0.30[B]	4 x 8	M	C	West	A	**A1**	**MEDIUM**	**3.6**	**2.0**
Assessment		This co-dominant/ multi-stemmed tree presents a significant western bias.									RETAIN Section 7.1.3	
38	*Murraya paniculata* Murraya	4	0.28 [B]	4 x 5	M	C	East	A	**A1**	**LOW**	**3.4**	**1.9**
Assessment		Typical of species.									RETAIN Section 7.1.3	
39	*Agonis flexuosa* Willow Myrtle	4	0.55[B]	4 x 5	M	C	South	A	**A2**	**MEDIUM**	**6.6**	**2.6**
Assessment		Lower crown (south side) has been lopped for footpath clearance.									REMOVE Section 7.1.4	
40	*Melaleuca bracteata* Black Tea Tree	6	0.27[C]	4 x 6	M	C	West	A	**A1**	**MEDIUM**	**3.3**	**1.9**
Assessment		This neighbouring tree presents as typical of the species. Limited assessment due to lack of access.									RETAIN Section 7.1.3	
41	*Stenocarpus sinuatus* Firewheel Tree	8	0.23[C]	4 x 6[C]	M	C	North	A	**A2**[C]	**MEDIUM**	**2.7**	**1.8**

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 neighbouring tree presents as typical of the species. A lopped 1st order branch at 3m (south side) presents epicormic growth. Limited assessment due lack of access.									RETAIN Section 7.1.3	
42	*Pittosporum undulatum* Sweet Pittosporum	8[C]	0.45[C]	9 x 9[C]	M	C	North	A	**A1**[C]	**HIGH**	**5.4**	**2.4**
Assessment		This neighbouring tree presents as typical of the species. Limited assessment due to fence and lack of access.									RETAIN Section 7.1.3	
43	*Jacaranda mimosifolia* Jacaranda	9	0.33	8 x 9	M	C	South	A	**A2**	**MEDIUM**	**3.9**	**2.1**
Assessment		This tree is located in council land. Presents as typical of the species. Several rubbing/ mechanical wounding events with tree No. 44									RETAIN Section 7.1.1	
44	*Syzygium luehmannii* Cherry Satinash	10	0.40[C]	7 x 9[C]	M	C	North	A	**A1**[C]	**HIGH**	**4.8**	**2.3**
Assessment		This large and significant neighbouring presents as typical of the species. Limited assessment due to lack of access.									RETAIN 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 both No. 58 and 60, Murphy's Avenue Keiraville. The gradient varies slightly across the entirety of the site; however, it is predominantly a minor gradient with an easterly aspect. A concrete driveway services the dwelling at No. 58 via the eastern side of the property, to terminate to the north of the single story, weatherboard dwelling. An inground pool is located immediately to the nor-west of the house. Multiple sheds/ outhouse type structures are located to the west of the dwelling. Extensive debris is located around these structures, in the western portion of the site. Deliberate plantings present predominantly on the perimeter of No 58 and 60, and these present as a mixture of native and exotic species. Open, lawn area dominates No. 58. Many specimens present that are either exempt species and/ or less than 3m in height. Colourbond fencing separates No. 58 & 60. The lot, No. 60 contains a two story brick dwelling and a slight gradient with a southerly aspect. A concrete driveway is located on the eastern side of the dwelling at No. 60, and a double carport is located immediately in front of (southern side) of lot No. 60.

The trees labeled as A and B that have been included on 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 DCP.

Tree A: trees that occur on the lot proposed for development and are exempt species[7].

Tree B: trees below 3m in height or less than 100mm in diameter

7.1 Proposed development

The proposed development consists of the demolition of existing site structures and the construction of a multi-unit residential development, drive access, and drainage infrastructure.

This report discusses the impact of the proposed design on the trees. Forty-four (44) trees have been listed within this report based upon the vicinity of the lot. This has included street and neighbouring trees where any part of the zones of protection (TPZ, 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.

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

Trees No. 12, 13, 14, 15, 20, 21, 22, 23, 34, 35, 36, 43 and 44

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

7.1.2 Trees directly conflicting with the design

Trees No. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 17, 18, 24, 25, 26, 27, 31, 32 and 33
These trees are located in the footprint of the proposed design and would require removal based on this premise alone. The conflict is summarised as follows;

Tree No. 2; within the route of the sewer line, Drawing C01, Section 4.4.3
Trees No. 3, 17, 18, 26, 31, 32, 33; within the footprint of drive, Drawing A02, Section 4.4.2
Trees No. 4, 5, 6 and 7; within the footprint of unit 4, Drawing A02, Section 4.4.2
Trees No. 8 and 9; within the footprint of unit 5, Drawing A02, Section 4.4.2
Trees No. 10 and 11; within the footprint of unit 6, Drawing A02, Section 4.4.2
Tree No. 24; within the footprint of unit 3, Drawing A02, Section 4.4.2
Tree No. 27; within the footprint of two car parking bays, Drawing A02, Section 4.4.2

7.1.3 Trees subject to a minor encroachment

Trees No. 16, 19, 37, 38, 40, 41 and 42
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. 16: this tree could be retained relative to the proposed design. However, provides minimal amenity value and the mature size relative to the size of the proposed yard for unit 9 is potentially unpractical to retain. The consideration for removal could warrant a more suitable option in preference to working around. Therefore, this tree is nominated for removal and compensatory[8] planting incorporated.

7.1.4 Trees subject to a major encroachment

Trees No. 1, 28, 29, 30 and 39
These trees are not directly located in the footprint of the proposed design, however, are located close and adjacent to the dwelling 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.

Tree No. 1: Encroachment: 45%; based on drawing A02 (P4), the encroachment consists of the courtyard for Unit 3. The tree is flush against the edge of this structure, and such proximity will not support mature growth and will likely compromise the zones of protection. This tree could not be viably retained with the design.
Tree No. 28: Encroachment: 40%; based on drawing A02 (P4), the encroachment consists of the visitor parking bay and motorcycle/bicycle parking. The extent of the impact will be pending on the exaction required

[8] See Section 7.2

for these parking surfaces. The tree is near flush with the edge of these structures, and such proximity will not support mature growth and will likely compromise the zones of protection. This tree is unlikely of viable retention.

Trees No. 29-30: Encroachment: 40%; based on drawing A02 (P4), the encroachment consists of the driveway. The extent of the impact will be pending on the excavation required for the drive surface. The trees are near flush with the edge of the drive and such proximity will not support mature growth and will likely compromise the zones of protection. These trees are unlikely of viable retention.

Tree No. 39: Encroachment: 40%; based on drawing A02 (P4), the encroachment consists of the driveway/crossover. The extent of the impact will be pending on the excavation required for this surface. Although the proposed drainage line to the street is proposed to fall within the SRZ and excavation to install this line will adversely compromise the tree. This tree is unable of viable retention.

7.2 Sub-surface utilities

No drawings have been provided for the proposed route of sub-surface utilities, other than stormwater. 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 for 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. 12-15, 34-38 and 40-42

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 B. 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- works	Installation of the protection measures, Section 7.4	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. 12-15, 19-23, 34-38 and 40-44

These trees can be retained relative to the nominated zones of protection (TPZ, SRZ) and based on the requirements of the Protection Specification, section 8.0. The proposed design does not adversely affect these trees.

9.2 Trees No. 1-11, 16-18, 24-33 and 39

The proposed design will require removal of these trees.

9.3 Sub-surface utilities

No drawings have been provided for the proposed route of sub-surface utilities, other than stormwater. 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 for 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.

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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.

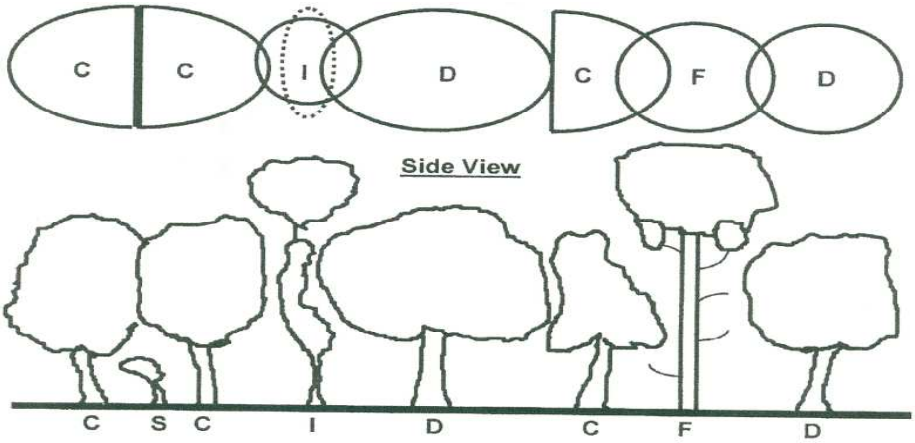
Crown Aspect
In relation to the root crown, this refers to the aspect the majority of the crown resides in. This will be either termed Symmetrical (Sym.) where the centre of the crown resides over the root crown or the cardinal direction the centre of the crown is biased towards, being either North (N), 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 for the purpose of managing large populations of trees within a limited time span 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.

