WLPP No.	Item No. 2
DA No.	DA-2022/1343
Proposal	Residential - consolidation of lots, tree removal, demolition of existing structures and construction of a residential flat building with basement parking and associated external works
Property	4-6 Georgina Avenue, KEIRAVILLE NSW 2500
Applicant	Daniel Watts
Responsible Team	Development Assessment & Certification – City Wide Planning Team (RT)

ASSESSMENT REPORT AND RECOMMENDATION

Executive Summary

Reason for consideration by Wollongong Local Planning Panel (WLPP)

The proposal has been referred to the WLPP **for determination** pursuant to part 2(b) of Schedule 2 of the Local Planning Panels Direction, as the application is the subject of ten (10) or more unique submissions by way of objection.

Proposal

The application proposes the development the following:

- Consolidation of Lot 29 and Lot 30 DP 30903;
- Demolition of existing structures and tree removal; and
- Construction of a residential flat building with basement parking and associated external works.

Permissibility

The subject site is zoned R2 Low Density Residential pursuant to Wollongong Local Environmental Plan (WLEP) 2009. Residential flat buildings are permissible with consent in the R2 zone. Demolition and tree removal are ancillary works so as to facilitate the proposal and as such are also permissible. The proposed lot consolidation is permissible on land to which the Wollongong Local Environmental Plan 2009 (WLEP 2009) applies.

Consultation

Details of the proposal were publicly exhibited in accordance with Council's adopted Community Participation Plan 2019. Fifty one (51) unique submissions were received. Following the submission of amended plans & additional information, the proposal was renotified, with a total of thirty (30) unique submissions received. The issues identified are discussed at section 1.5 of this report.

Internal

Details of the proposal were referred to Council's Development Engineering, Geotechnical, Environment, Landscape, Heritage, Design and Community Safety Officers for assessment. Satisfactory referral advice, comments and/or recommended conditions were provided in each instance. Assessment considerations of internal groups as relates to relevant Chapters of the WDCP 2009 are presented at section 2.3.1 of this report.

External

Details of the application submission were referred to the NSW Rural Fire Service for comment. Advice received indicates the proposal is considered conditionally satisfactory.

The application was formally reviewed by Council's Design Review Panel (DRP) on 22 May 2023. Following submission of amended plans and documentation the application was again reviewed by the DRP on 9 October 2023 with satisfactory outcomes achieved.

Main Issues

The main issues identified during the course of assessment are:-

- Variation requests regarding the basement car parking height above ground control of Chapter B1 Section 6.9.2(2) and driveway side setback control of Chapter B1 Section 6.10.2(1)(d) of WDCP2009.
- Character of the area; and
- Water run off and site stability;
- Traffic, parking and waste servicing;
- Amenity - adjoining residents

RECOMMENDATION

DA-2022/1343 be approved subject to the conditions provided in **Attachment 8**.

1.0 APPLICATION OVERVIEW

1.1 PLANNING CONTROLS

The following planning controls apply to the proposal:

State Environmental Planning Policies:

- SEPP 65 Design Quality of Residential Apartment Development
- State Environmental Planning Policy (Resilience & Hazards) 2021
- State Environmental Planning Policy (Biodiversity & Conservation) 2021
- 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
- Wollongong Community Participation Plan
- Planning for Bush fire Protection (PBP) 2019

1.2 DETAILED DESCRIPTION OF PROPOSAL

The application proposes the following:

- Consolidation of Lot 29 and Lot 30 DP 30903;
- Demolition of existing structures and tree removal; and
- Construction of a three (3) storey residential flat building consisting of
    - Eleven (11) units
        - Seven (7) studio apartments; and
        - Four (4) x one bedroom units;
    - One level of basement parking containing fourteen (14) spaces; and
- Associated external works.

1.3 BACKGROUND

The development history of the site is as follows:

Application Number	Description (Application)	Decision	Determined
BA-1992/2808	Additions To Dwelling & Deck	APPROVED	22-Feb-93
BA-1994/223	Proposed Inground Swimming Pool	COMPLETED	
BC-1990/815	Whole	APPROVED	17-Jul-90
BA-1961/964	2 Flats	APPROVED	24-Jan-62
BA-1966/1569	Double Carport	APPROVED	08-Aug-66

DA-1976/275	Additions To Flats	APPROVED	14-Dec-76
BA-1966/1251	Dwelling & Garage	APPROVED	27-Jun-66
BA-1975/1190	Additions	APPROVED	09-Jun-75
TMO-2009/1253	Remove 3 x trees	APPROVED	18-Sep-09
TMO-2020/1214	Prune 1 tree	APPROVED	10-Nov-20
PL-2022/127	Residential - multi dwelling development of 12 units TEAMS MEETING 12/10/22 - 10AM	COMPLETED	11-Nov-22
CERT-2022/4170	Flood Level Information Advice (Default category)	ISSUED	18-Nov-22

Application History

The subject development application, DA-2022/1343, was lodged on 15 December 2022 and proposed Residential - consolidation of lots, tree removal and demolition of existing structures and construction of a residential flat building with basement parking and associated external works. The application was notified from 11 January 2023 to 25 January 2023.

Concerns were raised by various referral groups with regard the proposals response to inherent site constraints including flooding, stormwater, hydrogeological, bush fire and design matters. Additional information to address flooding, landscaping, hydrogeological, bush fire, access, traffic, noise and architectural design matters raised by Council was provided by the applicant. The application was reviewed by the DRP on 22 May 2023.

Further concerns were raised by Council regarding stormwater, traffic, heritage, planning and design matters. Amended plans that revised the layout and reduced the yield of the proposed development by one (1) unit were provided by the applicant to address matters raised by Council and the DRP. These plans were notified from 12 July 2023 to 26 July 2023.

The amended plans were formally reviewed by the DRP on 9 October 2023. Further design amendments were made to the proposal to address recommendations of the DRP with satisfactory outcomes achieved.

Customer service actions:

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

1.4 SITE DESCRIPTION

The site is located at 4 and 6 Georgina Avenue, KEIRAVILLE and the title reference is Lot 29 and Lot 30 DP 30903. The subject properties are zoned R2 - Low Density Residential under WLEP2009.

Situated on 4 Georgina Avenue is a single storey brick veneer dwelling with a pitched tile roof with a basement double garage. Vehicular access to the site is via driveway off Georgina Avenue.

Situated on 6 Georgina Avenue is a single storey brick veneer attached dual occupancy development with a pitched tile roof and a basement single garage. Ancillary structures consist of a detached double carport forward of the dwellings and adjacent to the Eastern side boundary. Vehicular access to the site is via driveway off Georgina Avenue.

The two (2) lots form an irregular shaped allotment with an overall site area of approximately 1404.2m². The site has slopes to and from the street but is characterised by a cross fall to the East.

The street scene in the immediate vicinity is characterised by low density residential development of single and double storey construction. Adjoining development consists of a single storey dwelling to the East and a double storey dwelling to the South west, a reserve owned by the University of Wollongong adjoins the rear of the site.

Figure 1: Aerial photograph (2023)

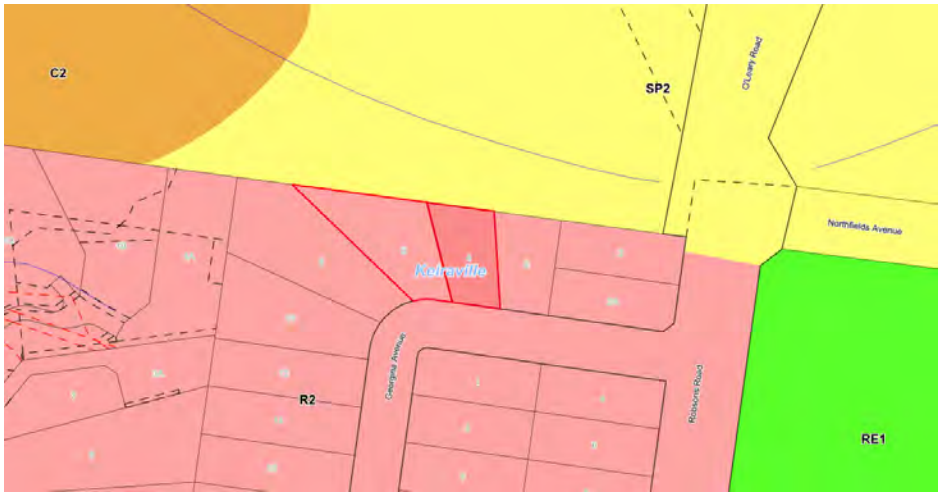

Figure 2: WLEP 2009 zoning map

Property constraints

- Flooding: Uncategorised flood risk precinct.
- Bush fire prone land;
- Unstable Land

There are no restrictions on the title.

1.5 SUBMISSIONS

Details of the proposal were publicly exhibited in accordance with Council's adopted Community Participation Plan 2019. Fifty one (51) unique submissions were received. Following the submission of amended plans & additional information, the proposal was renotified, with a total of thirty (30) unique submissions received. The main issues identified within the submissions are discussed below.

Table 1: Submissions

Concern	Comment
1. Character of the area and permissibility	Chapter D1 of WDCP2009 indicates that 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,

Concern	Comment
	villas, townhouses and walk up residential flat buildings. The desired future character is for Keiraville to remain a leafy suburb with a mix of housing types ranging from detached dwelling-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 proposal provides for a residential flat building development consisting of eleven (11) units with basement parking and associated external works. The existing character in the immediate surrounding area is characterised by one and two storey residential dwellings. The building has been designed such that it presents as two (2) separate two (2) storey forms that respond to the topography of the site. Deep soil planting forward of the building line further minimises visual impacts on the street to ensure the building is in harmony with the low density character of the neighbourhood. Residential flat buildings are a permissible use in the R2 zone. The bulk and scale of the development is consistent with the applicable planning controls for the area inclusive of building height and floor space ratio and satisfies built form controls for residential flat buildings under WDCP2009. Therefore the proposal is considered to be consistent with the existing and desired future character for the locality.
2. Nature of Occupation and Housing Strategy	The applicant's Statement of Environmental Effects indicates that the scheme is designed to take advantage of the site's proximity to the University of Wollongong. The target market being those associated with the university such as teachers, students and other key workers. The development provides for a mix of apartment types and sizes, including two adaptable units, within short walking distance of the University of Wollongong. Residential flat buildings are a permissible use in the R2 zone. The Wollongong Housing Strategy 2023 indicates that new housing will continue to diversify supply and provide choice for residents. Diversity is to be provided through a variety of housing types, sizes, configurations, and features to cater for a wide range of residential needs and price points. The focus for diversity being on affordable, smaller, and/or

Concern	Comment
	adaptable housing located throughout the Wollongong LGA to cater for range of incomes and abilities. Therefore the proposal is considered to be consistent with the existing and desired future character for the locality and the Wollongong Housing Strategy.
3. Geotechnical	Details of the application submission including a geotechnical report were referred to Council's Geotechnical, Environment and Development Engineering Officers for comment. Council requested further groundwater assessment of the site be conducted. Additional information including a Hydrogeological Report was provided to Council. The additional information and amended plans have been reviewed by Council's Geotechnical, Environment and Development Engineering Officers and are considered to resolve concerns raised. Conditions at **Attachment 8** require geotechnical design and inspection, excavation and protection to preserve adjoining dwellings and safe execution of excavation and backfilling. It is considered that the earthworks will not have a detrimental impact on environmental functions and processes, neighbouring uses and features of the surrounding land.
4. Amenity impacts (Privacy and Overshadowing)	The proposed development is considered acceptable with respect to overshadowing in this circumstance for the following reasons: - The bulk and scale of the development is consistent with the applicable planning controls for the area inclusive of building height and floor space ratio so as to minimise overshadowing. - Reasonable setbacks have been maintained to the site boundaries. - Submitted shadow diagrams are considered satisfactory and detail reasonable solar access between 9am and 3pm on 21 June as required by WDCP 2009 Chapter B1. The proposed development is considered acceptable with respect to privacy in this circumstance for the following reasons: - Reasonable setbacks have been maintained to the site boundaries. - Living room and windows have been orientated to take in views out to the North or South. Minimising visual privacy impacts to the neighbouring properties.

Concern	Comment
	- The POS balconies have been oriented to address either the rear boundary or street. Privacy screens have been incorporated to the eastern elevation of the balconies for Units 3, 4, 6 and 7 to minimise overlooking to the East and orientate views towards the street. - Landscape screening to site boundaries has been provided to minimise overlooking.
5. Bushfire	Details of the application submission were referred to the NSW Rural Fire Service for comment. Advice received is that the application is considered conditionally satisfactory.
6. Flooding and stormwater management	Particular consideration was given to flooding impacts both on the proposed development and on adjoining properties . Details of the application submission including a flooding information and stormwater management plans were referred to Council's Development Engineering Officer for comment. Council requested further flooding information with regard to the basement and stormwater management plans. Additional flooding information and stormwater management plans were provided to Council. The additional information and amended plans have been reviewed by Council's Development Engineering Officer and is considered to resolve concerns raised.
7. Traffic Safety and Parking	Details of the application were referred to Council's Development Engineering Officer for comment. Advice received indicates that the car parking, access and egress arrangements and manoeuvring are acceptable in this circumstance for the following reasons: - Council's DCP requires fourteen (14) parking spaces for the proposed development. The proposal provides fourteen (14) onsite parking spaces. - The proposed development satisfies Council's driveway cross over width controls thus minimising impacts on street parking spaces. - The proposed development will result in a maximum of 4.5 additional trips in and out in the peak hour based on RMS rates. Therefore the traffic generated by the proposed development will not be unreasonable in this circumstance, and is within the capacity of the local road network. - The bend would be considered a low speed environment where the risk to pedestrians and

Concern	Comment
	cyclists are much lower than other vehicle through routes. - The proposed access arrangement will improve existing egress arrangements for the site by allowing vehicles to leave the site in a forward facing direction. A condition at **Attachment 8** requires approval under Section 138 of the Roads Act from Council for any work that interrupts pedestrian and/or vehicular traffic during works associated with the application. A traffic management plan will be required to obtain the permit.
8. Environmental Impacts	. The site is not identified as containing areas of "Natural Resource Sensitivity – Biodiversity" and the development as proposed will not impact on areas of "Natural Resource Sensitivity – Biodiversity" within the vicinity. Details of the application submission including an arborist report and proposed earthworks were referred to Council's Environment and Landscape Officers for comment. Council requested further groundwater assessment of the site be conducted and amended landscape plans to provide more shading to the site. Additional information including a Hydrogeological Report and amended landscape plans were provided to Council. The additional information and amended plans have been reviewed by Council's Environment and Landscape Officers and are considered to resolve concerns raised. Advice received is that the application is considered conditionally satisfactory . With respect to ecologically sustainable development principles, development controls to improve the sustainability of development throughout Wollongong are integrated into the relevant chapters of this DCP as detailed below and at **Attachment 4**. The application submission contains a BASIX Certificate indicating minimum requirements with regard to energy and water efficiency and thermal comfort are met. The proposal is considered to be consistent with the principles of ecologically sustainable development.
9. Noise Impacts	Consideration was given to impacts of noise on residential development within the vicinity of the proposed development.

Concern	Comment
	The application submission including the submitted acoustic report was referred to Council's Environment Officer who raised concerns with regard to noise and the applicant was requested to provide an amended Acoustic Report. An amended acoustic report with recommendations was provided by the applicant resolving concerns raised. Conditions at **Attachment 8** account for compliance with the recommendations of the Acoustic report and construction noise and vibration such that noise levels do not exceed permitted levels.
10 Variation to driveway side setback	The proposed driveway setback to the Eastern side boundary is considered acceptable in this circumstance for the following reasons: • The variation is considered minor being 0.5m encroach for a 10m length of driveway. • The development has been sited so as to minimise the extent of cut to the site whilst facilitating compliant driveway widths and access to the basement garage. • Landscape screening and acoustic barrier to the Eastern side boundary will minimise amenity impacts on the adjoining property. • Details of the application including traffic report and swept path analysis were referred to Council's Development Engineering Officer for comment. Advice received indicates there are no issues with the proposed vehicular access arrangements.
11. Encroachment of POS into front setback	Council requested amended plans to remove all POS encroachments into the 6m front setback. The applicant submitted amended plans that detail no encroachments from POS court yards into the 6m front setback.
12. Waste Management	Details of the application were referred to Council's Development Engineering Officer for comment. Advice received indicates the proposed development satisfies Council's onsite parking requirements so as to minimise impacts on street parking and has sufficient frontage for waste collection. As such the proposal complies with Council's waste management controls.
13. Solar access to units	The objectives, design criteria and design guidance for solar and daylight access in residential flat building development are provided in the Part 4 of the Apartment Design Guide (ADG). As such the proposed development has been assessed against objectives, design criteria and design guidance of the ADG for solar and daylight access.

Concern	Comment
	The proposed development complies with the solar access requirements of the ADG. Daylight access has been provided to all habitable rooms and some non-habitable rooms. Balconies and window hoods have been incorporated to shade summer sun while maximising solar access to living areas in winter. Clothes drying facilities have been provided to the North western side of the building and receive reasonable solar access
14. Building Height	WLEP2009 defines building height in relation to the height of a building in metres as the vertical distance from ground level (existing) to the highest point of the building. The development including the lift overrun does not exceed 9m existing ground level and is therefore compliant It should be noted concerns were raised by Council regarding design matters including reducing the height of the three storey egress stairs and exploring opportunities to accentuate the two volume design approach. Amended plans that revised the layout, height and scale and reduced the yield of the proposed development by one (1) unit were provided by the applicant to address matters raised by Council and the DRP. The building has been designed such that it presents as two (2) separate two (2) storey forms that respond to the topography of the site resolving concerns raised.
15. Tree removal	Consideration was given to the proposed tree removal and impacts of the proposed development on trees to be retained. Details of the application submission including an arborist report were referred to Council's Landscape and Environment Officers for comment. Advice received is that the application is considered conditionally satisfactory in this circumstance. The six (6) trees to be removed were considered not significant site constraints as they are not native species. Landscaping conditions are included at **Attachment 8** specifying trees to be removed, trees to be retained, compensatory plantings, tree protection and management.
16. Loss of views to the Illawarra Escarpment	Concerns were raised regarding potential view loss to the Illawarra Escarpment situated to the West of the subject site as a result of the proposed development.

Concern	Comment
	Council has undertaken an assessment in accordance with the principles of Tenacity Consulting v Warringah (2004) NSWLEC 140 – Principles of View Sharing has been undertaken - see **Attachment 4**. The proposal is considered reasonable as it satisfies the principles of view sharing.
17. Use of proposal as a boarding house	The proposal is for a residential flat building development consisting of eleven (11) units with basement parking and associated external works. As such approval would be for use of the development as a residential flat building. Any change of use would require the submission of a separate development application to Council for consideration including public exhibition

Table 2: Number of concerns raised in submissions

Concern	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**
Frequency	*58*	*10*	*34*	*16*	*17*	*27*	*49*	*6*	*6*	*1*	*2*	*4*	*1*	*3*	*4*	*2*	*21*

1.6 CONSULTATION

1.6.1 INTERNAL CONSULTATION

Development Engineering Officer

Council's Development Engineering Officer has assessed the application submission in regard to subdivision, traffic, flooding and stormwater matters and provided conditionally satisfactory advice.

It is noted that the particular consideration was given to stormwater management, flooding, waste servicing and traffic management.

Council's Development Engineering Officer raised concerns with regard to stormwater management, flooding impacts to the proposed basement, waste servicing and traffic management on the site and during construction. Additional information including stormwater and flooding advice, amended waste servicing arrangements and vehicular access arrangements were provided by the applicant. The additional information was considered to resolve concerns raised regarding flooding impacts to the basement and waste servicing.

Further issues were raised by Council's Development Engineering Officer regarding stormwater management and vehicular access and egress arrangements for the site. Amended plans that reduced the yield of the proposed development by one unit and reconfigured the driveway access were provided by the applicant. The additional information and amended plans have been reviewed by Council's Development Engineering Officer and are considered to resolve concerns raised.

Geotechnical Officer

Council's Geotechnical Officer has assessed the application submission and provided conditionally satisfactory advice.

Landscape Officer

Council's Landscape Officer has assessed the application submission and provided conditionally satisfactory advice.

Environment Officer

Council's Environment Officer has assessed the application submission and provided conditionally satisfactory advice.

Heritage Officer

Council's Heritage Officer has assessed the application submission and provided conditionally satisfactory advice.

Safer Community Action Team (SCAT) Officer

Council's SCAT officer has assessed the application submission and considered it conditionally satisfactory.

1.6.1 EXTERNAL CONSULTATION

Design Review Panel (DRP) (*Post-lodgement)*

The proposal was formally reviewed by the Panel on 22 May 2023. There were a number of design amendments recommended by the DRP at the time which were included in amended plans later submitted by the applicant. The proposal was again reviewed by the DRP on 9 October 2023 where some further amendments were recommended. The project was supported by the Panel subject to these amendments being made. Amended plans were again provided which now address the outstanding matters raised by the Panel and the proposal is now considered satisfactory.

NSW Rural Fire Service

Details of the application submission were referred to the NSW Rural Fire Service for comments. Advice received indicates the proposal is considered conditionally satisfactory.

2 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 – 4.15 EVALUATION

1.7 Application of Part 7 of Biodiversity Conservation Act 2016 and Part 7A of Fisheries Management Act 1994

This Act has effect subject to the provisions of Part 7 of the Biodiversity Conservation Act 2016 and Part 7A of the Fisheries Management Act 1994 that relate to the operation of this Act in connection with the terrestrial and aquatic environment.

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.

Section 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).

The area of vegetation clearing proposed of 0.0042 hectares would not exceed the BOS area threshold (0.25 hectares for the lot size). Therefore the proposal does not trigger the requirement for a biodiversity offset scheme.

Council's Environment Officer has indicated that the site is not identified as being of high biodiversity value on the Biodiversity Values Map.

The proposed development is not likely to significantly affect threatened species or ecological communities, or their habitats.

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.

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

2.1.1 STATE ENVIRONMENTAL PLANNING POLICY NO.65 - DESIGN QUALITY OF RESIDENTIAL APARTMENT DEVELOPMENT

This policy applies as the development is for a residential flat building of 3 storeys and comprising of more than 4 dwellings.

The development is subject to the provisions of SEPP 65 and the Apartment Design Guide (ADG).

The application was accompanied by a statement by a qualified designer in accordance with Sections 29(1) & 29(2) of the Environmental Planning and Environment Regulation 2021. Section 28 provides that the application must be referred to the relevant design review panel (if any) for advice concerning the design quality of the development while Section 28(2) provides that a consent authority is to take into consideration (in addition to any other matters that are required to be, or may be, taken into consideration):-

(1) the advice (if any) obtained from the design review panel, and (b) the design quality of the development when evaluated in accordance with the design quality principles, and

(2) the design quality of the development when evaluated in accordance with the design quality principles, and

(3) the Apartment Design Guide

Design Review Panel

The proposal has been reviewed by a Design Review Panel in accordance with Section 28. See **Attachment 7.**

Design quality principles

Schedule 1 of SEPP 65 sets out the design quality principles for residential apartment development. These must be considered in the assessment of the proposal pursuant to clause 30(2)(a) of the Policy and are discussed below.

Schedule 1 Design quality principles

Principle 1: Context and neighbourhood character

The proposed development is located in a R2 Low Density Residential zone within close proximity to the University of Wollongong. The site has a maximum height limit of 9m and maximum floor space ratio of 0.5:1. The existing character in the surrounding area is characterised by one and two storey residential dwellings. The site, consisting of two (2) separate residential lots, contains a single dwelling on 4 Georgina Avenue and an attached dual occupancy on 6 Georgina Avenue. The proposal is considered to be consistent with the desired future character of Keiraville as identified through the development standards and controls applicable to the land. The DRP advised that the general form and expression of the building are supported.

Principle 2: Built form and scale

Higher density development, such as that proposed, are identified as being likely to occur within reasonable walking distance of the University of Wollongong in the desired future character for Keiraville. As such the development is considered reflective of the likely character expected to emerge over time. It is noted that there are examples larger student accommodation buildings within the vicinity of the site. The DRP advised that the general form and expression of the building are supported.

The bulk and scale of the development is consistent with the applicable planning controls for the area inclusive of building height, floor space ratio, building setbacks and other built form controls. The development is not considered to be out of context with regard to the desired future character of the area.

The design of the development is considered to positively contribute to the public domain and provide high level of amenity for the occupants by way of landscaped areas, private open space, communal open space and the like.

Previous advice by the DRP has been heeded and the recommended refinements arising from the meetings of the 22 May 2023 and 9 October 2023 have been made to the proposal.

Principle 3: Density

With an FSR of 0.494:1 the density of the development complies with the maximum FSR of 0.5:1 permitted for the land and the building height is compliant. While a residential flat building contrasts with the sites current context, it is considered consistent with the envisaged future character. The building has been designed such that it presents as two (2) separate two (2) storey forms that respond to the topography of the site. Deep soil planting forward of the building line further minimises visual impacts on the street to ensure the building is in harmony with the low density character of the neighbourhood. The development is not of a scale that is expected to place unreasonable strain on local infrastructure subject to augmentation. The site is well situated with regard to existing public open space, the University of Wollongong and services and residents will enjoy good amenity.

The DRP advised that the density proposed is acceptable.

Principle 4: Sustainability

The proposal is considered acceptable regarding sustainable design as follows:

- BASIX Certificates provided indicating minimum requirements are met.
- A Site Waste Management and Minimisation Plan has been provided indicating recycling of materials from the demolished buildings.
- The proposal will not have an unreasonable impact on any heritage items.
- The proposal satisfies the minimum amenity requirements of the ADG and DCP with respect to outlook, solar access and natural ventilation.

Principle 5: Landscape

The proposal provides suitable landscaped areas and communal open space that will improve the amenity of the occupants and soften the appearance of the development from adjoining properties and the public domain. These works are provided for on the landscape plans submitted with the application and conditions are recommended in regard to public domain works and general site landscaping matters.

Principle 6: Amenity

The proposal meets the minimum requirements for solar access, private and communal open space, storage, visual and acoustic privacy as required by ADG.

Principle 7: Safety

The proposal is satisfactory with regard to safety and security and is generally consistent with the principles of crime prevention through environmental design. Refer to discussion in relation to Chapter E2 of WDCP 2009 at **Attachment 4**.

Principle 8: Housing diversity and social interaction

The proposal provides a mix of unit sizes and layouts appropriate to the locality. Provision has also been made for adaptable units as per the requirements of the ADG and Wollongong DCP 2009. There

are opportunities for informal social interaction within common areas including the communal open space, lobbies and the like.

Principle 9: Aesthetics

The proposal is considered to be of a high quality with regard to its appearance. A mixture of materials and finishes is provided and the bulk of the development is suitably articulated. Appropriate treatment of the streetscape is proposed having regard to the desired future character of development in the locality. The proposal has been amended in response to the suggestions provided by the Design Review Panel and is now acceptable.

Apartment Design Guide (ADG)

The development has been assessed against the provisions of the ADG and was found to be satisfactory regarding the objectives. A full assessment of the application against the ADG is contained at **Attachment 3.**

Clause 30 Standards that cannot be used as grounds to refuse development consent or modification of development consent

Council will not refuse the application on car parking, minimum internal area or ceiling heights if it is equal to, or greater than, the minimum amount of car parking specified in the relevant section of the Apartment Design Guide.

Development consent must not be granted if, Council is not satisfied, the development or modification does not demonstrate that adequate regard has been given to the design quality principles, and the objectives specified in the Apartment Design Guide for the relevant design criteria. The proposed car parking satisfies minimum requirements of the Apartment Design Guide and WDCP 2009 Chapter E3. Details regarding Apartment Design Guide and WDCP 2009 parking requirements are at **Attachments 3** and **4**.

2.1.2 STATE ENVIRONMENTAL PLANNING POLICY (RESILIENCE & HAZARDS) 2021

4.6Contamination 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. Council's Environmental Officer has reviewed the history of the site in conjunction with details of the application submission. Satisfactory referral advice was received indicating no concerns are raised in regard to contamination as relates to the intended use of the land and the requirements of Section 4.6. As a precaution an unexpected finds protocol condition is proposed at **Attachment 8**.

The site is therefore considered suitable for the proposed development and consistent with the assessment considerations of SEPP (Resilience and Hazards) 2021 such that the determining authority can be satisfied that section 4.6 matters are satisfied

2.1.3 STATE ENVIRONMENTAL PLANNING POLICY (BIODIVERSITY & CONSERVATION) 2021

The State Environmental Planning Policy (Biodiversity & Conservation) 2021 applies to the Wollongong Local Government Area, identified as being in the South Coast koala management area.

4.9 Development assessment process—no approved koala plan of management for land

There is no approved koala plan of management applying to the land, and the land does not have an area of at least 1 hectare (including adjoining land within the same ownership). As such, Section 4.9 does not apply to the land.

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

The proposed development is BASIX affected development to which this policy applies. In accordance with Section 27 Division 1 Part 3 of the Environmental Planning and Assessment Regulation 2021, a BASIX Certificate has been submitted in support of the application demonstrating that the proposed scheme achieves the BASIX targets.

2.1.5 WOLLONGONG LOCAL ENVIRONMENTAL PLAN 2009

Part 1 Preliminary

Section 1.4 Definitions

Demolition: In relation to a building means wholly or partly destroy, dismantle or deface the building.

Residential flat building means a building containing 3 or more dwellings, but does not include an attached dwelling or multi dwelling housing.

Part 2 Permitted or prohibited development

Section 2.2 – zoning of land to which Plan applies

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

Section 2.3 – Zone objectives and land use table

The objectives of the zone are as follows:

- *To provide for the housing needs of the community within a low density residential environment.*
- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*

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

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

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

The proposal is categorised as a residential flat building as defined above and is permissible in the R2 Low Density Residential zone with development consent. Demolition and tree removal are ancillary works to facilitate the proposal and as such are also permissible.

The proposed lot consolidation is permissible on land to which the Wollongong Local Environmental Plan 2009 (WLEP 2009) applies pursuant to Section 2.6 of WLEP 2009.

Section 2.7 Demolition requires development consent

Demolition of a building or work may be carried out only with development consent. Demolition works on the existing structures on the site are proposed to facilitate the development.

Part 4 Principal development standards

Section 4.1 Minimum subdivision lot size

The minimum allotment size under Part 4.1 of WLEP2009 is 449m². The proposed consolidation of Lot 29 and Lot 30 DP 30903 will result in a Lot size of 1404.2m² which is compliant with this section.

Section 4.3 Height of buildings

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

Section 4.4 Floor space ratio

Maximum FSR permitted for the site: 0.5:1

FSR provided for development: 693.61m²/1404.2m² = 0.494:1

The floor space ratio does not exceed the maximum permissible for the site.

Part 5 Miscellaneous provisions

Clause 5.10 Heritage conservation

It is noted that the development is not located within the area of the site mapped as Illawarra Escarpment Heritage Conservation Area it is however is within the immediate vicinity of the Illawarra Escarpment Heritage Conservation Area.

Details of the application submission were referred to Council's Heritage Officer for comment. Advice received indicates that the proposal is considered conditionally satisfactory.

Section 5.21 Flood planning

The subject land is identified as being flood hazard affected. Details of the application submission were referred to Council's Development Engineering Officer for comment.

Council's Development Engineering Officer raised concerns with regard to stormwater management and flooding impacts to the proposed basement. Additional information including stormwater and flooding advice were provided by the applicant. The additional information was considered to resolve concerns raised regarding flooding.

Part 7 Local provisions – general

Section 7.1 Public utility infrastructure

The proposal has been assessed against Section 7.1 of WLEP2009 and the subject site is already serviced by public utilities.

Section 7.6 Earthworks

Earthworks associated with the proposal are considered minor, reflective of normal residential construction and thus acceptable in this circumstance. A geotechnical report, groundwater assessment and flood study accounting for the earthworks associated with the proposal were submitted with the application.

The application was referred to Council's Geotechnical, Development Engineering and Environment Officers for comment and no objections were raised in relation to this matter subject to conditions of consent. Therefore, it is considered that the earthworks will not have a detrimental impact on environmental functions and processes, neighbouring uses and features of the surrounding land. Conditions within the consent account for appropriate soil and water management during construction.

Clause 7.14 Minimum site width

This section prescribes a minimum site width of 24m for residential flat buildings. The subject site has a minimum site frontage of 27m to Georgina Avenue and is therefore compliant.

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

Not applicable.

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

2.3.1 WOLLONGONG DEVELOPMENT CONTROL PLAN 2009

The development has been assessed against the relevant chapters of WDCP 2009. Compliance tables can be found at **Attachment 4** to this report.

The proposal does involve variations to the basement car parking height above ground control of Chapter B1 Section 6.9.2(2) and driveway side setback control of Chapter B1 Section 6.10.2(1)(d) of WDCP2009. Variation request statements with justification have been provided by the applicant in accordance with Section 8 of Chapter A1 of WDCP 2009 and are included at **Attachment 5**. The variations have been considered and are worthy of support in this instance as discussed within **Attachment 4** of this report.

2.3.2 WOLLONGONG CITY WIDE DEVELOPMENT CONTRIBUTIONS PLAN 2022

The estimated cost of works is $2,940,000 and a levy of 1% is applicable under this plan as the threshold value is $100,000.

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

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

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

Environmental Planning and Assessment Regulation 2021

2 Savings

Any act, matter or thing that, immediately before the repeal of the 2000 Regulation, had effect under the 2000 Regulation continues to have effect under this Regulation.

2000 Regulation means the Environmental Planning and Assessment Regulation 2000 as in force immediately before its repeal on 1 March 2022.

6 Determination of BASIX development

Not Applicable.

61 Additional matters that consent authority must consider

A condition at **Attachment 8** requires compliance with AS 2601 for demolition works.

62 Consideration of fire safety

Not Applicable

63 Considerations for erection of temporary structures

Not Applicable

2.6 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 for a development involving consolidation of Lot 29 and Lot 30 DP 30903, demolition of existing structures and tree removal and construction of an eleven (11) unit residential flat building. The proposed development has been reasonably sited such that it satisfies the objectives of Council's boundary setback requirements so as to have minimal impact on the adjoining properties in terms of privacy and overshadowing and to allow reasonable solar access to the proposed units.

In regard to the visual impact, the development is considered to be largely in harmony with the surrounding character the area. The immediate area surrounding the site is characterised by low density residential development of varying architectural styles. The building has been designed such that it presents as two (2) separate two (2) storey forms that respond to the topography of the site. Deep soil planting forward of the building line further minimises visual impacts on the street to ensure the building is in harmony with the low density character of the neighbourhood. The proposed development satisfies Council's Floor Space Ratio and Building Height development standards as identified in the WLEP 2009, and overall the bulk and scale of the proposed development is considered acceptable in this circumstance.

The scale of the development as viewed from the street is considered comparable to other developments in the locality.

In summary, the proposal has been assessed with regard to the amenity impacts from the development, the zoning, permissible lot size and existing and future character of the area, and is considered to be compatible with the local area.

Access, Transport and Traffic:

Access to the site will be via an approved driveway to Council's formed roadway which adjoins Council's Local Road. The development is considered not to result in an adverse impact on the traffic movement and access to the site. Council's Development Engineering Officer has no objections to the proposed access arrangements subject to conditions included at **Attachment 8**.

Public Domain:

The development is considered to be consistent with the amenity of the locality, the development is not considered to result in significant impact on the public domain.

Utilities:

The proposal is not envisaged to place an unreasonable demand on utilities supply. Existing utilities can be augmented to service the proposal.

Heritage:

Council's Heritage officer has reviewed the proposal and not raised any concerns

Other land resources: The proposal is considered to contribute to orderly development of the site and is not envisaged to impact upon valuable land resources.
Water: The site is presently serviced by Sydney Water, which can be readily extended to meet the requirements of the proposed development. A BASIX certificate has been provided for the proposal. The proposal is not envisaged to have unreasonable water consumption.
Soils: It is expected that, with the use of appropriate erosion and sedimentation controls during construction, soil impacts will not be unreasonably adverse. The soil profile is considered to be acceptable for the construction of the proposed development. Council's Geotechnical, Development Engineering and Environment Officers have assessed the application submission and considered it satisfactory subject to conditions.
Air and Microclimate: The proposal is not expected to have a negative impact on air or microclimate.
Flora and Fauna: Six (6) trees are proposed to be removed with this application. The proposal is not expected to adversely impact fauna. Council's Landscape and Environment Officers has reviewed the application submission including the landscape plan and arborist report. Advice received is that the application is considered conditionally satisfactory. For Council's Landscape and Environment Officers response please see Section 1.6.1 of the report.
Waste: Waste management during works can be managed through proper arrangements. A condition is proposed requiring the use of an appropriate receptacle for any waste generated during the construction and compliance with the Site Waste Management and Minimisation Plan provided with the DA.
Energy: The proposal is not envisaged to have unreasonable energy consumption. A BASIX certificate has been provided for the proposal.
Noise and vibration: Some noise and vibration impacts during excavation and construction are unavoidable. Conditions are recommended for imposition (see **Attachment 8**) to minimise nuisance during and construction.
Natural hazards: There are no natural hazards affecting the site that would prevent the proposal. Council records list the site as being flood affected. Council's Development Engineering Officer has assessed the application submission in this regard and has not raised any objections subject to conditions. Council records list the site as bushfire affected. The application has been assessed by the NSW RFS having regard to the provisions of Planning for Bushfire Protection (PBP) 2019. The NSW RFS considered the application acceptable in this circumstance subject to conditions as at **Attachment 8**.

Technological hazards: There are no technological hazards affecting the site that would prevent the proposal. Council records list the site as being potentially unstable land. The application submission has been assessed by Council's Geotechnical Officer who considered the application conditionally satisfactory.
Safety, Security and Crime Prevention: This application is not expected to result in greater opportunities for criminal or antisocial behaviour.
Social Impact: The proposal is not expected to create negative social impacts.
Economic Impact: The proposal is not expected to create negative economic impacts.
Site Design and Internal Design: The proposal does not involve an exception to WLEP 2009 development standard. The application identifies variations to the basement car parking height above ground control of Chapter B1 Section 6.9.2(2) and driveway side setback control of Chapter B1 Section 6.10.2(1)(d) of WDCP2009. This variations have been considered in section 2.3.1 as being adequately justified and thus capable of support.
Construction: Conditions of consent are recommended in relation to construction impacts such as hours of work, erosion and sedimentation controls, works in the road reserve, excavation, 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 development is considered consistent with the amenity of the neighbourhood and the surrounding development.

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

Does the proposal fit in the locality?

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

Are the site attributes conducive to development?

There are no site constraints that would prevent the proposal.

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

See section 1.5 of this report.

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

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

3 CONCLUSION

The proposed development has been assessed with regard to the relevant prescribed matters for consideration outlined in Section 4.15 of the Environmental Planning & Assessment Act 1979, the provisions of Wollongong Local Environmental Plan 2009, Wollongong Development Control Plan 2009 and relevant , Codes and Policies.

Residential flat buildings are permitted in the R2 land use zone with development consent pursuant to the WLEP 2009. The proposal does not result in exceptions to development standards.

The proposal does involve Development Control Plan variations to the basement car parking height above ground and driveway side setback controls. Variation request statements with justification have been provided by the applicant in accordance with Section 8 of Chapter A1 of WDCP 2009. These variations have been considered and are capable of support in this instance as discussed within section 2.3.1 of this report.

All internal and external referrals are conditionally satisfactory and there are no outstanding issues.

It is considered that the proposed development is unlikely to result in adverse impacts on the character or amenity of the surrounding area, environment and adjoining development.