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,

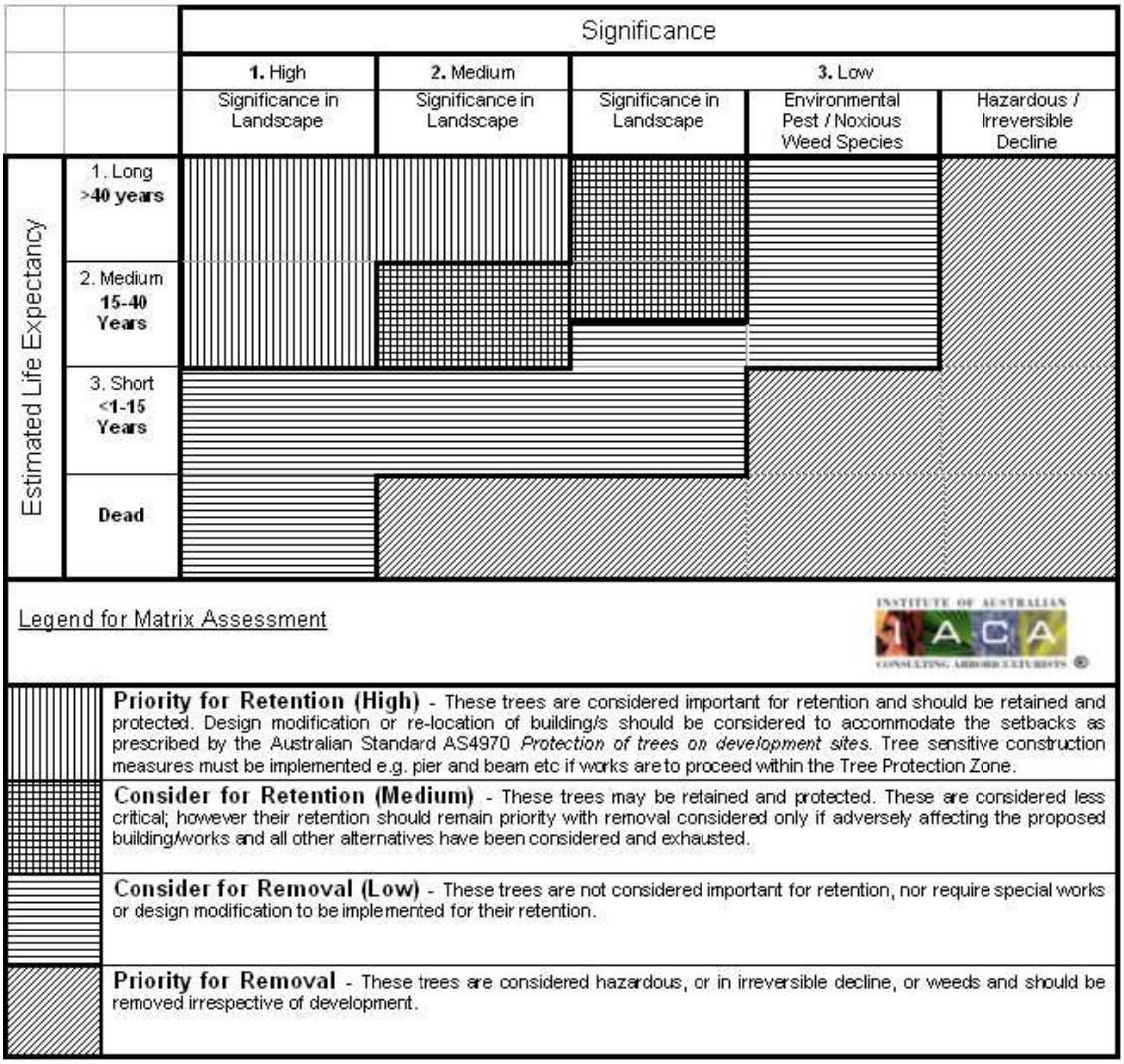
[10] IACA, 2010, IACA Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au

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).	

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.

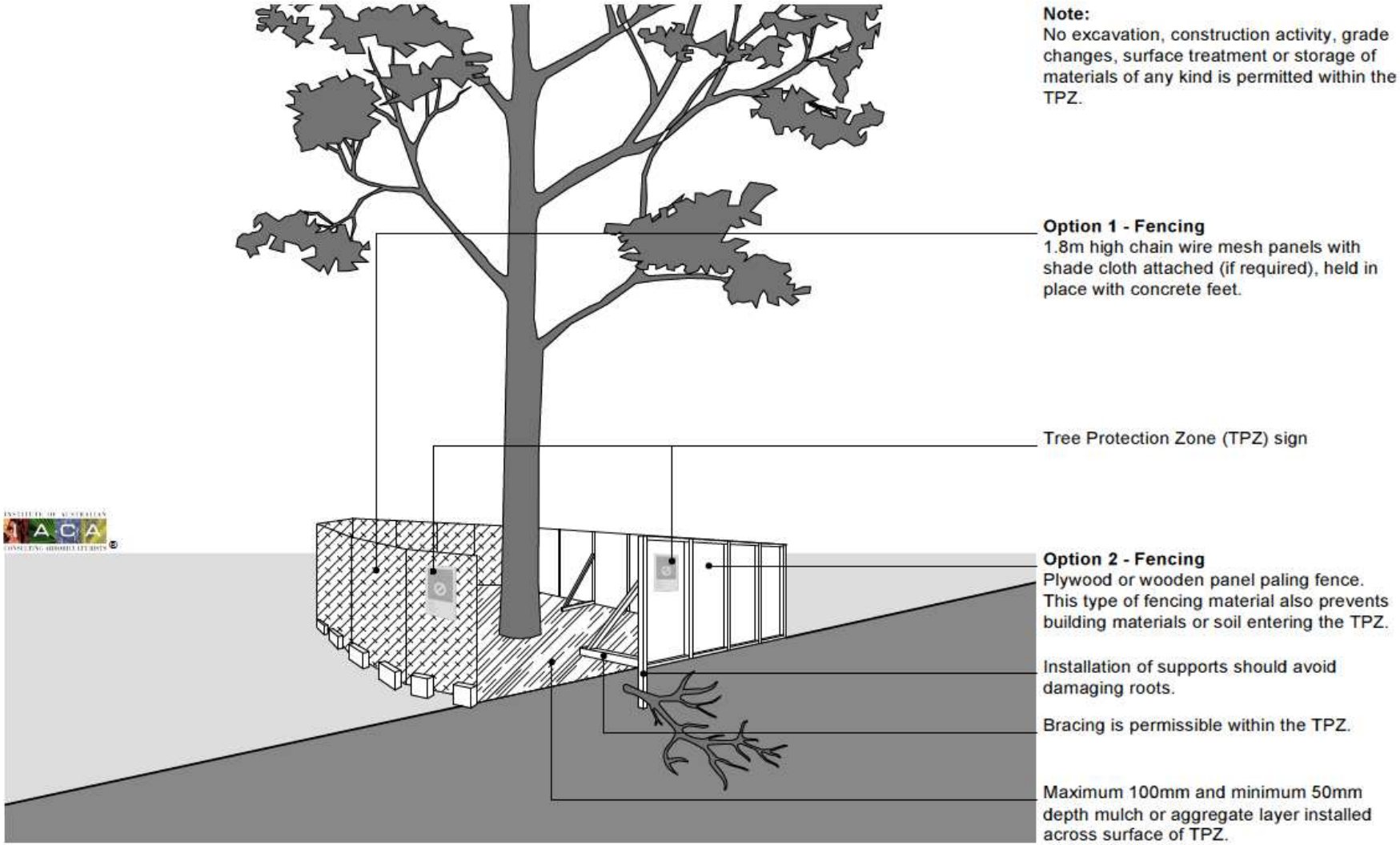
The size of the Tree Protection Zone (TPZ) has been calculated from the *Australian Standard, 4970; 2009* – Protection of Trees on Development Sites

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.