4 RECOMMENDATION

DA-2022/1343 be approved pursuant to Section 4.16(1) of the Environmental Planning & Assessment Act 1979 subject to the conditions provided at **Attachment 8**.

5 ATTACHMENTS

1 Plans

2 Site Inspection Photos

3 Apartment Design Guide Assessment

4 Compliance table for Wollongong Development Control Plan 2009

5 Section 8 Variation to Development Control Statements

6 SEPP 65 Design Report

7 DRP Notes 9 October 2023

8 Conditions

ATTACHMENT 1 - Plans

DEVELOPMENT APPLICATION
STUDIO - RESIDENTIAL FLAT BUILDING
4-6 GEORGINA AVENUE, KEIRAVILLE, NSW 2500

3D RENDER - VIEW FROM GEORGINA AVENUE

ID	NAME	REV	SCALE
DA000	COVER PAGE	04	
DA001	CONTEXT STUDY + LOCATION PLAN	02	1:1000
DA001A	WIDER CONTEXT PLAN	01	1:7000
DA003	SITE ANALYSIS	02	1:200
DA004	AMALGAMATION PLAN	02	1:200
DA005	DEMOLITION PLAN	03	1:100
DA006	SITE MANAGEMENT/ STAGING PLAN	04	1:100
DA100	SITE & ROOF PLAN	05	1:100
DA101	BASEMENT PLAN	05	1:100
DA102	GROUND FLOOR PLAN	05	1:100
DA103	FIRST FLOOR PLAN	05	1:100
DA104	SECOND FLOOR PLAN	05	1:100
DA105	ADAPTABLE UNITS LAYOUTS	04	1:50
DA200	ELEVATIONS 01	05	1:100
DA201	ELEVATIONS 02	05	1:100
DA300	SECTIONS	04	1:100
DA301	DETAIL SECTIONS 01	03	1:50
DA302	DETAIL SECTIONS 02	01	1:50, 1:2...
DA400	SHADOW DIAGRAMS 01	04	1:250
DA401	SHADOW DIAGRAMS 02	04	1:250
DA410	VIEWS FROM THE SUN 01	04	
DA411	VIEWS FROM THE SUN 02	04	
DA420	SOLAR + CROSS VENTILATION DIAGRAMS	04	1:200
DA500	AREA CALCULATIONS 01	04	1:200
DA501	AREA CALCULATIONS 02	05	1:200
DA600	MATERIALS SCHEDULE	04	
DA700	3D RENDER - VIEW FROM GEORGINA AVENUE	05	
DA701	ADDITIONAL 3D RENDER	02	
DA702	ADDITIONAL 3D RENDER	02	
DA703	ADDITIONAL 3D RENDER	02	

BASIX COMMITMENTS SUMMERY NOTES
(TO BE READ IN CONJUNCTION WITH BASIX CERTIFICATE)

BASIX Certificate # 1354807M_02

WATER	No hot water reticulation required			
Fixtures	**All shower heads**	**All toilets**	**All kitchen taps**	**All bathrooms taps**
Rating	4 Star(>4.5 But<=6L/Mi	5 star	5 star	4 star
Appliances	**Dishwasher**	**Cloth Washer**		
Rating	3 star	....		
Common area	**Taps**	**All toilets**	**Common kitchen taps**	**Common bath rms**
	4 Star	na	na	na
Alternate water source				
	Type	**Size**	**Roof area connected**	**Connections**
	Central RWT	5600L	285 m2	Common landscape
Swimming pool				
	Volume	**Heated**	**Cover**	**Shaded**
	...	...	...	...
ENERGY				
Hot water	**Type**		**Rating**	
	individual, gas instantaneous		6 star	
Mech. Ventilation	**System**		**Operation Control**	
Bath	Indiv. fan, ducted to facade or roof		Manual Switch On/Off	
L'dry	Indiv. fan, ducted to facade or roof		Manual Switch On/Off	
Kitchen	Indiv. fan, ducted to facade or roof		Manual Switch On/Off	
Cooling System	**Type**		**Living areas**	**Bed rooms**
	1 Phase Air conditioning: Zoned		4 star (average zoned)	ceiling fan + 4 star (average zoned)
Heating System	**Type**		**Living areas**	**Bed rooms**
	1 Phase Air conditioning: Zoned		4 star (average zoned)	ceiling fan + 4 star (average zoned)
Artificial Lighting	**Primary type of artificial lighting is fluorescent or light emitting diode (LED)**			
	No. of Bed rms	**No. of Living**	**Each Kitchen, Bath / Toilet**	**L'dry & Hallway**
	All	All	Yes	Yes
Others	Indoor private Cloth Line		Not Required	
	Outdoor or sheltered common Cloth Line		Not Required	
	Well ventilated Fridge space		Yes	
	Kitchen Cook top / Oven		Gas Cook top + Electric Oven	
Appliances	**Dishwasher**	**Cloth Dryer**	**Cloth Washer**	**Refrigerator**
Rating	4 star	1.5 star		....
Central System	**Type**		**Service Levels**	**Lighting**
Lifts	Gearless Traction With VVVF Motor		3	As nominated below
Common areas	**Ventilation System**	**Ventilation Efficiency measure**	**Primary type of artificial lighting**	**Lighting Efficiency measure**
Basement Car parking	Ventilation Supply & Exhaust only	Carbon Monoxide Monitor + VSD fan	light-emitting diode	daylight sensor and motion sensor
Waste / Bin room	Ventilation Supply & Exhaust only		light-emitting diode	motion sensors
Comms room	Ventilation Supply & Exhaust only	thermostatically controlled	light-emitting diode	motion sensors
Service rooms	Ventilation Supply & Exhaust only	thermostatically controlled	light-emitting diode	motion sensors
Pump room	Ventilation Exhaust only	-	light-emitting diode	motion sensors
Communal toilet	Ventilation Exhaust only	time clock	light-emitting diode	motion sensors
communcal store	Ventilation Exhaust only	time clock	light-emitting diode	motion sensors
Ground floor Foyer	No Mech. Ventilation	-	light-emitting diode	motion sensors
Level-1 floor Foyer	No Mech. Ventilation	-	light-emitting diode	motion sensors
Level-2 floor Foyer	No Mech. Ventilation	-	light-emitting diode	motion sensors
Storage rooms	No Mech. Ventilation	-	light-emitting diode	motion sensors
Lifts	No Mech. Ventilation	-	light-emitting diode	connected to Lift Call button
THERMAL	As per thermal simulation carried out by assessor			
	External Wall Insulation: R1.0			
	Ceiling Insulation: R2.0 (only for units with direct roof over)			
	Roof type : Concrete roof, Medium colour (SA 0.475 < 0.7)			
	Glazing: ALM-002-01 A: Aluminium B SG Clear U=5.6 SHGC =0.0.7			
	All External doors & windows to be weather sealed			
	Eaves / shading as per drawings			

Energy Rating Certificate Number 0006180094

☐ single-dwelling rating — 5.4 stars

☒ multi-unit development (attach listing of ratings) — heating 40.0 MJ/m²
If selected, data specified is the average across the entire development — cooling 26.0 MJ/m²

Recessed downlights confirmation: ☐ Rated with ☒ Rated without

Assessor Name/Number 10194

Assessor Signature _____ Date 30/06/2023

COVER PAGE

SUSAN NOLA ROSS

COVER PAGE

3/11/2023 9:57 PM / v.wats / BIMcloud: BJREALSVR A26 - BIMcloud Basic for ARCHICAD 26/22049_4-6 Georgina Ave/22049_4-6 Georgina Ave_RFI_221024

1 CONTEXT STUDY
1:1000

2 UOW KOOLOOBONG STUDENT ACCOMODATION

3 49 ROBSONS RD - RESIDENTIAL FLAT BUILDING

4 27 MADOLINE ST - STUDENT ACCOMODATION

5 1 COSGROVE AVE - RESIDENTIAL DEVELOPMENT

PRELIMINARY
NOT FOR CONSTRUCTION

SRH Architecture Pty Ltd

Level 1, 17-19 Brisbane Street, Surry Hills NSW 2010
T. +612 8302 3200 | office@srharchitecture.com
srharchitecture.com
Nominated Architect: Simon Hanson #6739

General

This drawing shall be read in conjunction with all other architectural and consultant drawings and specifications and with such other written instructions issued during the course of the contract. Notify architect of any discrepancies before proceeding with work. Materials and workmanship shall be in accordance with the specification, current SAA codes, building regulations and other statutory authorities. Verify all dimensions on site and notify architect of any discrepancies. Use figured dimensions only.

CAD Files

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Notes/Legend:

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:1000

Drawing title
CONTEXT STUDY + LOCATION PLAN

Drawn	Checked	Approved
DW	DP	SRH

Client
SUSAN NOLA ROSS

Date
3/11/2023

Project No.
22049

Drawing No.
DA001

Revision
02

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01	15/03/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:7000

Drawing title
WIDER CONTEXT PLAN

Drawn	Checked	Approved
DW	DP	SRH

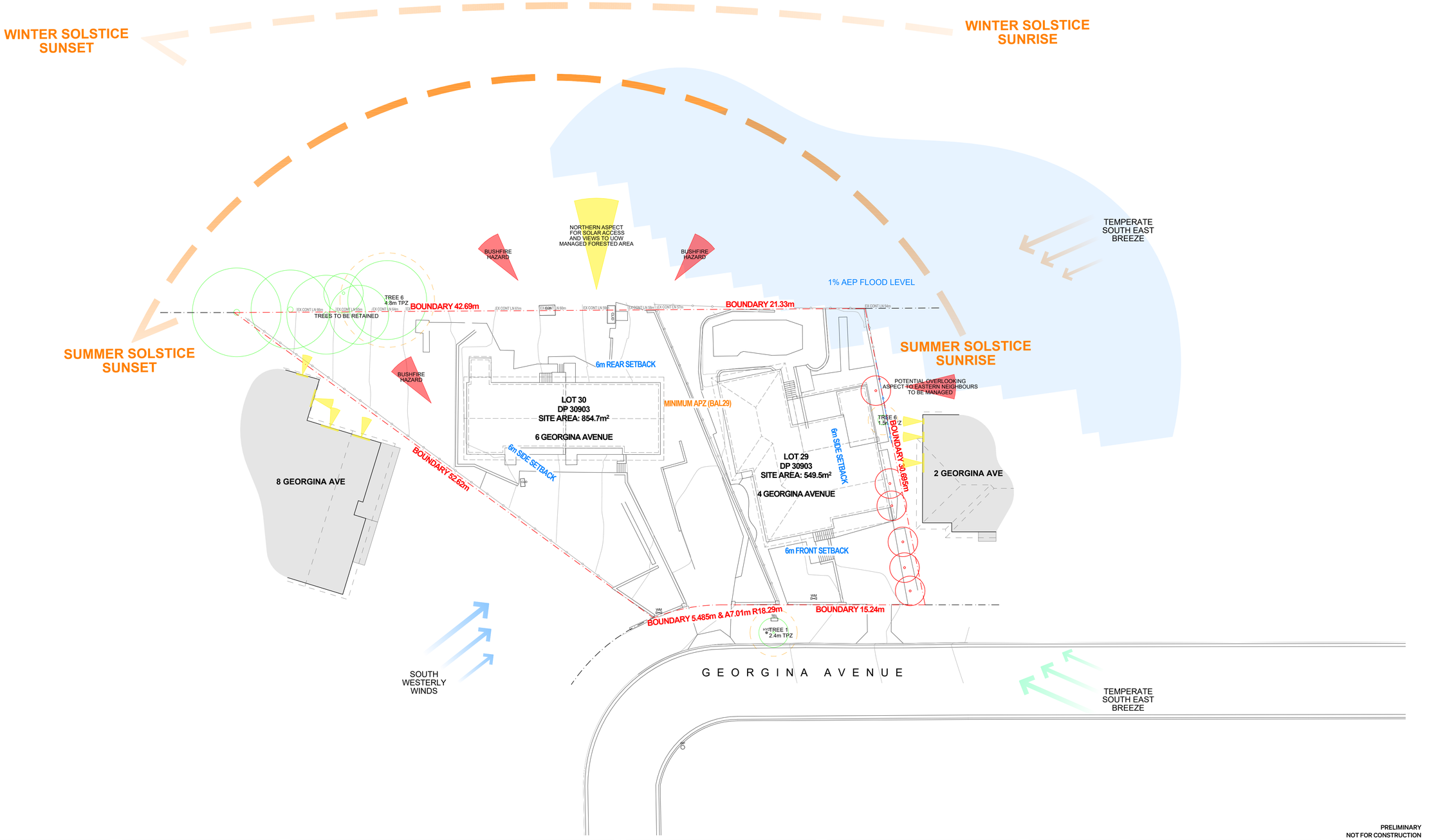
Client
SUSAN NOLA ROSS

Date
3/11/2023

Project No.
22049

Drawing No.
DA001A

Revision
01



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PRELIMINARY
NOT FOR CONSTRUCTION

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:200

Drawing title
SITE ANALYSIS

Drawn	Checked	Approved
DW	DP	SRH

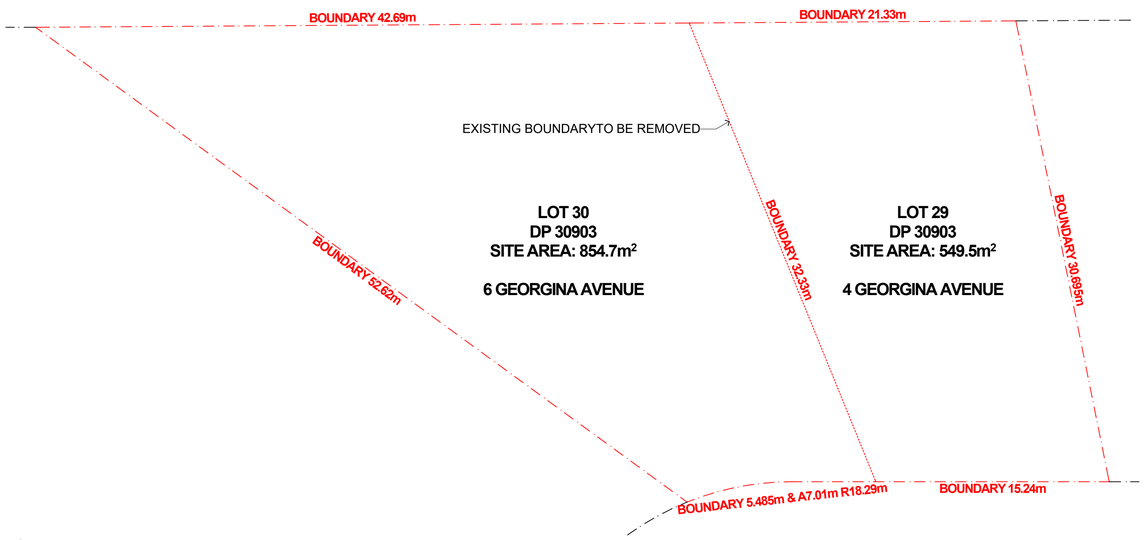
Client
SUSAN NOLA ROSS

Date
3/11/2023

Project No.
22049

Drawing No.
DA003

Revision
02



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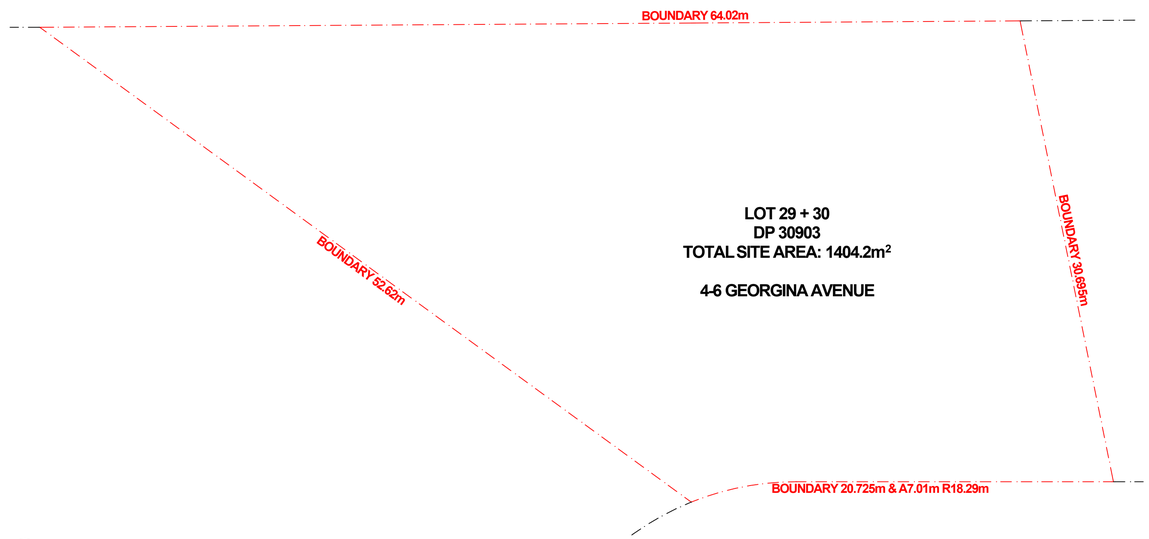

2 AMALGAMATION PLAN - PROPOSED
1:200

PRELIMINARY
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02	15/03/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:200

Drawing title
AMALGAMATION PLAN

Drawn	Checked	Approved
DW	DP	SRH

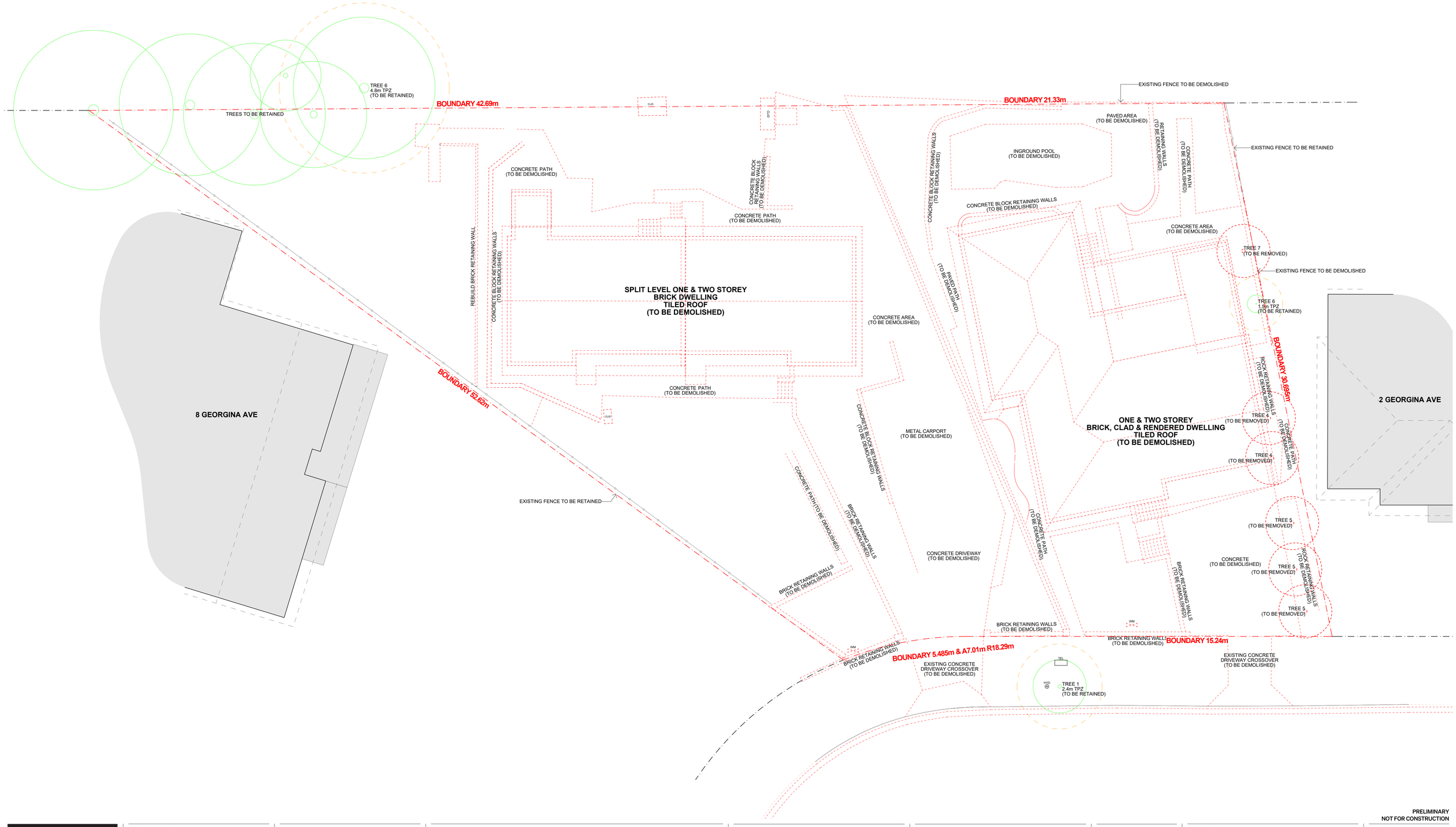
Client
SUSAN NOLA ROSS

Date
3/11/2023

Project No.
22049

Drawing No.
DA004

Revision
02



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CAD Files

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Notes/Legend:

- EXISTING BUILDINGS, HARDSCAPE AND ANCILLARY STRUCTURES TO BE DEMOLISHED
- EXISTING TREES TO BE RETAINED & PROTECTED
- EXISTING TREES TO BE REMOVED

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:100

Drawing title
DEMOLITION PLAN

Drawn	Checked	Approved
DW	DP	SRH

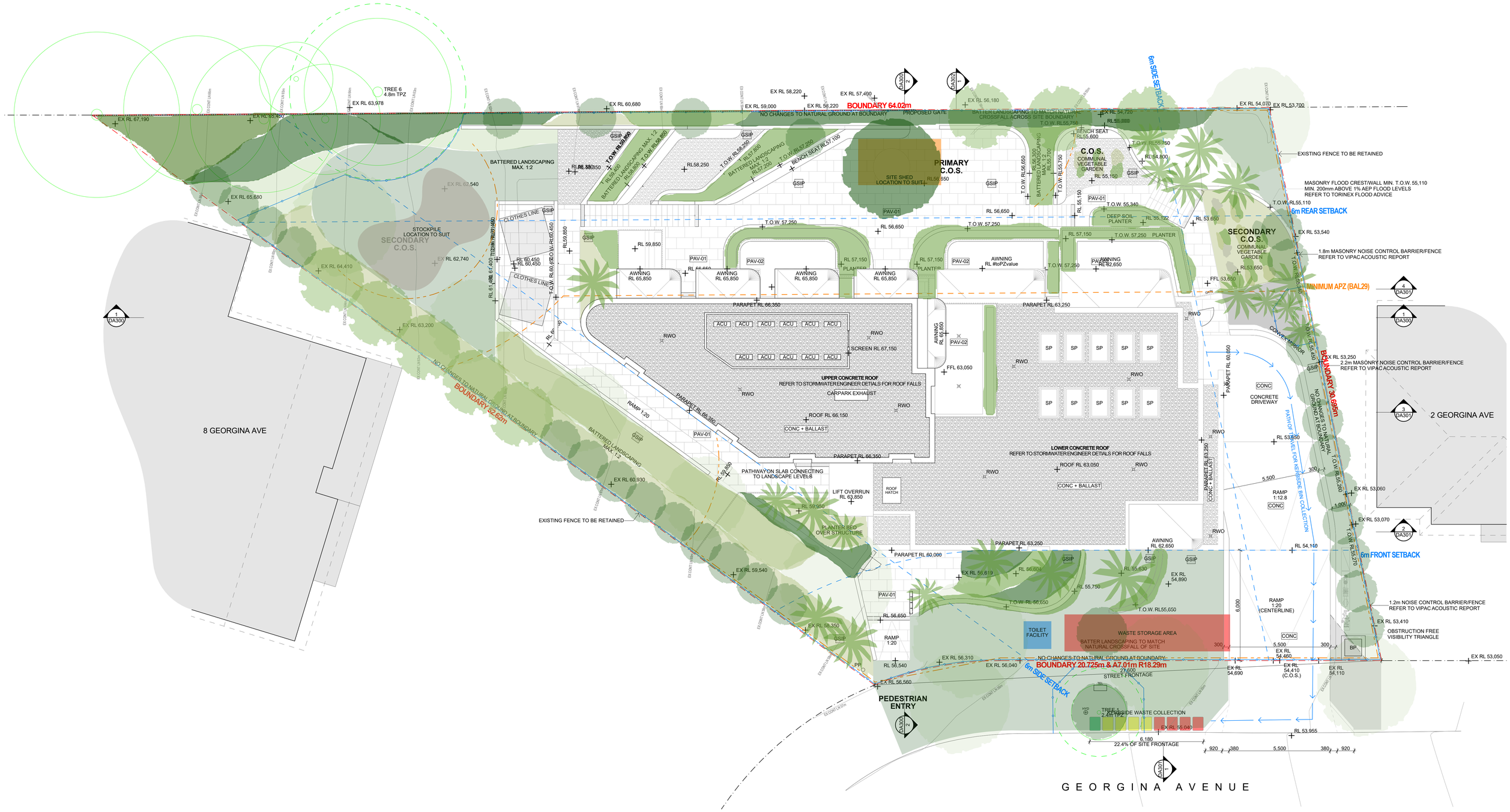
Client
SUSAN NOLA ROSS

Date
3/11/2023

Project No.
22049

Drawing No.
DA005

Revision
03



SRH Architecture Pty Ltd

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srharchitecture.com
Nominated Architect: Simon Hanson #6739

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Notes/Legend:

- TEMPORARY SITE FENCING
- SEDIMENT FENCE
- EXISTING TREES TO BE RETAINED & PROTECTED
- EXISTING TREES TO BE REMOVED
- TREE PROTECTION ZONE

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	3/11/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:100

Drawing title
SITE MANAGEMENT/ STAGING PLAN

Drawn	Checked	Approved
DW	DP	SRH

Client
SUSAN NOLA ROSS

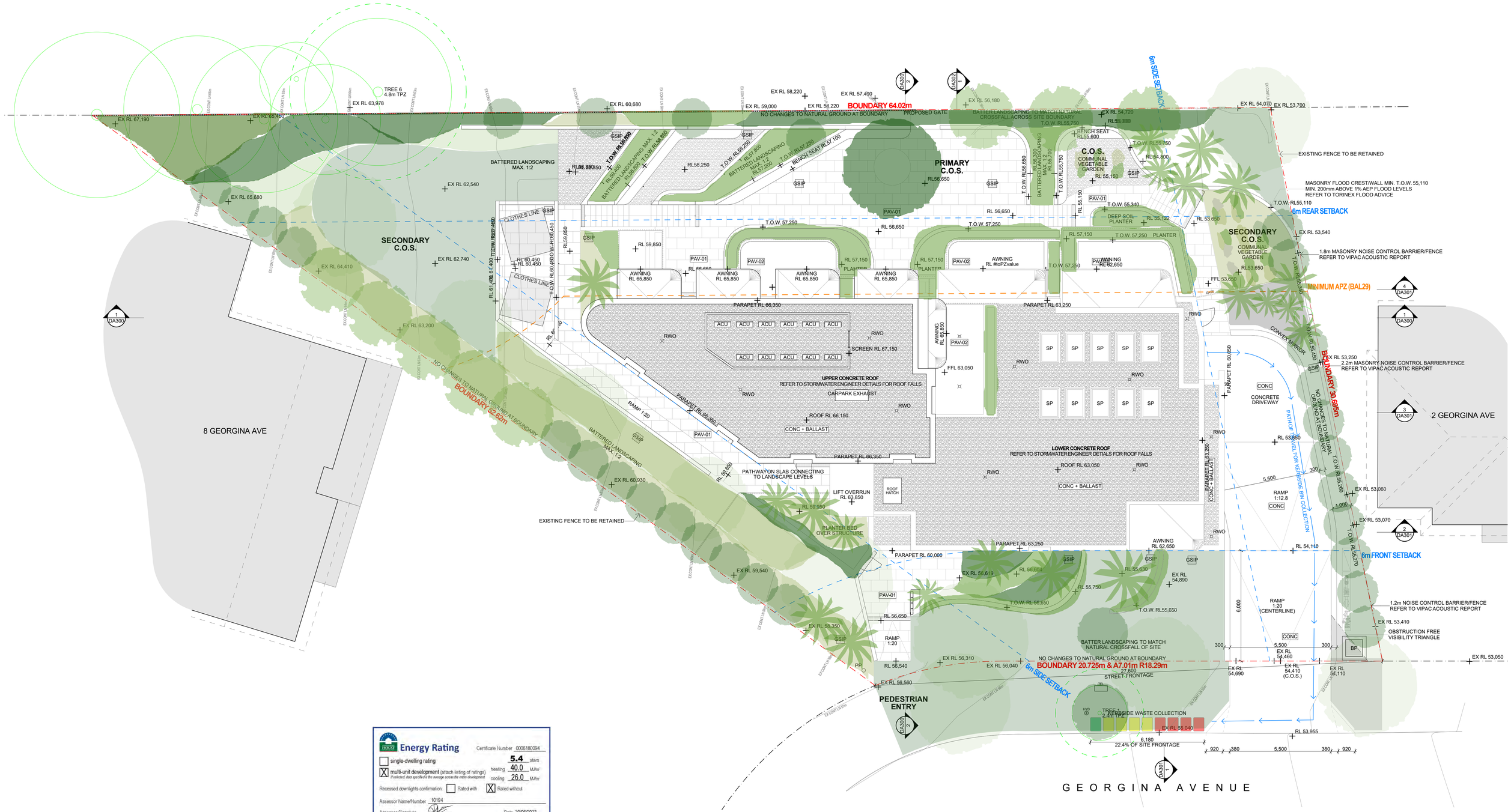
Date
3/11/2023

PRELIMINARY
NOT FOR CONSTRUCTION

Project No.
22049

Drawing No.
DA006

Revision
04



Energy Rating

Certificate Number 0006180094

- [ ] single-dwelling rating — 5.4 stars
- [X] multi-unit development (attach listing of ratings) — heating 40.0 MJ/m² — cooling 26.0 MJ/m²

If selected, data specified is the average across the entire development

Recessed downlights confirmation: [ ] Rated with [X] Rated without

Assessor Name/Number 10194

Assessor Signature _____ Date 30/06/2023

PRELIMINARY
NOT FOR CONSTRUCTION

S R H A

SRH Architecture Pty Ltd

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Nominated Architect: Simon Hanson #6739

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Notes/Legend:

- EXISTING TREES TO BE RETAINED & PROTECTED
- EXISTING TREES TO BE REMOVED
- TREE PROTECTION ZONE

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	1/09/2023	Issue
05	3/11/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:100

Drawing title
SITE & ROOF PLAN

Drawn	Checked	Approved
DW	DP	SRH

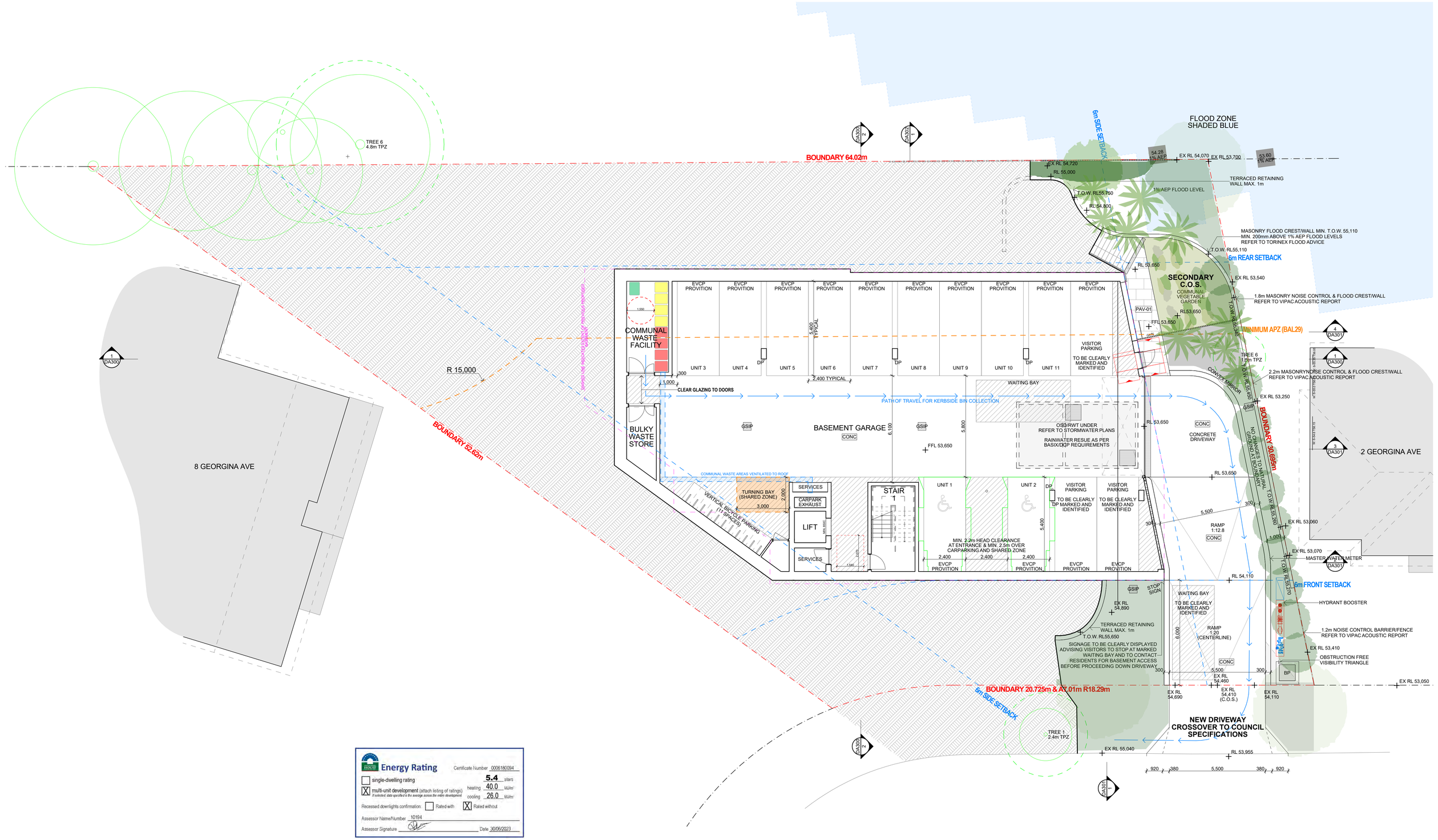
Client
SUSAN NOLA ROSS

Date
3/11/2023

Project No.
22049

Drawing No.
DA100

Revision
05



Energy Rating

Certificate Number 0006180094

☐ single-dwelling rating — 5.4 stars

☒ multi-unit development (attach listing of ratings) — heating 40.0 MJ/m² — cooling 26.0 MJ/m²

If selected, data specified is the average across the entire development

Recessed downlights confirmation: ☐ Rated with ☒ Rated without

Assessor Name/Number 10194

Assessor Signature _____ Date 30/06/2023

SRH Architecture Pty Ltd

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Nominated Architect: Simon Hanson #6739

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Notes/Legend:

- EXISTING TREES TO BE RETAINED & PROTECTED
- EXISTING TREES TO BE REMOVED
- TREE PROTECTION ZONE

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	1/09/2023	Issue
05	3/11/2023	Issue

PRELIMINARY
NOT FOR CONSTRUCTION

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:100

Drawing title
BASEMENT PLAN

Drawn	Checked	Approved
DW	DP	SRH

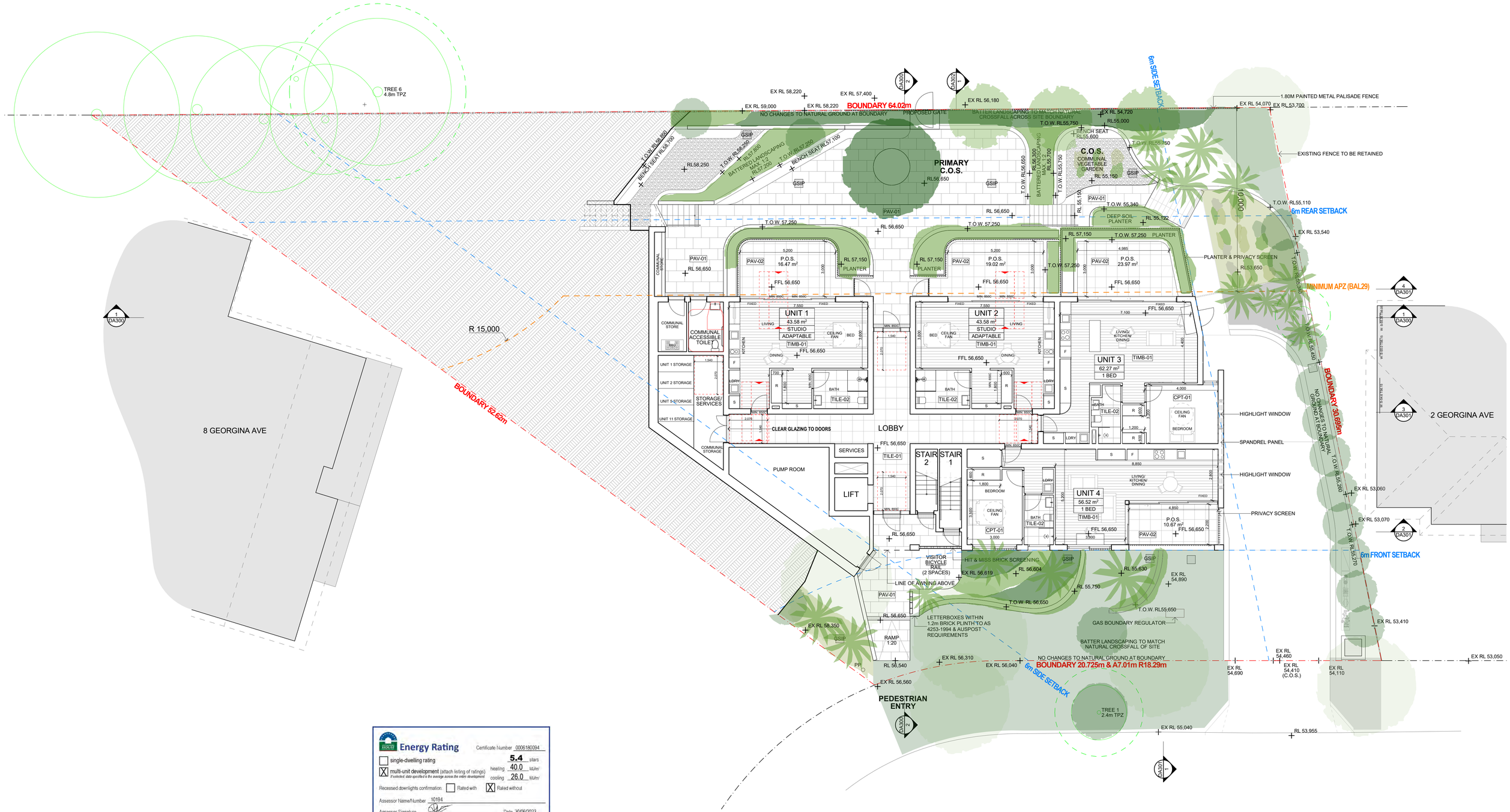
Client
SUSAN NOLA ROSS

Date
22/11/2023

Project No.
22049

Drawing No.
DA101

Revision
05



Energy Rating

Certificate Number 0006180094

☐ single-dwelling rating — 5.4 stars

☒ multi-unit development (attach listing of ratings) — heating 40.0 MJ/m² — cooling 26.0 MJ/m²

If selected, data specified is the average across the entire development

Recessed downlights confirmation: ☐ Rated with ☒ Rated without

Assessor Name/Number 10194

Assessor Signature _____ Date 30/06/2023

PRELIMINARY
NOT FOR CONSTRUCTION

SRH Architecture Pty Ltd

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srharchitecture.com
Nominated Architect: Simon Hanson #6739

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Notes/Legend:

- EXISTING TREES TO BE RETAINED & PROTECTED
- EXISTING TREES TO BE REMOVED
- TREE PROTECTION ZONE

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	1/09/2023	Issue
05	3/11/2023	Issue

Project: 4-6 GEORGINA AVENUE, KEIRAVILLE

Stage: DEVELOPMENT APPLICATION

Scale @A1: 1:100

Drawing title: GROUND FLOOR PLAN

Drawn	Checked	Approved
DW	DP	SRH

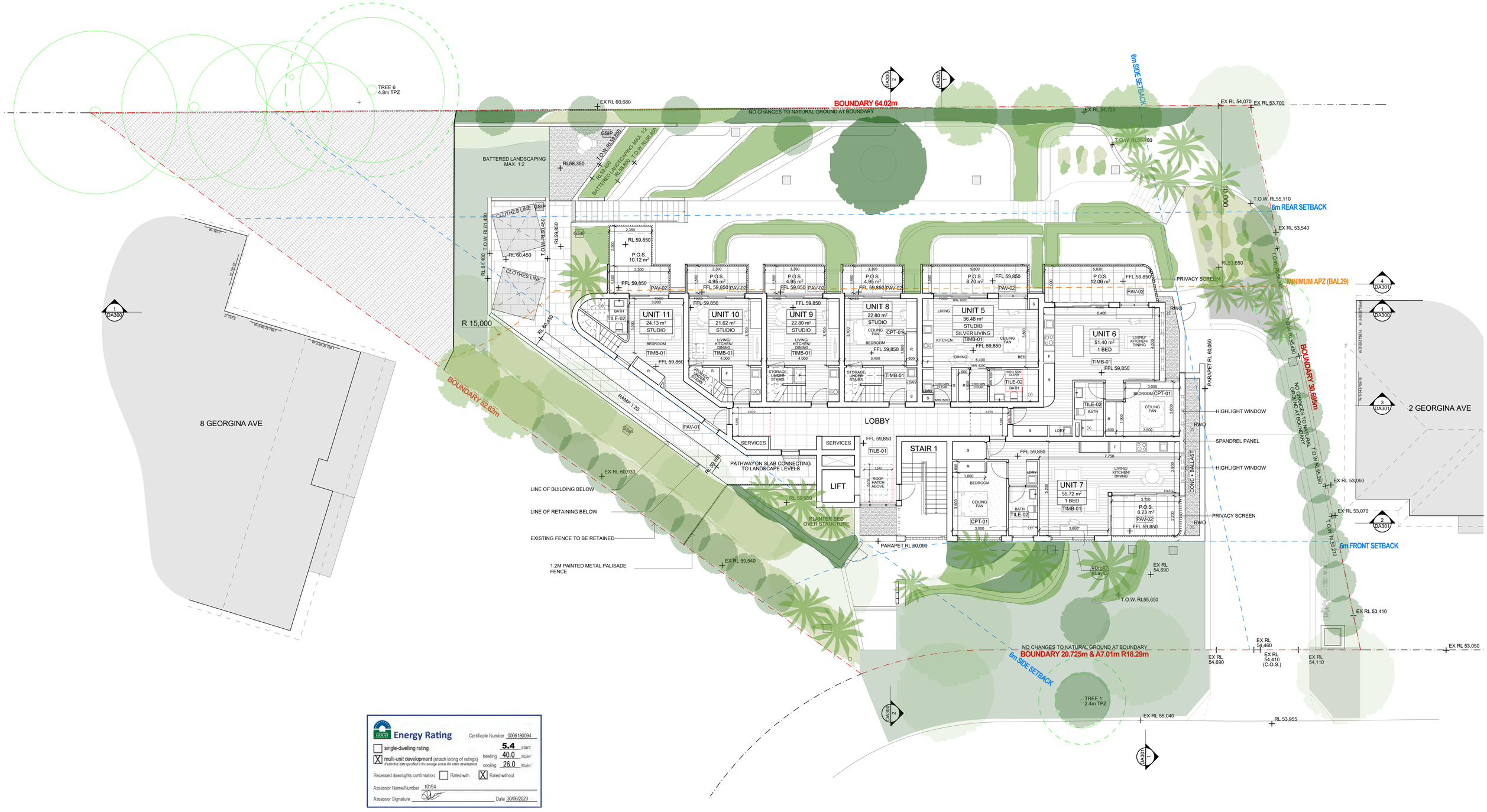
Client: SUSAN NOLA ROSS

Date: 3/11/2023

Project No.: 22049

Drawing No.: DA102

Revision: 05



Energy Rating

Certificate Number 0006180094

- [ ] single-dwelling rating — 5.4 stars
- [X] multi-unit development (attach listing of ratings) — heating 40.0 MJ/m² — cooling 26.0 MJ/m²
  If selected, data specified is the average across the entire development

Recessed downlights confirmation: [ ] Rated with [X] Rated without

Assessor Name/Number 10194

Assessor Signature _____ Date 30/06/2023

SRHA

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Nominated Architect: Simon Hanson #6739

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Notes/Legend:

- EXISTING TREES TO BE RETAINED & PROTECTED
- EXISTING TREES TO BE REMOVED
- TREE PROTECTION ZONE

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	1/09/2023	Issue
05	3/11/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:100

PRELIMINARY
NOT FOR CONSTRUCTION

Drawing title
FIRST FLOOR PLAN

Drawn	Checked	Approved
DW	DP	SRH

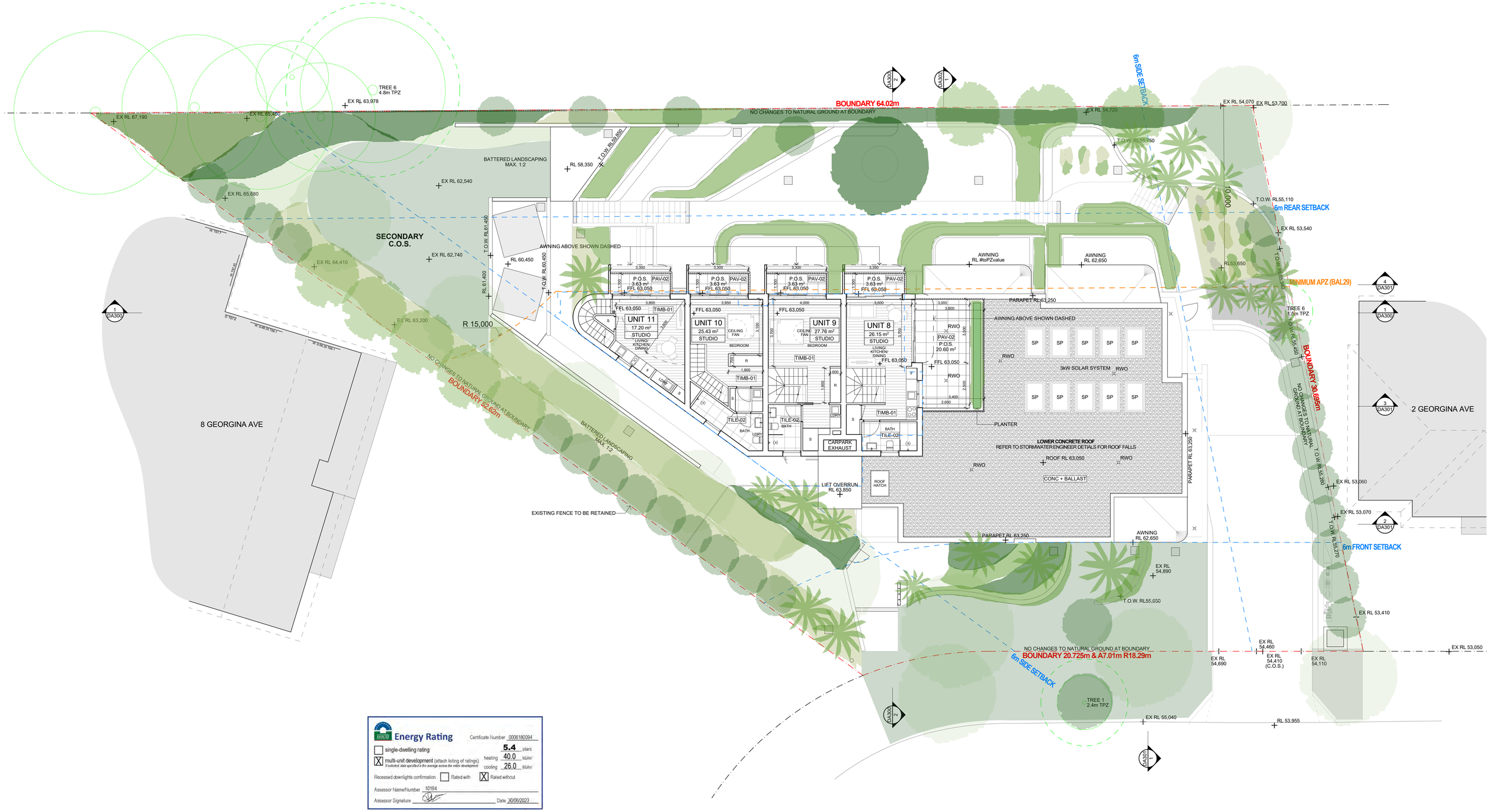
Client
SUSAN NOLA ROSS

Date
21/11/2023

Project No.
22049

Drawing No.
DA103

Revision
05



Energy Rating Certificate Number 0006180094

- ☐ single-dwelling rating — 5.4 stars
- ☒ multi-unit development (attach listing of ratings) — heating 40.0 MJ/m² — cooling 26.0 MJ/m²
  Protected: data specified is the average across the entire development

Recessed downlights confirmation: ☐ Rated with ☒ Rated without

Assessor Name/Number 10194

Assessor Signature _____ Date 30/06/2023

SRH Architecture Pty Ltd

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Copyright

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Notes/Legend:

- EXISTING TREES TO BE RETAINED & PROTECTED
- EXISTING TREES TO BE REMOVED
- TREE PROTECTION ZONE

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	1/09/2023	Issue
05	3/11/2023	Issue

Project: 4-6 GEORGINA AVENUE, KEIRAVILLE

Stage: DEVELOPMENT APPLICATION

Scale @A1: 1:100

PRELIMINARY
NOT FOR CONSTRUCTION

Drawing title: SECOND FLOOR PLAN

Drawn	Checked	Approved
DW	DP	SRH

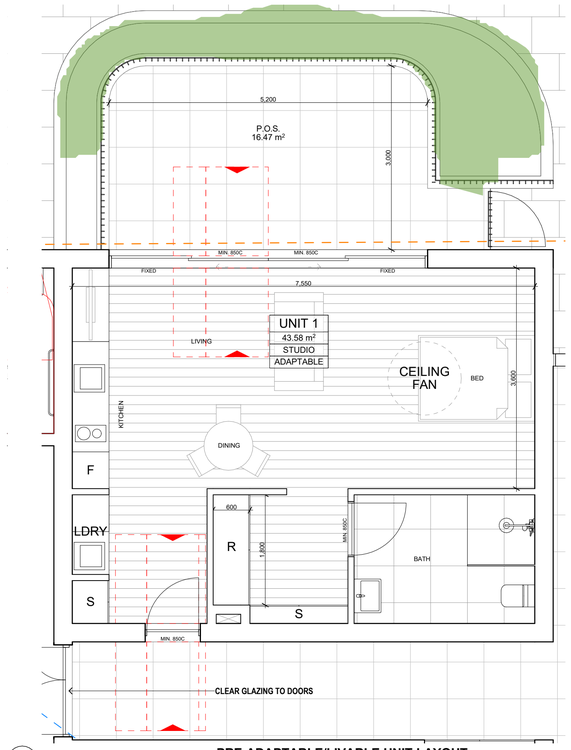
Client: SUSAN NOLA ROSS

Date: 3/11/2023

Project No.: 22049

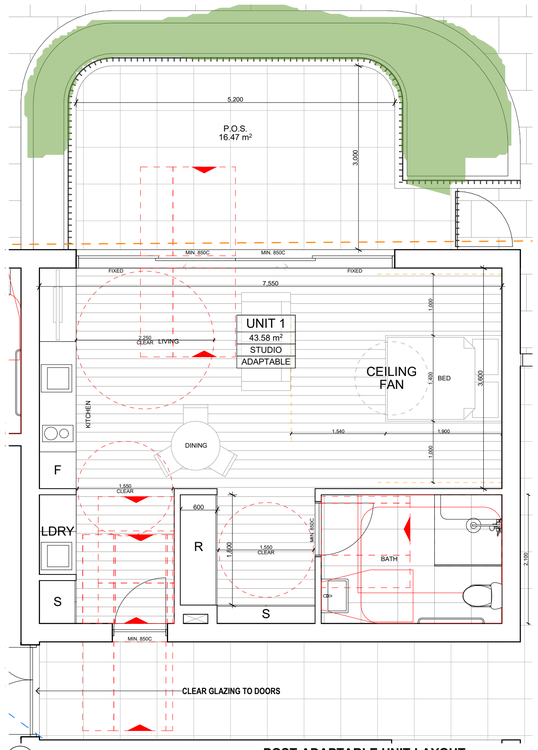
Drawing No.: DA104

Revision: 05



1 PRE-ADAPTABLE/LIVABLE UNIT LAYOUT
1:50

UNITS: 1 & 2(MIRRORED)



2 POST-ADAPTABLE UNIT LAYOUT
1:50

PRELIMINARY
NOT FOR CONSTRUCTION

SRH Architecture Pty Ltd
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Notes/Legend:

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	1/09/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:50

Drawing title
ADAPTABLE UNITS LAYOUTS

Drawn: DW
Checked: DP
Approved: SRH

Client
SUSAN NOLA ROSS

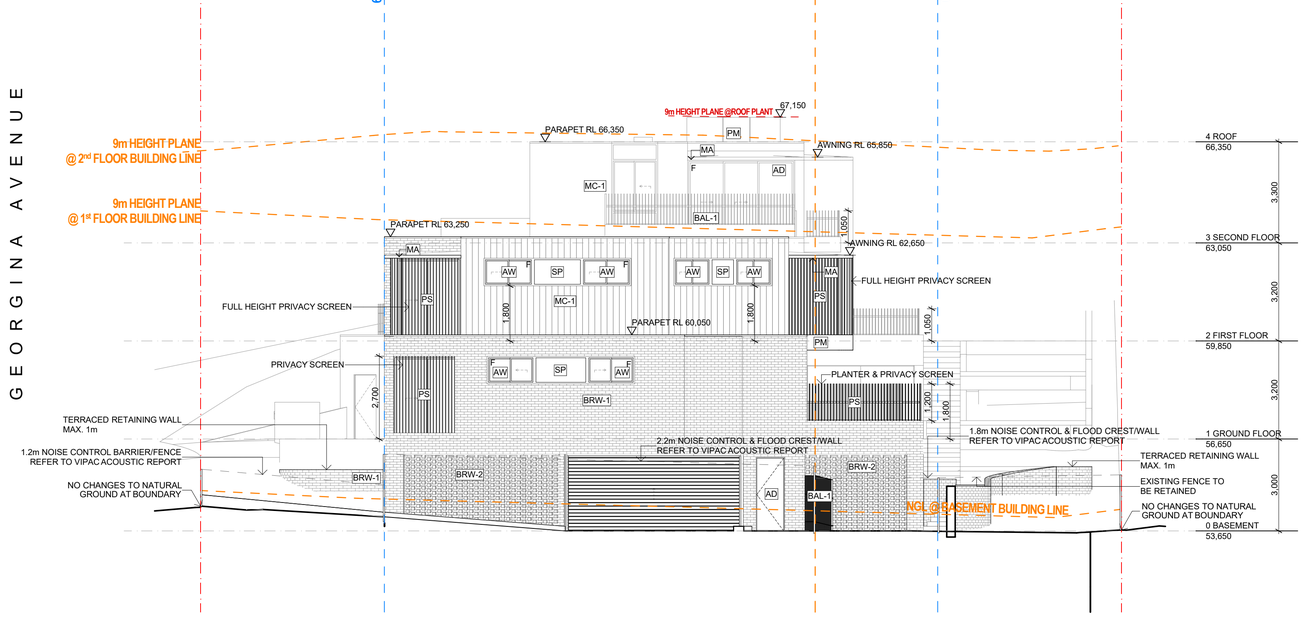
Date
3/11/2023

Project No.
22049

Drawing No.
DA105

Revision
04

1 **SOUTH ELEVATION**
1:100



2 **EAST ELEVATION**
1:100

Energy Rating
Certificate Number 0006180094
☐ single-dwelling rating — 5.4 stars
☒ multi-unit development (attach listing of ratings) — heating 40.0 MJ/m² — cooling 26.0 MJ/m²
If selected, data specified is the average across the entire development
Recessed downlights confirmation: ☐ Rated with ☒ Rated without
Assessor Name/Number 10194
Assessor Signature _____ Date 30/06/2023

SRH Architecture Pty Ltd
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srharchitecture.com
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Notes/Legend:

BRW-1	FACED BRICKWORK	AD	ALUMINIUM DOOR
BRW-2	HIT & MISS BRICKWORK	AW	ALUMINIUM WINDOW
MC-1	METAL CLADDING	GD	HORIZONTAL BATTEN GARAGE DOOR
BAL-1	METAL PALISADE BALUSTRADE	PS	VERTICAL BATTEN PRIVACY SCREEN
SP	SPANDREL PANEL	MA	METAL AWNING
GW	GREENWALL	PM	PAINTED METAL

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	1/09/2023	Issue
05	3/11/2023	Issue

PRELIMINARY
NOT FOR CONSTRUCTION

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:100

Drawing title
ELEVATIONS 01

Drawn	Checked	Approved
DW	DP	SRH

Client
SUSAN NOLA ROSS

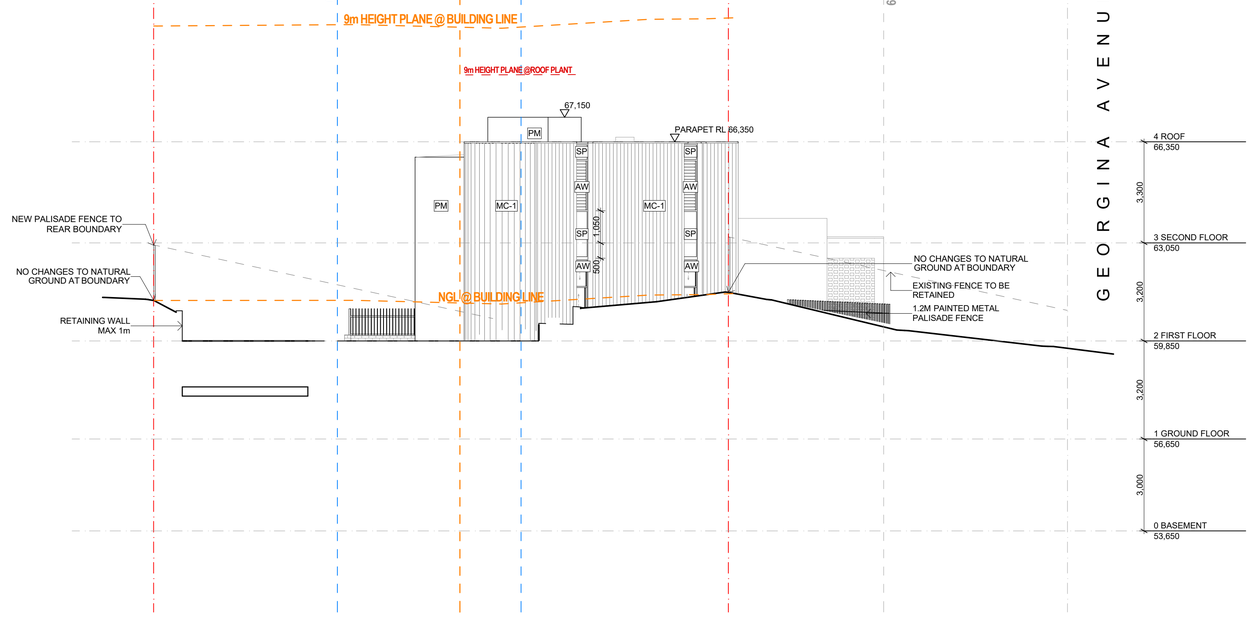
Date
3/11/2023

Project No.
22049

Drawing No.
DA200

Revision
05

1 **NORTH ELEVATION**
1:100



2 **WEST ELEVATION**
1:100

Energy Rating

Certificate Number 0006180094

☐ single-dwelling rating — 5.4 stars

☒ multi-unit development (attach listing of ratings) — heating 40.0 MJ/m² — cooling 26.0 MJ/m²

If selected, data specified is the average across the entire development

Recessed downlights confirmation: ☐ Rated with ☒ Rated without

Assessor Name/Number 10194

Assessor Signature _____ Date 30/06/2023

SRH Architecture Pty Ltd

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Notes/Legend:

BRW-1	FACED BRICKWORK	AD	ALUMINIUM DOOR
BRW-2	HIT & MISS BRICKWORK	AW	ALUMINIUM WINDOW
MC-1	METAL CLADDING	GD	HORIZONTAL BATTEN GARAGE DOOR
BAL-1	METAL PALISADE BALUSTRADE	PS	VERTICAL BATTEN PRIVACY SCREEN
SP	SPANDREL PANEL	MA	METAL AWNING
GW	GREENWALL	PM	PAINTED METAL

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	1/09/2023	Issue
05	3/11/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:100

PRELIMINARY
NOT FOR CONSTRUCTION

Drawing title
ELEVATIONS 02

Drawn	Checked	Approved
DW	DP	SRH

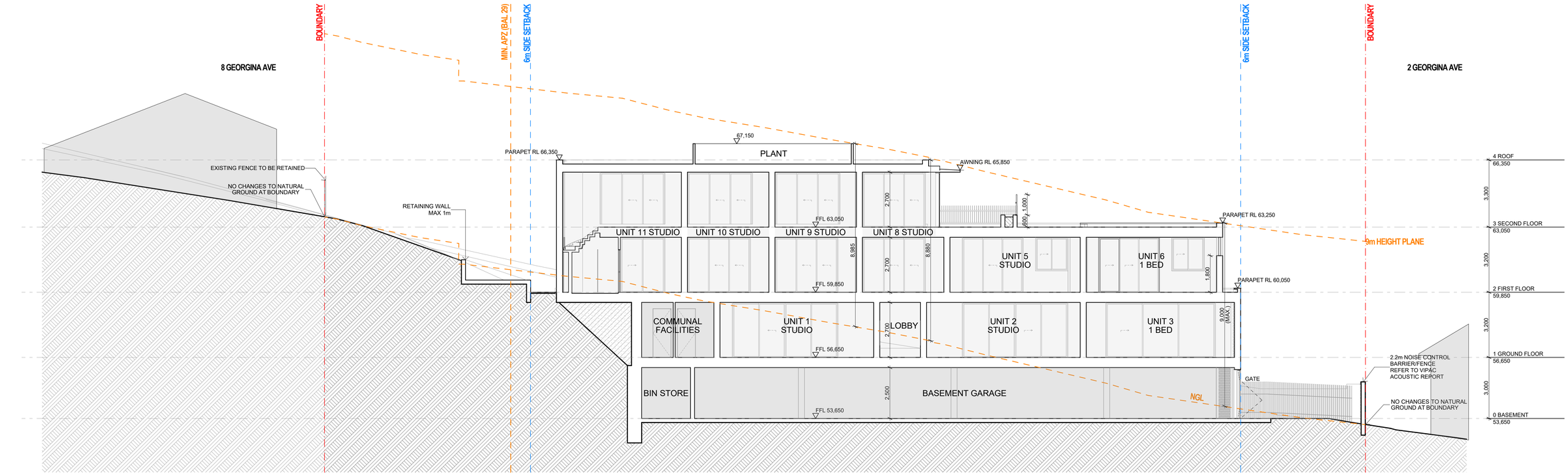
Client
SUSAN NOLA ROSS

Date
3/11/2023

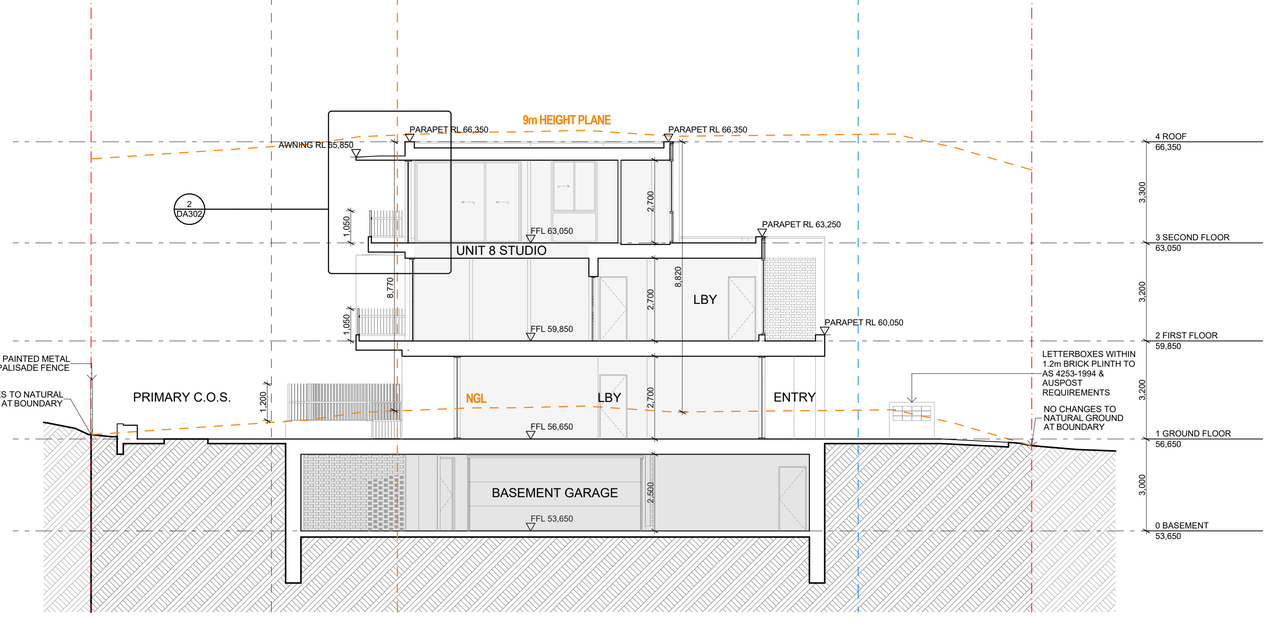
Project No.
22049

Drawing No.
DA201

Revision
05



1 **SECTION A-A**
1:100



2 **SECTION B-B**
1:100

Energy Rating

Certificate Number 0006180094

single-dwelling rating — 5.4 stars

multi-unit development (attach listing of ratings) — heating 40.0 MJ/m² — cooling 26.0 MJ/m²

If selected, data specified is the average across the entire development

Recessed downlights confirmation: Rated with ☐ Rated without ☒

Assessor Name/Number 10194

Assessor Signature _____ Date 30/06/2023

SRH Architecture Pty Ltd

Level 1, 17-19 Brisbane Street, Surry Hills NSW 2010
T. +612 8302 3200 | office@srharchitecture.com
srharchitecture.com
Nominated Architect: Simon Hanson #6739

General

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CAD Files

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Notes/Legend:

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	3/11/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:100

PRELIMINARY
NOT FOR CONSTRUCTION

Drawing title
SECTIONS

Drawn DW | Checked DP | Approved SRH

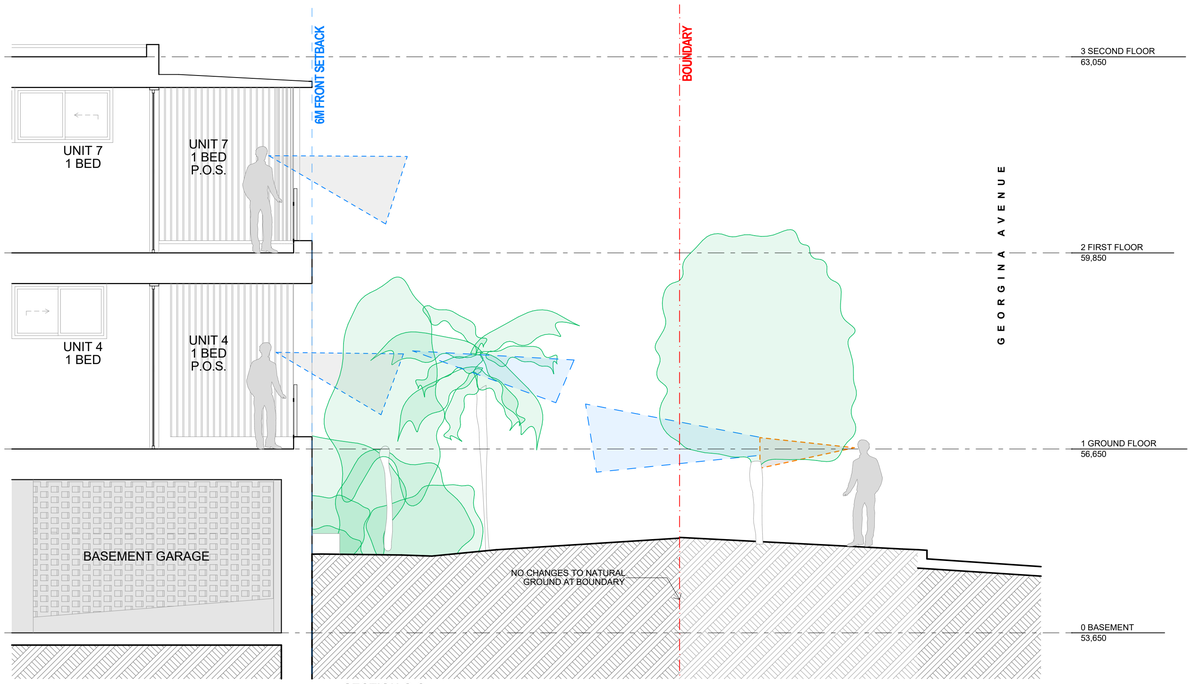
Client
SUSAN NOLA ROSS

Date
16/11/2023

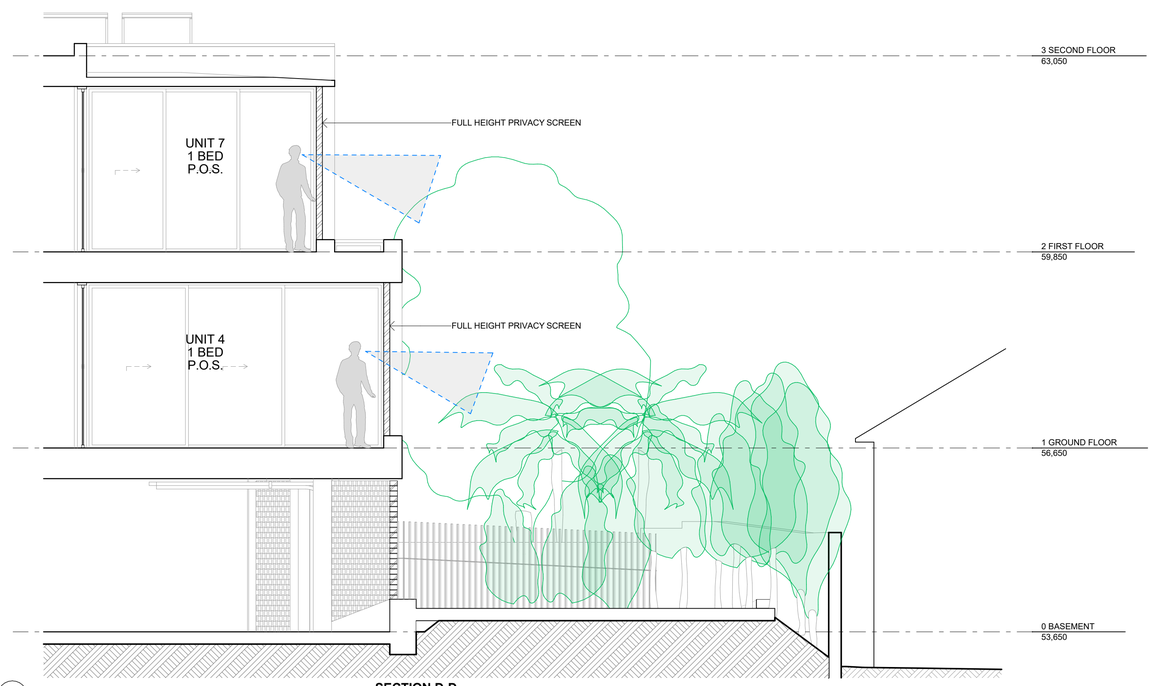
Project No.
22049

Drawing No.
DA300

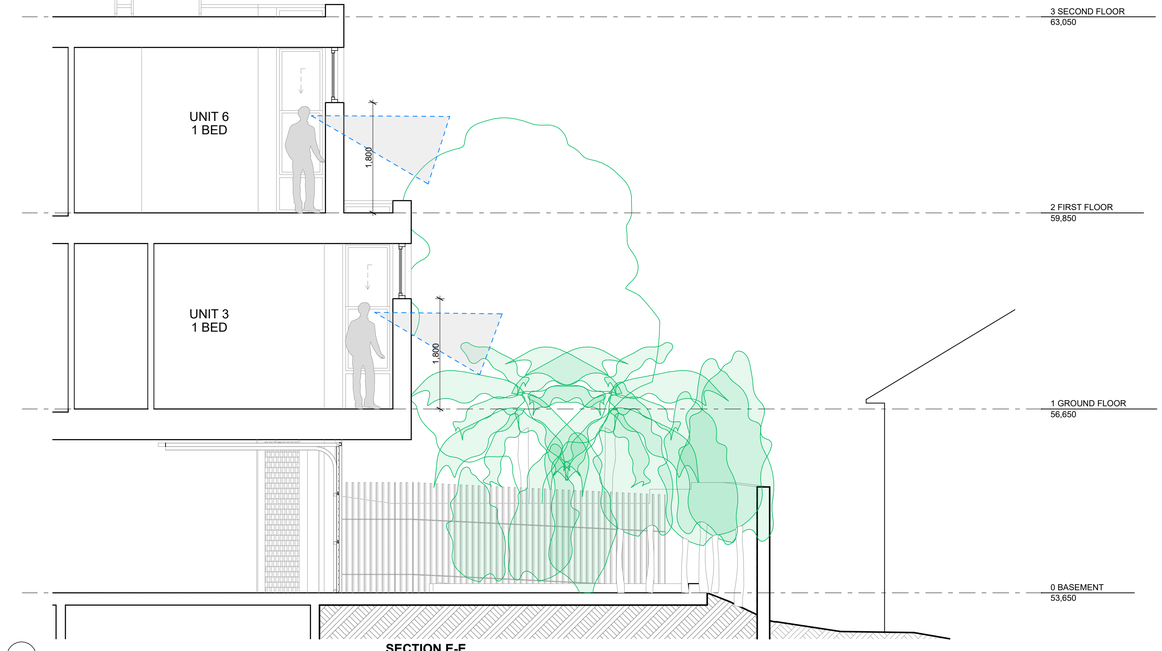
Revision
04



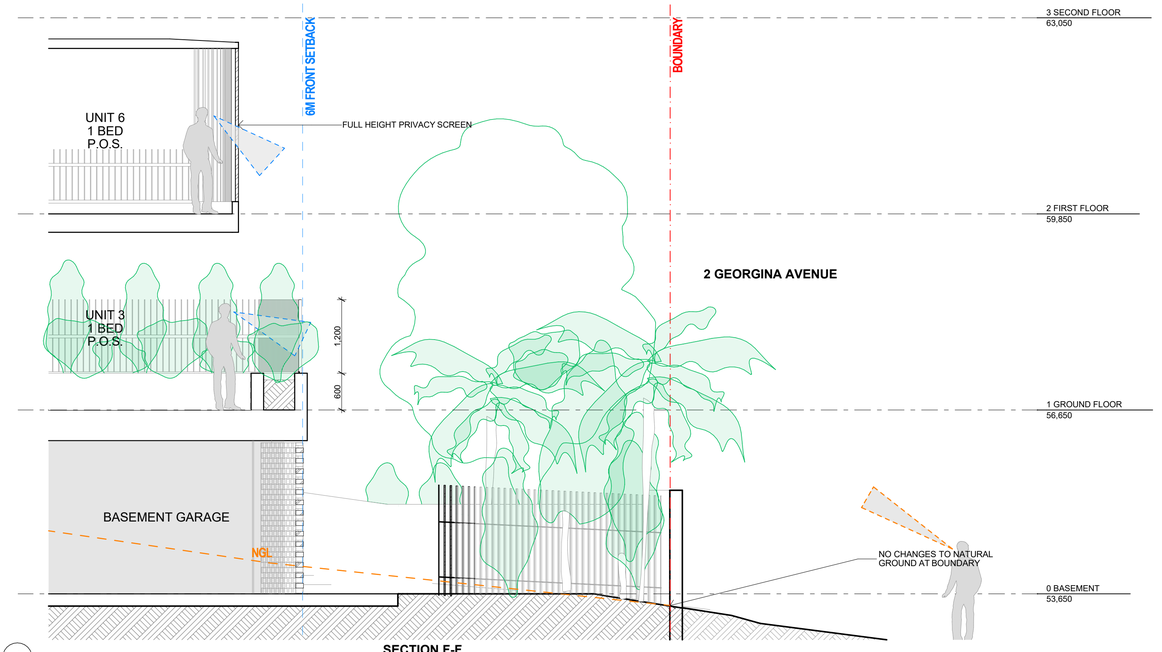
1 SECTION C-C
1:50



2 SECTION D-D
1:50



3 SECTION E-E
1:50



4 SECTION F-F
1:50

PRELIMINARY
NOT FOR CONSTRUCTION

SRH Architecture Pty Ltd

Level 1, 17-19 Brisbane Street, Surry Hills NSW 2010
T. +612 8302 3200 | office@srharchitecture.com
srharchitecture.com
Nominated Architect: Simon Hanson #6739

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Notes/Legend:

Rev	Date	Description
01	15/03/2023	Issue
02	30/06/2023	Issue
03	3/11/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:50