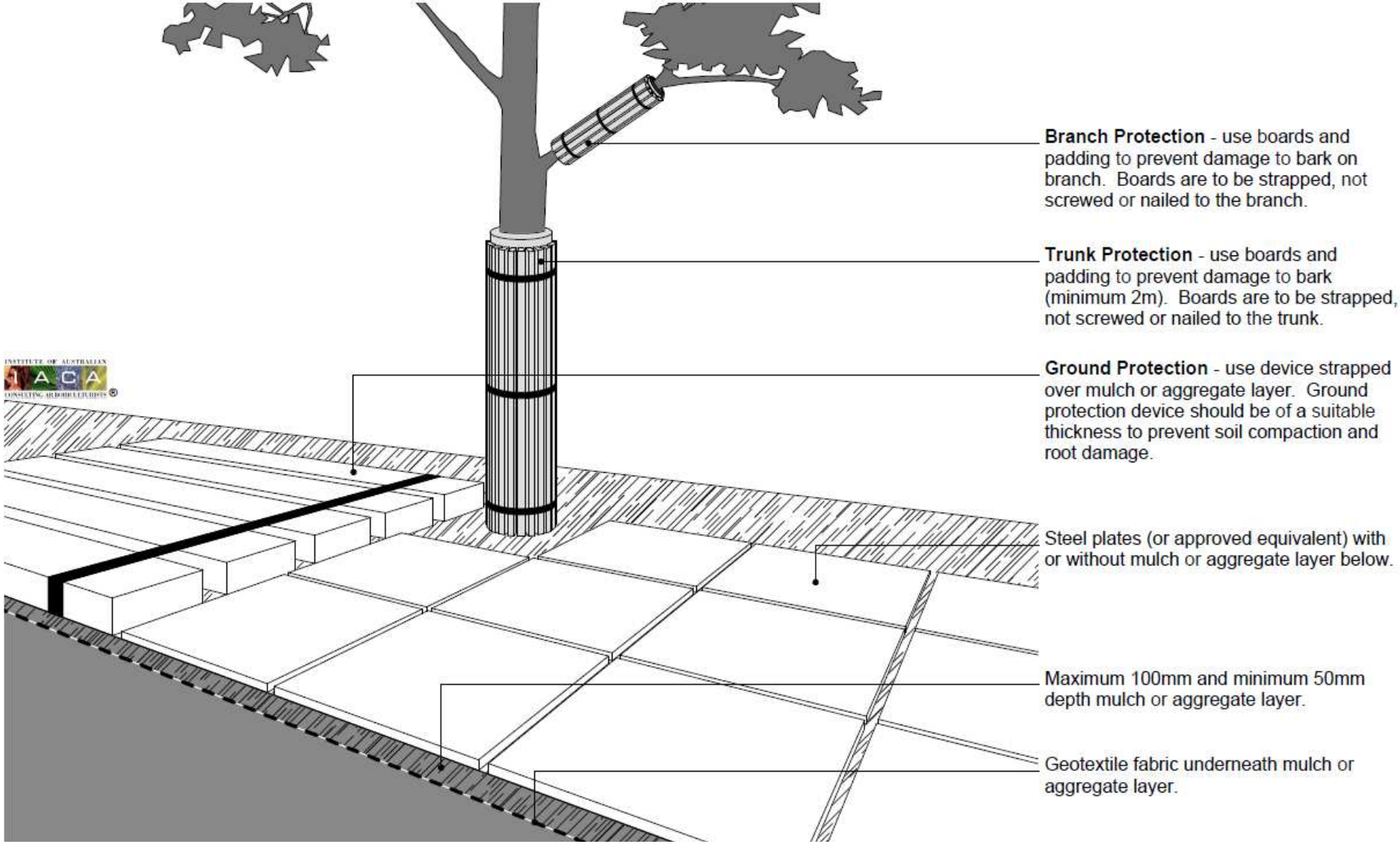
Protection Measures
These are required for the protection of trees during demolition/construction activities. Protective barriers are required to be installed before the initiation of demolition and/or construction and are to be maintained up to the time of landscaping. Samples of the recommended protection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

Appendix B- Protection measures;
Protective fence



Tree protection zone sign; requirements

Stem and Ground protection



Attachment 6 - NRAR Correspondence

From: Jordan Gibson <jordan.gibson@nrar.nsw.gov.au>
Sent: Tuesday, 4 June 2019 1:22 PM
To: Records
Subject: Exempt from needing General Terms of Approval / Controlled Activity Approval for DA2019/284 (our ref: IDAS1115200) Lots 2 & 3, DP589693, 58 & 60 Murphys Avenue, KEIRAVILLE NSW

Dear Sir/Madam The Natural Resources Access Regulator has reviewed documents for the above development application and considers that, for the purposes of the Water Management Act 2000 (WM Act), a controlled activity approval is not required and no further assessment by this agency is necessary. Should the proposed development be varied in any way that results in development extending onto land that is waterfront land, or encompassing works that are defined as controlled activities, then the Natural Resources Access Regulator (NRAR) should be notified. Further information on controlled activity approvals under the WM Act can be obtained from NRAR's website: www.water.nsw.gov.au, go to Water Licensing > Approvals > Controlled activities. Please direct any questions to Natural Resources Access Regulator by email to nrar.servicedesk@industry.nsw.gov.au Kindest Regards Natural Resources Access Regulator

Attachment 7: WDCP 2009 compliance table

CHAPTER A2: ECOLOGICALLY SUSTAINABLE DEVELOPMENT

Development controls to improve the sustainability of development throughout Wollongong are integrated into the relevant chapters of this DCP.

Generally speaking, the proposal could be considered to be consistent with the principles of Ecologically Sustainable Development. The applicant has also provided additional commentary with regard to compliance with this Chapter, as provided at Attachment 3 which generally demonstrates consistency with the objectives of this Chapter.

CHAPTER B1: RESIDENTIAL DEVELOPMENT

This Chapter applies to all residentially zoned land in the LGA. Section 4 provides general residential controls which apply to all dwelling houses, dual occupancies, secondary dwellings, ancillary structures and semi-detached dwellings. Section 5 provides controls that must also be taken into consideration for development for the purposes of Multi-Dwelling Housing.

4. General Residential controls

Controls/objectives	Comment	Compliance
4.11 Storage Facilities • 3 bedroom- 10m³ storage volume to 5m² storage area	The proposed development will provide adequate storage with each proposed dwelling.	Yes
4.12 Site Facilities • letterboxes in an accessible location • air-con, satellite dishes and other ancillary structures to be located away from street frontage, not in a place where they are a skyline feature and adequately setback	The necessary site facilities have been provided and are acceptable in this circumstance.	Yes
4.13 Fire Brigade Servicing • All dwellings located within 60m of a fire hydrant	A hydrant is proposed to be provided on site, as indicated on the submitted plans at Attachment 1. A condition is also recommended in this regard, as provided at Attachment 8	Yes
4.14 Services • Encourage early consideration of servicing requirements	The site has access to existing utility services. Draft conditions are recommended with regard to services.	Yes
4.15 View sharing	The proposal would not be envisaged to result in any significant impact on existing view corridors, given the context of the site and surrounding area.	N/A
4.16 Retaining walls	No retaining walls are proposed.	N/A

5 Attached dwellings and multi - dwelling housing

Controls/objectives	*Comment*	*Compliance*
5.1 Minimum Site Width Requirement		
18m for multi dwelling	The proposal involves multi dwelling housing. The subject site consists of two (2) lots, with a combined width in excess of 18m. A condition is recommended requiring the consolidation of the two existing lots, prior to the issue of the Occupation Certificate, as at Attachment 8.	Yes
5.2 Number of Storeys		
Maximum 2 Storeys for Zone R2 Low Density Residential	All proposed units are two (2) storeys.	Yes
5.3 Front Setbacks		
• Infill 6m minimum • Balconies, front courtyard fences and other building extrusions may be set back up to 900mm closer than the required front or secondary setback.	Unit 1 is proposed to be setback a minimum of 6m from the front property boundary. A small porch area is proposed to encroach on this setback as permitted by this clause. The porch area is proposed to be setback a minimum of 5.2m from the front property boundary.	Yes
5.4 Side and Rear Setbacks		
• 0.8 x ceiling height min	All proposed side and rear setbacks proposed comply, as demonstrated by Table 2 below.	Yes

	Required setbacks		**Proposed setbacks**	
Unit 1	Ground floor	2.48m	Ground floor	3.22m
	First floor	4.76	First floor	9.33m
Unit 2	Ground floor	2.4m	Ground floor	3.22m
	First floor	4.68m	First floor	9.33m
Unit 3	Ground floor	2.2m	Ground floor	3.22m
	First floor	4.48m	First floor	9.33m
Unit 4	Ground floor	2.48m	Ground floor	2.52m
	First floor	4.76m	First floor	4.76m
Unit 5	Ground floor	2.28m	Ground floor	2.52m
	First floor	4.56m	First floor	4.6m
Unit 6	Ground floor	2.28m	Ground floor	2.52m
	First floor	4.56m	First floor	4.6m
Unit 7	Ground floor	2.28m	Ground floor	2.52m
	First floor	4.56m	First floor	4.6m