Drawing title
DETAIL SECTIONS 01

Drawn: DW
Checked: DP
Approved: SRH

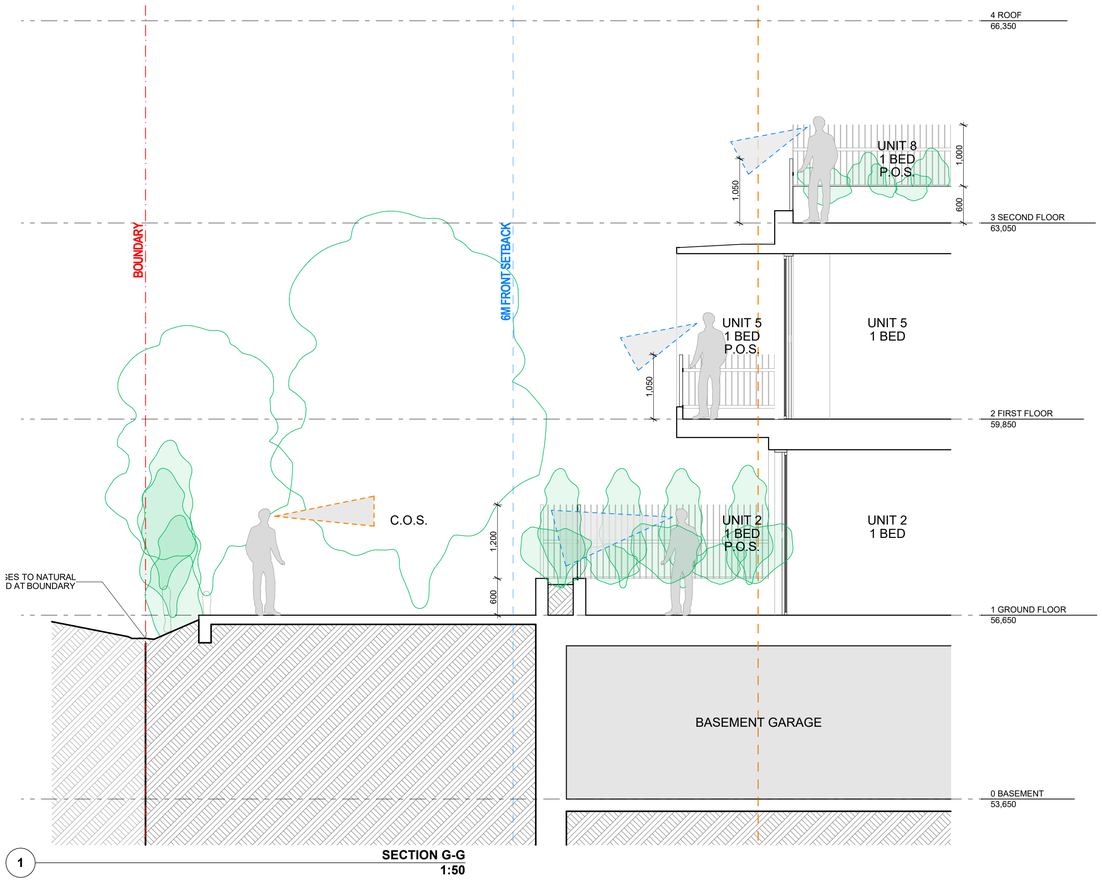
Client
SUSAN NOLA ROSS

Date
3/11/2023

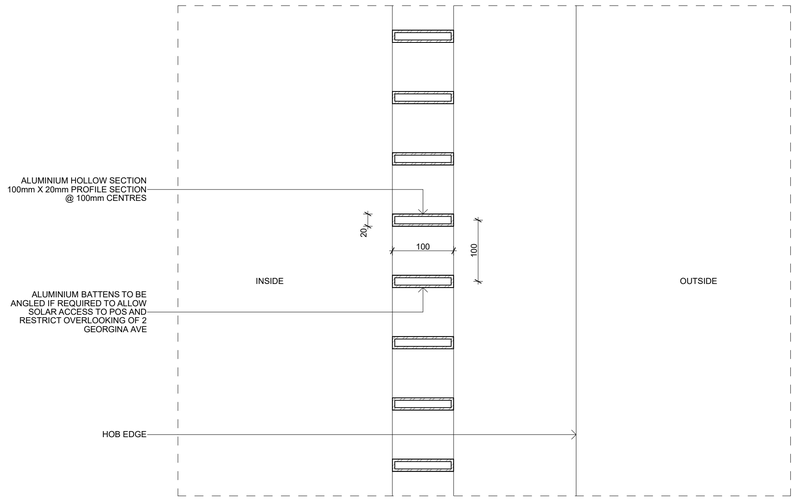
Project No.
22049

Drawing No.
DA301

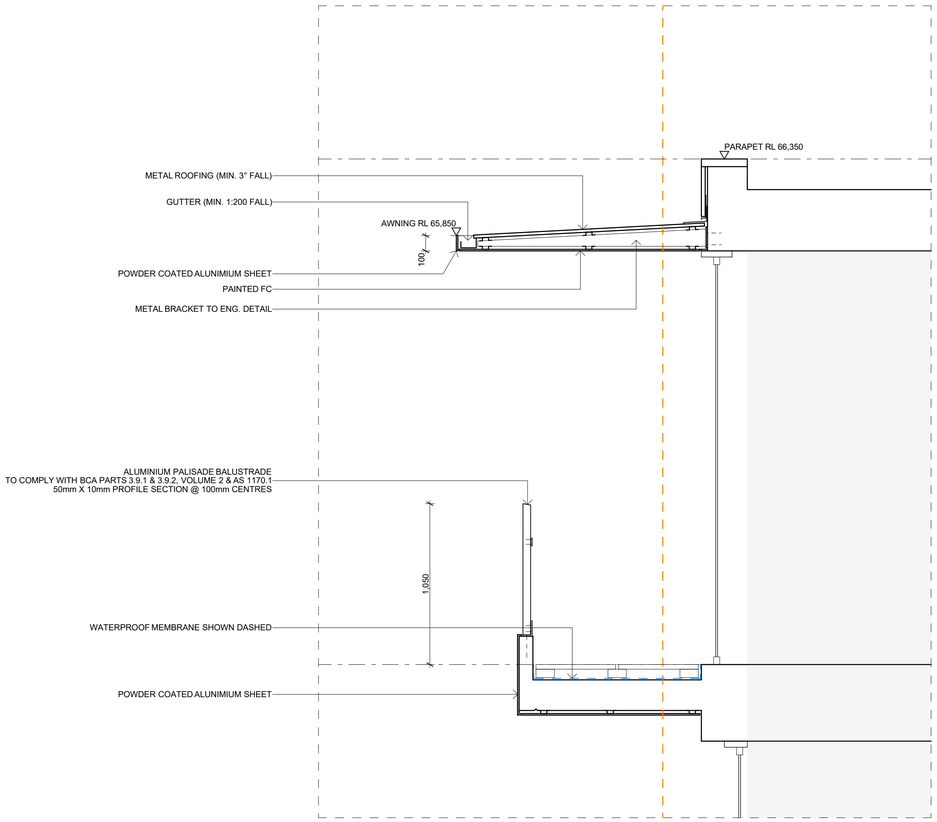
Revision
03



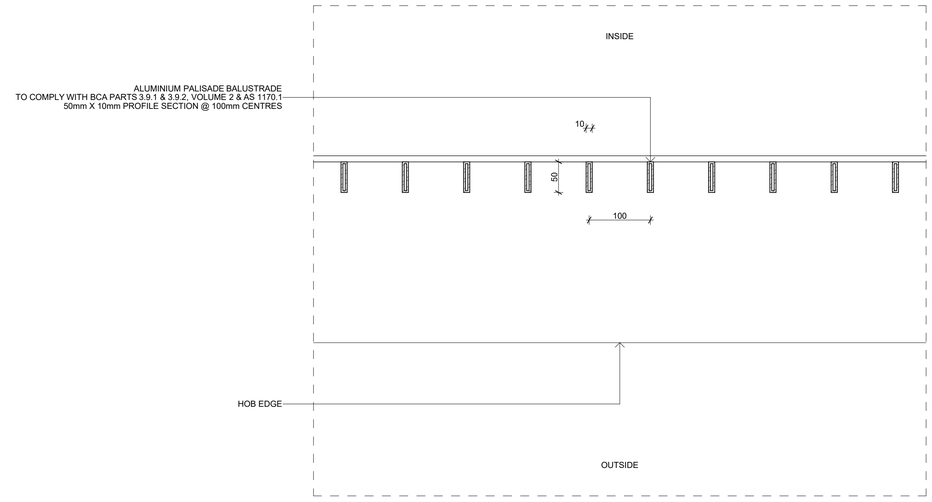
1 **SECTION G-G**
1:50



3 **TYPICAL PRIVACY SCREEN DETAIL**
1:5



2 **DETAIL SECTION**
1:20



4 **TYPICAL BALUSTRADE DETAIL**
1:5

PRELIMINARY
NOT FOR CONSTRUCTION

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Notes/Legend:

Rev	Date	Description
01	3/11/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:50, 1:20, 1:5

Drawing title
DETAIL SECTIONS 02

Drawn	Checked	Approved
DW	DP	SRH

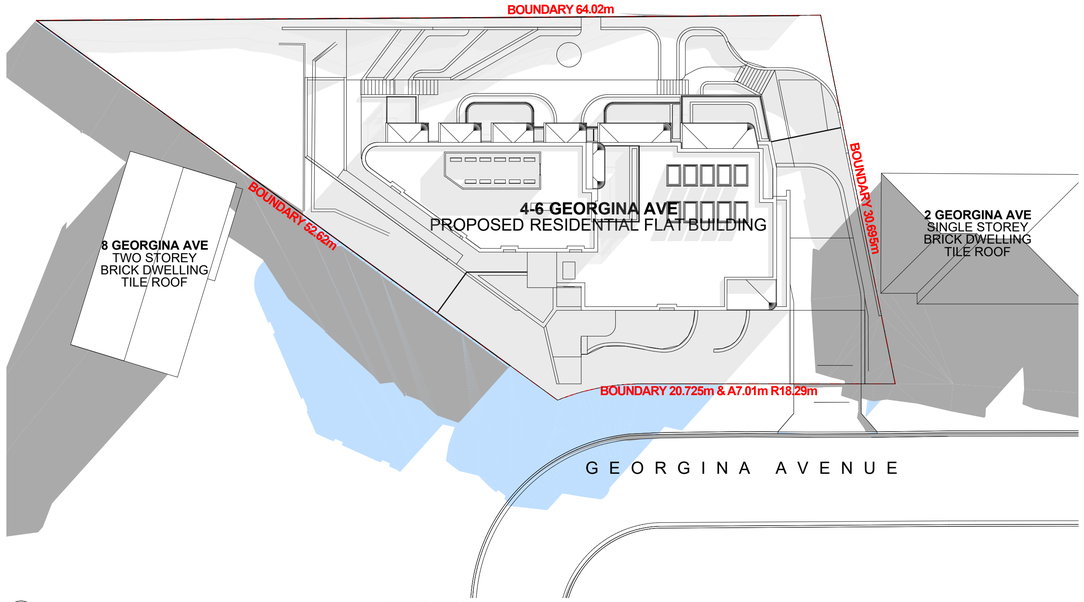
Client
SUSAN NOLA ROSS

Date
3/11/2023

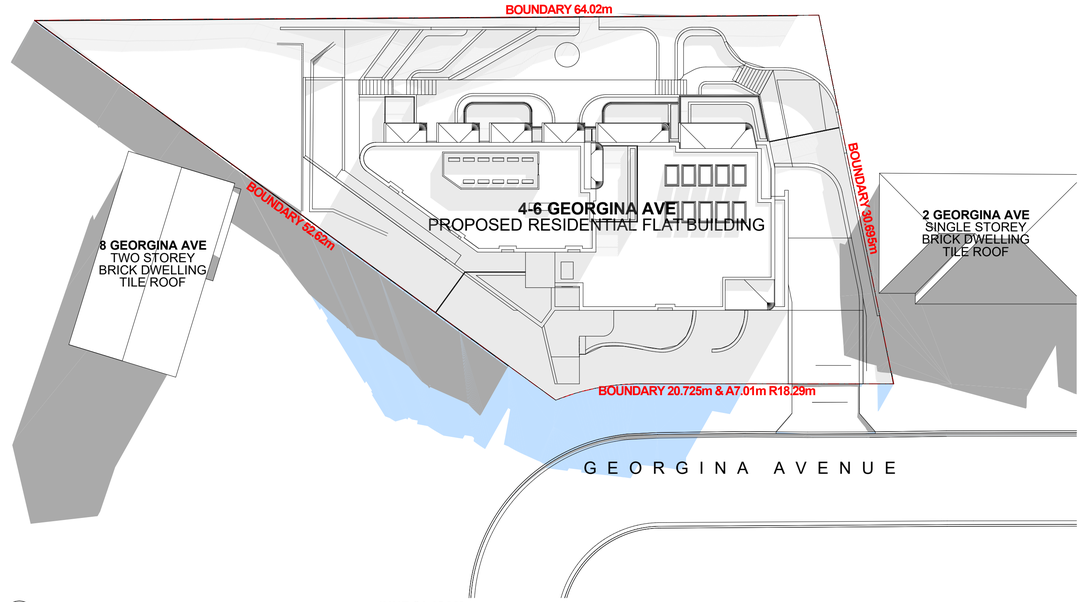
Project No.
22049

Drawing No.
DA302

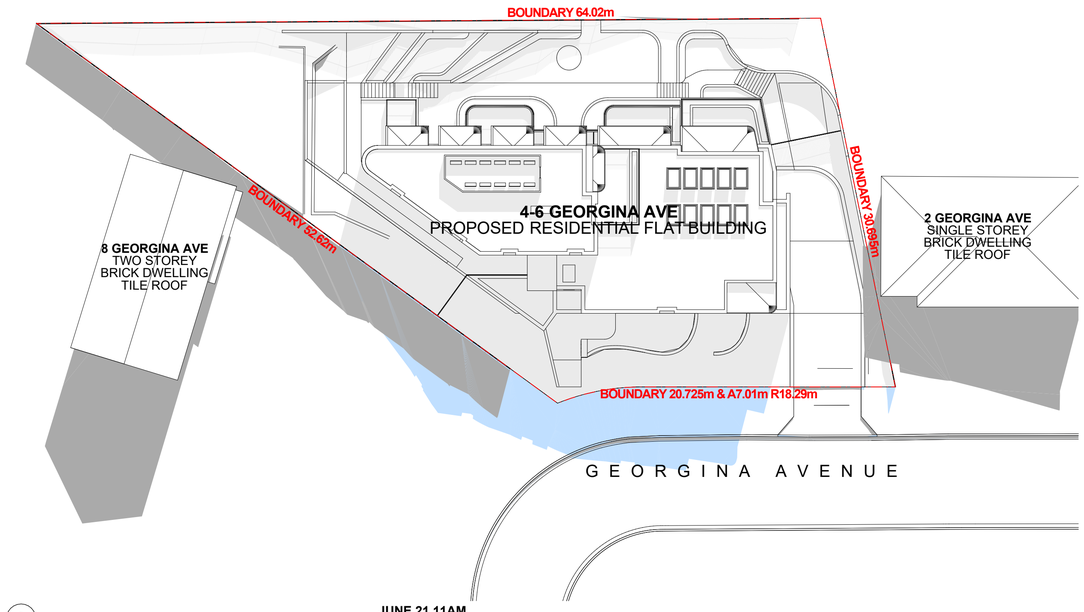
Revision
01



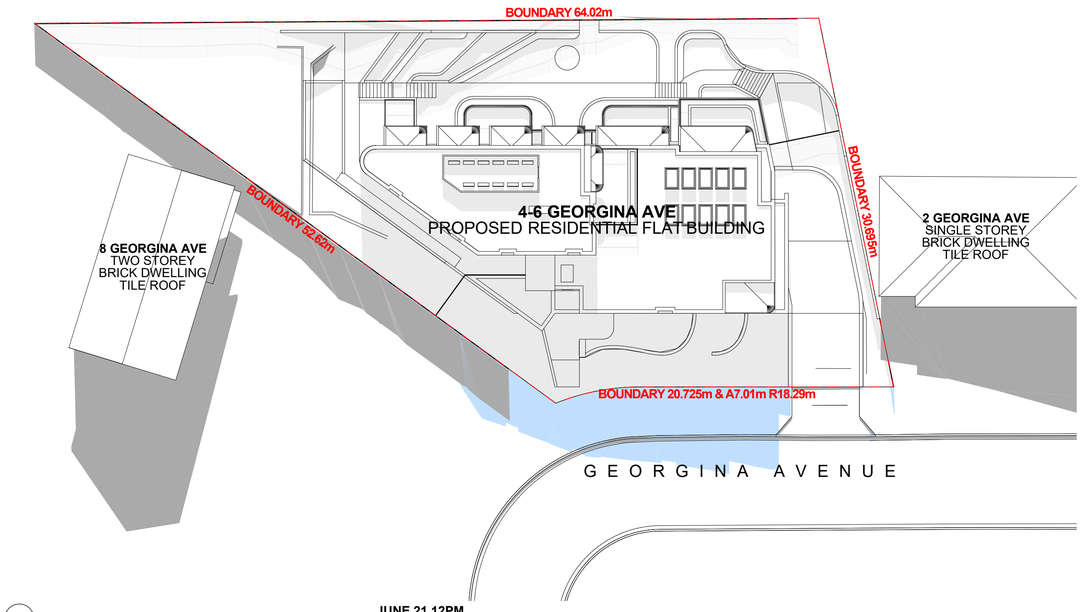
1 JUNE 21 9AM
1:250



2 JUNE 21 10AM
1:250



3 JUNE 21 11AM
1:250



4 JUNE 21 12PM
1:250

SRH Architecture Pty Ltd

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Notes/Legend:

- EXISTING SHADOWS
- ADDITIONAL SHADOWS CAST BEYOND SITE BOUNDARY BY PROPOSED DEVELOPMENT
- SHADOWS CAST WITHIN SITE BOUNDARY BY PROPOSED DEVELOPMENT

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	3/11/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:250

PRELIMINARY
NOT FOR CONSTRUCTION

Drawing title
SHADOW DIAGRAMS 01

Drawn	Checked	Approved
DW	DP	SRH

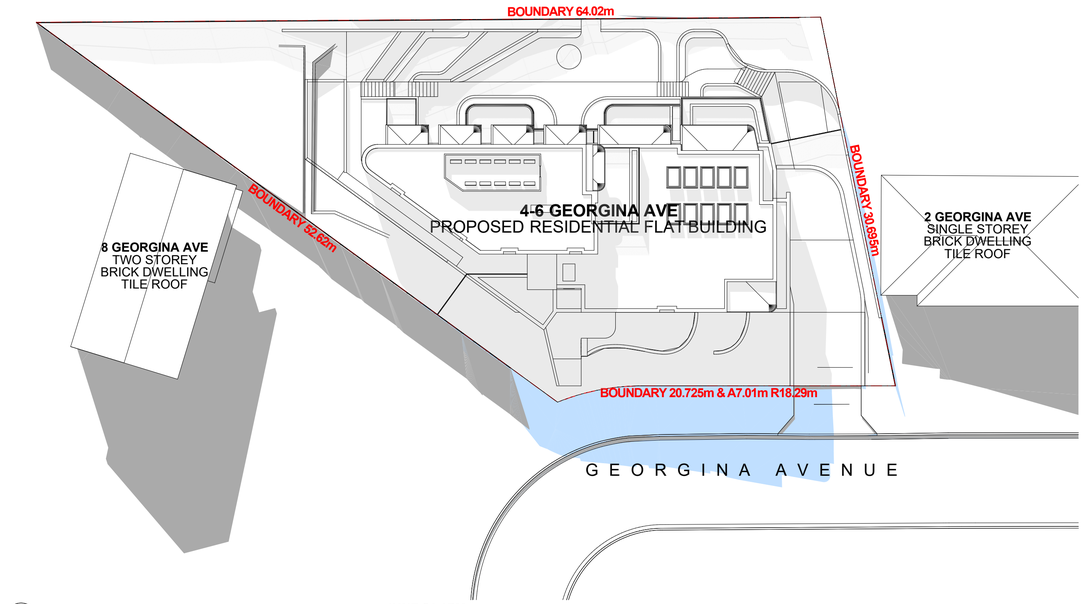
Client
SUSAN NOLA ROSS

Date
3/11/2023

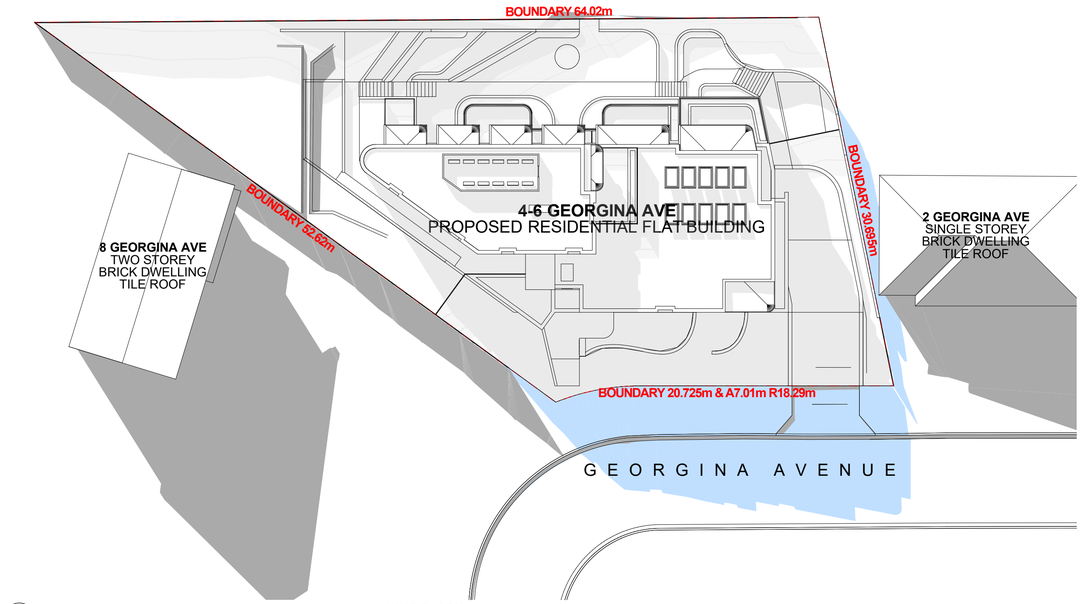
Project No.
22049

Drawing No.
DA400

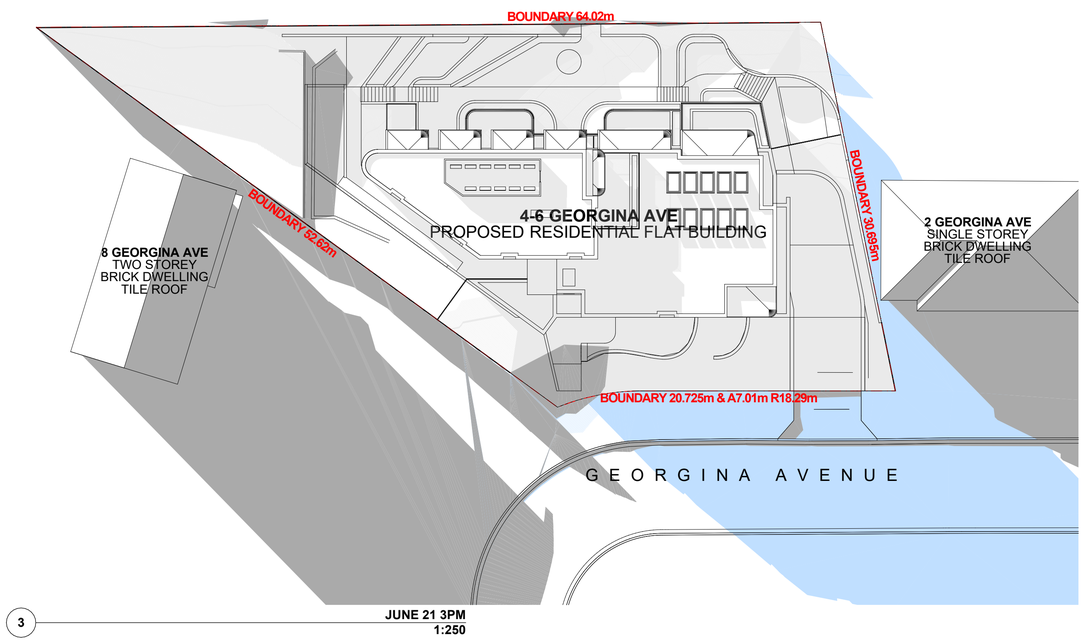
Revision
04



1 JUNE 21 1PM
1:250



2 JUNE 21 2PM
1:250



3 JUNE 21 3PM
1:250

SRH Architecture Pty Ltd

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srharchitecture.com
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- SHADOWS CAST WITHIN SITE BOUNDARY BY PROPOSED DEVELOPMENT

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	3/11/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:250

Drawing title
SHADOW DIAGRAMS 02

Drawn: DW
Checked: DP
Approved: SRH

Client
SUSAN NOLA ROSS

Date
3/11/2023

Project No.
22049

Drawing No.
DA401

Revision
04

PRELIMINARY
NOT FOR CONSTRUCTION

1 JUNE 21 9AM

2 JUNE 21 10AM

3 JUNE 21 11AM

4 JUNE 21 12PM

PRELIMINARY
NOT FOR CONSTRUCTION

S R
H A

SRH Architecture Pty Ltd

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Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	3/11/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1

Drawing title
VIEWS FROM THE SUN 01

Drawn	Checked	Approved
DW	DP	SRH

Client
SUSAN NOLA ROSS

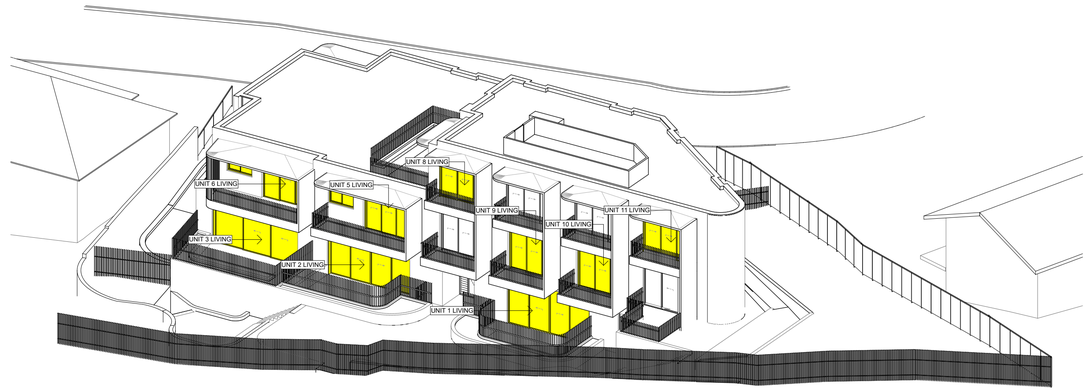
Date
3/11/2023

Project No.
22049

Drawing No.
DA410

Revision
04

1 JUNE 21 1PM



2 JUNE 21 2PM

3 JUNE 21 3PM

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Notes/Legend:

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	3/11/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1

PRELIMINARY
NOT FOR CONSTRUCTION

Drawing title
VIEWS FROM THE SUN 02

Drawn: DW
Checked: DP
Approved: SRH

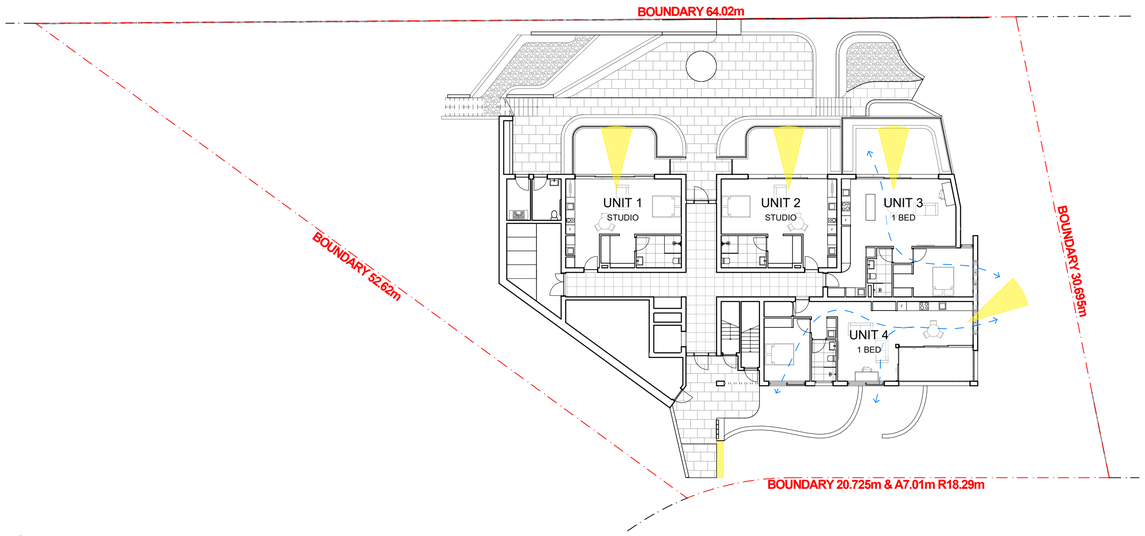
Client
SUSAN NOLA ROSS

Date
3/11/2023

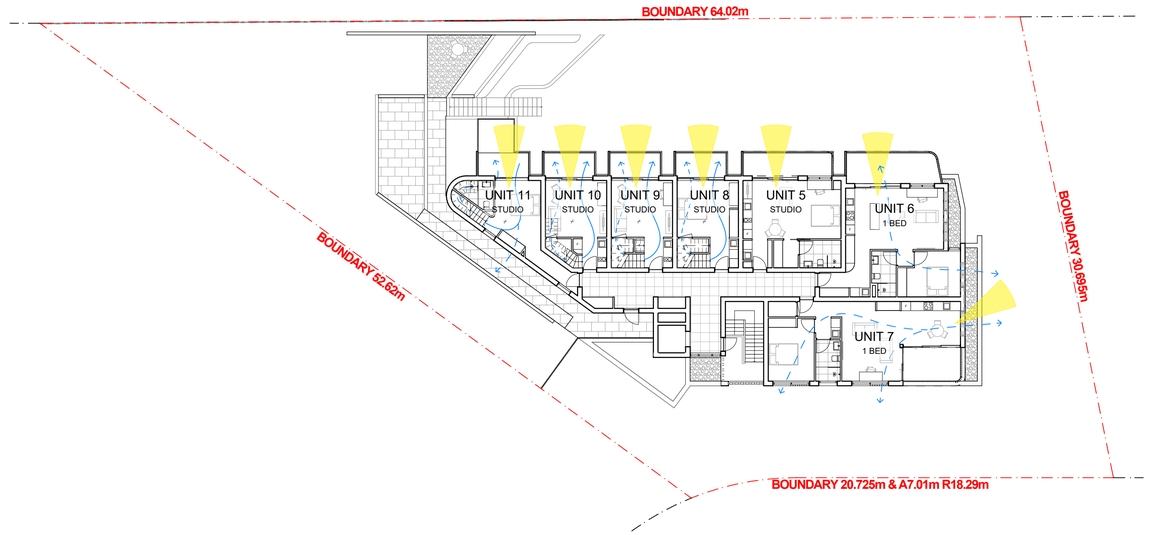
Project No.
22049

Drawing No.
DA411

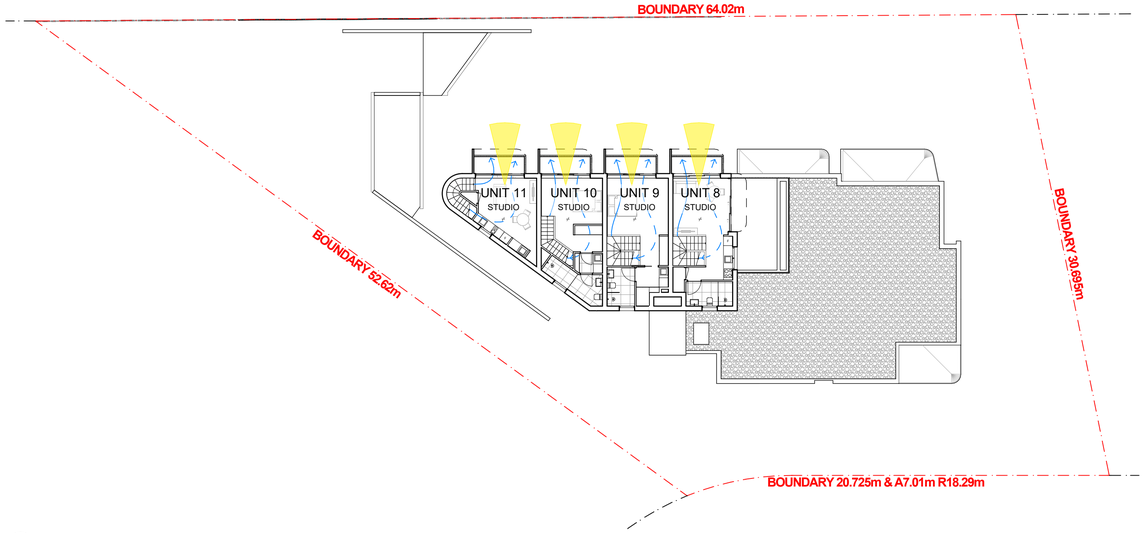
Revision
04



1 GROUND FLOOR SOLAR ACCESS
1:200



2 FIRST FLOOR SOLAR ACCESS
1:200



3 SECOND FLOOR SOLAR ACCESS
1:200

SOLAR ACCESS

REQUIRED:
70% (7.7 UNITS)

PROPOSED:
81.8% (9 UNITS)

CROSS VENTILATION

REQUIRED:
60% (6.6 UNITS)

PROPOSED:
72.7% (8 UNITS)

SOLAR ACCESS & CROSS VENTILATION SCHEDULE

UNIT	SOLAR	CROSS VENTILATION
UNIT 1	YES	NO
UNIT 2	YES	NO
UNIT 3	YES	YES
UNIT 4	YES (<3HRS)	YES
UNIT 5	YES	NO
UNIT 6	YES (<3HRS)	YES
UNIT 7	YES	YES
UNIT 8	YES	YES
UNIT 9	YES	YES
UNIT 10	YES	YES
UNIT 11	YES	YES

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Notes/Legend:

SOLAR ACCESS

CROSS VENTILATION

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	3/11/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:200

PRELIMINARY
NOT FOR CONSTRUCTION

Drawing title
SOLAR + CROSS VENTILATION DIAGRAMS

Drawn: DW
Checked: DP
Approved: SRH

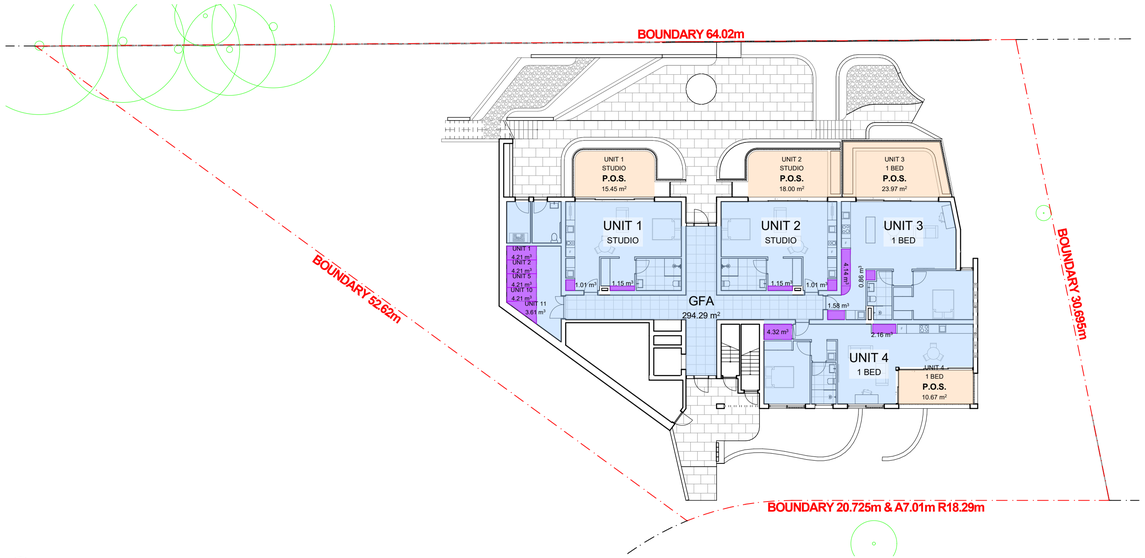
Client
SUSAN NOLA ROSS

Date
3/11/2023

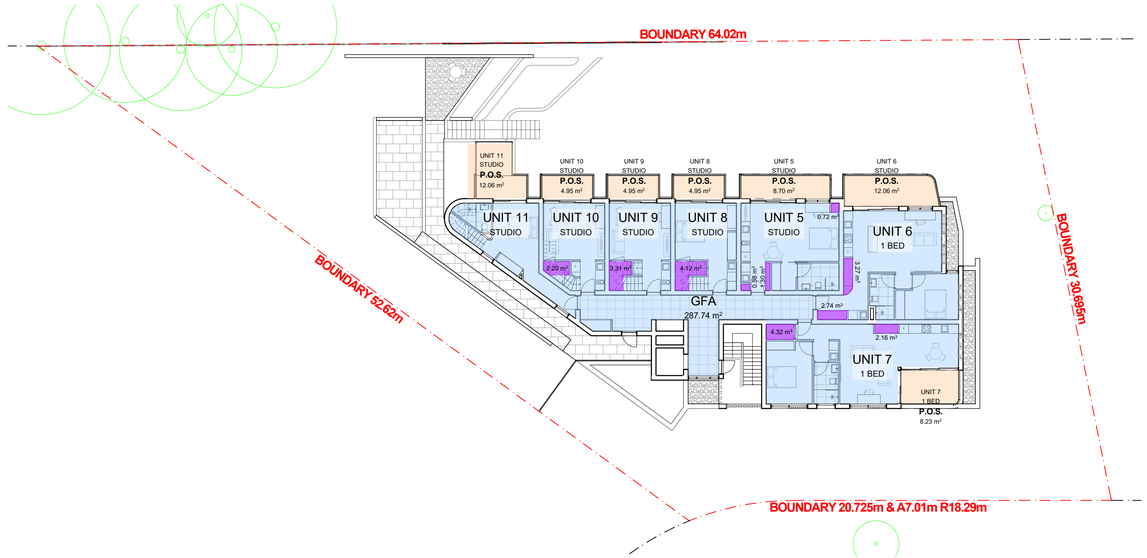
Project No.
22049

Drawing No.
DA420

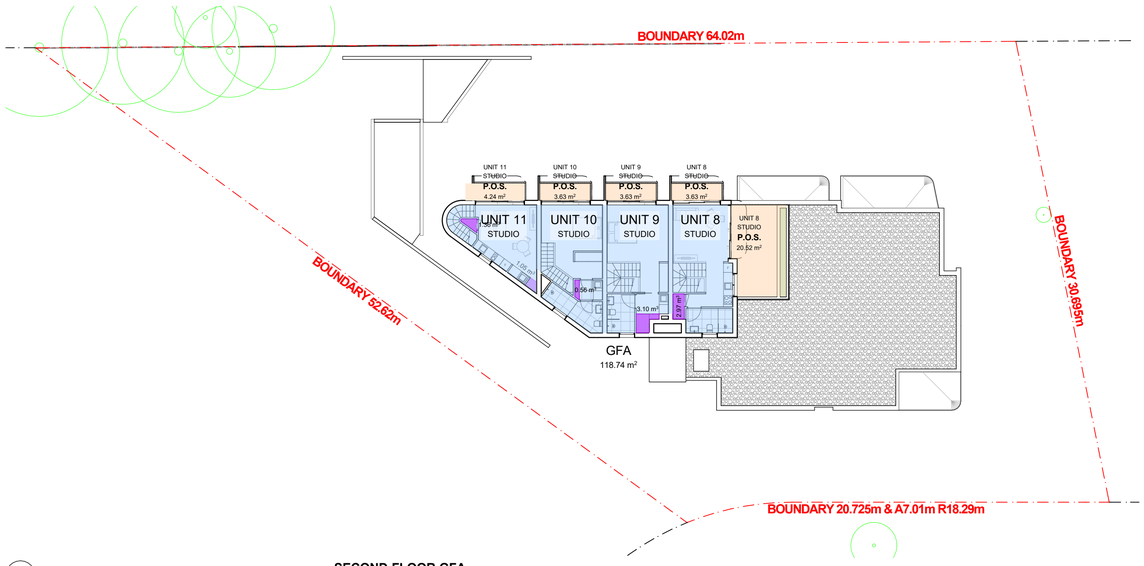
Revision
04



1 GROUND FLOOR GFA
1:200



2 FIRST FLOOR GFA
1:200



3 SECOND FLOOR GFA
1:200

GROSS FLOOR AREA SUMMARY

SITE AREA: 1404.2m²

MAXIMUM PERMISSIBLE GFA: 0.5:1 (702.1m²)

PROPOSED GFA: 0.5:1 (700.77m²)

PRIVATE OPEN SPACE SUMMARY

REQUIREMENTS

STUDIO APARTMENTS: MIN. AREA - 4m² MIN. DEPTH - N/A
1 BEDROOM APARTMENTS: MIN. AREA - 8m² MIN. DEPTH - 2m

UNIT	TYPE	REQUIREMENTS	PROPOSED
UNIT 1	STUDIO	15m² (MIN. DEPTH - 3m)	15.45m² (MIN. DEPTH 3m)
UNIT 2	STUDIO	15m² (MIN. DEPTH - 3m)	18.00m² (MIN. DEPTH 3m)
UNIT 3	1 BED	15m² (MIN. DEPTH - 3m)	23.97m² (MIN. DEPTH 3m)
UNIT 4	1 BED	15m² (MIN. DEPTH - 3m)	13.82m² (MIN. DEPTH 3m)
UNIT 5	STUDIO	4m² (MIN. DEPTH N/A)	8.70m² (DEPTH 1.5m)
UNIT 6	1 BED	8m² (MIN. DEPTH - 2m)	12.06m² (MIN. DEPTH 2m)
UNIT 7	1 BED	8m² (MIN. DEPTH - 2m)	10.25m² (MIN. DEPTH 2m)
UNIT 8	STUDIO	4m² (MIN. DEPTH N/A)	16.86m² (DEPTH L1 - 1.5m, DEPTH L2 - 1.1m)
UNIT 9	STUDIO	4m² (MIN. DEPTH N/A)	8.58m² (DEPTH L1 - 1.5m, DEPTH L2 - 1.1m)
UNIT 10	STUDIO	4m² (MIN. DEPTH N/A)	8.58m² (DEPTH L1 - 1.5m, DEPTH L2 - 1.1m)
UNIT 11	STUDIO	4m² (MIN. DEPTH N/A)	16.30m² (DEPTH L1 - 3.3m, DEPTH L2 - 1.1m)

STORAGE CALCULATIONS SUMMARY

REQUIREMENTS

STUDIO APARTMENTS: 4m³ (MINIMUN)
1 BEDROOM APARTMENTS: 6m³ (MINIMUM)
(MIN. 50% OF REQUIRED STORAGE TO BE PROVIDED WITHIN THE APARTMENT)

UNIT	IN UNIT STORAGE	GROUND FLOOR STORAGE	TOTAL
UNIT 1	2.16m³	4.21m³	6.37m³
UNIT 2	2.16m³	4.21m³	6.37m³
UNIT 3	6.58m³	-	6.58m³
UNIT 4	6.48m³	-	6.48m³
UNIT 5	2.6m³	4.21m³	6.81m³
UNIT 6	6.01m³	-	6.01m³
UNIT 7	6.48m³	-	6.48m³
UNIT 8	7.09m³	-	7.09m³
UNIT 9	6.41m³	-	6.41m³
UNIT 10	2.76m³	4.21m³	6.97m³
UNIT 11	2.41m³	3.61m³	6.05m³

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Notes/Legend:

CALCULATED GFA AREA
CALCULATED P.O.S AREA
CALCULATED STORAGE

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	3/11/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:200

Drawing title
AREA CALCULATIONS 01

Drawn	Checked	Approved
DW	DP	SRH

Client
SUSAN NOLA ROSS

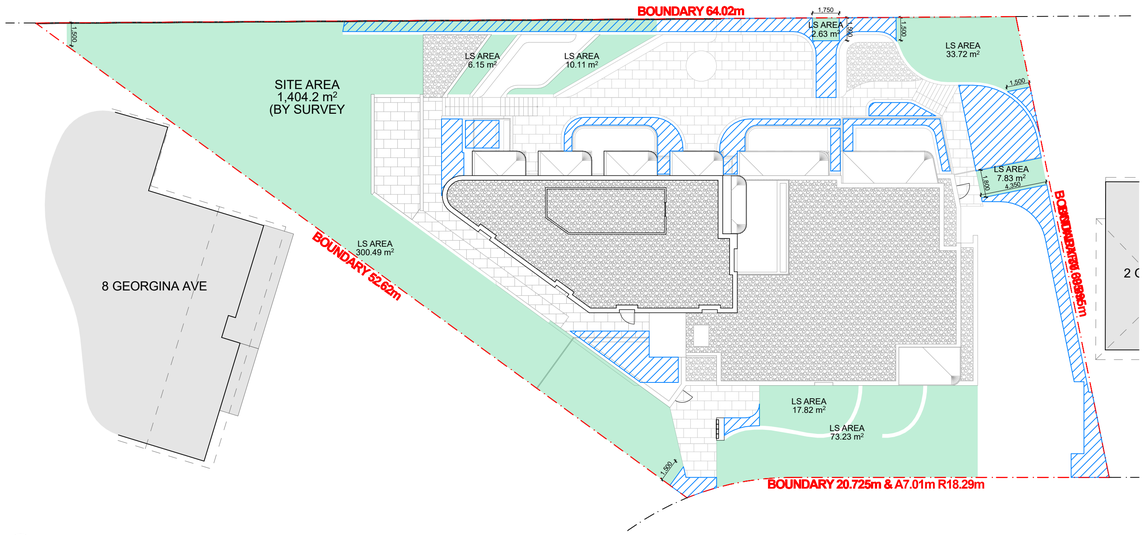
Date
3/11/2023

Project No.
22049

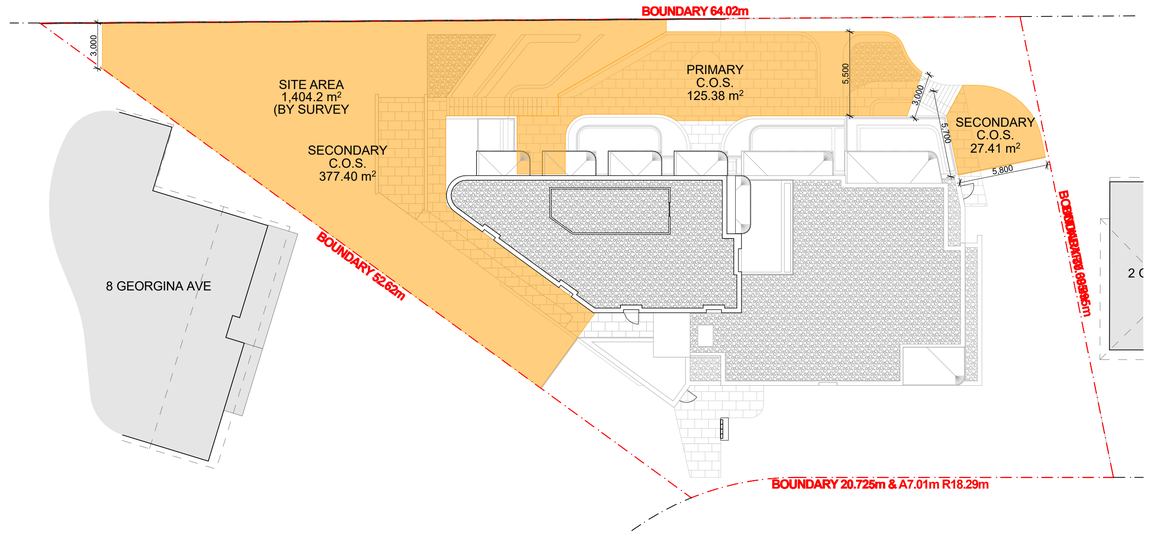
Drawing No.
DA500

Revision
04

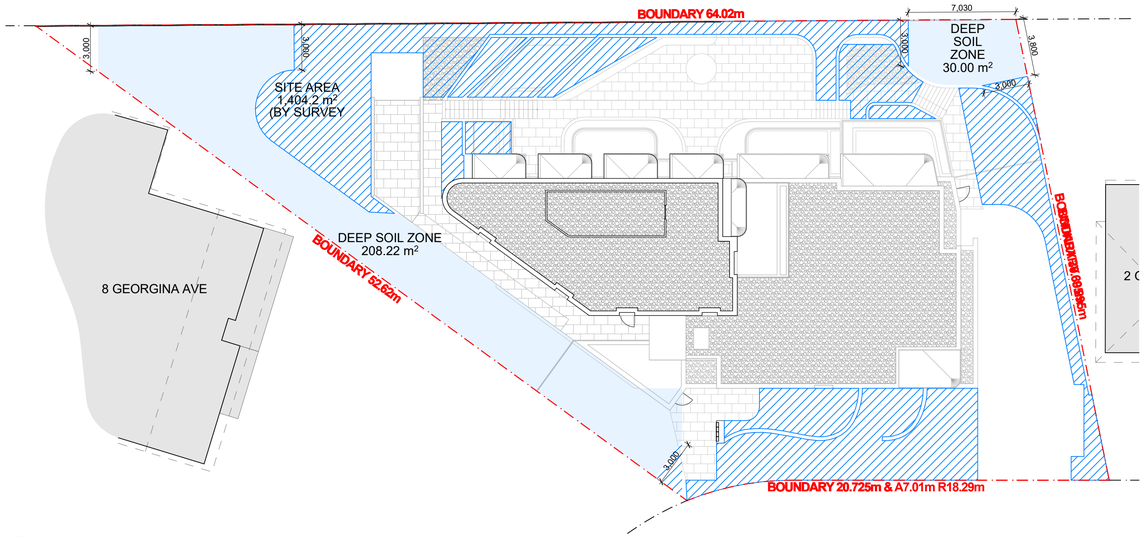
PRELIMINARY
NOT FOR CONSTRUCTION



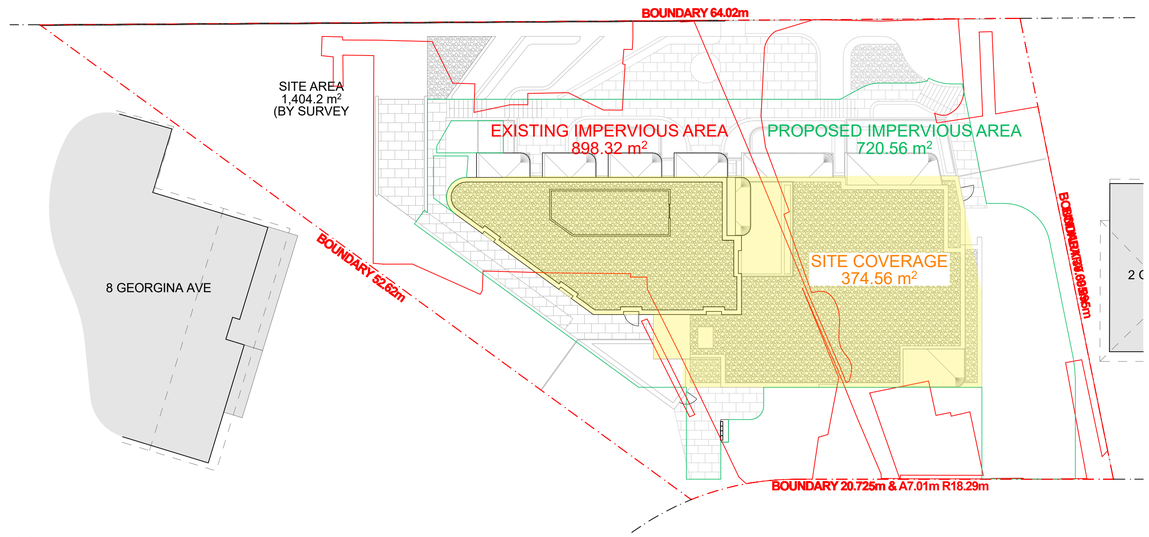
1 **LANDSCAPE CALCULATIONS**
1:200



2 **C.O.S. CALCULATIONS**
1:200



3 **DEEP SOIL**
1:200



4 **IMPERVIOUS CALCULATIONS**
1:200

SITE AREA: 1404.2m²

LANDSCAPE CONTROLS

DCP REQUIREMENTS: 30% (421.26m²)

PROPOSED: 32.1% (451.98m²)

COMMUNAL OPEN SPACE

ADG REQUIREMENTS: 25% (351.05m²)
DCP REQUIREMENTS: 5m² PER DWELLING (60m²)

PROPOSED: 37.8% (530.19m²)

DEEP SOIL ZONE

7% (98.29m²)
DCP REQUIREMENTS: 15% (210.63m²)

PROPOSED: 35.6% (527.48m²)

SITE COVERAGE

DCP REQUIREMENTS: 40% (561.68m²)

PROPOSED: 26.7% (374.56m²)

EXISTING IMPERVIOUS AREA: 898.32m²
PROPOSED IMPERVIOUS AREA: 720.56m²

SRH Architecture Pty Ltd

Level 1, 17-19 Brisbane Street, Surry Hills NSW 2010
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srharchitecture.com
Nominated Architect: Simon Hanson #6739

General

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CAD Files

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Notes/Legend:

- CALCULATED LANDSCAPED AREA
- CALCULATED DEEP SOIL ZONE
- COMMUNAL OPEN SPACE
- PERMIABLE LANDSCAPED AREA NOT INCLUDED IN CALCULATIONS
- SITE COVERAGE
- EXISTING IMPERVIOUS AREA
- PROPOSED IMPERVIOUS AREA

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	1/09/2023	Issue
05	3/11/2023	Issue

PRELIMINARY
NOT FOR CONSTRUCTION

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1
1:200

Drawing title
AREA CALCULATIONS 02

Drawn	Checked	Approved
DW	DP	SRH

Client
SUSAN NOLA ROSS

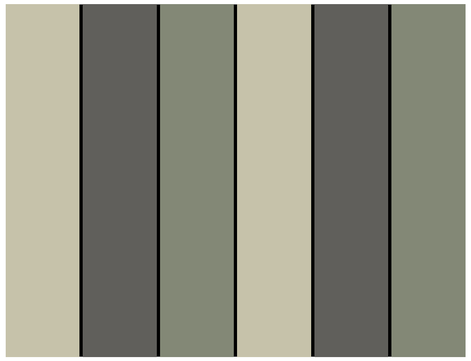
Date
3/11/2023

Project No.
22049

Drawing No.
DA501

Revision
05

BRW-1 FACED BRICKWORK - ACCESS ASH



MC-1 METAL CLADDING - LYSAGHT DOMINION

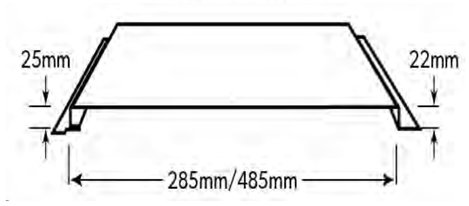
BAL-1 METAL PALISADE BALUSTRADE
PS VERTICAL BATTEN PRIVACY SCREEN

AD ALUMINIUM DOORS & WINDOWS
AW MONUMENT POWDER COAT FINISH

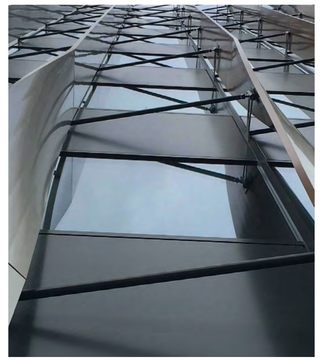
BRW-3 FACED BRICKWORK - ACCESS TAN

GD VERTICAL BATTEN GARAGE DOOR

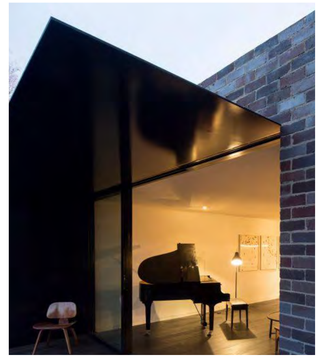
BRW-2 HIT & MISS BRICKWORK - ACCESS ASH



MC-1 METAL CLADDING - LYSAGHT DOMINION



SP SPANDREL PANEL - MONUMENT



MA METAL AWNING
PM PAINTED METAL

PRELIMINARY
NOT FOR CONSTRUCTION

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Notes/Legend:

Rev	Date	Description
01	12/12/2022	Issue
02	15/03/2023	Issue
03	30/06/2023	Issue
04	3/11/2023	Issue

Project:
4-6 GEORGINA AVENUE, KEIRAVILLE

Stage:
DEVELOPMENT APPLICATION

Scale @A1

Drawing title
MATERIALS SCHEDULE

Drawn: DW
Checked: DP
Approved: SRH

Client
SUSAN NOLA ROSS

Date
3/11/2023

Project No.
22049

Drawing No.
DA600

Revision
04

3D RENDER - VIEW FROM GEORGINA AVENUE

SUSAN NOLA ROSS

3D RENDER - VIEW FROM GEORGINA AVENUE

S R H A

3/11/2023 9:58 PM / watts / BIMcloud: BUREAUSVR A26 -

ADDITIONAL 3D RENDER

SUSAN NOLA ROSS

ADDITIONAL 3D RENDER

3/11/2023 9:58 PM / watts / BMcloud: BUREAUSVRA26 -

ADDITIONAL 3D RENDER

SUSAN NOLA ROSS

ADDITIONAL 3D RENDER

S R H A

3/11/2023 9:58 PM / watts / BIM cloud: BUREAUSVR A26 - S

ADDITIONAL 3D RENDER

SUSAN NOLA ROSS

ADDITIONAL 3D RENDER

3/11/2023 9:58 PM / watts / BMcloud: BUREAUSVRA26 - S

NOTE GENERAL:

1. Figure dimensions shall take precedence over scale.
2. Contractors must verify all dimensions on job before commencing any work or making shop drawings.
3. All structural works including demolition to be verified by Structural Engineer prior to contractor undertaking any works. All structural landscaping and building works to be undertaken by suitably qualified, insured and licensed persons in the field only. Supervision and coordination of such work to be undertaken by suitably qualified, insured, licensed and experienced structural landscaper and/or builder only.
4. Verify all plant numbers on site prior to ordering and advise Landscape Architect if any changes are deemed necessary. Responsibility of number of plant stock ordered rests solely with contractor not Landscape Architect. Plant schedule for approval process only, not to be used for orders or quotes. Set out instructions as given on site by TWLA including any amendments to plant species and type as given on site remain the responsibility of contractor to update quote and order accordingly. Plant schedule as guide only.
5. Automatic irrigation system to be installed by irrigation subcontractor who is a suitably qualified, insured and licensed persons in the field only.
6. Check existing RL's and all soil depths on site. Advise Landscape Architect of any discrepancies before commencement. Allow for adjustments to suit discrepancies.
7. Contractor/s to familiarize self and team with existing site conditions prior to undertaking any works, including any underground services.
8. Forest Fines Mulch from Australian Native Landscapes to be evenly distributed under all completed garden beds post soil, plant, irrigation and electrical install (Ph: 13 14 58).
9. Lighting to be from Nocturnal Lighting (Sydney Distributor Ph: 02 9699 6007) or Lumascape Lighting (+61 7 3854 5000), to electrician detail. Allow for power to all garden beds as directed by TWLA.
10. Pot selection from The Balcony Garden and Martin Kellock Pots, TBD by TWLA, is applicable.
11. Any natural materials used in the project including but not limited to timber, stone and plant material, may change in appearance and dimension following exposure to use or climatic conditions and this is typical of such materials. Any discrepancy regarding natural or non-natural material to be directed to supplier, landscape contractor, stonemason, manufacturer or the like. No responsibility for material used on project rests with Landscape Architect.
12. Comply with relevant authority requirements.
13. Comply with National Construction Code requirements.
14. Comply with Australian Standards for material, construction and landscape practice.
15. Comply with BASIX certificate, if applicable.
16. Do not scale from drawings.
17. This drawing is protected by copyright.

NOTE LANDSCAPE DETAIL & MAINTENANCE:

1. Automatic irrigation system to be installed by irrigation subcontractor. Irrigation to include but not limited to:
- To gardens: Combination of border jets and microsprays to narrow beds along with shrub head risers with Rain Bird nozzles to larger areas.
- Automatic control via Orbit Control Star controllers operating Hunter 25mm remote control valves. Automatic rain shut down devices to be included.
- Connection to water service via approved dual check valve backflow prevention devices and brass isolation valves.
- Irrigation system manual to be prepared and issued to client and landscape maintenance team for reference.

2. Check proposed planter RL's for all above ground levels with contractor. Advise Landscape Architect of any discrepancies before commencement. Allow for adjustments to suit discrepancies.
3. Contractor/s to familiarize self and team with existing conditions prior to undertaking any works in landscape planters, including any services.
4. Planters: Planter Box Mix (soil) from Australian Native Landscapes.
5. Flo Cell Drainage Cell from Atlantis for planters. Ph: 9417 8344
6. Forest Fines Mulch from Australian Native Landscapes to be evenly distributed under all completed garden beds post soil, plant, irrigation and electrical install (Ph: 131458).
7. Landscape maintenance general: The landscaped areas are intended to be low maintenance. Maintenance during the plant establish period will ensure the longevity and low maintenance nature of the planters and future success of these species.

Maintenance to include:
- PLANT ESTABLISHMENT PERIOD: 13 weeks.
- MAINTENANCE PERIOD: 39 weeks.
- DEFECTS LIABILITY PERIOD: The Contractor will be entirely responsible for the complete replacement of any tree, shrub, plant, grass or turf area that dies or fails to meet the specification due to defective materials or workmanship and including any damage sustained through vandalism. Replacement items will be of equal size, species and quality to those specified, and the Contractor will be responsible for the complete repair and reinstatement to the reasonable satisfaction of the Landscape Architect and the Superintendent. Works to be carried out as soon as possible within the bounds of good horticultural practice. This maintenance must be carried out in such a manner to avoid unreasonable disturbance of any buildings and adjoining works not part of the contract.
- MAINTENANCE REQUIREMENTS: Following the date of Practical Completion, the Contractor shall maintain all the landscape areas of the works in accordance with the clauses within this section for the periods stated. The Contractor shall maintain the whole of the planted areas in a manner which ensures the establishment of healthy and vigorous plants and a close textured, weed free appearance. Allowance shall be made in pricing for watering to maintain all planting in a healthy moist condition to facilitate optimum conditions for early establishment. Throughout the planting establishment period, carry out maintenance work including, watering, weeding, rubbish removal, fertilising, pest and disease control, reseeding (if applicable), returfing (if applicable), staking and tying, replanting, cultivating, pruning, clipping, and reinstatement of mulch.
- During the maintenance period the Contractor will be expected to:
+Establish a regular pattern of site visits throughout the maintenance period;
+Carry out routine maintenance operations;
+Correct any defects, which become apparent during the earliest suitable weather conditions;
+Attend hand-over any meetings deemed necessary with the Superintendent at off-maintenance inspection, and regular meetings with the Landscape Architect to monitor defects and maintenance;
+The Contractor will be deemed to have allowed for a minimum of 12 monthly main visits per year, but should not assume that this will be sufficient to discharge the requirements of the maintenance.
- LITTER ARISINGS & DEBRIS MATERIALS: All debris unless otherwise stated and arising from the performance of the works shall promptly be removed from the site and the Contractor will be required to make good any damage at their own expense, or bear any cost incurred through their failure to comply with this requirement. Remove all litter and deleterious material from planting areas at the time of each main visit (no less than monthly).
- PESTICIDES AND HERBICIDES: The Contractor must only use chemicals specifically approved for the purpose for which it is intended and the conditions of approval for the chemicals and any relevant code of practice. The Contractor will consider in every instance whether the use of chemicals is strictly necessary before application. Herbicides used to kill perennial weed growth shall be appropriate foliar applied, non-residual, translocated herbicides applied in accordance with established horticultural and health and safety practices. All tree, shrub and ground cover planting areas are to be kept completely weed free through the use of chemical, mechanical and hand weeding as appropriate to the type of planting, its prominence and species involved. Translocated herbicides should be used in preference to contact products, and where applied in ornamental areas re-visits to remove dead growth will be required.
- IRRIGATION AND GARDEN WATERING: Ensure the continued and adequate watering of all planting areas during the establishment and maintenance periods. Ensure that all planting is watered adequately until planting is established. Maintain irrigation system by regularly flushing thoroughly, checking heads, sprays and drippers and clean if blocked. Clean strainers and adjust for even distribution with no dry areas. Liaise with irrigation contractor.
- PRUNING: Inspect tree canopies regularly for shape, dead and diseased wood. Allow for formative pruning under the direction of the landscape architect to ensure the development of an even crown of good shape. Allow for pruning out dead/diseased wood as necessary. Inspect shrub and groundcover planting areas regularly and prune out dead or diseased growth as and when discovered. Inspect areas of ground cover planting regularly. In areas of compacted soil surface lightly fork soil to improve establishment. Cut back plants significantly overhanging kerbs or paths or any species climbing/touching windows in a manner appropriate for the species and to the approval of the Landscape architect and Superintendent.
- PLANT FAILURES & REPLACEMENTS: Advise Landscape Architect of any failures and allow for the removal from site of any plantings which fail to establish. Replace as soon as possible. Monitor and report any incidents of malicious damage or theft. Planting requiring replacement due to inadequate maintenance practices shall be replaced at the cost of the Contractor.
- PLANTER MULCH: As noted. Inspect mulch depths to all planting areas regularly and allow for tidying and topping up levels to specified depths as required.
- FERTILISING FREQUENCY: LocationProductN:P:KRateGardensTBC As per package.4 No. foliage applic/year/man. recommended.Tree & palm specimensTBCAs per package.4 No. foliage applic/year/man. recommended.Note: All native plantings are to be fertilised with products < 3% phosphorous. Apply liquid plant conditioner into irrigation system bi annually - or as needed.
- LOG BOOK: Keep a log book recording, according to weekly cycles, when and what maintenance work has been done and what materials, including toxic materials, have been used. Make the log book available for inspection on request and include as part of the Maintenance Manual at the completion of the On Maintenance period.
- PRODUCT WARRANTIES: Submit the supplier's written statement certifying that plants are true to the required species and type, and are free from diseases, pests and weeds. Supply also all documentation, shop drawings, warranties and guarantees for items installed and used on site for inclusion in the Maintenance Manual.
- MAINTENANCE MANUAL: The Contractor shall supply a Maintenance Manual for the site covering the maintenance of all hard and soft landscape areas including but not limited to fertilising, pruning, watering, pest and weed control, cleaning and rubbish removal. The Maintenance Log Book is also required to be kept as part of this Manual to ensure that the maintenance activities are being carried out in accordance with the Manual. Included in the Maintenance Manual should be the product warranties and certifications for all elements within the works.

TWLA
TANYA WOOD LANDSCAPE ARCHITECTURE
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EMAIL tanya@twla.com.au
WEB www.twla.com.au
ABN 61 100 972 986

DATE	REVISION	NOTE	RECIPIENT
09.11.2022	A	First draft for client/architect comment	Client,Architects
30.11.2022	B	DA	Client,Architects
14.03.2023	C	Updated architectural dwg	Client,Architects
26.06.2023	D	Updated architectural dwg	Client,Architects
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24.08.2023	G	Updated architectural dwg	Client,Architects
03.11.2023	H	Updated architectural dwg	Client,Architects

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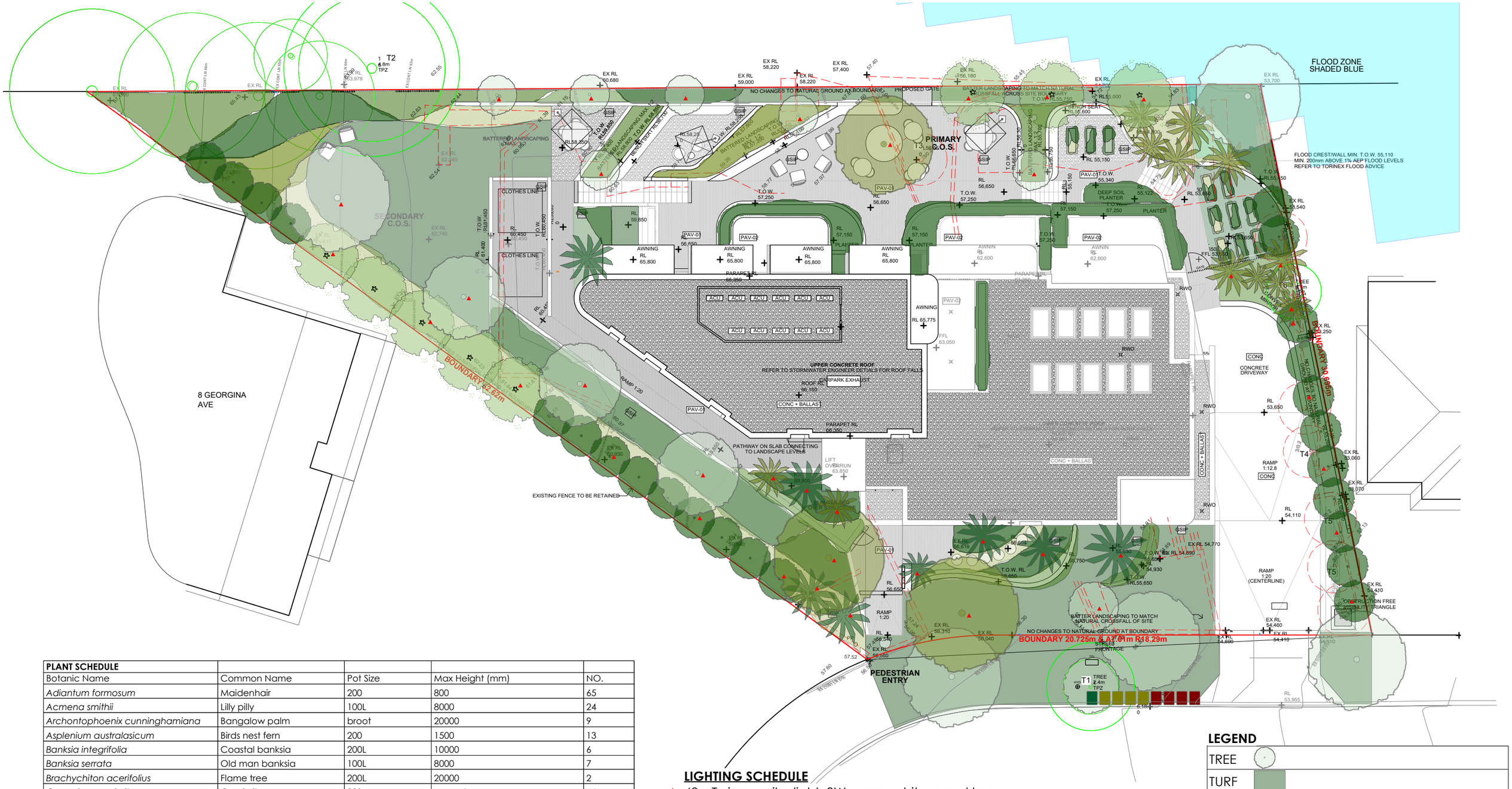
Project:	Dwg no:	Drawn by:	Checked:	Scale:
4-6 Georgina Ave Keiraville	LP01-1922	TW	TW	NTS
Client:	**Title:**	**Issue:**	**Revision:**	**Date:**
Ross	Site Notes	01	H	Nov 2023



PLANT SCHEDULE				
Botanic Name	Common Name	Pot Size	Max Height (mm)	NO.
Adiantum formosum	Maidenhair	200	800	65
Acmena smithii	Lilly pilly	100L	8000	24
Archontophoenix cunninghamiana	Bangalow palm	broot	20000	9
Asplenium australasicum	Birds nest fern	200	1500	13
Banksia integrifolia	Coastal banksia	200L	10000	6
Banksia serrata	Old man banksia	100L	8000	7
Brachychiton acerifolius	Flame tree	200L	20000	2
Casuarina cousin it	Cousin it	200	groundcover	46
Carpobrotus glauscens	Pigs face	200	groundcover	22
Cupaniopsis anarcdiodes tuckeroo	Tuckeroo	200L	8000	3
Cyathea australis	Tree fern	200L	5000	12
Cissus antarctica	Snake vine	140	groundcover	116
Dichondra repens	Kidney weed	200	groundcover	120
Lomandra longifolia	Mat rush	200	800	205
Lomandra nyalla	Nyalla	200	600	50
Poa labillardieri	Tussock grass	200	700	260
Tristaniopsis laurina luscious	Water gum	200L	9000	8
Themeda australis	Kangaroo grass	200	1500	125
Westringea fruiticosa	Native rosemary	300	2000	45

LIGHTING SCHEDULE

▲ 40 x Twiggy spike light, 3W, warm white, aged brass from Nocturnal Lighting, to electrician detail

TREE SCHEDULE

T1	Callistemon Harkness	RETAIN
T2	Angophora floribunda	RETAIN
T3	Magnolia soulangiana	REMOVE
T4	Camellia sasanqua x2	REMOVE
T5	Tibouchina lepidota Alstonville x 3	REMOVE
T6	Cyathea australis	RETAIN
T7	Lagerstroemia indica	REMOVE

LEGEND

- TREE
- TURF
- SHRUB
- PAVING
- STEPPER
- TREE TO BE REMOVED
- TREE TO BE RETAINED
- EXISTING STRUCTURE TO BE REMOVED
- LANDSCAPE LIGHTING
- REDUCED LEVELS RL 56,650

TWLA
TANYA WOOD LANDSCAPE ARCHITECTURE
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ABN 61 100 972 986

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03.11.2023	H	Updated architectural dwg	Client,Architects

Project:	Dwg no:	Drawn by:	Checked:	Scale:
4-6 Georgina Ave Keiraville	LP02-1922	TW	TW	1:200@A3
Client: Ross	Title: Site Plan	Issue: 01	Revision: H	Date: Nov 2023

N

Allow existing species to self mulch

35 Adiantum formosum
5 Asplenium australasicum with 25 Dichondra repens around
20 Lomandra longifolia

1.8m Painted metal palisade fence along rear boundary

Banksia serrata

Banksia serrata with 30 Themeda australis under
Banksia serrata with 20 Lomandra longifolia
Banksia serrata with 40 Poa labillardieri
Banksia serrata with 40 Lomandra nyalla
Cupaniopsis anarcdiodes tuckeroo
3 Tristaniopsis laurina luscious along boundary with 65 Lomandra longifolia under
Banksia serrata with 30 Themeda australis under
Communal vegetable garden.Nepean river pebble 20mm

13 Acmena smithii along boundary

Brachychiton acerifolius

Archontophoenix cunninghamiana, 3 Alocasia macrorrhiza, 10 Cissus antarctica to spillover

45 Westringea fruiticosa, 40 Carpobrotus glauscens and 45 Casuarina cousin it to spillover. Species even distributed across planter beds 1-4

5 Tristaniopsis laurina luscious with 100 Lomandra longifolia in front

10 Lomandra nyalla with 8 Carpobrotus glauscens

3 Banksia integrifolia with 220 Poa labillardieri under

Cupaniopsis anarcdiodes tuckeroo with 20 Cissus antarctica under

FLOOD ZONE SHADED BLUE

Brachychiton acerifolius

Grove of 5 Cyathea australis with 65 Themeda australis and 25 Cissus antarctica

FLOOD CREST/WALL MIN. T.O.W. 55.110
MIN. 200mm ABOVE 1% AEP FLOOD LEVELS
REFER TO TORINEX FLOOD ADVICE

Communal vegetable garden. 65 Dichondra repens around vegetable plots

2 Acmena smithii

Grove of 5 Cyathea australis to marry in with existing with 20 Cissus antarctica under

9 Acmena smithii

3 Banksia integrifolia in lawn on council land

Archontophoenix cunninghamiana, 6 Cissus antarctica to spillover

Banksia serrata

3 Archontophoenix cunninghamiana, 30 Adiantum aethiopicum with 20 Cissus antarctica to spillover. Steppers with 30 Dichondra repens

Cupaniopsis anarcdiodes tuckeroo

Grove of 4 Archontophoenix cunninghamiana, 2 Cyathea australis with 8 Asplenium australasicum, 15 Cissus antarctica to spillover

TWLA
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ABN 61 100 972 986

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Project:	Dwg no:	Drawn by:	Checked:	Scale:
4-6 Georgina Ave Keiraville	LP03-1922	TW	TW	1:200@A3
Client: Ross	Title: Landscape Plan	Issue: 01	Revision: H	Date: Nov 2023

N

PROJECT	**4-6 GEORGINA AVE, KEIRAVILLE NSW 2500**
PROJECT NO.	**2000259**
DISCIPLINE	**STORMWATER SERVICES**
CLIENT	**BUREAU SRH PTY LIMITED**

TORINEX
CONSULTING ENGINEERS

DRAWING LIST

DRAWING NUMBER		TITLE	CURRENT REVISION	DATE	STATUS	PREVIOUS REVISIONS												
						31-Oct-22	*25-Nov-22*	*29-Jun-23*										
STW000		COVER SHEET	**3**	28-Jun-23	ISSUED FOR APPROVAL	*1*	*2*											
STW100		CATCHMENT PLAN	**2**	28-Jun-23	ISSUED FOR APPROVAL		*1*											
STW101		BASEMENT	**4**	29-Jun-23	ISSUED FOR APPROVAL	*1*	*2*	*3*										
STW102		GROUND FLOOR	**4**	29-Jun-23	ISSUED FOR APPROVAL	*1*	*2*	*3*										
STW103		FIRST FLOOR	**4**	29-Jun-23	ISSUED FOR APPROVAL	*1*	*2*	*3*										
STW104		SECOND FLOOR	**4**	29-Jun-23	ISSUED FOR APPROVAL	*1*	*2*	*3*										
STW105		ROOF	**4**	29-Jun-23	ISSUED FOR APPROVAL	*1*	*2*	*3*										
STW201		ESC PLAN	**3**	28-Jun-23	ISSUED FOR APPROVAL	*1*	*2*											
STW202		ESC DETAILS	**3**	28-Jun-23	ISSUED FOR APPROVAL	*1*	*2*											
STW301		TYPICAL DETAILS	**3**	28-Jun-23	ISSUED FOR APPROVAL	*1*	*2*											
STW302		OSD DETAILS	**4**	29-Jun-23	ISSUED FOR APPROVAL	*1*	*2*	*3*										

PROPOSED DEVELOPMENT

4-6 GEORGINA AVE, KEIRAVILLE NSW 2500

STORMWATER SERVICES

DRAWING SCHEDULE

STW000	COVER SHEET
STW100	CATCHMENT PLAN
STW101	BASEMENT
STW102	GROUND FLOOR
STW103	FIRST FLOOR
STW104	SECOND FLOOR
STW105	ROOF
STW201	ESC PLAN
STW202	ESC DETAILS
STW301	TYPICAL DETAILS
STW302	OSD DETAILS