Unit 8	Ground floor	2.08m	Ground floor	2.57m
	First floor	4.36m	First floor	5.34m
Unit 9	Ground floor	1.88	Ground floor	2.855m
	First floor	4.16	First floor	4.665m
Unit 10	Ground floor	2.48	Ground floor	4m
	First floor	4.6m	First floor	4.665m

5.5 Building Character and Form		
• To design residential development to respond to the streetscape character. The Site and Context Analysis must inform the development proposal. • To complement and enhance the visual character of the street and neighbourhood through appropriate building scale, form and detail.	It is considered the design, height and siting of the proposed dwellings respond to the site context. The proposal defines the street edge and allows for surveillance of the street, with Unit 1 addressing the street frontage. Articulation is provided on all elevations and the proposal does not present as inappropriate in scale or form when considered in relation to the zoning of the site and desired future character.	Yes
5.6 Access / Driveway Requirements		
• A multi dwelling development must provide vehicular manoeuvring areas to all parking spaces so vehicles do not need to make more than a single point turn to leave the site in a forward direction. • Driveway grades, vehicular ramp width/grades and passing bays must be in accordance with the relevant Australian Standard, being AS 2890.1. • Crossover width: 4 – 6m combined to within 6m internally of the front property boundary • Minimum driveway width - 3m	Diagrams have been provided which demonstrate that manoeuvring to and from all car parking spaces is able to be undertaken with a single point turn. All vehicles will be able to leave the site in a forward direction. The proposed development satisfies the objectives of Council's Access/Driveway Requirements controls and policies. Conditions are recommended requiring compliance with AS2890.1. A 5.5m crossover is proposed. The driveway widens to 6m within the site and has a minimum width of 3m. Council's Traffic Officer has reviewed the application submission and identified no objections to the proposed access arrangements.	Yes
5.7 Car Parking Requirements		
• 2 car parking spaces per dwelling with a GFA of greater than 110m². • Plus 0.2 car parking spaces per dwelling	All proposed units have a GFA of more than 125sqm. A double garage within minimum dimensions of 6m x 6m is proposed for each dwelling. Garbage bin storage is proposed within the garage areas of all units except Unit	Yes

• On site car parking must be positioned to minimise impacts on the streetscape. Car parking must be located behind the building setback and be screened from view with well-designed structures and vegetation.	8. These areas are proposed outside of the required 6x6m car parking area. 2 visitor spaces are proposed centrally to the site, off the main access driveway. Council's Traffic Officer has raised no objections to the proposed car parking. All proposed garages and car parking spaces are proposed behind the front building line. The proposed development satisfies the objectives of Council's Car Parking Requirements controls and policies.	
5.8 Landscaping Requirements		
• A minimum of 30% of the total site area must be provided as landscaped area. • The required landscaped area must include a minimum 1.5 metre wide landscaping bed, which is provided along the side and rear boundaries of the site	Landscaped Area Proposed: 30% A minimum 1.5m landscaped strip is proposed along all side and rear boundaries of the site. The proposed development satisfies the objectives of Council's landscaped area controls and policies. Council's Landscape Officer has raised no objections to the proposed landscaping. See further discussion at Chapter E6 below.	Yes
5.9 Deep Soil Planting		
• The deep soil may extend along the full length of the rear of the site, with a minimum width of 6m. • No structures, basement carparks, driveways, hard paving, decks, balconies or drying areas are permitted within the deep soil zone. • The deep soil zone shall be densely planted with trees and shrubs.	The proposal provides for 211m² of deep soil zone comprising planting along the full length of the rear boundary. Dense planting is indicated and consists of the retention of several trees in this area, and also provides the opportunity for the transplanting of five palms. No structures, basement, driveways or other hard surfaces encroach on the deep soil zone area. The proposed development satisfies the objectives of Council's Deep Soil Planting controls and policies.	Yes
5.10 Communal Open Space		
• Required for greater than ten (10) dwellings • $5m^2$ per dwelling • minimum dimension of 5 metres	The proposal is for a 10 dwelling multi dwelling housing development and as such communal open space with minimum area of 50sqm is required. An 84sqm area is proposed between Units 3 and 4, and has a minimum dimension of 5m. The area is comprised of approximately 40sqm	Yes

• Easily accessible and within a reasonable distance from each dwelling be integrated with site landscaping, allow for casual social interaction, and be capable of accommodating recreational activities.	of lawn space, a seating area and gardens. The area is centrally located on the site. The space is considered appropriate and capable of accommodating both recreational and passive activities.	
<u>5.11 Private Open Space</u>		
• Minimum dimension of 4 metres x 5 metres • Separated from boundaries by at least 1.5 metres with a vegetated landscaping bed • The primary private open area of at least 70% of the dwellings within a multi dwelling housing development must receive a minimum of three hours of direct sunlight between 9.00am and 3.00pm on June 21. • Private open space areas (courtyards) must not extend forward of the front building setback by greater than 900mm • Private open space should be sited in a location, which provides privacy, solar access, and pleasing outlook and has a limited impact upon adjoining neighbours. • Design private open spaces so that they act as direct extensions of the living areas of the dwellings they serve	All units have private open space with a minimum area of 4m x 5m separated from the boundary by a minimum 1.5m vegetated landscape bed. Shadow diagrams have been submitted which demonstrate that 7 of the 10 POS areas proposed with receive in excess of 3 hours of direct sunlight between 9am and 3pm on June 21, equating to 70% of the dwellings proposed. The POS area of Unit 1 is proposed to extend forward of the front building line by approximately 450mm. A 1.8m timber fence and landscaping is proposed to screen this area from the street. The location of the POS areas proposed are considered generally satisfactory, being at ground level and accessed directly from living areas, and separated from property boundaries with landscaped areas.	Yes
<u>5.12 Solar Access Requirements</u>		
• Windows to living rooms of adjoining dwellings must receive 3 hours of sunlight between 9.00am and 3.00pm on 21 June • At least 50% of the private open areas of adjoining residential properties must receive at least 3 hours of sunlight between 9.00am and	The application submission included shadow diagrams which demonstrate that the proposal would not result in unreasonable overshadowing impacts on any adjoining properties. The backyard area of 62 Murphys Avenue is expected to be overshadowed in the morning, with minimal impact from 12pm onwards. The development at 56 Murphys Avenue would also not be expected to be unreasonably	Yes

3.00pm on June 21. • The primary balcony of at least 70% of the dwellings within a multi dwelling housing development shall receive a minimum of three hours of direct sunlight between 9.00am and 3.00pm on June 21. • At least 50% of the private open space area for each of the subject dwellings in the development must receive at least 3 hours of sunlight between 9.00am and 3.00pm on 21 June.	impacted, with overshadowing only occurring in the late afternoon on June 21. Windows to living rooms and private open space areas of adjoining properties would retain in excess of 3 hours of solar access on June 21 as a result of the development. The proposed development will have minimal impact on adjoining properties in terms of Solar Access as reasonable setbacks and building heights have been maintained. At least 50% of the area of the proposed POS area for 7 of the 10 units will receive in excess of 3 hours of direct sunlight on June 21, as demonstrated by the submitted shadow diagrams.	
<u>5.13 Additional Control for Multi Dwelling Housing - Dwelling Mix and Layout</u> • Required for greater than ten (10) dwellings. • Provide a mix of dwelling sizes and layouts within larger multi-dwelling developments having ten (10) or more dwellings. This could include both variation in the number of bedrooms and gross floor areas of apartments, variety in the internal design or incorporating one, two and three bedroom dwellings to accommodate various resident requirements.	The proposal is for a 10 dwelling multi dwelling housing development. Despite all dwellings being proposed with 3 bedrooms, a mix of layouts and variety in internal design is proposed. A variation to the bedroom mix requirement is sought, as discussed at Chapter A1 within the report. The variation is considered capable of support in this case. The variation request statement is provided within Attachment 2.	No – variation to WDCP 2009 requested and capable of support.
<u>5.14 Additional Control for Multi Dwelling Housing - Adaptable Housing</u> Required for greater than six (6) dwellings.	The proposal is for a 10 dwelling multi dwelling housing development. Unit 1 has been designed to be capable of adaptation. A post adaptation plan and a statement of compliance report were provided as part of the application submission, demonstrating that Unit 1 satisfies the requirements of this control and AS 1428.1-2009. Conditions are recommended in this regard at Attachment 8.	Yes

5.15 Additional Control for Multi Dwelling Housing – Crime Prevention through Environmental Design	The proposed development satisfies the objectives of Council's Crime Prevention Through Environmental Design controls and policies in this circumstance, minimising areas for entrapment and concealment. See chapter E2 comments below.	Yes

CHAPTER D1: CHARACTER STATEMENTS

Existing Character

Keiraville is set in a natural amphitheatre on the foothills of the Illawarra escarpment, below Mount Keira. Keiraville is home to the University of Wollongong, which is the main tertiary academic centre for the Illawarra Region. The suburb is in relative close proximity to Wollongong City Centre and is serviced by major road network links such as the Southern Freeway and Mount Ousley Road. It is also serviced by regular bus services to and from the city centre.