LEGEND

CO	CLEAR OUT
GSIP	GRATED SURFACE INLET PIT
DIA	DIAMETER
DP	DOWNPIPE
FFL	FINISHED FLOOR LEVEL
HL	HIGH LEVEL
SP	SURFACE/STORMWATER PIT
IC	INSPECTION CHAMBER
IL	INVERT LEVEL
IOS	INSPECTION OPENING TO SURFACE
MH	MANHOLE
RHS	RECTANGULAR HOLLOW SECTION
RL	RELATIVE LEVEL
RWO	RAINWATER OUTLET
FDO	FLOOR DRAIN OUTLET
RW	RAIN WATER
GL	GROUND LEVEL
STW	STORMWATER

SBF SBF — BARRIER FENCE

SSD SSD — SUBSOIL DRAIN

RM RM — RISING MAIN

SWD SWD — STORMWATER DRAINAGE

RWT RWT — RAINWATER TANK LINE

\> \> — GRAVITY LINE - LEFT TO RIGHT

< < — GRAVITY LINE - RIGHT TO LEFT

DP 100 — DOWN PIPE TAG (DIA & FLOW)
WATER FLOW DIRECTION

GRATED INLET PIT
450 mm SQ. CLASS 'D' GALV. GRATE

RWO — RAINWATER OUTLET

RWO — RAINWATER OUTLET

GENERAL NOTES

1. ALL WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION.
   THE CONSTRUCTOR SHALL PREPARE A DILAPIDATION REPORT FOR THE EXISTING INFRASTRUCTURE WITHIN THE ROAD RESERVE, INCLUDING BUT NOT LIMITED TO KERBS, GUTTERS, FOOTPATHS, VEHICULAR CROSSINGS, STREET SIGNS, SERVICE FITTING COVERS, ETC.
2. THE CONSTRUCTOR SHALL REVIEW, BE AWARE AND AT ALL TIMES COMPLY WITH THE SPECIFIC REQUIREMENTS FOR THIS DEVELOPMENT AS SET OUT IN THE DEVELOPMENT APPROVAL FOR THE PROJECT.
3. ANY CHANGES MADE BY THE CONSTRUCTOR TO ANY LEVEL, DIMENSION, LOCATION, POSITION, ALIGNMENT ETC, OF ANY OF THE WORKS SHOWN ON THE DRAWINGS WITHOUT THE WRITTEN CONSENT IF TORINEX CONSULTING ENGINEERS AND OR THE PRINCIPAL CERTIFYING AUTHORITY IS DONE SO AT THE CONSTRUCTORS OWN RISK.
4. THE CONSTRUCTOR SHALL ALLOW TO LIAISE WITH AND PROVIDE SUFFICIENT NOTICE TO THE PRINCIPAL CERTIFYING AUTHORITY TO ENSURE THAT ALL WORKS ARE INSPECTED TO ENABLE COMPLIANCE CERTIFICATES TO BE ISSUED THROUGHOUT THE CONSTRUCTION PERIOD. THE CONSTRUCTOR SHALL LIAISE WITH THE PRINCIPAL CERTIFYING AUTHORITY PRIOR TO ANY CONSTRUCTION WORKS COMMENCING AND PREPARE AN INSPECTION AND TEST PLAN WITH A MUTUALLY AGREED WITNESS AND HOLD POINTS FOR THE CONSTRUCTION WORKS.
5. IF THE PRINCIPAL CERTIFYING AUTHORITY IS NOT **CITY OF WOLLONGONG** COUNCIL. THEN THE CONSTRUCTOR MUST CONTACT COUNCIL'S WORKS DIVISION TO ENABLE THEIR INSPECTION OF ALL WORKS (INCLUDING EROSION AND SEDIMENT CONTROL MEASURES) WITHIN THE ROAD RESERVE AREA.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL ACCESS TO THE SITE. THE ACCESS SHALL BE ALL WEATHER SAFE ACCESS TO THE CONTRACTOR'S SITE FACILITIES AT ALL TIMES FOR THE DURATION OF THE CONTRACT.
7. A TEMPORARY HOARDING OR FENCE OF MINIMUM 1.5m HIGH IS TO BE PROVIDED AROUND THE SITE TO PROTECT THE PUBLIC PRIOR TO COMMENCEMENT OF WORKS. HOARDING OR FENCES ARE TO BE STRUCTURALLY ADEQUATE. THE CONTRACTOR SHALL OBTAIN AN APPROVAL FROM COUNCIL PRIOR TO ERECTING THE HOARDING OR FENCE.
8. ALL NEW WORKS SHALL MAKE A SMOOTH CONNECTION WITH ANY FORMATIONS, STRUCTURES, ETC.
9. ALL ALTERATIONS AND/OR ADDITIONS TO EXISTING WORK, THE CONTRACTOR SHALL VERIFY THE DIMENSIONS OF THE EXISTING WORK BEFORE PROCEEDING AND NOTIFY THE SUPERINTENDENT OF DISCREPANCIES.
10. THE CONTRACTOR SHALL USE MANUFACTURED ITEMS IN THE WORK ONLY IN ACCORDANCE WITH THE CURRENT PUBLISHED.
11. THE WORKS SHALL BE CONSTRUCTED IN SUCH A MANNER THAT THERE IS MINIMUM DISTURBANCE TO EXISTING TREES AND VEGETATION.
12. THE PUBLIC FOOTWAY AND ROADWAY FRONTING THE SITE SHALL BE MAINTAINED IN A SAFE AND UNOBSTRUCTED MANNER AT ALL TIMES DURING THE CONSTRUCTION WORKS.
13. THE CONSTRUCTOR SHALL BE RESPONSIBLE FOR REPAIRING TO THE SATISFACTION OF THE ASSET OWNER, ANY DAMAGE CAUSED TO ANY EXISTING INFRASTRUCTURE WITHIN THE ROAD RESERVE, INCLUDING BUT NOT LIMITED TO KERBS, GUTTERS, FOOTPATHS, VEHICULAR CROSSINGS, STREET SIGNS, SERVICE FITTING COVERS, ETC.
14. THE SITE SHALL BE KEPT IN A TIDY CONDITION AT ALL TIMES. LITTER RUBBISH AND BUILDING RUBBLE SHALL BE PLACED IN CONTAINERS OR BINS AND REGULARLY REMOVED FROM SITE AS REQUIRED.

BRICKWORK NOTES

1. ALL WORKMANSHIP AND MATERIALS IN ACCORDANCE WITH AS 3700 AND AS 2733.
2. BLOCKS SHALL BE BORAL SPLIT FACE CHARCOAL WITH MATCHING CAPPING.
3. MORTAR SHALL BE FRESHLY PREPARED, UNIFORMLY MIXED IN THE FOLLOWING RATION: 1:1/10:3 CEMENT, LIME SAND, IN ACCORDANCE WITH ASA 123 AND AS 3700 CLAUSE 2.2.2.
4. BOTTOM COURSE OF BLOCKS TO HAVE INSPECTION OPENINGS TO ALL CORES TO BE GROUTED. THOROUGHLY CLEAN ALL CORES PRIOR TO REINFORCEMENT PLACING.
5. STOP POUR 50 BELOW TOP OF BLOCK. MINIMUM GROUT STRENGTH 20 MPa. SLUMP - 230 mm MAX AGGREGATE SIZE = 10 mm.
6. PROVIDE VERTICAL CONTROL JOINTS IN WALLS AT 8 m MAX. CENTRES. U.N.O
7. TIE ALL VERTICAL REINFORCEMENT TO STARTER BARS AND TOP HORIZONTAL REINFORCEMENT.
8. MAXIMUM POUR HEIGHT TO BE 2400 mm.
9. OPEN ENDED DOUBLE U - BLOCKS TO BE USED FOR ALL REINFORCED BLOCKWORK.

CONCRETE NOTES

1. ALL WORKMANSHIP, MATERIALS AND TESTING FOR CONCRETE WORKS SHALL COMPLY WITH THE REQUIREMENTS OF AS 3600.
2. ALL WORKMANSHIP AND MATERIALS FOR FORMWORK SHALL COMPLY WITH THE REQUIREMENTS OF AS3610.
3. THE CONSTRUCTOR SHALL ENSURE THAT ALL REINFORCEMENT IS SECURELY TIED AND SUPPORTED IN IT'S CORRECT POSITION AND WITHIN ACCEPT TABLE TOLERANCES SO AS NOT TO BE DISPLACED DURING CONCRETE POURING.
4. PROVIDE CONCRETE WITH A MAXIMUM SLUMP OF 80, TYPE SL CEMENT, MAXIMUM AGGREGATE SIZE 20, APPROVED ADMIXTURES AND STRENGTH GRADE AS FOLLOWS:

ELEMENT	EXPOSURE CLASSIFICATION	STRENGTH (MPa)
PAVEMENT	A2	32
KERB (ALL TYPES)	A2	25
FOOTPATH	A2	25
RETAINING WALL FOOTING	A1/B1	20

PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS3600.

5. PROVIDE LAPS ONLY AT LOCATIONS SHOWN AND OF DIMENSIONS AS FOLLOWS UNLESS DETAILED OTHERWISE OR APPROVED IN WRITING BY THE ENGINEER.

BAR SIZE	LAP
N12	500
N16	750
N20	1000

6. OVERLAP FIRST AND SECOND CROSS WIRES OF EACH STREET OF FABRIC BY 25 AT LAPS.
7. DO NOT WELD REINFORCEMENT UNLESS SHOWN OR APPROVED BY THE ENGINEER.
8. TIE ALL UNSUPPORTED BARS TO N12.350.B OR N12.450.T CROSSRODS, LAPPED 450 WHERE REQUIRED.
9. PROP, CURE AND STRIP IN ACCORDANCE WITH AS3600, AS3610 AND THE SPECIFICATION.
10. CONCRETE SAWN JOINTS MUST BE DONE WITH 8 HOURS OF CONCRETE POUR.
11. JOINT SEALANT MUST BE SILICONE SEALANT FOR CASTING IN -SITU AS SPECIFIED ON DRAWINGS.

SETTING OUT NOTES

1. THE CONSTRUCTOR SHALL USE A SUITABLY QUALIFIED SURVEYOR TO SET OUT ALL WORKS. THE SURVEYOR SHALL ISSUE A CERTIFICATE TO THE PRINCIPAL CERTIFYING AUTHORITY CERTIFYING THAT THE WORKS HAVE BEEN SET OUT IN ACCORDANCE WITH THE APPROVED DRAWINGS PRIOR TO THE WORKS BEING CONSTRUCTED.
2. THE SURVEY WIRJ ASSOCIATED WITH THE CONTRACT SHALL INCLUDE SETTING OUT THE FOLLOWING COMPONENTS OF THE WORK:
   - DRAINAGE STRUCTURES

SAFETY IN DESIGN

- THERE ARE INHERENT RISKS WITH CONSTRUCTING, MAINTAINING, OPERATING, DEMOLISHING, DISMANTLING AND DISPOSING THE DESIGN THAT ARE TYPICAL OF SIMILAR DESIGNS. AS FAR AS IS REASONABLY PRACTICAL RISKS HAVE BEEN ELIMINATED OR MINIMIZED THROUGH THE DESIGN PROCESS. HAZARD CONTROLS MUST STILL BE IMPLEMENTED BY THE CONTRACTOR, OWNER OR OPERATOR TO ENSURE THE SAFETY OF WORKERS.

ENVIRONMENTAL CONTROL NOTES

EROSION AND SEDIMENT CONTROL

1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONTROL OF EROSION AND SEDIMENTATION TO THE SATISFACTION OF COUNCIL, THE RELEVANT STATE AUTHORITIES AND THE SUPERINTENDENT. TO THIS END, THE EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE DRAWINGS SHALL ONLY BE USED AS A GUIDE BY THE CONTRACTOR AND SHALL REPRESENT THE MINIMUM REQUIREMENT ONLY.
2. NO CONSTRUCTION WORKS ARE TO COMMENCE ON SITE UNTIL ALL EROSION AND SEDIMENT CONTROL MEASURES ARE IN PLACE AND HAVE BEEN INSPECTED AND APPROVED BY THE COUNCIL ENGINEER AND/OR SUPERINTENDENT.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REGULARLY INSPECTED, IN PARTICULAR AFTER STORMS, AND REPAIRED OR MAINTAINED AS REQUIRED TO ENSURE THE MEASURES CORRECT AND EFFICIENT FUNCTION THROUGHOUT THE DURATION OF THE WORKS UNTIL SUCH TIME AS THE COUNCIL ENGINEER AND/ OR SUPERINTENDENT AUTHORIZES THE REMOVAL OF SUCH MEASURES.
4. ALL STOCKPILES SHALL BE CLEAR OF ALL TREES AND DRAINAGE LINES (INCLUDING OVERLAND FLOW PATHS) AND PROTECTED FROM EROSION.
5. AND THE CASE OF THE TEMPORARY CONSTRUCTION EXIT, THE CONTRACTOR SHALL UNDERTAKE WEEKLY SURFACE CLEANING BY DRAG BROOM OR EQUIVALENT, TO REMOVE ALL BUILD UP OF FOREIGN MATERIAL TO THE SATISFACTION OF THE SUPERINTENDENT.

TRAFFIC CONTROLS

1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONTROL OF TRAFFICS INCLUDING VEHICLES AND PEDESTRIANS TO THE SATISFACTION OF COUNCIL, THE RELEVANT STATE AUTHORITIES AND THE SUPERINTENDENT.
2. THE CONTRACTOR IS TO PREPARE A TRAFFIC MANAGEMENT PLAN TO THE REQUIREMENTS OF THE RMS - TRAFFIC CONTROL AT WORK SITE, AS1742 - AUSTRALIAN STANDARD MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND LOCAL COUNCIL STANDARDS.

OTHER ENVIRONMENTAL CONTROLS

1. OTHER ENVIRONMENTAL CONTROLS LIKE NOISE, DUST, VIBRATION, FLORA & FAUNA, FIRE , HAZMAT, AND CONTAMINATIONS MUST BE CONTROLLED TO THE REQUIREMENT OF THE COUNCIL AND THE RELEVANT STATE AUTHORITIES.

STORMWATER NOTES

1. STORMWATER DESIGN CRITERIA:
   MINOR STORM ARI: 20 YEARS
   MAJOR STORM ARI: 100 YEARS
2. IFD DATE LOCALITY: **KEIRAVILLE/CITY OF WOLLONGONG**
3. PIPES DN375 AND LARGER TO BE STEEL REINFORCED CONCRETE PIPES CLASS '2' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS U.N.O.
4. PIPES DN300 AND SMALLER SHALL BE GRADE SH (SEWER GRADE) uPVC WITH RUBBER RING JOINTS.
5. EQUIVALENT STRENGTH FIBRE REINFORCED CONCRETE PIPES MAY BE USED UP TO DN450.
6. PIPES FOR SUB-SOIL DRAINS SHALL BE SLOTTED 100MM DIAMETER CLASS 1000 WRAPPED IN GEOFABRIC, U.O.N, COMPLYING WITH THE REQUIREMENT OF AS 2439.
7. PRECAST PITS, WHERE ALLOWED, AND THE IN-SITU BASE SHALL COMPLY WITH THE REQUIREMENT OF THE MANUFACTURER.
8. ALL PITS/TANKS DEEPER THAN 1200mm TO HAVE STEP IRONS.
9. ALL PITS SHOULD HAVE COVERS/LIDS/GRATES APPROPRIATE TO VEHICLE LOADING.
10. ALL BALCONIES/ROOF AREAS TO HAVE 150X50 OVERFLOW COUNTS, UNLESS NOTIFIED BY THE ARCHITECT.
11. BALCONY OVERFLOW COUNTS TO BE AT LEAST 2.4m APART.
12. GRATES 600X600 OR GREATER TO BE LOCKABLE AND HINGED.
13. PITS TO HAVE APPROPRIATE BENCHING OR AS PER COUNCIL REQUIREMENTS.
14. ALL MILD STEEL FIXTURES INCLUDING GRATES, FRAMES, STEP IRONS, LADDERS, ETC., SHALL BE HOT DIP GALVANISED. GALVANIZING SHALL COMPLY WITH THE REQUIREMENTS OF AS 1214 OR AS 1650, AS APPROPRIATE.
15. GEOFABRIC FILTER SHALL BE PERMEABLE, NON -WOVEN FABRIC MANUFACTURED FROM A POLYMER SUCH AS POLYPROPYLENE OR POLYESTER OF MASS NOT LESS THAN 135 g/m^2.
16. THE MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:
    CONCRETE AND FRC PIPES: EXTERNAL PIPE DIAMETER PLUS 400 mm.
    uPVC PIPE: EXTERNAL DIAMETER OF PIPE PLUS 200 mm.
    SUBSOIL PIPE: 250 mm.
17. ALL PIPES SHALL BE PLACED CENTRALLY WITHIN THE TRENCH WITH EQUAL CLEARANCE EACH SIDE.
18. 100 mm DIA. SUBSOIL DRAINAGE PIPE 3M LONG WRAPPED IN FILTER SOCK TO BE PROVIDED IN PIPE TRENCHES UPSTREAM OF ALL PITS.
19. PIPE BEDDING MATERIAL SHALL BE CLEAN COARSE RIVER SAND WITH DEPTH AS FOLLOWS:
    CONCRETE AND FRC PIPES: 100 mm (175 mm IN ROCK)
    uPVC PIPE: 75 mm (100 mm IN ROCK)
    SUBSOIL DRAINS: 50 mm
20. ALL PIPES SHALL BE BACKFILLED WITH GRANULAR MATERIAL SUCH AS QUARRY FINES OR COARSE RIVER SAND TO A MINIMUM OF 150 mm ABOVE THE PIPE. THE GRANULAR MATERIAL SHALL BE PLACED IN 150 mm THICK MAXIMUM LAYERS AND COMPACTED TO ACHIEVE A DENSITY INDEX (ID) OF 70%. FREQUENCIES OF COMPACTION TESTS FOR TRENCHES SHALL BE 1 TEST PER 2 LAYERS PER 40 LINEAR METRE.
21. BACKFILL THE REMAINDER OF THE TRENCH ABOVE THE SAND TO SUBGRADE LEVEL WITH TRENCH MATERIAL. PLACE AND COMPACT MATERIALS IN LAYERS NOT EXCEEDING 150MM LOOSE THICKNESS. MATERIALS LOWER THAN 500MM BELOW SUBGRADE LEVEL SHALL BE COMPACTED TO AT LEAST 95% OF STANDARD MAXIMUM DRY DENSITY. THE TOP 500MM BELOW PAVEMENT SUBGRADE LEVELS SHALL BE COMPACTED TO AT LEAST 100% STANDARD MAXIMUM DRY DENSITY.
22. FILTER MATERIAL FOR SUBSOIL SHALL BE COARSE SAND OR CRUSHED STONE COMPLYING WITH ONE OF THE GRADING IN THE TABLE BELOW. WHERE NOTED ON THE DRAWINGS THE 7mm CRUSHED ROCK FILTER MATERIAL SHALL BE ENCLOSED WITHIN FILTER FABRIC SHEET AS SPECIFIED. FILTER MATERIAL SHALL BE PLACED IN 250mm LAYERS AND COMPACTED TO DENSITY INDEX (ID) OF 60%.
23. UNLESS OTHERWISE DETAILED OR PERMITTED, THE MINIMUM GRADE OF ALL PIPE WORKS SHALL BE 1.0%.

AS SIEVE SIZE (mm)	SAND	7mm ROCK
9.5	100	100
6.7		75-100
4.75	90-100	20-55
2.36	75-100	0-15
1.18	50-90	
0.6	20-60	
0.3	10-30	
0.15	2-10	
0.075	0-3	0-2

THIS IS A STANDARD LEGEND.
ALL SYMBOLS MAY NOT NECESSARILY BE USED IN THESE DRAWINGS

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ARCHITECT: BUREAU SRH PTY LTD

REV	DATE	REVISION DETAILS	LAST EDITED
1	31.10.22	PRELIMINARY	MS
2	25.11.22	PRELIMINARY	MS
3	28.06.23	ISSUED FOR APPROVAL	MS

SCALE: NTS
SIZE: A1
DRAWN: FS
DESIGNED: MS
VERIFIED: JF

FOR APPROVAL

NORTH POINT

PROJECT: PROPOSED DEVELOPMENT AT 4-6 GEORGINA AVE, KEIRAVILLE NSW 2500

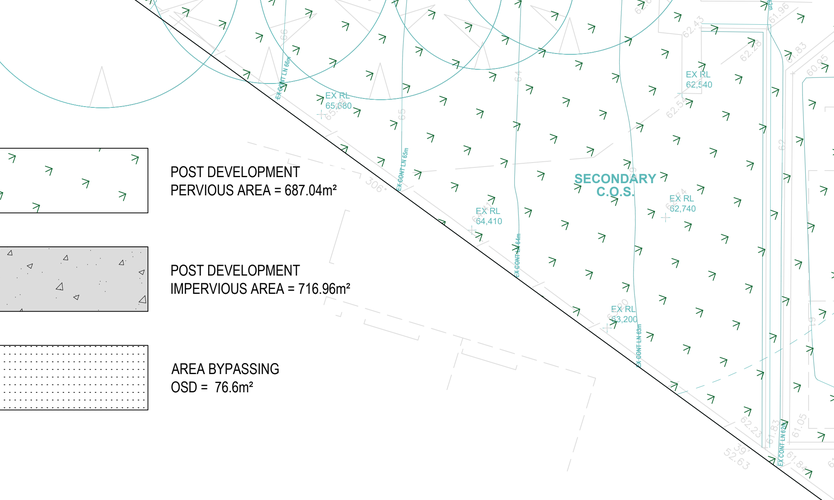
DRG. TITLE: STORMWATER SERVICES COVER SHEET

DRAWING No. PROJECT No. 2000259 – DISC. STW – NUMBER 000 – REV 3

POST DEVELOPMENT
PERVIOUS AREA = 687.04m²

POST DEVELOPMENT
IMPERVIOUS AREA = 716.96m²

AREA BYPASSING
OSD = 76.6m²



TRIBUTARY AREA PLAN

SECONDARY C.O.S.

GEORGINA AVENUE

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SCALE	SIZE
NTS	A1

DRAWN: FS
DESIGNED: MS
VERIFIED: JF

FOR APPROVAL

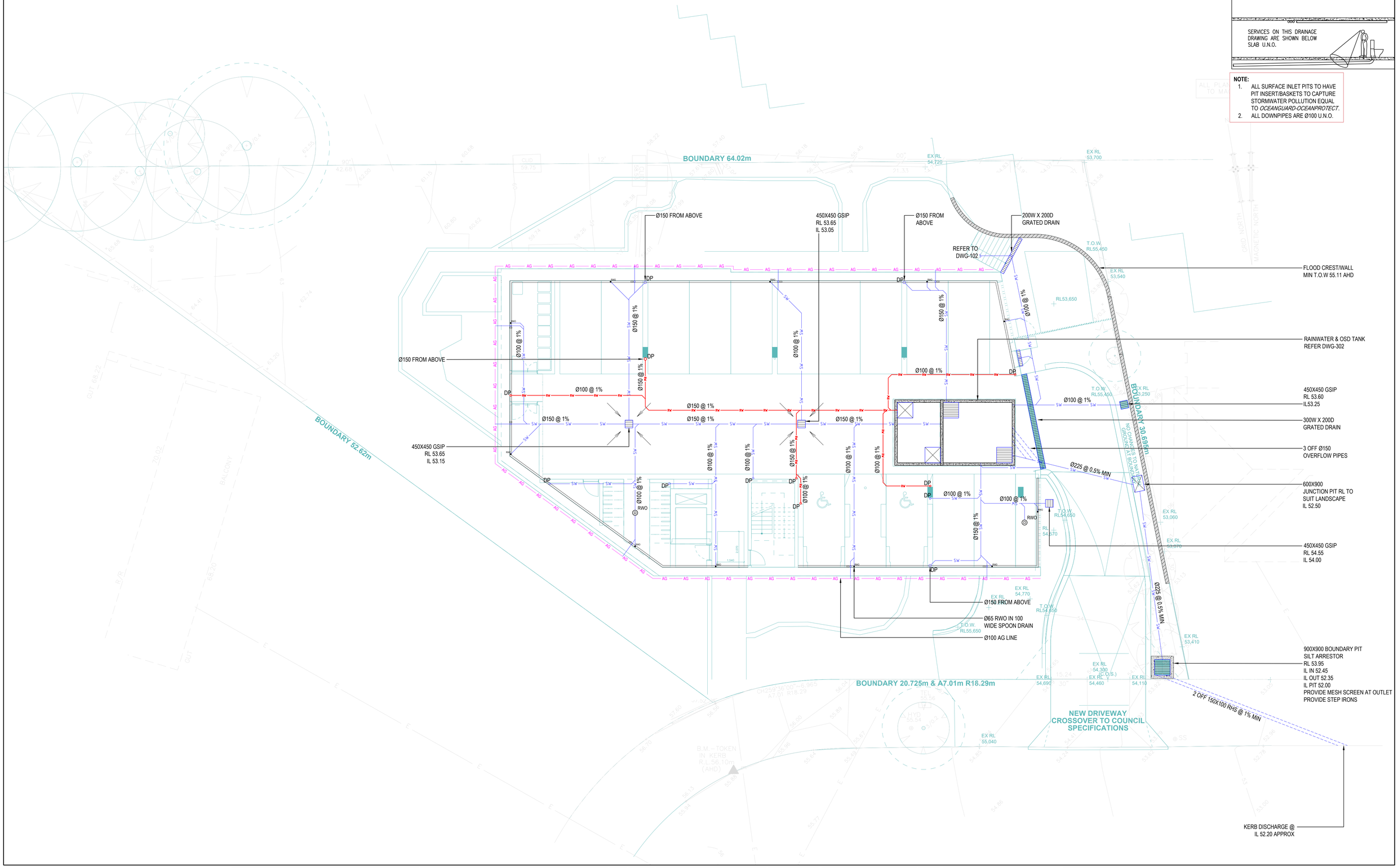
NORTH POINT

PROJECT	PROPOSED DEVELOPMENT AT 4-6 GEORGINA AVE, KEIRAVILLE NSW 2500
DRG. TITLE	STORMWATER SERVICES BASEMENT STORMWATER MANAGEMENT PLAN

DRAWING No.	PROJECT No.	DISC.	NUMBER	REV
	2000259	STW	101	2

SERVICES ON THIS DRAINAGE DRAWING ARE SHOWN BELOW SLAB U.N.O.

NOTE:
1. ALL SURFACE INLET PITS TO HAVE PIT INSERT/BASKETS TO CAPTURE STORMWATER POLLUTION EQUAL TO *OCEANGUARD-OCEANPROTECT*.
2. ALL DOWNPIPES ARE Ø100 U.N.O.



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SCALE	SIZE
1:100	A1

DRAWN: FS
DESIGNED: MS
VERIFIED: JF

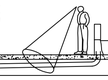
FOR APPROVAL

NORTH POINT

PROJECT	PROPOSED DEVELOPMENT AT 4-6 GEORGINA AVE, KEIRAVILLE NSW 2500
DRG. TITLE	STORMWATER SERVICES BASEMENT STORMWATER MANAGEMENT PLAN

DRAWING No.	PROJECT No.	DISC.	NUMBER	REV
	2000259	STW	101	4

SERVICES ON THIS DRAINAGE DRAWING ARE SHOWN BELOW SLAB U.N.O.

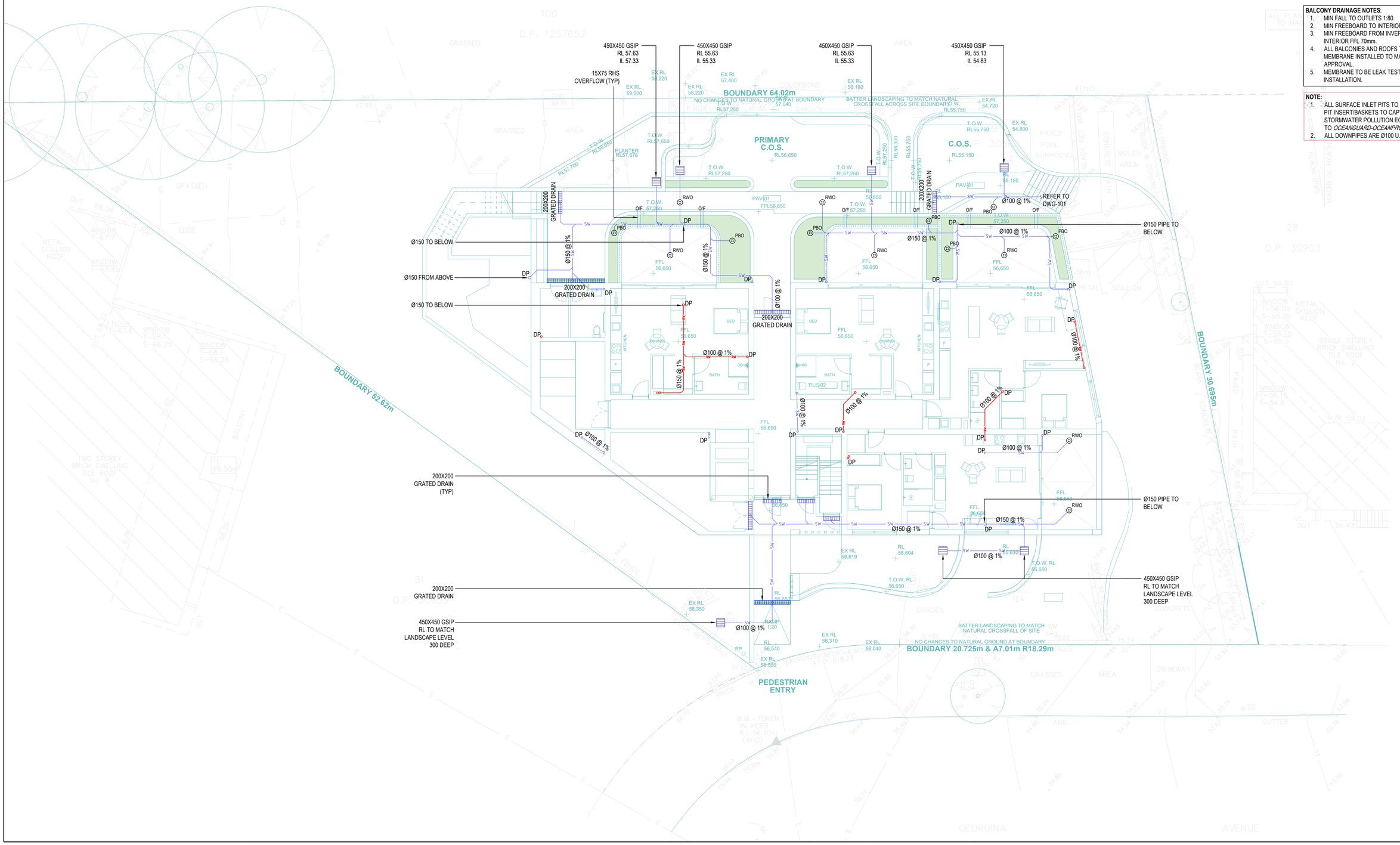


BALCONY DRAINAGE NOTES:

1. MIN FALL TO OUTLETS 1:80.
2. MIN FREEBOARD TO INTERIOR FFL 70mm.
3. MIN FREEBOARD FROM INVERT OF OVERFLOW TO INTERIOR FFL 70mm.
4. ALL BALCONIES AND ROOFS TO HAVE WATERPROOF MEMBRANE INSTALLED TO MANUFACTURER'S APPROVAL.
5. MEMBRANE TO BE LEAK TESTED IN-SITU AFTER INSTALLATION.

NOTE:

1. ALL SURFACE INLET PITS TO HAVE PIT INSERT/BASKETS TO CAPTURE STORMWATER POLLUTION EQUAL TO *OCEANGUARD-OCEANPROTECT*.
2. ALL DOWNPIPES ARE Ø100 U.N.O.



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4	29.06.23	ISSUED FOR APPROVAL	MS

SCALE	SIZE
1:100	A1

DRAWN
FS

DESIGNED
MS

VERIFIED
JF

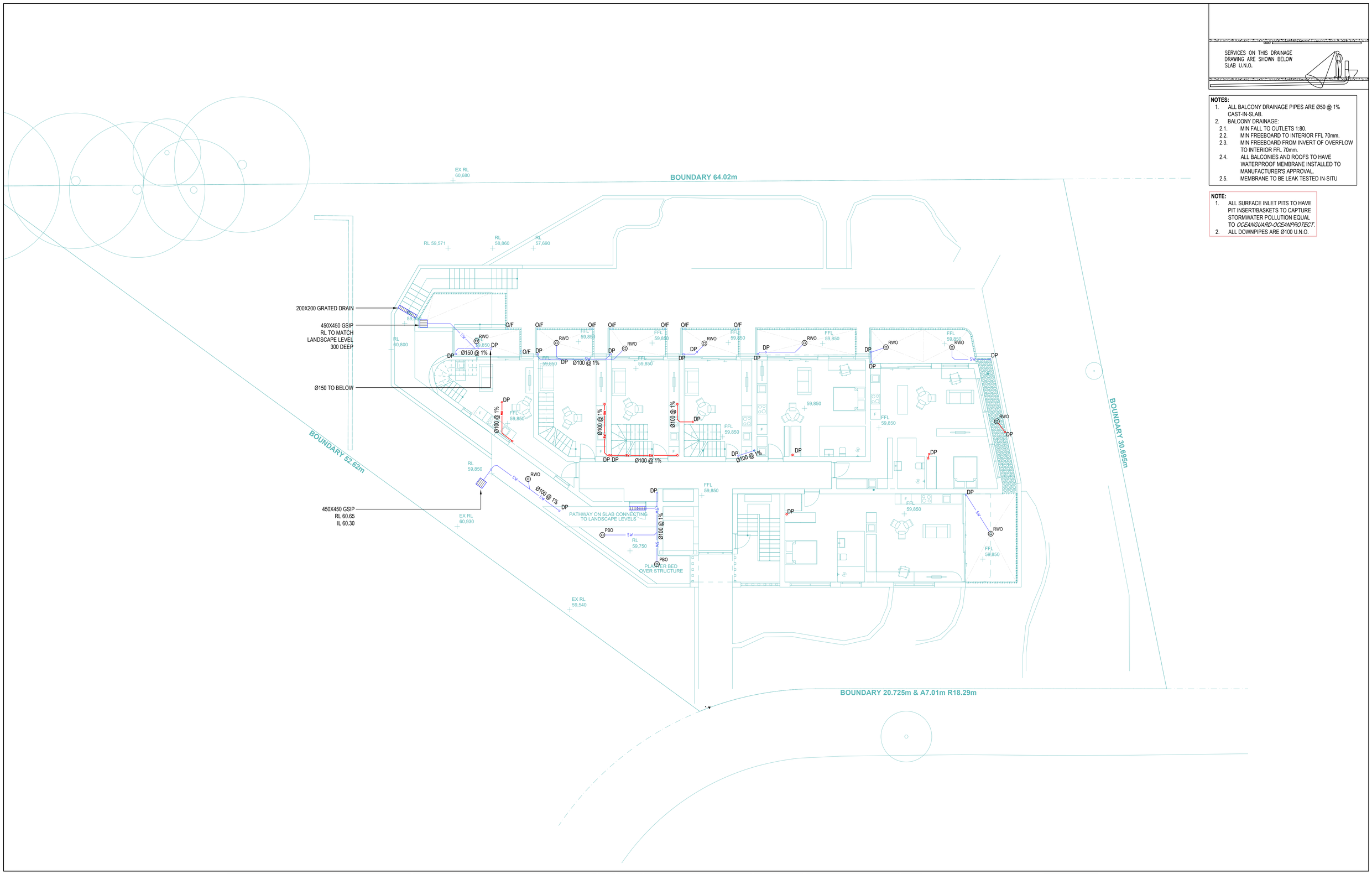
FOR APPROVAL

NORTH POINT

N

PROJECT	PROPOSED DEVELOPMENT AT 4-6 GEORGINA AVE, KEIRAVILLE NSW 2500
DRG. TITLE	STORMWATER SERVICES GROUND FLOOR STORMWATER MANAGEMENT PLAN

DRAWING No.	PROJECT No.	DISC.	NUMBER	REV
	2000259	STW	102	4



SERVICES ON THIS DRAINAGE DRAWING ARE SHOWN BELOW SLAB U.N.O.

NOTES:

1. ALL BALCONY DRAINAGE PIPES ARE Ø50 @ 1% CAST-IN-SLAB.
2. BALCONY DRAINAGE:
   - 2.1. MIN FALL TO OUTLETS 1:80.
   - 2.2. MIN FREEBOARD TO INTERIOR FFL 70mm.
   - 2.3. MIN FREEBOARD FROM INVERT OF OVERFLOW TO INTERIOR FFL 70mm.
   - 2.4. ALL BALCONIES AND ROOFS TO HAVE WATERPROOF MEMBRANE INSTALLED TO MANUFACTURER'S APPROVAL.
   - 2.5. MEMBRANE TO BE LEAK TESTED IN-SITU

NOTE:

1. ALL SURFACE INLET PITS TO HAVE PIT INSERT/BASKETS TO CAPTURE STORMWATER POLLUTION EQUAL TO *OCEANGUARD-OCEANPROTECT*.
2. ALL DOWNPIPES ARE Ø100 U.N.O.