Keiraville has a natural leafy setting and is characterised by a mix of housing types, including detached dwelling-houses on varied residential lot sizes as well as boarding-houses, villas, townhouses and walk up residential flat buildings. The detached dwelling-houses are predominantly single storey to two storey in height and are of a face brick or weatherboard construction with tiled hipped roof forms.

Desired Future Character

Keiraville will remain a leafy suburb with a mix of housing types ranging from detached dwelling-houses, boarding-houses, villas, townhouses and some residential flat buildings. In this regard, additional medium density developments are likely to occur within reasonable walking distance to the University of Wollongong, especially in residential precincts directly to the east and south of the Wollongong Botanic Gardens.

The subject proposal is not considered to be inconsistent with the desired future character statement for the area. The development would assist in providing an additional mix of housing types, within reasonable walking distance to the University. Adequate landscaped area and deep soil zone areas are proposed as part of the development, as discussed above. Councils Landscape Officer has considered the tree removal proposed, and is satisfied that the development, subject to conditions, would be provided with an appropriate landscaped setting.

The applicant has also provided additional commentary with regard to the consistency of the proposal with the future desired character, as provided at Attachment 3.

Neighbourhood Forum 5, with the input from the community, UOW, elected Councillors and Council officers have developed a "Keiraville Gwynneville Community Planning Project Report". The report included 10 vision statements for the area which were endorsed by Council in April 2014.

The 10 vision statements as relates to the proposal are as follows:

1. Keiraville and Gwynneville are villages

The proposal is not envisaged to adversely impact the village nature of the area.

2. Viable shopping centres

The development site is located approximately 650m from Keiraville village centre. The proposal is not envisaged to adversely impact on the viability of the village. No additional commercial premises are proposed as part of this current application.

3. Building styles to reflect village character

The proposed development is considered generally consistent with other similar developments in the area, with Unit 1 being designed to front Murphys Avenue. The development is considered to be appropriately located within the site.

4. Managing traffic for safety and access

Traffic matters are discussed at Chapter E3 below and throughout the report. The proposal is not envisaged to result in unreasonable traffic generation, impact on the local network or present safety concerns.

5. Managing parking pressures

Traffic and car parking matters are discussed at Chapter E3 below and throughout the report. Compliant car parking areas are proposed within the site. A Traffic Impact Assessment Report has also been provided which concludes that whilst the development would result in a minor increase in traffic movements, Murphys Avenue and surrounding roads are considered to be capable of absorbing this increase without resulting in unacceptable impacts on the local road network.

6. A mix of people

The proposed development would provide housing options for a range of different people, contributing to the mix of people in the suburb.

7. A connected community

The efforts of the community with regard to engagement with the University are acknowledged.

8. Valuing the University while retaining our character

The proposed development is not considered to result in adverse impacts upon the village character of the area.

9. Protected green spaces

See Chapter E6 below. The proposal has been designed with regard to retaining significant vegetation where possible with sufficient green space curtilage around the built form.

10. Protected heritage

The site is not located in close proximity to or within the visual catchment of any identified built form heritage items.

CHAPTER E1: ACCESS FOR PEOPLE WITH A DISABILITY

It is considered that disabled access to the proposed development is acceptable in this circumstance. The submitted Access Consultant's Report has been reviewed and conditions are recommended as provided at Attachment 8.

CHAPTER E2: CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

Control/objective	*Comment*	*Compliance*
3.1 Lighting	Conditions are recommended with regard to the lighting of entries.	Yes
3.2 Natural surveillance and sightlines	Unit 1 has been designed to front the street.	Yes
3.3 Signage	The proposal does not include any signage	N/A
3.4 Building design	The building design minimises areas of concealment or entrapment.	Yes
3.5 Landscaping	Landscaping proposed is considered appropriate and minimises areas of concealment or entrapment.	Yes
3.6 Public open space and parks.	There is no public open space proposed or required.	N/A
3.7 Community facilities	There are no community facilities located within the development as proposed. Communal open space provided is satisfactory.	N/A
3.8 Bus stops and taxi ranks	There are several bus stops located in the vicinity of the development.	Yes

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

Multi dwelling housing

	Rate	*Calculation*	*Required*	*Provided*	*Compliance*
Car parking					
Resident:	1 space per dwelling <70sqm 1.5 spaces per dwelling 70-110sqm 2 spaces per dwelling >110sqm	0 0 2 x 10	20	20	**Yes**
Visitor:	0.2 per dwelling	0.2 x 10	2	2	**Yes**
Bicycle Parking:	1 bicycle space per 3 dwellings (residents) and 1 bicycle space per 12 dwellings (visitor)	10/3 10/12	4(rounded)	4+	**Yes**
Motorcycle Parking:	1 motorcycle space per 15 dwellings	10/15	1 (rounded)	1	**Yes**

Councils Traffic Officer has assessed the proposal and provided conditionally satisfactory referral advice. Each dwelling is provided with a double garage, and 2 visitors car parking spaces are proposed off the central driveway area, satisfying the provisions of this Chapter.

Manoeuvring diagrams have also been provided demonstrating compliance from all car parking spaces, and allowing all vehicles to enter and exit the site in a forward direction. One motorcycle and one bicycle parking space are proposed adjoining the visitors car parking area. Resident bicycle parking spaces are proposed within the garage storage areas of the dwellings.

A Traffic Impact Assessment (TIA) was requested given the proximity of the site to the University of Wollongong, Botanic Gardens and the potential for the rooms to be separately let. The TIA has been

prepared in accordance with the requirements of part 6 of this Chapter and is provided at Attachment 4. The TIA has been reviewed by Councils Traffic Engineer who indicated no objection to the findings of the report. Further, given the site is located only 300m from bus stops on Robsons Road and 270m from bus stops on Murphys Avenue, the development could have sought a 10% reduction in required car parking spaces. This has not been sought, and the car parking provision complies with the rates as required via Schedule 1 of this Chapter.

The TIA also considers traffic generation and movements per hour as a result of the development, and anticipates an additional 65 vehicle movements per day, 7 in the peak hour to result. The surrounding road network is considered capable of absorbing this minor increase.

CHAPTER E6: LANDSCAPING

Council's Landscape Officer has assessed the proposal and provided conditionally satisfactory referral advice. The proposal seeks consent for the removal of 20 trees to provide for the proposed footprint. An Arborists Report was provided with the application submission, which is provided at Attachment 5. Overall, all trees identified within the report were considered to be viable in the medium to long term. However no trees within the site were considered 'significant' in terms of health, form, size and species of the trees. The Officer has advised that the assessment of the site trees proposed for removal does not identify any particular tree that should be considered a site constraint. The existing site palm trees are proposed to be transplanted within the deep soil area of the site, which will assist in providing for an established deep soil zone from the occupation of the development. Conditions are also recommended as provided at Attachment 8 which require compensatory planting, totalling 22x 100L container trees.

The Officer has reviewed the submissions received, and provided the following breakdown of the trees identified within the submitted report:

Total trees in arborist report	**44**
Trees located on subject property	35
Trees located on neighbouring properties	9
Number of native trees	30
Number of locally occurring native trees	6
Palms to be relocated	5
Trees to be retained	19
Total trees to be retained and/or relocated	**24**
Trees for removal that are native	12
Trees for removal that are locally occurring natives	3
Exotic Trees for removal	5
Total Trees for Removal	**20**

Overall, Councils Landscape Officer considers the proposal satisfactory, subject to conditions as provided at Attachment 8. The proposed landscaped area, deep soil zone and communal open space areas proposed comply with the WDCP 2009, as discussed within Chapter B1. The proposal is not considered to be inconsistent with the provisions of this Chapter. The landscape plan is provided within Attachment 1.

CHAPTER E7: WASTE MANAGEMENT

Council's Traffic Officer has assessed the proposal against the requirements of this Chapter. A Site Waste Minimisation and Management Plan was submitted with the application and waste servicing arrangements are satisfactory.

A site waste minimisation and management plan formed part of the application submission.