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4	29.06.23	ISSUED FOR APPROVAL	MS

SCALE	SIZE
1:100	A1

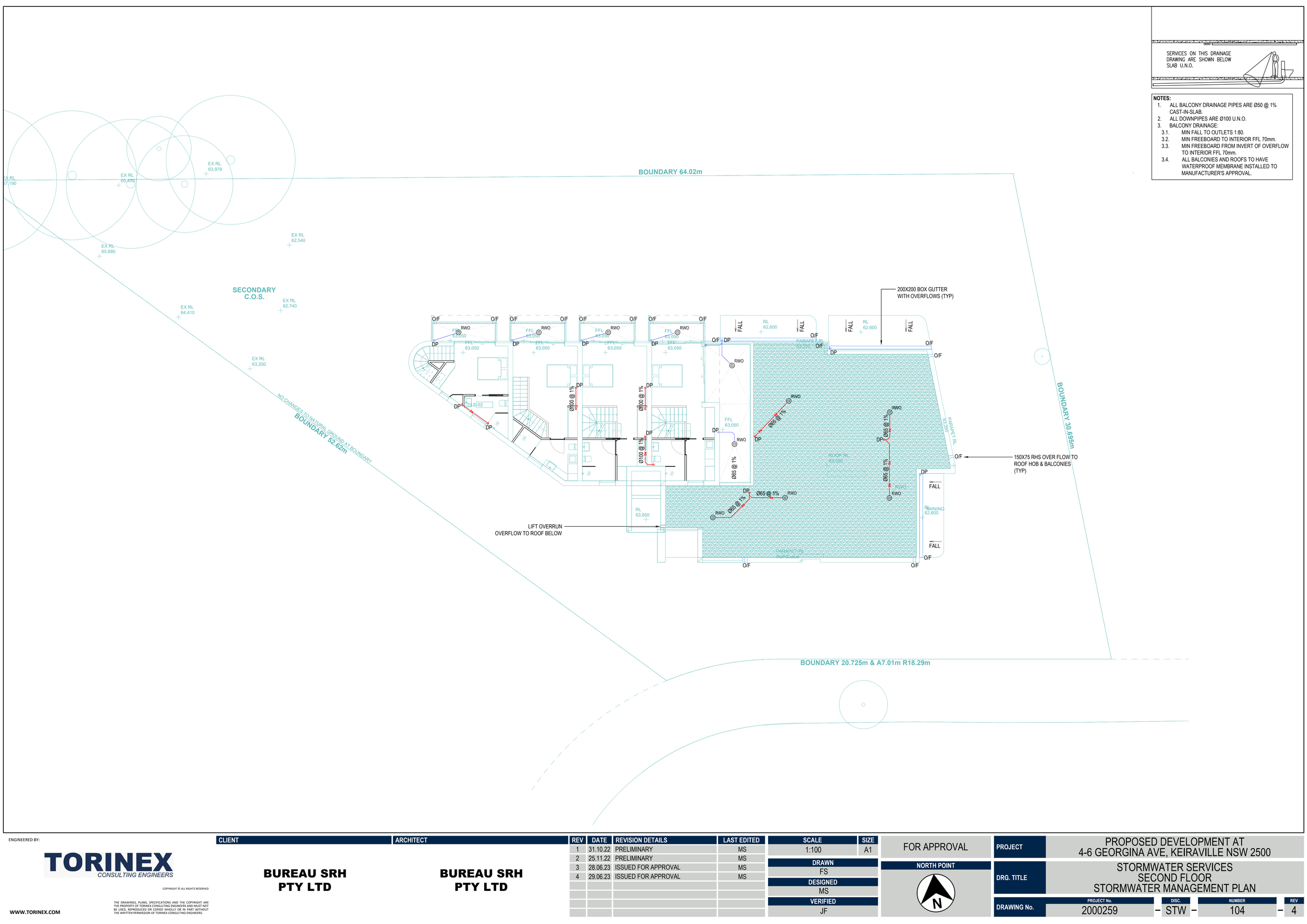
DRAWN: FS
DESIGNED: MS
VERIFIED: JF

FOR APPROVAL

NORTH POINT

PROJECT	PROPOSED DEVELOPMENT AT 4-6 GEORGINA AVE, KEIRAVILLE NSW 2500
DRG. TITLE	STORMWATER SERVICES FIRST FLOOR STORMWATER MANAGEMENT PLAN

DRAWING No.	PROJECT No.	DISC.	NUMBER	REV
	2000259	STW	103	4



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NOTES:

1. ALL BALCONY DRAINAGE PIPES ARE Ø50 @ 1% CAST-IN-SLAB.
2. ALL DOWNPIPES ARE Ø100 U.N.O.
3. BALCONY DRAINAGE:
   - 3.1. MIN FALL TO OUTLETS 1:80.
   - 3.2. MIN FREEBOARD TO INTERIOR FFL 70mm.
   - 3.3. MIN FREEBOARD FROM INVERT OF OVERFLOW TO INTERIOR FFL 70mm.
   - 3.4. ALL BALCONIES AND ROOFS TO HAVE WATERPROOF MEMBRANE INSTALLED TO MANUFACTURER'S APPROVAL.

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SCALE	SIZE
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DRAWN: FS

DESIGNED: MS

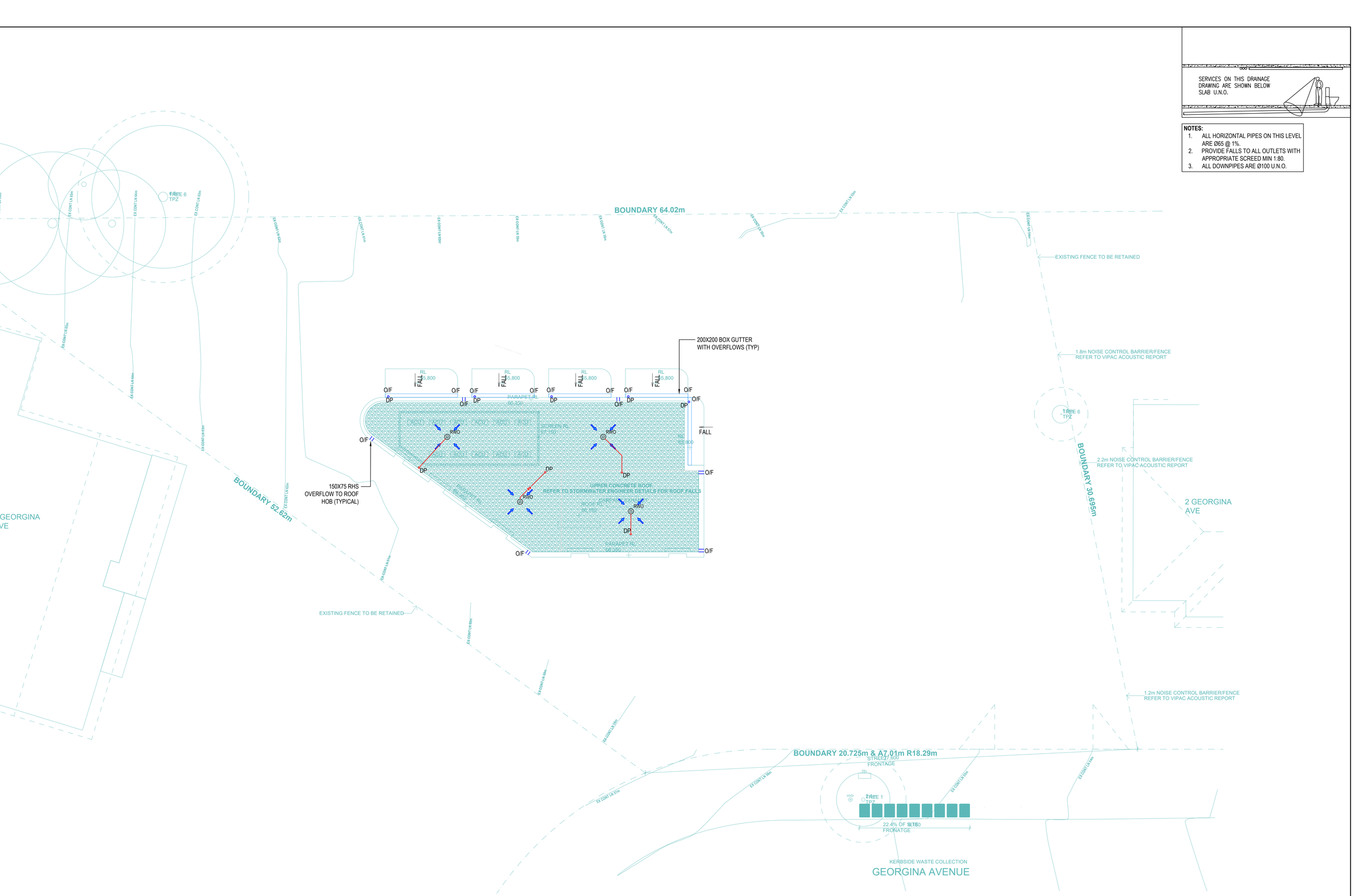
VERIFIED: JF

FOR APPROVAL

NORTH POINT

PROJECT	PROPOSED DEVELOPMENT AT 4-6 GEORGINA AVE, KEIRAVILLE NSW 2500
DRG. TITLE	STORMWATER SERVICES SECOND FLOOR STORMWATER MANAGEMENT PLAN

DRAWING No.	PROJECT No.	DISC.	NUMBER	REV
	2000259	STW	104	4



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SCALE	SIZE
1:100	A1

DRAWN
FS

DESIGNED
MS

VERIFIED
JF

FOR APPROVAL

NORTH POINT

N

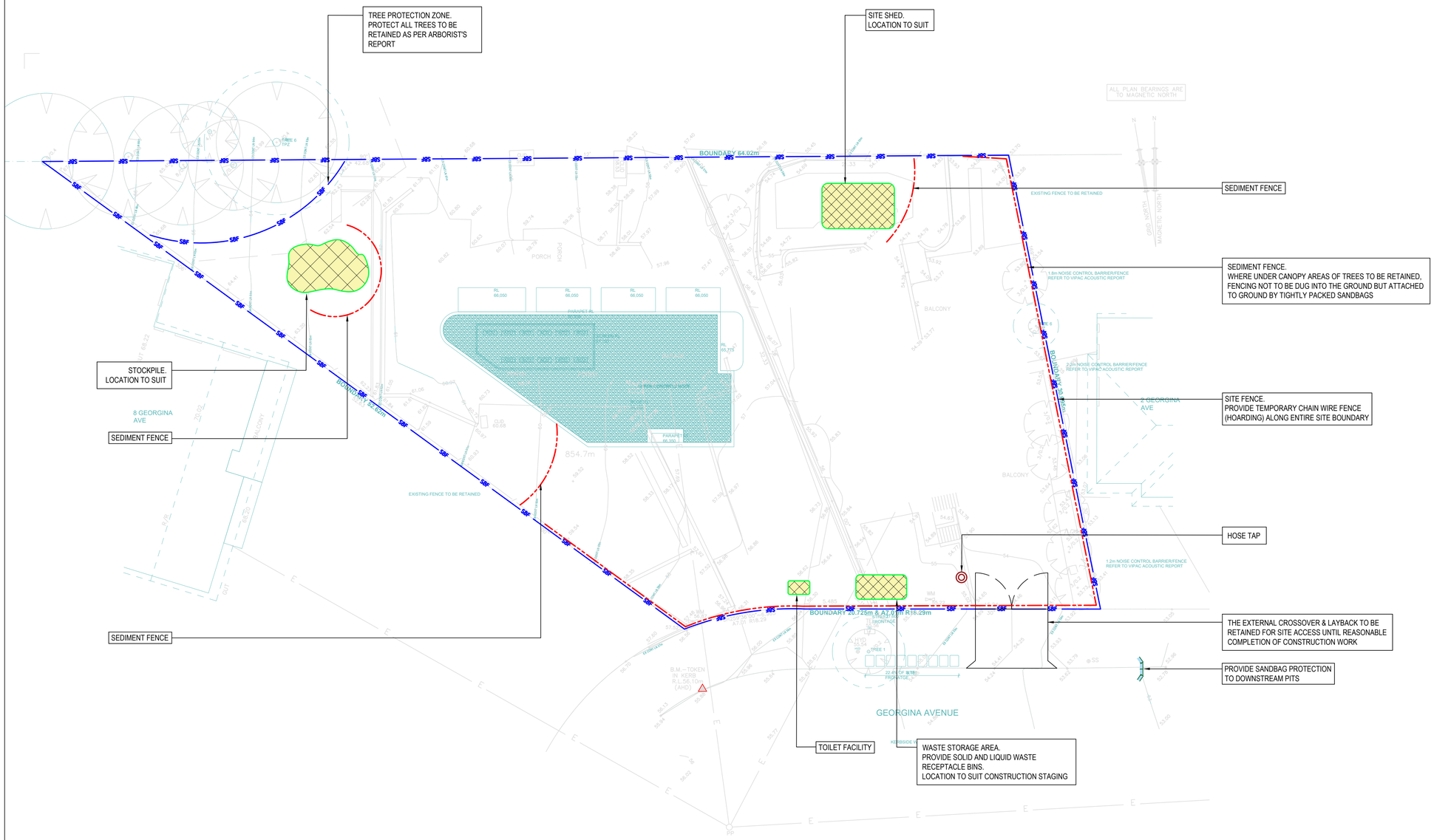
PROJECT	PROPOSED DEVELOPMENT AT 4-6 GEORGINA AVE, KEIRAVILLE NSW 2500
DRG. TITLE	STORMWATER SERVICES ROOF STORMWATER MANAGEMENT PLAN

DRAWING No.	PROJECT No.	DISC.	NUMBER	REV
	2000259 –	STW –	105 –	4

ENVIRONMENTAL SITE MANAGEMENT

1. EROSION & SEDIMENT CONTROLS TO BE INSTALLED IN ACCORDANCE WITH COUNCIL'S SPECIFICATION & THE NSW DEPARTMENT OF HOUSING "BLUE BOOK" - SOILS AND CONSTRUCTION - MANAGING URBAN STORMWATER, 2004. REFER TO THE BLUE BOOK FOR STANDARD DRAWINGS "SD"
2. SEDIMENT & EROSION CONTROLS MUST BE IN PLACE PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS OR DEMOLITION ACTIVITY. THE LOCATION OF SUCH DEVICES IS INDICATIVE ONLY AND FINAL POSITION SHOULD BE DETERMINED ON SITE.
3. RETAIN ALL EXISTING GRASS COVER WHEREVER POSSIBLE. TOPSOIL FROM ALL AREAS THAT WILL BE DISTRIBUTED TO BE STRIPPED AND STOCKPILED AT THE NOMINATED SITE. A SEDIMENT FENCE TO BE PLACED DOWNHILL OF STOCKPILE.
4. ALL EXISTING TREES TO BE RETAINED UNLESS SHOWN OTHERWISE ON APPROVED DRAWINGS. TREES RETAINED ARE TO BE PROTECTED WITH A HIGH VISIBILITY FENCE, PLUS FLAGGING TO INDIVIDUAL TREES AS NECESSARY.
5. INSTALL TEMPORARY SEDIMENT BARRIERS TO ALL INLET PITS LIKELY TO COLLECT SILT LADEN WATER, UNTIL SURROUNDING AREAS ARE PAVED OR REGRASSED.
6. ALL SILT FENCES & BARRIERS ARE TO BE MAINTAINED IN GOOD ORDER & REGULARLY DESILTED DURING THE CONSTRUCTION PERIOD.
7. STOCKPILES OF LOOSE MATERIALS SUCH AS SAND, SOIL, GRAVEL MUST BE COVERED WITH GEOTEXTILE SILT FENCE MATERIAL. PLASTIC SHEETING OR MEMBRANE MUST NOT BE USED. SAFETY BARRICADING SHOULD BE USED TO ISOLATE STOCKPILES OF SOLID MATERIALS SUCH AS STEEL REINFORCING, FORMWORK AND SCAFFOLDING.
8. WASTE MATERIALS ARE TO BE STOCKPILED OR LOADED INTO SKIP-BINS LOCATED ON SITE AS SHOWN ON PLAN.
9. NO MORE OF 150M OF TRENCHING TO BE OPEN AT ANY ONE TIME. IMMEDIATELY AFTER TRENCH BACKFILLING, PROVIDE SANDBAGS OR SAUSAGE FILTERS ACROSS EACH TRENCH AT MAXIMUM 20M SPACING. FILTERS TO REMAIN IN PLACE UNTIL REVEGETATION HAS OCCURRED.
10. ALL VEHICLES LEAVING THE SITE MUST PASS OVER THE STABILISED SITE ACCESS BALLAST AREA TO SHAKE OFF SITE CLAY AND SOIL. IF NECESSARY WHEELS AND AXLES ARE TO BE HOSED DOWN. BALLAST IS TO BE MAINTAINED AND REPLACED AS NECESSARY DURING THE CONSTRUCTION PERIOD.
11. THE HEAD CONTRACTOR IS TO INFORM ALL SITE STAFF AND SUB-CONTRACTORS OF THEIR OBLIGATIONS UNDER THE EROSION AND SEDIMENT CONTROL PLAN.
12. ANY SEDIMENT DEPOSITED ON THE PUBLIC WAY, INCLUDING FOOTPATH RESERVE AND ROAD SURFACE, IS TO BE REMOVED IMMEDIATELY.
13. PROVIDE BARRIERS AROUND ALL CONSTRUCTION WORKS WITHIN THE FOOTPATH AREA TO PROVIDE SAFE ACCESS FOR PEDESTRIANS.
14. CONCRETE PUMPS AND CRANES ARE TO OPERATE FROM WITHIN THE BALLAST ENTRY DRIVEWAY AREA AND ARE NOT TO OPERATE FROM THE PUBLIC ROAD WAY ACCESS UNLESS SPECIFIC COUNCIL PERMISSION IS OBTAINED.
15. TRUCKS REMOVING EXCAVATED / DEMOLISHED MATERIAL SHOULD TRAVEL ON STABILISED CONSTRUCTION PATHS. MATERIAL TO BE TAKEN TO THE TRUCK TO REDUCE TRUCK MOVEMENT ON SITE. TRUCKS TO BE LIMITED TO SINGLE UNIT HEAVY RIGID VEHICLES. [NO SEMITRAILERS]
16. ANY EXCAVATION WORK ADJUSTMENT TO ADJOINING PROPERTIES OR THE PUBLIC ROADWAY IS NOT TO BE COMMENCED UNTIL THE STRUCTURAL ENGINEER IS CONSULTED AND SPECIFIC INSTRUCTIONS RECEIVED FROM THE ENGINEER.
17. TOILET FACILITIES MUST BE EITHER A FLUSHING TYPE OR APPROVED PORTABLE CHEMICAL CLOSET. CHEMICAL CLOSETS ARE TO BE MAINTAINED AND SERVICED ON A REGULAR BASIS SO THAT OFFENSIVE ODOUR IS NOT EMITTED.
18. DURING TRENCH EXCAVATION ALL SPOIL SHALL BE MOUNDED ON THE UPHILL SIDE OF TRENCHES AND PLACEMENT IS TO COMPLY WITH THE SUPERINTENDENTS REQUIREMENT.
19. DIVERSION BANKS SHOULD BE CONSTRUCTED BY MOUNDING STRIPPED TOPSOIL [MIN HEIGHT 600MM] WHERE DIRECTED. MATERIAL TO BE RESPREAD ON FOOTWAYS AFTER FINAL TRIMMING.
20. UNDISTURBED BUFFER ZONE AREAS ARE CLOSED TO ALL TRAFFIC MOVEMENTS UNLESS OTHERWISE NOTED BY SUPERINTENDENT AND ACCESS TO THE SEWER ORC.D.L. TRENCHING WILL BE AS SHOWN, OR HEAVY PENALTIES MAY BE IMPOSED.
21. TRAFFIC MANAGEMENT MEASURES ARE TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION. IN ACCORDANCE WITH R.T.A. TRAFFIC CONTROL AT WORK SITES - CURRENT EDITION AND AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES'.
22. PEDESTRIAN CONTROL MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION. IN ACCORDANCE WITH AS 1742 ' MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES'.

NOTES:
1. PROVIDE TEMPORARY SEDIMENT PROTECTION TO ALL NEW GRATES/PITS/RWOs AS THEY ARE CONSTRUCTED AND MAINTAIN UNTIL SITE WORKS GET COMPLETED. LOCATION OF GRATES/PITS TO ARCHITECT'S DETAIL.
2. TREE BARRIERS REQUIRED IN ACCORDANCE WITH THE ARBORIST REPORT.



ENGINEERED BY:

TORINEX CONSULTING ENGINEERS

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CLIENT	ARCHITECT
BUREAU SRH PTY LTD	BUREAU SRH PTY LTD

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2	25.11.22	PRELIMINARY	MS
3	28.06.23	ISSUED FOR APPROVAL	MS

SCALE	SIZE
NTS	A1

DRAWN: FS
DESIGNED: MS
VERIFIED: JF

FOR APPROVAL

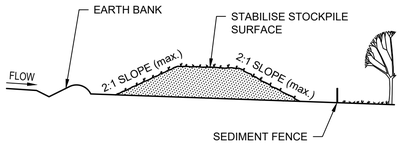
NORTH POINT

PROJECT: PROPOSED DEVELOPMENT AT 4-6 GEORGINA AVE, KEIRAVILLE NSW 2500

DRG. TITLE: EROSION AND SEDEMENTATION CONTROL PLAN

DRAWING No. 2000259 – STW – 201 – 3

PROJECT No.	DISC.	NUMBER	REV
2000259	STW	201	3

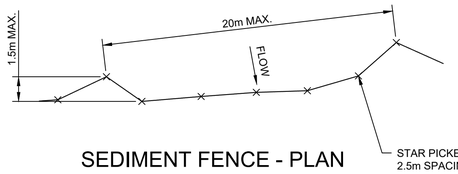


STOCKPILE

SCALE NTS

STOCKPILE

1. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95% STANDARD PROCTOR DENSITY.
2. SELECT FILL FOLLOWING THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK LARGE STONE OR FOREIGN MATERIAL.
3. SPREAD THE FILL IN 100mm TO 150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP.

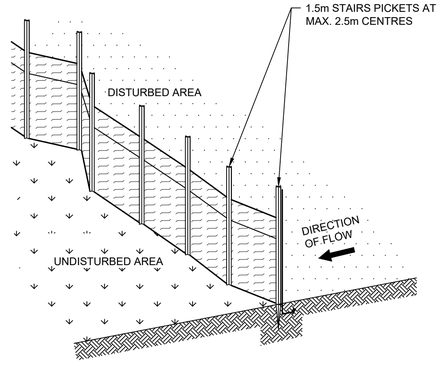


SEDIMENT FENCE - PLAN

NTS

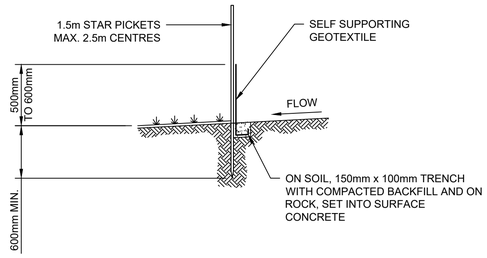
SEDIMENT FENCE

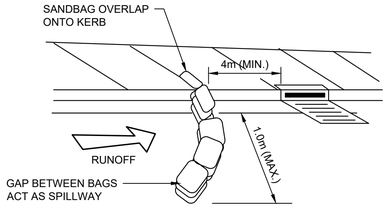
1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BE PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING, TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 litres/sec IN THE DESIGN STORM EVENT, USUALLY THE 10 YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5 METER LONG STAR PICKETS INTO GROUND AT 2.5 METER 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 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.



SEDIMENT FENCE - DETAIL

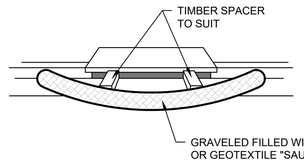
NTS





KERB INLET SEDIMENT FILTER (ON GRADE)

SCALE NTS

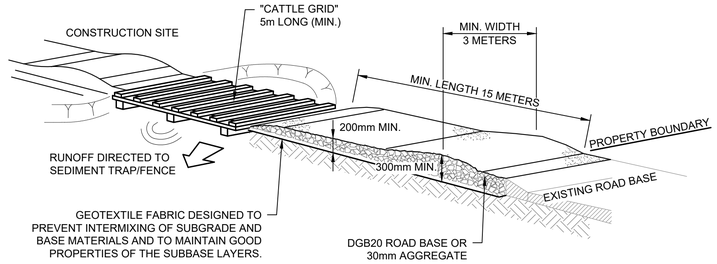


KERB INLET SEDIMENT FILTER (SAG)

SCALE NTS

KERB INLET SEDIMENT FILTER

1. REFER TO APPROVED PLANS FOR LOCATIONAND INSTALLATION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION,DIMENSIONS, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
2. ENSURE THAT THE INSTALLATION OF THE SEDIMENT TRAP WILL NOT CAUSE UNDESIRABLE SAFETY OR FLOODING ISSUES.
3. INSTALL SEDIMENT TRAP IN ACCORDANCE WITH STANDARD DRAWING SUPPLIED WITH THE APPROVED PLAN, OR AS DIRECTED BY THESITE SUPERVISOR.
4. ENSURE THE SEDIMENT TRAP IS CONSTRUCTED UP-SLOPE OF AN ON-GRADE KERB INLET. THE SEDIMENT TRAP MUST NOT SURROUND THE KERB INLET UNLESS SPECIFICALLY DIRECTED BY THE SITE SUPERVISOR.
5. ENSURE THE SEDIMENT TRAP FULLY ENCLOSES THE KERB INLET. USE APPROPRIATE SPACERS TO ENSURE THE SEDIMENT TRAP DOES NOT BLOCK THE SIDE-ENTRY INLET.
6. TAKE ALL NECESSARY MEASURE TO MINIMISE THE SAFETY RISK CAUSED BY THE STRUCTURE

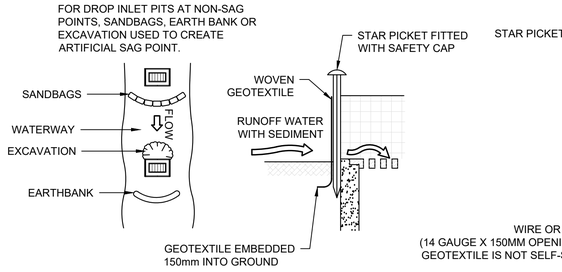


STABILISED SITE ACCESS DETAIL

NTS

STABILISED SITE ACCESS

1. COVER THE EXISTING SANDSTONE SUBGRADE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
2. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
3. ENSURE THE STRUCTURE IS AT LEAST 15 METERS LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METERS WIDE.
4. 4. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT

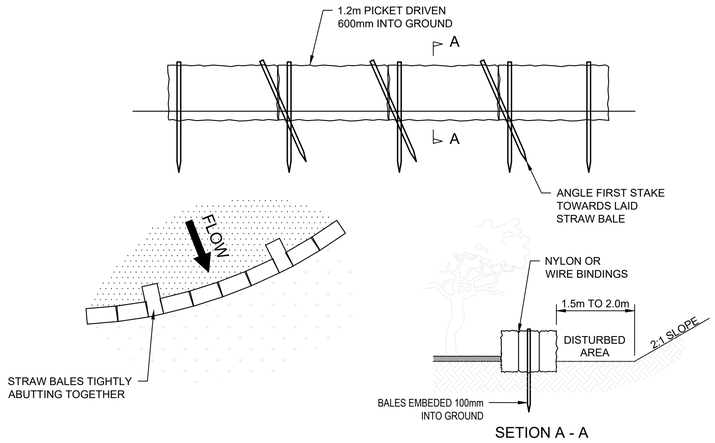


DROP INLET FILTER

NTS

DROP INLET FILTERS

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OF STRAW BALES.
2. FOLLOW STANDARD DRAWINGS OF STRAW BALE FILTERS AND SEDIMENT FENCES FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1m CENTERS.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.



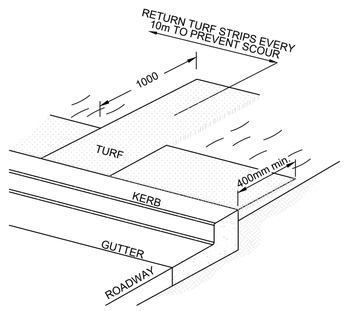
SETION A - A

STRAW BALE FILTERS

NTS

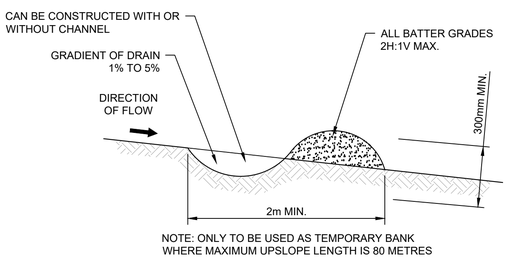
STRAW BALE FILTERS

1. CONSTRUCT THE STRAW BALE FILTER AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DIAGRAM TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION.
2. PLACE BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE STRAW TO FILL ANY GAPS BETWEEN THE BALES. THE STRAWS IN EACH BALE ATE TO BE ALIGNED PARALLEL TO THE GROUND.
3. ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE.
4. EMBED EACH BALE IN THE GROUND 75mm TO 100mm AND ANCHOR WITH 1.2m STAR PICKETS OR STAKES. ANGLE THE FIRST STAR PICKET OR STAKE IN EACH BALE TOWARDS THE PREVIOUSLY LAID BALE. DRIVE THEM 600mm INTO THE GROUND AND, IF POSSIBLE, FLUSH WITH THE TOP OF THE BALES. WHERE STAR PICKETS ARE USED AND THEY PROTRUDE ABOVE THE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.
5. WHERE A STRAW BALE FILTER IS CONSTRUCTED DOWNSLOPE FROM A DISTURBED BATTER, ENSURE BALES ARE PLACED 1m TO 2m DOWNSLOPE FROM THE TOE.
6. ESTABLISH A MAINTENANCE PROGRAM THE ENSURES THE INTEGRITY OF THE BALES IS RETAINED - THEY COULD REQUIRE REPLACEMENT EACH TWO TO FOUR MONTHS.



KERBSIDE TURF STRIP

1. INSTALL A 400mm MINIMUM WIDE ROLL OF TURF ON THE FOOTPATH NEXT TO THE KERB AND AT THE SAME LEVEL AS THE TOP OF THE KERB.
2. LAY 1.4m LONG TURF STRIPS NORMAL TO THE KERB EVERY 10m.
3. REHABILITATE DISTURBED SOIL BEHIND THE TURF STRIP FOLLOWING THE ESCP/SWMP.



NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES

EARTHBANK (LOW FLOW)

1. BUILD WITH GRADIENTS BETWEEN 1% AND 5%.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
5. ENSURE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

ENGINEERED BY:

TORINEX CONSULTING ENGINEERS

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CLIENT	ARCHITECT
BUREAU SRH PTY LTD	BUREAU SRH PTY LTD

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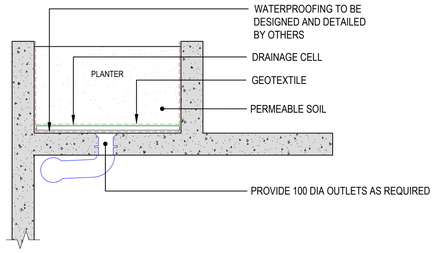
SCALE	SIZE
AS SHOWN	A1

DRAWN: FS
DESIGNED: MS
VERIFIED: JF

FOR APPROVAL

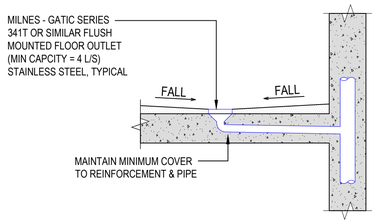
NORTH POINT

PROJECT	PROPOSED DEVELOPMENT AT 4-6 GEORGINA AVE, KEIRAVILLE NSW 2500
DRG. TITLE	STORMWATER SERVICES EROSION & SEDIMENTATION CONTROL DETAILS
DRAWING No.	PROJECT No. 2000259 – DISC. STW – NUMBER 202 – REV 3



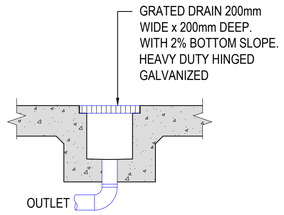
TYPICAL PLANTER DRAINAGE DETAIL

NTS



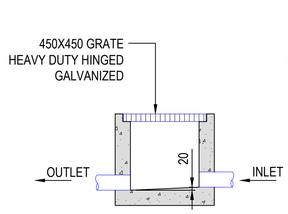
TYPICAL BALCONY FLOOR OUTLET DETAIL

NTS

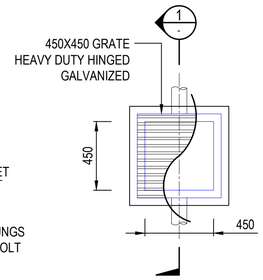


STANDARD GRATED DRAIN

NTS

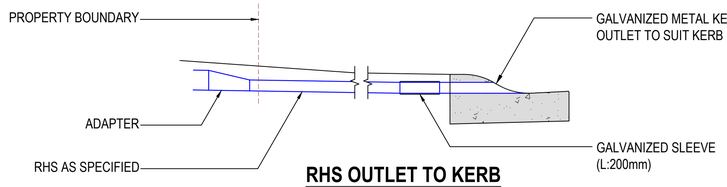


SECTION 1 / - SCALE NTS



STANDARD PIT

NTS



RHS OUTLET TO KERB TYPICAL DETAIL

NTS

MINIMUM INTERNAL DIMENSIONS FOR STORMWATER AND INLET PITS			
DEPTH TO INVERT OF OUTLET		MINIMUM INTERNAL DIMENSIONS, mm	
		WIDTH	LENGTH
≤600		450	450
>600 ≤900		600	600
>900 ≤1200		600	900
>1200		900	900
*STEP IRONS SHALL BE PROVIDED FOR PITS WITH DEPTHS OF 1200mm OR MORE			

STANDARD PIT NOTES

1. CLIMB IRONS SHALL BE PROVIDED AS PER AS1657.
2. REINFORCEMENT NOTED IS ONLY REQUIRED FOR PITS EXCEEDING 900 DEEP, SUBJECT TO COUNCIL REQUIREMENTS. PITS GREATER THAN 3000 DEEP WILL REQUIRE STRUCTURAL ENGINEERS DESIGN.
3. PROVIDE 90 DIA x 3000 LONG SUBSOIL DRAINAGE STUB PIPE SURROUNDED WITH 100mm THICKNESS OF NOMINAL 20mm COARSE FILTER MATERIAL WRAPPED IN GEOTEXTILE FILTER FABRIC. (BIDUM A24 OR APPROVED SIMILAR). TO BE PARALLEL TO UPSTREAM SIDE OF EACH INLET PIPE.
4. ALTERNATIVE PIT CONSTRUCTION MAY BE USED SUBJECT TO THE ENGINEERS APPROVAL.
5. CONCRETE STRENGTH F'c = 32MPa

ENGINEERED BY:
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ARCHITECT: BUREAU SRH PTY LTD

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SIZE: A1
DRAWN: FS
DESIGNED: MS
VERIFIED: JF

FOR APPROVAL

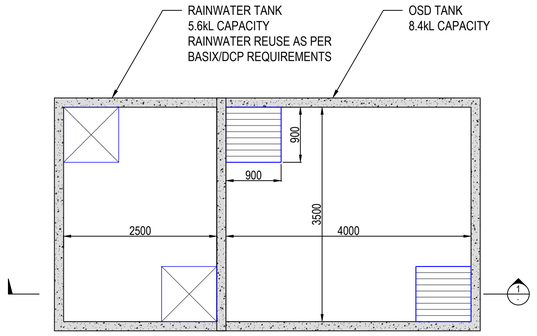
NORTH POINT

PROJECT: PROPOSED DEVELOPMENT AT 4-6 GEORGINA AVE, KEIRAVILLE NSW 2500

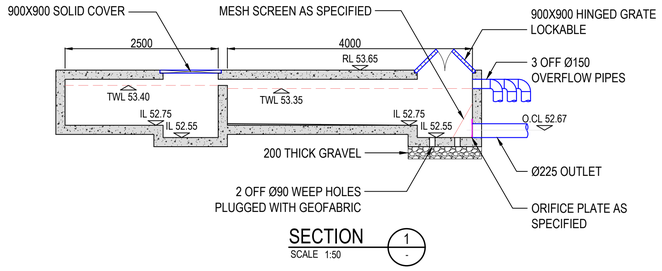
DRG. TITLE: STORMWATER SERVICES TYPICAL DETAILS

DRAWING No. 2000259 – STW – 301 – 3

STORMWATER CALCULATIONS BASED ON *'CITY OF WOLLONGONG-STORMWATER MANAGEMENT-PART 10.2':*



RW & OSD TANK - PLAN VIEW
1:50



ONSITE DETENTION CALCULATION

Step-1

Site Area	1404.000	m^2
Tributary Area	2294.600	m^2
Ex Impervious Area	850.000	37%
Post-Dev Impervious Area 1	716.960	31%
$F1_5$	1.130	
$F1_{100}$	1.096	
F2	1.090	
F3	0.085	
F4	0.680	
I^{50}_1	109.000	mm/hr

PSD_5	**82.25**	l/s
PSD_{100}	**139.54**	l/s
SSR_5	**9.81**	m^3
SSR_{100}	**16.65**	m^3

Step-2

Site Area	1404.000	m^2
Tributary Area	2294.600	m^2
Post-Dev Impervious Area 2	850.000	37%
$F1_5$	1.000	
$F1_{100}$	1.000	
F2	1.090	
F3	0.100	
F4	0.680	
I^{50}_1	109.000	mm/hr

PSD_5	**72.79**	l/s
PSD_{100}	**127.31**	l/s
SSR_5	**10.22**	m^3
SSR_{100}	**17.87**	m^3

Final PSDs

PSD_5	**82.25**	l/s
PSD_{100}	**139.54**	l/s

Final SSRs

SSR_5	**-0.40**	m^3
SSR_{100}	**-1.22**	m^3

SSR values are negative as post-dev impervious area is less than pre-dev impervious area

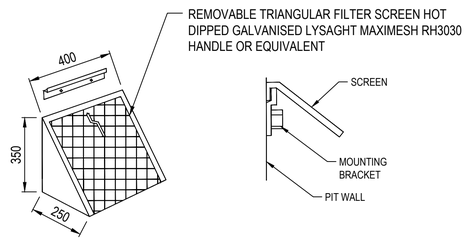
OSD VOLUME CALCULATION TO LIMIT DISCHARGE TO 55 l/s FOR KERB DISCHARGE:

For Kerb Discharge

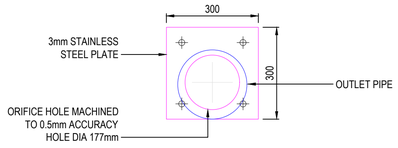
PSD_{max}	**55.00**	l/s	*Limit PSD to 55 l/s for kerb discharge*
Ex Impervious Area	850.00	60.54%	
C_5	0.78		
C_{100}	0.98		

ORIFICE DIAMETER

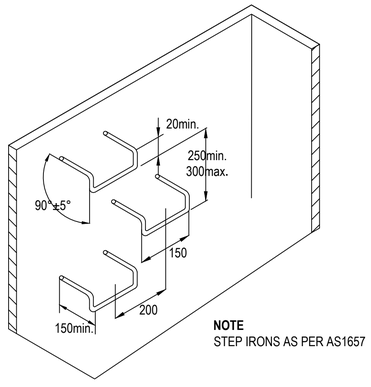
C	0.61	
g	9.81	m/s^2
Weir Height (H)	0.68	m
Orifice Dia (D)	**177**	mm



DEBRIS CONTROL SCREEN DETAIL
N.T.S.



ORIFICE PLATE ELEVATION
SCALE 1:10



STEP IRON DETAIL
N.T.S.

On-Site Detention Storage Calculation

Time (mins)	Rainfall Intensity (1%AEP) (mm/hr)	Flow to Outlet (l/s)	Mass Curve (m^3)	PSD Volume (m^3)	Storage (m^3)
5	348.00	80.52	24.16	16.50	7.7
10	271.00	62.71	37.62	33.00	4.6
15	224.00	51.83	46.65	49.50	-2.9
20	192.00	44.43	53.31	66.00	-12.7
25	170.00	39.34	59.00	82.50	-23.5
30	153.00	35.40	63.72	99.00	-35.3
45	120.00	27.77	74.97	148.50	-73.5
60	100.00	23.14	83.30	198.00	-114.7
90	78.20	18.09	97.71	297.00	-199.3
120	65.90	15.25	109.79	396.00	-286.2
180	52.10	12.06	130.20	594.00	-463.8
360	35.90	8.31	179.43	1188.00	-1008.6
720	25.30	5.85	252.90	2376.00	-2123.1
1440	17.80	4.12	355.86	4752.00	-4396.1
2880	11.90	2.75	475.81	9504.00	-9028.2
4320	8.99	2.08	539.18	14256.00	-13716.8
				Required OSD Storage	**7.657** m^3
				Provided OSD Storage	**8.4** m^3

CLIENT: **BUREAU SRH PTY LTD**

ARCHITECT: **BUREAU SRH PTY LTD**

REV	DATE	REVISION DETAILS	LAST EDITED
1	31.10.22	PRELIMINARY	MS
2	25.11.22	PRELIMINARY	MS
3	28.06.23	ISSUED FOR APPROVAL	MS
4	29.06.23	ISSUED FOR APPROVAL	MS

SCALE: AS SHOWN | SIZE: A1
DRAWN: FS
DESIGNED: MS
VERIFIED: JF

FOR APPROVAL

NORTH POINT

PROJECT: PROPOSED DEVELOPMENT AT 4-6 GEORGINA AVE, KEIRAVILLE NSW 2500

DRG. TITLE: STORMWATER SERVICES OSD DETAILS

DRAWING No.: PROJECT No. 2000259 – DISC. STW – NUMBER 302 – REV 4

ATTACHMENT 2 – Site Photos

1: Existing dual occupancy on 6 Georgina Avenue as viewed from Georgina Avenue.