A variation request has been provided in relation to part 5.4.3 of this Chapter, as discussed at section 3.1.3 of the Assessment report. This clause requires that where more than 6 units are proposed, that a communal waste storage area is to be provided. In this case, no communal waste

storage areas are proposed, and garbage storage is proposed within the storage area within the garage or courtyards of each unit. On street collection is proposed, and the width of the bins on the street would not exceed 50% of the site frontage. The extent of the bins on the frontage on collection day is demonstrated on the site plan, provided at Attachment 1. This arrangement is considered appropriate for the subject site, and the variation capable of support.

CHAPTER E13: FLOODPLAIN MANAGEMENT

The subject site is identified as uncategorised flood hazard affected.

Councils Stormwater Engineer reviewed the application submission and requested additional information including a flood model from the applicant. The model has been received and reviewed by Councils Stormwater Engineer, who has advised that the proposed development would not be located within the floodplain extents. The 1 in 100 year and Probable Maximum Flood (PMF) extents do not encroach on the subject site area, with the exception of an area of approximately 2.5sqm in the south western corner of the site. No earthworks are proposed within this area, and no impacts are expected.

Runoff from the site is proposed to be captured by the On-Site Detention (OSD) system proposed within the driveway area. Flows from the site would then be discharged to the street at the pre-development rate. The proposal has been designed to not result in any additional flood affectation on properties downstream. Conditions are recommended in this regard, as provided at Attachment 8.

CHAPTER E14: STORMWATER MANAGEMENT

Council's Stormwater Officer, has assessed the proposal against the requirements of this Chapter. A stormwater concept plan and land survey information were submitted with the application and are considered to be satisfactory. The drainage from the site is proposed to be directed to an OSD tank beneath the south western corner of the driveway area. This OSD has been designed to limit the flows from the site to the predeveloped state. The OSD is then proposed to connect to an existing pit located within Murphys Avenue. Conditions are recommended in this regard as provided at Attachment 8.

CHAPTER E18: THREATENED SPECIES

The *Biodiversity Conservation Act 2016* provides a Biodiversity Offsets Scheme which is creates a all types of development which are likely to have a significant impact on biodiversity.

Section 1.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) provides that Act has effect subject to the provisions of Part 7 of the Bio*diversity Conservation Act 2016* (BC Act).

The *Biodiversity Conservation Regulation 2017* sets out threshold levels for when the BOS will be triggered. The threshold has two components:

- whether the amount of native vegetation being cleared exceeds a threshold area
- whether the development involves clearing of native vegetation or prescribed impacts on an area mapped on the biodiversity values map published by the Minister for the Environment.

Native vegetation includes planted native vegetation.

If clearing and other impacts exceeds either trigger, the BOS applies to the proposed development and it is necessary to engage an accredited assessor to apply the Biodiversity Assessment Method (BAM) to assess the impacts of the development.

If the BOS is not triggered, the test of significance detailed in section 7.3 of the *BC Act 2016* must be used to determine whether a local development is likely to significantly affect threatened species or ecological communities, or their habitats.

The area clearing threshold as per the *Biodiversity Conservation Regulation 2017* for the subject development site is as per the following:

Minimum lot size associated with the property	**Threshold for clearing, above which the BAM and offsets scheme apply**
Less than 1 ha	0.25 ha (2500sqm) or more

Approximately 151sqm, or 0.0151 ha of native vegetation (12 trees) is proposed to be removed from the site as part of the development. The subject site has a minimum lot size of 449sqm, less than 1 ha. As less than 0.25 ha of native vegetation clearing is proposed, and the Biodiversity Assessment Methodology (BAM), requirement for a biodiversity development assessment report (BDAR) and offsets scheme do not apply to the subject proposal.

The site is not identified as being of high biodiversity value on the Biodiversity Values Map.

Council's Environmental Assessment Officer has considered whether the development site would potentially provide suitable habitat for any threatened species and the test of significance and has concluded that the proposed development is not expected to likely significantly affect threatened species or ecological communities, or their habitats. The development proposed would not be considered a key threatened process.

None of the trees on the site were identified as containing hollows.

The development would therefore not be considered to result in adverse impacts on biodiversity and is consistent with the provisions of the *Biodiversity Conservation Act 2016*.

Notwithstanding, conditions are recommended as provided at Attachment 8 which require consideration of fauna during the tree removal works.

CHAPTER E19: EARTHWORKS (LAND RESHAPING WORKS)

The proposal would require minor site preparation works, which would not otherwise require development consent. The works are not expected to result in unreasonable impacts on environmental functions and processes, neighbouring properties or the features surrounding land. Conditions are recommended to manage impacts as provided at Attachment 8.

CHAPTER E21: DEMOLITION AND ASBESTOS MANAGEMENT

The submitted demolition plan indicates the removal of the all structures on the site. Conditions are recommended in this regard as provided at Attachment 8.

CHAPTER E22: SOIL EROSION AND SEDIMENT CONTROL

Conditions are recommended in this regard as provided at Attachment 8.

CHAPTER E23: RIPARIAN LAND MANAGEMENT

The subject site is located approximately 30m from a piped watercourse which traverses 66 and 64 Murphys Avenue. This area is mapped as a riparian corridor within the WLEP 2009 as discussed within the report, but not captured as part of the WDCP 2009 mapping. The area is indicated to be a drainage asset within Councils property information system. A site inspection has revealed that there is no remaining bed or channel located in the vicinity of the development site.

The Natural Resources Access Regulator (NRAR) provided a response on 4 June 2019 advising that for the purposes of the Water Management Act 2000, a controlled activity approval would not be required for the proposed development.

The development is considered to have been appropriate located with regard to the piped watercourse. No adverse impacts are expected.

Attachment 8: Conditions

Approved Plans and Specifications

1 The development shall be implemented substantially in accordance with the details and specifications set out on Project No 2018-34 Drawing A02-C to A06-C dated 9 August 2019, A07-B dated 17 June 2019 and A12-A and A13-A dated 1 March 2019 prepared by ADM Architects 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 **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.

3 **Construction Certificate**
A Construction Certificate must be obtained from Council or an Accredited Certifier prior to work commencing.

A Construction Certificate certifies that the provisions of Clauses 139-148 of the Environmental Planning and Assessment Amendment Regulations, 2000 have been satisfied, including compliance with all relevant conditions of Development Consent and the Building Code of Australia.

Note: The certifying authority 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.

4 **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.

5 **Maintenance of Access to Adjoining Properties**
Access to all properties not the subject of this approval must be maintained at all times and any alteration to access to such properties, temporary or permanent, must not be commenced until such time as written evidence is submitted to Council or the Principal Certifying Authority indicating agreement by the affected property owners.

6 **Occupation Certificate**
An Occupation Certificate must be issued by the Principal Certifying Authority prior to occupation or use of the development. In issuing an Occupation Certificate, the Principal Certifying Authority 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 Retention/Removal**
The developer shall retain the existing trees indicated on the Landscape Plan by Ochre Landscape Architects dated 9 August 2019 consisting of trees numbered T12, T13, T14, T15, T19, T20, T21, T22, T23, T34, T35, T36, T37, T38, T40, T41 T42, T43 and T44.

Any branch 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.

All recommendations in Arborist's Report by Allied Tree Consultancy to be implemented including and not restricted to: remedial tree pruning, deadwooding, fencing and signage, sediment buffer, stem protection, establishing tree protection zones and watering and root hormone application if required.

The developer shall transplant tree numbered T8, T10, T11, T25 and T33 to an appropriate location on site by an experienced and qualified contractor.

This consent permits the removal of trees numbered T1, T2, T3, T4, T5, T6, T7, T9, T16, T17, T18, T24, T26, T27, T28, T29, T30, T31, T32 and T39 as indicated on the Landscape Plan by Ochre Landscape Architects dated 9 August 2019. No other trees shall be removed without prior written approval of Council.

Prior to the Issue of the Construction Certificate

8 **Flows from Adjoining Properties**
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. The above requirements must be clearly shown on construction certificate plans prior to the release of the construction certificate.

9 **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 Certifying Authority 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.

10 **Endeavour Energy Requirements**
The submission of documentary evidence from Endeavour Energy to the Principal Certifying Authority is required confirming that satisfactory arrangements have been made with Endeavour Energy for the provision of electricity supplies to the development, prior to the release of the Construction Certificate.

Note: Applications should be made to Customer Connections – South Coast, Endeavour Energy PO Box 811 Seven Hills NSW 1730.

11 **Telecommunications**
The submission of documentary evidence from an approved telecommunications carrier to the Principal Certifying Authority confirming that underground telecommunication services are available for this development is required prior to the issue of the Construction Certificate.

12 **Provision of a Fire Hydrant**
The provision of a fire hydrant in accordance with AS2419 (1994) Fire Hydrant Installations and any requirements of the NSW Rural Fire Service and/or NSW Fire Brigades. The final details of the location of the fire hydrant shall be reflected on the Construction Certificate plans prior to the issue of the Construction Certificate

13 **Obscure Glazing for all Bathroom and WC Windows**
The first floor 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.

14 **External Clothes Drying Facilities**
Where external clothes drying facilities are proposed, full details of the screening and the location of these facilities shall be reflected on the Construction Certificate plans and the final landscape plan.

15 **Car Parking and Access**
The development shall make provision for a total of 22 car parking spaces, 1 motorcycle parking space, a minimum of 4 secure (Class B) residential bicycle spaces and a minimum of 1 visitor bicycle space (Class C). This requirement shall be reflected on the Construction Certificate plans. Any change in above parking numbers shown on the approved DA 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.

16 The parking dimensions, internal circulation, aisle widths, kerb splay corners, head clearance heights, ramp widths and grades of the car parking areas are to be in conformity with the current relevant Australian Standard AS2890.1, except where amended by other conditions of this consent. Details of such compliance are to be reflected on the Construction Certificate plans.

17 The driveway, car parking areas and unit entrances shall incorporate 'low impact' floodlighting to ameliorate any light spillage and/or glare impacts upon surrounding properties. The final design details of the proposed lighting system shall be reflected on the Construction Certificate plans. The installation of the lighting system shall be in accordance with the approved final design.

18 A change in driveway paving is required at the entrance threshold within the property boundary to clearly show motorists they are crossing a pedestrian area. Between the property boundary and the kerb, the developer must construct the driveway pavement in accordance with the conditions, technical specifications and levels to be obtained from Council's Manager Works. This requirement shall be reflected on the Construction Certificate plans and any supporting documentation.

19 **Structures Adjacent to Driveway**
Any proposed structures adjacent to the driveway shall comply with the requirements of the current relevant Australian Standard AS2890.1 (figure 3.2 and 3.3) to provide for adequate pedestrian and vehicle sight distance. This includes, but is not limited to, structures such as signs, letterboxes, retaining walls, dense planting etc. This requirement shall be reflected on the Construction Certificate plans.

20 **Water/Wastewater Entering Road Reserve**
Provision shall be made for a minimum 200mm wide grated box drain along the boundary of the property at the vehicular crossing/s to prevent surface water entering the road reserve. This requirement shall be reflected on the Construction Certificate plans.

21 The depth and location of all services (ie gas, water, sewer, electricity, telephone, traffic lights, etc) must be ascertained and reflected on the Construction Certificate plans and supporting documentation.

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

a 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;
b the final species selections in close proximity to property boundaries are to be species that do not excessively drop seeds, berries or leaves;
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; and
d any proposed hard surface under the canopy of 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.

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

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

24 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 Certifying Authority prior to release of the Construction Certificate.

25 **Tree Protection and Management**

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 Certifying Authority 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.

26 **Stormwater Connection to Kerb**

Connection across footways shall be by means of one or two (maximum), sewer grade UPVC pipe(s), 100mm diameter pipes with a continuous downslope gradient to the kerb. Connection to the kerb shall be made with a rectangular, hot dipped galvanised mild steel weephole(s) shaped to suit the kerb profile, with each weephole having the capacity equal to a 100mm diameter pipe. Alternatively, a maximum of two 150mm x 100mm hot dipped galvanised steel pipes may be used across footways, with the 150mm dimension being parallel to the road surface to suit the kerb profile.

27 Bicycle parking facilities must have adequate weather protection and provide the appropriate level of security as required by the current relevant Australian Standard AS2890.3 - Bicycle Parking Facilities. This requirement shall be reflected on the Construction Certificate plans.

28 **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.

29 **Street Trees**

The developer must address the street frontage by installing street tree planting. The number and species for this development is one *Acmena smithii* 200 litre container size, in accordance with AS 2303:2018 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.

30 **Roofwater Drainage**

All roof gutters, downpipes, pits, and pipelines draining roof areas and other impervious surfaces with no deliberate overflow path to the on-site stormwater detention (OSD) facility, shall be designed to cater for a 1 in 100 year ARI storm event in accordance with AS 3500.3 – Plumbing

and Drainage (Stormwater Drainage). Details of gutter/downpipe/pipeline sizes and locations shall be reflected on the Construction Certificate plans.

31 **Stormwater Drainage Design**

A detailed drainage design for the development must be submitted to and approved by the Principal Certifying Authority prior to the release of the Construction Certificate. The detailed drainage design must satisfy the following requirements:

a Be prepared by a suitably qualified civil engineer in accordance with Chapter E14 of Wollongong City Council's Development Control Plan 2009, Subdivision Policy, conditions listed under this consent, and generally in accordance with the The Concept Stormwater Plan lodged for development approval, prepared by Jones Nicholson Consulting Engineers Reference No.18020085 C01, revision P3, dated 03/07/2019.

b Include details of the method of stormwater disposal. Stormwater from the development must be piped to Council's existing stormwater drainage system.

c Engineering plans and supporting calculations for the stormwater drainage system are to be prepared by a suitably qualified engineer and be designed to ensure that stormwater runoff from upstream properties is conveyed through the site without adverse impact on the development or adjoining properties. The plan must indicate the method of disposal of all stormwater and must include rainwater tanks, existing ground levels, finished surface levels on all paved areas, estimated flow rates, invert levels and sizes of all pipelines.

d Overflow paths shall be provided to allow for flows of water in excess of the capacity of the pipe/drainage system draining the land, as well as from any detention storage on the land. Blocked pipe situations with 1 in 100 year ARI events shall be incorporated in the design. Overflow paths shall also be provided in low points and depressions. Each overflow path shall be designed to ensure no entry of surface water flows into any building and no concentration of surface water flows onto any adjoining property. Details of each overflow path shall be shown on the detailed drainage design.

32 **On-Site Stormwater Detention (OSD) Design**

The developer must provide on-site stormwater detention (OSD) storage for stormwater runoff from the development. The design and details of the OSD system must be provided in conjunction with the detailed drainage design and approved by the Principal Certifying Authority prior to the release of the Construction Certificate. The OSD design and details must satisfy the following requirements:

a Must be prepared by a suitable qualified engineer in accordance with Chapter E14 of the Wollongong DCP 2009.

b Must include details of the Site Storage Requirement (SSR) and Permissible Site Discharge (PSD) values for the site in accordance with Section 12.2.4 of Chapter E14 of the Wollongong DCP2009.

c The OSD facility must be designed to withstand the maximum loadings occurring from any combination of traffic (with consideration to residential and heavy vehicles), hydrostatic, earth, and buoyancy forces. Details must be provided demonstrating these requirements have been achieved.

d The OSD facility shall incorporate a minimum 600mm x 600mm square lockable grate for access and maintenance purposes, provision for safety, debris control screen, and a suitably graded invert to the outlet to prevent ponding.

e Must include discharge control calculations (i.e. orifice/weir calculations) generally in accordance with Section 12.2.6 and 12.5.4 of Chapter E14 of the Wollongong DCP2009.

f Details of the orifice plate including diameter of orifice and method of fixing shall be provided.

g Must include details of a corrosion resistant identification plaque for location on or close to the OSD facility. The plaque shall include the following information and shall be installed prior to the issue of the occupation certificate:

- The structure is an OSD facility, being part of the stormwater drainage network, and is not to be tampered with.
- Identification number DA-2019/284.

- Any specialist maintenance requirements.

h Must include a maintenance schedule for the OSD system, generally in accordance with Chapter E14 of the Wollongong DCP2009.

33 **Council Footpath Reserve Works**

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.

34 **Fencing**

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

a 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 or colorbond fences.

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

35 **Development Contributions**

Pursuant to Section 4.17 of the Environmental Planning and Assessment Act 1979 and the Wollongong City-Wide Development Contributions Plan (2018), a monetary contribution of $22,250.00 (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	http://www.wollongong.nsw.gov.au/applicationpayments Your Payment Reference: 1095951	• 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 (2018) 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

36 **Appointment of Principal Certifying Authority**
Prior to commencement of work, the person having the benefit of the Development Consent and a Construction Certificate must:

a Appoint a Principal Certifying Authority (PCA) and notify Council in writing of the appointment irrespective of whether Council or an accredited private certifier is appointed; and
b notify Council in writing of their intention to commence work (at least two days notice is required).

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

37 **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 Certifying Authority 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.

38 **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 Certifying Authority 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.

39 **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.

40 **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 Certifying Authority, prior to the commencement of any works on the site.

41 **Enclosure of the Site**

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

42 **Demolition Works**

The demolition of the existing dwelling houses and ancillary structures shall be carried out in accordance with Australian Standard AS2601 (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. Any unforeseen hazardous and/or intractable wastes shall be disposed of to the satisfaction of the Principal Certifying Authority. 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.

43 **Notification to SafeWork NSW**

The demolition licence holder who proposes demolition of a structure or part of a structure that is loadbearing or otherwise related to the physical integrity of the structure that is at least six metres in height, involving load shifting machinery on a suspended floor, or involving the use of explosives must notify SafeWork NSW in writing at least five (5) calendar days before the work commences.

44 **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.

45 **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.

46 **Waste Management**

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 reusable materials.

47 **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.

48 **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.

49 **Tree Protection and Management**
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 installation of Tree Protection Fencing - A one (1) metre high exclusion fence must be installed around the extremity of the dripline of the tree/trees to be retained prior to any site works commencing. The minimum acceptable standard is a 3 strand wire fence with star pickets at 1.8 metre centres. This fence must be maintained throughout the period of construction to prevent any access within the tree protection area;
c 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;
d 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.

50 **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.

51 **Certification from Arborist - Adequate Protection of Trees to be Retained**
A qualified arborist is required to be engaged for the supervision of all on-site excavation or land clearing works. The submission of appropriate certification from the appointed arborist to the Principal Certifying Authority is required which confirms that all trees and other vegetation to be retained are protected by fencing and other measures, prior to the commencement of any such excavation or land clearing works.

52 **Notification to Council of any Damage to Council's Infrastructure**
Council must be notified in the event of any existing damage to any of Council's infrastructure including, but not limited to the road, kerb and gutter, road shoulder, footpath, drainage structures and street trees fronting the development prior to the commencement of work. Adequate protection must be provided to Council infrastructure prior to work commencing and during the construction period. Any damage to Council's assets shall be restored in a satisfactory manner prior to the issue of the Occupation Certificate.

53 The arrangements and costs associated with any adjustment to a public utility service shall be borne by the applicant/developer. Any adjustment, deletion and/or creation of public utility easements associated with the approved works are the responsibility of the applicant/developer. The submission of documentary evidence to the Principal Certifying Authority which confirms

that satisfactory arrangements have been put in place regarding any adjustment to such services is required prior to any works commencing on site.

54 **Dilapidation Report**
The developer shall submit a Dilapidation Report recording the condition of the existing streetscape, street trees and adjoining properties prior to work commencing and include a detailed description of elements and photographic record.

55 **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.

56 Prior to removal, the trees approved for removal under this development consent shall be closely inspected for native vertebrate fauna occupation, and if occupied by native vertebrate fauna, then the NSW Wildlife Information, Rescue and Education Service (WIRES) shall be contacted for advice (phone 1300 094 737).

57 **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.

During Demolition, Excavation or Construction

58 **Supervision of Engineering Works**
All engineering works associated with the development are to be carried out under the supervision of a practicing engineer and/or registered surveyor.

59 **Avoidance of Cruelty and Harm to Fauna**
During tree removal works, all care shall be taken to avoid cruelty and harm to fauna.

In the event any native fauna are injured during tree removal works, then the NSW Wildlife Information, Rescue and Education Service (WIRES) shall be contacted (phone 1300 094 737) for assistance.

60 **Piping of Stormwater to Existing Stormwater Drainage System**
Stormwater for the land must be piped to Council's existing stormwater drainage system.

61 **No Adverse Run-off Impacts on Adjoining Properties**
The design and construction of the development shall ensure there are no adverse effects to adjoining properties, as a result of flood or stormwater run-off. Attention must be paid to ensure adequate protection for buildings against the ingress of surface run-off.

Allowance must be made for surface run-off from adjoining properties. Any redirection or treatment of that run-off must not adversely affect any other property.

62 **Copy of Consent to be in Possession of Person carrying out Tree Removal**
The applicant/developer 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 trees which have been given approval to be removed in accordance with this consent.

63 **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 Certifying Authority 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.

64 Vehicle access is to be controlled so as to prevent tracking of sediment onto adjoining roadways, particularly during wet weather or when the site has been affected by wet weather.

65 Drains, gutters, access ways and roadways must be maintained free of sediment and any other material. Gutters and roadways must be swept/scraped regularly to maintain them in a clean state.

66 Building operations such as brick cutting, the washing of tools or paint brushes, or other equipment and the mixing of mortar must not be carried out on the roadway or public footpath or any other locations which could lead to the discharge of materials into the stormwater drainage system or natural watercourse.

67 **Dust Suppression Measures**
Activities occurring during the construction phase of the development must be carried out in a manner that will minimise the generation of dust.

68 Trucks which are entering and leaving the premises and carrying loads must be sealed or covered at all times, except during loading and unloading.

69 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".

70 **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>).

71 **Asbestos Clearance Certificate**
The internal floor area affected or likely to be affected, by scattering of asbestos pieces, particles or fibres during demolition or cutting into the building, is to be cleaned by vacuuming by a

contractor approved by SafeWork NSW. A Clearance Certificate to certify that the site area is free of asbestos is to be submitted to Council by a licensed asbestos assessor within fourteen (14) days of the completion of renovations (or prior to the Occupation Certificate being issued).

72 **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 Certifying Authority, and a copy submitted to Council (in the event that Council is not the Principal Certifying Authority), prior to commencement of the construction works.

73 **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.

74 **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 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
b if a replacement BASIX Certificate accompanies any subsequent application for a construction certificate, the replacement BASIX Certificate; and
c BASIX Certificate has the meaning given to that term in the Environmental Planning & Assessment Regulation 2000."

75 **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.

76 **Screen Planting**
A continuous evergreen hedge is to be established along the boundaries as shown on the Landscape Plan by Ochre Landscape Architects dated 9 August 2019. Species as per Landscape Plan.

Minimum spacing 900mm.

Minimum pot size 5 lt.

Prior to the Issue of the Occupation Certificate

77 **Lot Consolidation**
Prior to the issue of any Occupation Certificate, the two subject Lots, being Lot 2 DP 589693 and Lot 3 DP 589693 are to be consolidated.

78 A Section 73 Certificate must be submitted to the Principal Certifying Authority prior to occupation of the development/release of the plan of subdivision.

79 **Drainage**
The developer must obtain a certificate of Hydraulic Compliance (using Council's M19 form) from a suitably qualified civil engineer, to confirm that all stormwater drainage and on-site detention works have been constructed in accordance with the approved plans. In addition, full works-as-executed plans, prepared and signed by a Registered Surveyor must be submitted.

These plans and certification must satisfy all the stormwater requirements stated in Chapter E14 of the Wollongong DCP2009. This information must be submitted to the Principal Certifying Authority prior to the issue of the final Occupation Certificate.

80 **Restriction on Use – On-site Detention System**
The applicant must create a restriction on use under the Conveyancing Act 1919 over the on-site detention system. The following terms must be included in an appropriate instrument created under the Conveyancing Act 1919 for approval of Council:

"The registered proprietor of the lot burdened must not make or permit or suffer the making of any alterations to any on-site stormwater detention system on the lot(s) burdened without the prior consent in writing of the authority benefited. The expression 'on-site stormwater detention system' shall include all ancillary gutters, pipes, drains, walls, kerbs, pits, grates, tanks, chambers, basins and surfaces designed to temporarily detain stormwater as well as all surfaces graded to direct stormwater to those structures.

Name of the authority having the power to release, vary or modify the restriction referred to is Wollongong City Council."

The instrument, showing the restriction, must be submitted to the Principal Certifying Authority for endorsement prior to the issue of the final Occupation Certificate and the use of the development.

81 **Access Certification**
Prior to the occupation of the building, the Principal Certifying Authority must ensure that a certificate from an "accredited access consultant" has been issued certifying that the building complies with the requirements of AS 1428.1.

82 The developer must make compensatory provision for the trees required to be removed as a result of the development. In this regard, 22x 100 litre container mature plant stock shall be placed as per the Landscape Plan by Ochre Landscape Architects dated 9 August 2019. Species as per Landscape Plan.

83 **Positive Covenant – On-Site Detention Maintenance Schedule**
A positive covenant shall be created under the Conveyancing Act 1919, requiring the property owner(s) to undertake maintenance in accordance with the Construction Certificate approved On-Site Stormwater Detention System and Maintenance Schedule (application number to be referenced).

The instrument, showing the positive covenant must be submitted to the Principal Certifying Authority for endorsement prior to the issue of the final Occupation Certificate and the use of the development.

84 **On-Site Detention – Structural Certification**
The submission of a certificate from a suitably qualified practising civil and/or structural engineer to the Principal Certifying Authority is required prior to the issue of the final Occupation Certificate. This certification is required to verify the structural adequacy of the on-site detention facility and that the facility has been constructed in accordance with the approved Construction Certificate plans.

85 **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.

Operational Phases of the Development/Use of the Site

86 **Fire Safety Measures**
All new and existing fire safety measures shall be maintained in working condition, at all times.

87 **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.