2: Adjoining dwelling to the South west of 6 Georgina Avenue as viewed from Georgina Avenue.

3 View South along Georgina Avenue. Photo taken forward of 8 Georgina Avenue.

4: View East along Georgina Avenue of Southern side of the street. Photo taken from forward of 6 Georgina Avenue.

5: View East along Georgina Avenue of Northern side of the street. Photo taken from forward of 6 Georgina Avenue.

6: Existing dwelling on 4 Georgina Avenue as viewed from Georgina Avenue.

7: View West from rear yard of 4 Georgina Avenue.

8: Rear elevation of 4 Georgina Avenue.

9: Separation between 4 Georgina Avenue and 2 Georgina Avenue. Photo taken from rear yard of 4 Georgina Avenue facing South.

10: View to the rear of the 4 Georgina Avenue.

11: View North west from rear deck of 4 Georgina Avenue.

12: View to the rear from rear deck of 4 Georgina Avenue..

13: View North east from rear deck of 4 Georgina Avenue.

14: View East from rear deck of 4 Georgina Avenue..

15: View of dwelling on 2 Georgina Avenue from rear deck of 4 Georgina Avenue.

16: Adjoining properties East of 4 Georgina Avenue. Photo taken forward of 4 Georgina Avenue

17: Dual occupancy development on 6 Georgina Avenue.

18: Adjoining dwelling to the South west 8 Georgina Avenue as viewed from front yard of 6 Georgina Avenue.

19: View North west of the subject site of land owned by University of Wollongong adjoining rear of subject site.

20: View North of the subject site of land owned by University of Wollongong adjoining rear of subject site.

21 View North east of the subject site of land owned by University of Wollongong adjoining rear of subject site.

22: View East along land owned by University of Wollongong adjoining rear of subject site. Photo taken standing to the rear of 6 Georgina Avenue.

23: View South east from rear of the subject site. Photo taken from land owned by University of Wollongong adjoining rear of subject site. 6 Georgina Avenue to right of photo.

24: View West along land owned by University of Wollongong adjoining rear of subject site. Photo taken standing to the rear of 6 Georgina Avenue

25: Rear elevation of existing development on 6 Georgina Avenue.

26: Existing trees North western corner of 6 Georgina Avenue.

27: Existing trees North western corner of 6 Georgina Avenue.

28: View of adjoining dwelling to the South west, 8 Georgina Avenue from rear yard of 6 Georgina Avenue.

29: View of adjoining dwelling to the South west, 8 Georgina Avenue from rear yard of 6 Georgina Avenue.

ATTACHMENT 3 - APARTMENT DESIGN GUIDE (ADG) – ASSESSMENT TABLE

DA-2022/1343 – 4-6 Georgina Avenue, Keiraville Date: 01.09.2023

REF	PART / OBJECTIVE / DESCRIPTION	COMMENTS	COMPLIANCE
3A	SITE ANALYSIS		
3A-1	Site analysis illustrates that design decisions have been based on opportunities and constraints of the site conditions and their relationship to the surrounding context	Site Analysis addressing matters identified at Appendix 1 of the ADG provided.	☒ Achieved ☒ Conditional ☐ Not achieved
3B	ORIENTATION		
3B-1	Building types and layouts respond to the streetscape and site while optimising solar access within the development	9 out of 11 units face the rear of the site with a northern orientation maximising solar access. The other 2 units provide a south-east orientation to provide passive surveillance to the street whilst still maintaining a small amount of solar access.	☒ Achieved ☐ Conditional ☐ Not achieved
3B-2	Overshadowing of neighbouring properties is minimised during mid-winter	Overshadowing mainly occurs to the street with minimal impact on the neighbouring properties.	☒ Achieved ☐ Conditional ☐ Not achieved
3C	PUBLIC DOMAIN INTERFACE		
3C-1	Transition between private and public domain is achieved without compromising safety and security	Unit 4 is the only ground level street fronting unit and provides direct access from the street. Units 4 and 7 are oriented towards the street to provide surveillance.	☒ Achieved ☐ Conditional ☐ Not achieved
3C-2	Amenity of the public domain is retained and enhanced	A substantial amount of planting has been provided along the street frontage to ensure consistency with the existing surrounding context. Mailboxes have been appropriately located near the main entry.	☒ Achieved ☐ Conditional ☐ Not achieved
3D	COMMUNAL AND PUBLIC OPEN SPACE		
3D-1	An adequate area of communal open space is provided to enhance residential amenity and to provide opportunities for landscaping 1. Communal open space has a minimum area equal to 25% of the site 2. Developments achieve a minimum of 50% direct sunlight to the principal usable part of the communal open space for a minimum of 2 hours between 9 am and 3 pm on 21 June (mid winter)	The total area dedicated to COS is sufficient and complies with the minimum requirement. All COS has good access to direct sunlight.	☒ Achieved ☐ Conditional ☐ Not achieved
3D-2	Communal open space is designed to allow for a range of activities, respond to site conditions and be attractive and inviting	It is considered that the proposed COS allows for a range of activities, is safe and accessible.	☒ Achieved ☐ Conditional ☐ Not achieved
3D-3	Communal open space is designed to maximise safety	The proposed COS provides for adequate circulation throughout the space and allows for visibility and passive surveillance of the space whilst minimising visual privacy impacts. A palisade fence has been provided to the entire rear boundary for security and safety. Gated access along the rear boundary has been provided to give future residents opportunity to access the rear bushland.	☒ Achieved ☐ Conditional ☐ Not achieved
3D-4	Public open space, where provided, is responsive to the existing pattern and uses of the neighbourhood	N/A	~~☐ Achieved~~ ~~☐ Conditional~~ ~~☐ Not achieved~~

3E	**DEEP SOIL ZONES**		
3E-1	Deep soil zones provide areas on the site that allow for and support healthy plant and tree growth. They improve residential amenity and promote management of water and air quality 1. Deep soil zone is 7% of site area 2. Deep soil zone minimum dimensions - N/A (sites less than 650m²) - 3m (sites 650m² – 1500m²) - 6m (sites greater than 1500m²)	Deep soil area complies with minimum requirements.	☒ Achieved ☐ Conditional ☐ Not achieved
3F	**VISUAL PRIVACY**		
3F-1	Adequate building separation distances are shared equitably between neighbouring sites, to achieve reasonable levels of external and internal visual privacy 1. Building separation (habitable): - 6m (4 storeys) - 9m (5-8 storeys) - 12m (9+ storeys) 2. Building separation (non-habitable): - 3m (4 storeys) - 4.5m (5-8 storeys) - 6m (9+ storeys)	The development provides a minimum setback of 6m to the eastern and south-western side boundaries.	☒ Achieved ☐ Conditional ☐ Not achieved
3F-2	Site and building design elements increase privacy without compromising access to light and air and balance outlook and views from habitable rooms and private open space	Living room and windows have been orientated to take in views out to the North or South. This minimises visual privacy impacts to the neighbouring properties whilst providing rooms with improved outlook and maintaining a good level of natural light. The POS balconies have oriented to address either the rear boundary or street. Privacy screens have been incorporated to the eastern elevation of the balconies for Units 3, 4, 6 and 7 to minimise overlooking to the East and orientate views towards the street. Privacy buffer planting and screening to the Eastern side of the COS has been provided to minimise overlooking.	☒ Achieved ☐ Conditional ☐ Not achieved
3G	**PEDESTRIAN ACCESS AND ENTRIES**		
3G-1	Building entries and pedestrian access connects to and addresses the public domain	The main entry provides equitable access from the street and has a good direct visual and physical connection with the COS to the rear of the site.	☒ Achieved ☐ Conditional ☐ Not achieved
3G-2	Access, entries and pathways are accessible and easy to identify	The main entry is easily identifiable from the street.	☒ Achieved ☐ Conditional ☐ Not achieved
3G-3	Large sites provide pedestrian links for access to streets and connection to destinations	N/A	~~☐ Achieved~~ ~~☐ Conditional~~ ~~☐ Not achieved~~
3H	**VEHICLE ACCESS**		
3H-1	Vehicle access points are designed and located to achieve safety, minimise conflicts between pedestrians and vehicles and create high quality streetscapes	Car parking access integrated to Eastern elevation. Basement parking proposed with entrance behind the building line. One access point proposed for basement car park. Access to the basement car park is set below existing ground level. Acoustic barrier provided opposite car park entrance minimising noise and glare impacts from vehicles egressing the basement car park. Pedestrian access to the building separate form vehicular access	☒ Achieved ☐ Conditional ☐ Not achieved

		Advice received from Council's Development Engineering Officer is that access is considered satisfactory.	
3J	**BICYCLE AND CAR PARKING**		
3J-1	Car parking is provided based on proximity to public transport in metropolitan Sydney and centres in regional areas	1 parking space has been provided for each unit, and 3 additional spaces have been provided for visitors which is acceptable.	☒ Achieved ☐ Conditional ☐ Not achieved
3J-2	Parking and facilities are provided for other modes of transport	Residential bicycle parking has been provided in the basement which is acceptable. They must however be within a secure enclosure. Provision for electric car charge has been noted in the basement, however there are additional spatial requirements for electric car charge parking spaces which have not been accommodated for. *Refer to Council's Traffic referral for details.*	☐ Achieved ☒ Conditional ☐ Not achieved
3J-3	Car park design and access is safe and secure	Basement layout is appropriate with regard to safety and security. It is noted that visitor parking has not been separated from residential parking both being located behind the security roller shutter. A waiting bay and signage advising visitors to stop at marked waiting bay and contact residents for basement access prior to proceeding down the driveway has been provided.	☒ Achieved ☐ Conditional ☐ Not achieved
3J-4	Visual and environmental impacts of underground car parking are minimised	The eastern façade of the basement carpark consists of open "hit and miss" brickwork to maintain natural ventilation. Details of the application submission including an Acoustic report were referred to Council's Environment Officer for comment. Advice received is that the proposal is considered conditionally satisfactory.	☐ Achieved ☒ Conditional ☐ Not achieved
3J-5	Visual and environmental impacts of on-grade car parking are minimised	N/A	~~☐ Achieved~~ ~~☐ Conditional~~ ~~☐ Not achieved~~
3J-6	Visual and environmental impacts of above ground enclosed car parking are minimised	N/A	~~☐ Achieved~~ ~~☐ Conditional~~ ~~☐ Not achieved~~
4A	**SOLAR AND DAYLIGHT ACCESS**		
4A-1	To optimise the number of apartments receiving sunlight to habitable rooms, primary windows and private open space 1. Living rooms and private open spaces of at least 70% of apartments receive 2 hours direct sunlight between 9am and 3pm on winter solstice 3. Maximum of 15% of apartments receive no direct sunlight between 9am and 3pm on winter solstice	9 out of 11 units (81.8%) comply with the minimum 2hr solar access requirement.	☒ Achieved ☐ Conditional ☐ Not achieved
4A-2	Daylight access is maximised where sunlight is limited	Daylight access has been provided to all habitable rooms and some non-habitable rooms.	☒ Achieved ☐ Conditional ☐ Not achieved
4A-3	Design incorporates shading and glare control, particularly for warmer months	Balconies and window hoods have been incorporated to shade summer sun while maximising solar access to living areas in winter.	☒ Achieved ☐ Conditional ☐ Not achieved
4B	**NATURAL VENTILATION**		
4B-1	All habitable rooms are naturally ventilated	All habitable rooms provide natural ventilation.	☒ Achieved ☐ Conditional ☐ Not achieved

4B-2	The layout and design of single aspect apartments maximises natural ventilation	Only 3 out of 11 units (27%) have been provided as single aspect units with unit depths limited to maximise ventilation and airflow.	☒ Achieved ☐ Conditional ☐ Not achieved
4B-3	The number of apartments with natural cross ventilation is maximised to create a comfortable indoor environment for residents 1. At least 60% of apartments are naturally cross ventilated in the first 9 storeys of the building. (Note: Apartments at 10 storeys or greater are deemed to be cross ventilated only if any enclosure of the balconies at these levels allows adequate natural ventilation and cannot be fully enclosed) 2. Overall depth of a cross-over or cross-through apartment does not exceed 18m (measured glass line to glass line)	8 out of 11 units (72%) comply with natural cross ventilation. Units 8, 9 and 10 rely on smaller windows within bathroom areas to achieve natural ventilation.	☒ Achieved ☐ Conditional ☐ Not achieved
4C	**CEILING HEIGHTS**		
4C-1	Ceiling height achieves sufficient natural ventilation and daylight access 1. Minimum ceiling height of 2.7m for habitable rooms 2. Minimum ceiling height of 2.4m for non-habitable rooms 3. Minimum ceiling height of 3.3m for ground and first floor in mixed use areas	3.2m floor to floor dimensions have been provided to all unit levels which is able to accommodate 2.7m high ceilings to all habitable areas.	☒ Achieved ☐ Conditional ☐ Not achieved
4C-2	Ceiling height increases the sense of space in apartments and provides for well-proportioned rooms	Generally acceptable.	☒ Achieved ☐ Conditional ☐ Not achieved
4C-3	Ceiling heights contribute to the flexibility of building use over the life of the building	N/A	~~☐ Achieved~~ ~~☐ Conditional~~ ~~☐ Not achieved~~
4D	**APARTMENT SIZE AND LAYOUT**		
4D-1	The layout of rooms within an apartment is functional, well organised and provides a high standard of amenity 1. Minimum apartment sizes: - Studio 35sqm - 1-bedroom 50sqm - 2-bedroom 70sqm - 3-bedroom 90sqm (Note: minimum internal areas include 1 bathroom only. Additional bathrooms increase the minimum area by 5m²) (Note: a fourth bedroom and further additional bedrooms increase the minimum area by 12m² each) 2. Every habitable room must have a window with a total minimum glass area of not less than 10% of the floor area of the room.	All units meet the minimum required areas and appear to provide a good level of natural light.	☒ Achieved ☐ Conditional ☐ Not achieved

4D-2	Environmental performance of the apartment is maximised 1. Habitable room depths are limited to a maximum of 2.5 x the ceiling height 2. In open plan layouts (where the living, dining and kitchen are combined) the maximum habitable room depth is 8m from a window	Unit layouts are efficient and provide a good level of natural light to all habitable (and some non-habitable) spaces.	☒ Achieved ☐ Conditional ☐ Not achieved
4D-3	Apartment layouts are designed to accommodate a variety of household activities and needs 1. Master bedrooms have a minimum area of 10m2 and other bedrooms 9m2 (excluding wardrobe space) 2. Bedrooms have a minimum dimension of 3m (excluding wardrobe space) 3. Living rooms or combined living / dining rooms have a minimum width of: - 3.6m for studio / 1 bed - 4m for 2+ beds 4. The width of cross-over or cross-through apartments are at least 4m internally to avoid deep narrow apartment layouts	Living room and bedroom dimensions meet the minimum required dimensions.	☒ Achieved ☐ Conditional ☐ Not achieved
4E	**PRIVATE OPEN SPACE AND BALCONIES**		
4E-1	Apartments provide appropriately sized private open space and balconies to enhance residential amenity 1. Minimum balconies: - Studio - 4m² - 1 bed - 8m² (2m depth) - 2 bed - 10m² (2m depth) - 3 bed - 12m² (2.4m depth) 2. Ground level and Podium level apartments have a POS requirement of 15m² and a minimum depth of 3m	All POS areas achieve the minimum required area and dimensions.	☒ Achieved ☐ Conditional ☐ Not achieved
4E-2	Primary private open space and balconies are appropriately located to enhance liveability for residents	The POS of all units re located adjoining and accessible from living/dining areas. Adequate solar access appears to be available to the POS areas.	☒ Achieved ☐ Conditional ☐ Not achieved
4E-3	Private open space and balcony design is integrated into and contributes to the overall architectural form and detail of the building	Balconies are generally well integrated with the overall built form.	☒ Achieved ☐ Conditional ☐ Not achieved
4E-4	Private open space and balcony design maximises safety	Appears to comply by avoiding opportunities for climbing and falls.	☒ Achieved ☐ Conditional ☐ Not achieved
4F	**COMMON CIRCULATION AND SPACES**		
4F-1	Common circulation spaces achieve good amenity and properly service the number of apartments 1. The maximum number of apartments off a circulation core on a single level is 8	1 lift has been provided for 11 units and there are a maximum of 7 units off the circulation core on a single level. Natural ventilation appears to have been provided to the lobby on all levels.	☒ Achieved ☐ Conditional ☐ Not achieved

	2. For buildings of 10 storeys and over, the maximum number of apartments sharing a single lift is 40		
4F-2	Common circulation spaces promote safety and provide for social interaction between residents	Direct and legible access has been provided between vertical circulation points and apartment entries.	☒ Achieved ☐ Conditional ☐ Not achieved
4G	**STORAGE**		
4G-1	Adequate, well designed storage is provided in each apartment 1. Storage required, of which 50% is in the apartment: - Studio 4m^3 - 1 bed 6 m^3 - 2 bed 8 m^3 - 3+ bed 10 m^3	Storage has been for each of the units that satisfies minimum requirements.	☒ Achieved ☐ Conditional ☐ Not achieved
4G-2	Additional storage is conveniently located, accessible and nominated for individual apartments	Additional storage area located in the western corner of the ground floor provided. Clear glazing for passive surveillance has been provided to this area. Compliant circulation is provided for this area. Condition provided for lighting and CCTV to this space.	☒ Achieved ☐ Conditional ☐ Not achieved
4H	**ACOUSTIC PRIVACY**		
4H-1	Noise transfer is minimised through the siting of buildings and building layout	*Refer to Council's Environment / Acoustic referral for details.*	☐ Achieved ☒ Conditional ☐ Not achieved
4H-2	Noise impacts are mitigated within apartments through layout and acoustic treatments	*Refer to Council's Environment / Acoustic referral for details.*	☐ Achieved ☒ Conditional ☐ Not achieved
4J	**NOISE AND POLLUTION**		
4J-1	In noisy or hostile environments, the impacts of external noise and pollution are minimised through the careful siting and layout of buildings	*Refer to Council's Environment / Acoustic referral for details.*	☐ Achieved ☒ Conditional ☐ Not achieved
4J-2	Appropriate noise shielding or attenuation techniques for the building design, construction and choice of materials are used to mitigate noise transmission	*Refer to Council's Environment / Acoustic referral for details.*	☐ Achieved ☒ Conditional ☐ Not achieved
4K	**APARTMENT MIX**		
4K-1	A range of apartment types and sizes is provided to cater for different household types now and into the future	The development focuses on providing 1-bed and studio apartments with the intent to be used as student accommodation. Justification has been provided in the SoEE.	☒ Achieved ☐ Conditional ☐ Not achieved
4K-2	The apartment mix is distributed to suitable locations within the building	Four 2-storey studio apartments have been introduced into the unit mix providing a good variety of unit types that maximise solar access and minimise the perceived bulk and scale from the street frontage.	☒ Achieved ☐ Conditional ☐ Not achieved
4L	**GROUND FLOOR APARTMENTS**		
4L-1	Street frontage activity is maximised where ground floor apartments are located	All POS has been removed from the front setback area; however direct street access has been maintained for Unit 4 only which is considered acceptable.	☒ Achieved ☐ Conditional ☐ Not achieved
4L-2	Design of ground floor apartments delivers amenity and safety for residents	The design of the ground floor court yards is such that privacy is afforded to the occupants without compromising surveillance to the COS. Landscaping provides adequate separation from ground floor court yards from COS areas.	☒ Achieved ☐ Conditional ☐ Not achieved

		Adequate solar access appears to be available to the POS areas.	
4M	FACADES		
4M-1	Building facades provide visual interest along the street while respecting the character of the local area	Building materials and colours have been revised to be more natural and sympathetic to the surrounding landscape and bushland context. Condition from Council Heritage Officer requires muted bushland tones for external finishes.	☒ Achieved ☐ Conditional ☐ Not achieved
4M-2	Building functions are expressed by the facade	The main entry is clearly defined, and a good variety of articulation and materials has been provided.	☒ Achieved ☐ Conditional ☐ Not achieved
4N	ROOF DESIGN		
4N-1	Roof treatments are integrated into the building design and positively respond to the street	Flat roofs have been used throughout to minimise the perceived bulk and scale whilst complying with the prescribed height limit.	☒ Achieved ☐ Conditional ☐ Not achieved
4N-2	Opportunities to use roof space for residential accommodation and open space are maximised	No habitable roof space has been proposed to reduce potential visual and acoustic impacts to neighbouring properties. This is supported.	☒ Achieved ☐ Conditional ☐ Not achieved
4N-3	Roof design incorporates sustainability features	Solar panels have been included to supply power to common areas.	☒ Achieved ☐ Conditional ☐ Not achieved
4O	LANDSCAPE DESIGN		
4O-1	Landscape design is viable and sustainable	Council's Landscape Officer has reviewed the proposal including the submitted Landscape Plan. Advice received is that the proposal is considered conditionally satisfactory.	☐ Achieved ☒ Conditional ☐ Not achieved
4O-2	Landscape design contributes to the streetscape and amenity	Council's Landscape Officer has reviewed the proposal including the submitted Landscape Plan. Advice received is that the proposal is considered conditionally satisfactory.	☐ Achieved ☒ Conditional ☐ Not achieved
4P	PLANTING ON STRUCTURES		
4P-1	Appropriate soil profiles are provided	Council's Landscape Officer has reviewed the proposal including the submitted Landscape Plan. Advice received is that the proposal is considered conditionally satisfactory.	☒ Achieved ☐ Conditional ☐ Not achieved
4P-2	Plant growth is optimised with appropriate selection and maintenance	Council's Landscape Officer has reviewed the proposal including the submitted Landscape Plan. Advice received is that the proposal is considered conditionally satisfactory.	☒ Achieved ☐ Conditional ☐ Not achieved
4P-3	Planting on structures contributes to the quality and amenity of communal and public open spaces	Council's Landscape Officer has reviewed the proposal including the submitted Landscape Plan. Advice received is that the proposal is considered conditionally satisfactory.	☒ Achieved ☐ Conditional ☐ Not achieved
4Q	UNIVERSAL DESIGN		
4Q-1	Universal design features are included in apartment design to promote flexible housing for all community members	20% of units are required to incorporate silver level design features from the Liveable Housing Guideline's. 3 out of 11 units (27%) achieve this.	☒ Achieved ☐ Conditional ☐ Not achieved
4Q-2	A variety of apartments with adaptable designs are provided	10% of units are required to be adaptable. 2 out of 11 units (18%) have been provided.	☒ Achieved ☐ Conditional ☐ Not achieved
4Q-3	Apartment layouts are flexible and accommodate a range of lifestyle needs	The apartment layouts are flexible and accommodate a range of lifestyle needs.	☒ Achieved ☐ Conditional ☐ Not achieved

4R	**ADAPTIVE REUSE**		
4R-1	New additions to existing buildings are contemporary and complementary and enhance an area's identity and sense of place	N/A	~~☐ Achieved~~ ~~☐ Conditional~~ ~~☐ Not achieved~~
4R-2	Adapted buildings provide residential amenity while no precluding future adaptive reuse	N/A	~~☐ Achieved~~ ~~☐ Conditional~~ ~~☐ Not achieved~~
4S	**MIXED USE**		
4S-1	Mixed use developments are provided in appropriate locations and provide active street frontages that encourage pedestrian movement	N/A	~~☐ Achieved~~ ~~☐ Conditional~~ ~~☐ Not achieved~~
4S-2	Residential levels of the building are integrated within the development, and safety and amenity is maximised for residents	N/A	~~☐ Achieved~~ ~~☐ Conditional~~ ~~☐ Not achieved~~
4T	**AWNINGS AND SIGNAGE**		
4T-1	Awnings are well located and complement and integrate with the building design	An entry awning has been provided over the main pedestrian entry door.	☒ Achieved ☐ Conditional ☐ Not achieved
4T-2	Signage responds to the context and desired streetscape character	A location for mailboxes and building numbering has been identified at the front of the building within the landscape.	☒ Achieved ☐ Conditional ☐ Not achieved
4U	**ENERGY EFFICIENCY**		
4U-1	Development incorporates passive environmental design	Adequate natural light has been provided to all habitable rooms. A communal clothes drying area has been provided in the far north-eastern corner as a separate COS space which is commendable. Equitable access is provided through the basement parking area.	☒ Achieved ☐ Conditional ☐ Not achieved
4U-2	Development incorporates passive solar design to optimise heat storage in winter and reduce heat transfer in summer	Majority of units face north and incorporate shading devises to minimise heat transfer in summer and maximise solar access in winter.	☒ Achieved ☐ Conditional ☐ Not achieved
4U-3	Adequate natural ventilation minimises the need for mechanical ventilation	Natural ventilation is optimised throughout the development.	☒ Achieved ☐ Conditional ☐ Not achieved
4V	**WATER MANAGEMENT AND CONSERVATION**		
4V-1	Potable water use is minimised	An inground rainwater tank has been provided. Council's Development Engineering Officer has reviewed the proposal including the submitted Stormwater Management Plan. Advice received is that the proposal is considered conditionally satisfactory	☒ Achieved ☐ Conditional ☐ Not achieved
4V-2	Urban stormwater is treated on site before being discharged to receiving waters	Council's Development Engineering Officer has reviewed the proposal including the submitted Stormwater Management Plan. Advice received is that the proposal is considered conditionally satisfactory.	☐ Achieved ☒ Conditional ☐ Not achieved
4V-3	Flood management systems are integrated into site design	The stormwater design is satisfactory and the design makes provision for the required flood mitigation and management. The flood management system is integrated into the building/ site design	☐ Achieved ☒ Conditional ☐ Not achieved

4W	**WASTE MANAGEMENT**		
4W-1	Waste storage facilities are designed to minimise impacts on the streetscape, building entry and amenity of residents	A communal waste storage room and bulk waste room have been located on the basement level. Waste collection is proposed from the street and considered acceptable.	☒ Achieved ☐ Conditional ☐ Not achieved
4W-2	Domestic waste is minimised by providing safe and convenient source separation and recycling	Refer comments above.	☒ Achieved ☐ Conditional ☐ Not achieved
4X	**BUILDING MAINTENANCE**		
4X-1	Building design detail provides protection from weathering	Appropriate selection of prefinished materials has been specified.	☒ Achieved ☐ Conditional ☐ Not achieved
4X-2	Systems and access enable ease of maintenance	The AC units have been located away from adjoining residential development behind solid balustrading so as to minimise visual and acoustic impacts. A roof access hatch has been provided to allow ease of access for maintenance.	☒ Achieved ☐ Conditional ☐ Not achieved
4X-3	Material selection reduces ongoing maintenance costs	Prefinished materials have been proposed throughout the development to promote longevity and ease of maintenance.	☒ Achieved ☐ Conditional ☐ Not achieved

Attachment 4 - Wollongong Development Control Plan 2009 Assessment

8 Variations to development controls in the DCP

The applicant proposes variations to Sections 6.9.2(2) and Section 6.10.2(1)(d) of Chapter B1. The variation requests are considered justified and supportable. See considerations at Chapter B1 Residential Development table below.

Control	Comment
1. The variation statement must address the following points:	
a) The control being varied; and	The variation request statement identifies the control being varied as Section 6.9.2(2) Basement Car Parking of Chapter B1 Residential Development of WDCP 2009.
b) The extent of the proposed variation and the unique circumstances as to why the variation is requested; and	**Justification for Basement Car Parking (Basement Podium height above ground) Variation:** The applicant proposes to have a basement podium height out of ground greater than 1.2m. WDCP2009 Chapter B1 Section 6.9.2(2) indicates that the roof of any basement podium, measured to the top of any solid wall located on the podium must not be greater than 1.2m above natural or finished ground level, when measured at any point on the outside walls of the building. The variation to the basement podium height above ground development control plan can be supported in this circumstance for the following reasons: • The variation is considered minor and is due to the steep cross fall of the subject site resulting in the basement podium on the Eastern elevation and a small section of the Southern elevation extending greater than 1.2m above the ground level. • The building has been designed such that it presents as two (2) separate two (2) storey forms that respond to the topography of the site. Deep soil planting forward of the building line further minimises visual impacts on the street to ensure the building is in harmony with the low density character of the neighbourhood. • The bulk and scale of the development is consistent with the applicable planning controls for the area inclusive of building height, floor space ratio, building setbacks and other built form controls. The development is not considered to be out of context with regard to the desired future character of the area. • The proposed development has been designed to be sympathetic to and address site constraints.

	• Although the numerical requirements have not been strictly met in this circumstance the objectives of the Section have been met ensuring minimal impact on the street scene and on the amenity of the adjoining dwellings. It is considered that the proposed basement height above ground is acceptable in this circumstance in order to satisfy the objectives of the Section.
c) Demonstrate how the objectives are met with the proposed variations; and	The overall objectives of the WDCP 2009 Chapter B1 Section 6.9 Basement Car Parking are to: *a) To integrate the siting, scale and design of basement parking into the site and building design. To minimise the potential for overlooking on adjacent dwellings and open space areas.* 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.
d) Demonstrate that the development will not have additional adverse impacts as a result of the variation.	<u>Council comment:</u> Due to the developments boundary setbacks, building separation, compliant building height and floor space ratio with minimal impact on adjoining development and street scape, the development is not considered to result in adverse impacts as a result of the variation.
Comment: The requested variation is considered capable of support.	

Control	**Comment**
1. The variation statement must address the following points:	
a) The control being varied; and	The variation request statement identifies the control being varied as Section 6.10.2(1)(d) Access Requirements of Chapter B1 Residential Development of WDCP 2009.
b) The extent of the proposed variation and the unique circumstances as to why the variation is requested; and	The proposed driveway has minimum side setback of 1m to the Eastern side boundary. WDCP2009 Chapter B1 Section 6.10.2(1)(d) indicates that any driveway servicing a residential development is to be setback a minimum of 1.5m from any side property boundary.

	The variation to the driveway side setback control can be supported in this circumstance for the following reasons: • The variation is considered minor being 0.5m encroachment for a 10m length of driveway. • The development has been sited so as to minimise the extent of cut to the site whilst facilitating compliant driveway widths and access to the basement garage. • Landscape screening and acoustic barrier to the Eastern side boundary will minimise amenity impacts on the adjoining property. • Details of the application including traffic report and swept path analysis were referred to Council's Development Engineering Officer for comment. Advice received from Council's Development Engineering Officer indicates there are no issues with the proposed vehicular access arrangements. • Although the numerical requirements have not been strictly met in this circumstance the objectives of the Section have been met ensuring minimal impact on the street scene and on the amenity of the adjoining dwellings.
c) Demonstrate how the objectives are met with the proposed variations; and	The overall objectives of the WDCP 2009 Chapter B1 Section 6.10 Access Requirements are to: *(a) To provide adequate and safe vehicular access to basement car parking areas.* *(b) To ensure that all car parking areas have satisfactory manoeuvring areas to enable vehicles to leave the site in a forward direction.* <u>Council comment:</u> The development is not considered to be inconsistent with the above objectives.
d) Demonstrate that the development will not have additional adverse impacts as a result of the variation.	<u>Council comment:</u> Due to the provision of landscaping and acoustic attenuation measures to the Eastern side boundary the development is not considered to result in adverse impacts as a result of the variation.
Comment: The requested variation is considered capable of support.	

CHAPTER A2 – ECOLOGICALLY SUSTAINABLE DEVELOPMENT

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

The application submission contains a BASIX Certificate indicating minimum requirements with regard to energy and water efficiency and thermal comfort are met.

Generally speaking, the proposal is considered to be consistent with the principles of ecologically sustainable development.

CHAPTER B1 – RESIDENTIAL DEVELOPMENT

4.0 General Residential controls

Controls/objectives	*Comment*	*Compliance*
4.13 Fire Brigade Servicing		
• All dwellings located within 60m of a fire hydrant	The subject site can be adequately serviced by fire fighting vehicles in this circumstance. Details of the application were referred to the NSW Rural Fire Service for comment. Advice received indicates that the proposal is conditionally satisfactory.	Yes
4.14 Services		
• Encourage early consideration of servicing requirements	Water, electricity, sewage and telephone services are already available to the site. It is expected that the existing utility services can be augmented to support the proposed development.	Yes
4.16 View sharing		
• To protect and enhance view sharing, significant view corridors • A range of view sharing measures to be considered for building design	The proposed development will have minimal impact on view corridors of existing development.	Yes

Comment:

A concern was raised regarding loss of views to the Illawarra Escarpment.

An assessment in accordance with the principles of Tenacity Consulting v Warringah (2004) NSWLEC 140 – Principles of View Sharing has been undertaken.

Views to be affected:

One principle in assessing view loss is to assess the views to be affected. Water views are generally more highly valued than land views, and iconic views are more highly valued than views without icons. Whole views are also more valued than partial views. In this instance the following views area at issue from the adjoining properties:

- Partial views to the Illawarra Escarpment with mature vegetation restricting the view.

Location from where views are to be obtained:

Another principle for assessing view loss is consideration from what part of the property the views are obtained.

- In this instance the submission did not state where or from which property or point the view loss would occur.

  Views West across the side boundary from the adjoining dwelling are very restricted by the existing dwelling on No.4 Georgina Avenue.

It is noted that any views obtained from development within the street situated further East of the subject site are restricted by vegetation within the front setback of dwellings in the street, street trees and existing development.

Figure 1: View West from Southern side of Georgina Avenue. Photo taken adjacent to 4 Robsons Road towards intersection of Georgina Avenue and Robsons Road facing West.

Figure 2: View West from Northern side of Georgina Avenue. Photo taken adjacent to 2A Robsons Road towards intersection of Georgina Avenue and Robsons Road facing West.

Figure 3: View North west towards subject site from Southern side of Georgina Avenue. Photo taken from driveway of 4 Robsons Road.

Figure 4: View North west towards subject site from Southern side of Georgina Avenue. Photo taken adjacent to 1 Georgina Avenue.

Figure 5: View North west towards subject site from Southern side of Georgina Avenue. Photo taken adjacent to 1 Georgina Avenue.

Figure 6: View West towards Illawarra Escarpment. Subject site to the right of photo. Photo taken forward of 4 Georgina Avenue.

View sharing:

- It is considered that the partial views to the Illawarra Escarpment will not be obstructed by the proposed development noting that the proposed development is situated toward the base of the foothills and is lower than the line of the significant mature vegetation situated to the West of the subject site.

  The proposal satisfies Council's development standards and controls for built form and scale.

Summary:

The view loss would be very minimal and is not considered unreasonable, given that the design of the proposal endeavours to minimise the amount of view loss through the construction of a development that includes a flat roof which enables the overall height to not exceed the 9m allowable roof height of Council's Development Standards and not project above the height of the mature vegetation to the West of the subject site.

The proposed development is considered to satisfy the objectives of Council's Policies and Controls in terms of building height and that preservation of the entire views from adjoining properties would be unrealistic and unreasonable.

4.17 Retaining walls • To ensure well designed retaining walls that are structurally sound	The proposed retaining walls are considered acceptable in this circumstance.	Yes

6 Residential Flat Buildings

It is noted that the proposed residential flat building component of the development is subject to SEPP 65 and as such an assessment of the proposed residential flat building against the ADG is required to be undertaken.

SEPP 65 Clause 6A(2) indicates that in the event that a development control plan contains provisions that specify requirements, standards or controls in relation to a matter to which the ADG applies, those provisions are of no effect. However certain matters in Council's DCP still require assessment against relevant controls for all components of the development.

Overall, the proposed development has been considered against the provisions of WDCP 2009 below and found to be acceptable.

Controls/objectives	Comment	Compliance
6.1 General		
6.2 Minimum Site Width Requirement		
This clause prescribes a minimum site width of 24m for residential flat buildings.	The subject site has a minimum site frontage of 27m to Georgina Avenue.	Yes
6.3 Front Setbacks		
A 6m minimum is required to the primary road frontage with a 3m minimum to secondary street frontage for corner allotments. Balconies may be setback 900mm closer. Darkes Road and West Dapto Road have been considered primary roads with the Road 1 frontage considered a secondary frontage.	The development proposes a front setback of 6m.	Yes
6.4 Side and Rear Setbacks / Building Separation		
A minimum of 6m is required for buildings up to 4 storeys where a habitable room /balcony faces the boundary.	The development provides a 6m setback to the Eastern and South western side boundaries. See 3F ADG assessment at **Attachment 3**	See 3F ADG assessment at **Attachment 3**
6.5 Built Form		
	The buildings have been designed by a qualified designer in accordance with SEPP65. The application submission includes a Design Verification Statement. The proposed development is located in a R2 Low Density Residential zone within	Yes

	close proximity to Wollongong University. The site has a maximum height limit of 9m and maximum floor space ratio of 0.5:1. The existing character in the surrounding area is characterised by one and two storey residential dwellings. The site, consisting of two (2) separate residential lots, contains a single dwelling on 4 Georgina Avenue and an attached dual occupancy on 6 Georgina Avenue. The DRP advised that the general form and expression of the building are supported. The bulk and scale of the development is consistent with the applicable planning controls for the area inclusive of building height, floor space ratio, street frontage heights, building setbacks and other built form controls. The development is not considered to be out of context with regard to the desired future character of the area. While a residential flat building contrasts with the sites current context, it is considered consistent with the envisaged future character for higher densities within walking distance of the University of Wollongong. The building has been designed such that it presents as two (2) separate two (2) storey forms that respond to the topography of the site. Deep soil planting forward of the building line further minimises visual impacts on the street to ensure the building is in harmony with the low density character of the neighbourhood. The design of the development is considered to positively contribute to the public domain, addresses all street frontages and provides high level of amenity for the occupants by way of landscaped areas, private open space, communal open space and the like. Further comments on built form are provided in the ADG assessment at **Attachment 3**	
<u>6.6 Visual privacy</u>	The objectives, design criteria and design guidance for visual privacy in residential flat building development are provided in the Part 3 of the ADG. As such the proposed development has been assessed against	See 3F ADG assessment at **Attachment 3**

	objectives, design criteria and design guidance of the ADG for visual privacy at Part 3F ADG assessment at **Attachment 3** Reasonable separation distances have been maintained between buildings and the site boundary. It is considered that the buildings have been designed to increase privacy without compromising access to sunlight.	
6.7 Acoustic privacy		
	The objectives, design criteria and design guidance for acoustic privacy in residential flat building development are provided in the Part 4 of the ADG. As such the proposed development has been assessed against objectives, design criteria and design guidance of the ADG for acoustic privacy at Part 4H ADG assessment at **Attachment 3.** It is noted that adequate building separation is proposed, see comments for Clause 6.6 above. Details of the application submission including an Acoustic Report were referred to Council's Environment Officer for comment. Conditionally satisfactory referral advice was received and conditions are included at **Attachment 8**. Any consent issued by Council would require the development to be constructed in accordance with BCA requirements.	See 4H ADG assessment at **Attachment 3**
6.8 Car Parking Requirements		
1 car parking space per dwelling (<70m2) or 1.5 car parking spaces per dwelling (70-110m2) or 2 car parking spaces per dwelling (>110m2), plus 0.2 car parking spaces per dwelling for visitors. 1 bicycle space per 3 dwellings (residents) and 1 bicycle space per 12 dwellings (visitors). 1 motorcycle space per 15 dwellings Large Rigid Vehicle (Waste Contractor) >10 dwellings – side loading waste collection vehicle	• 14 car parking spaces (including 2 spaces capable of adaption for people with disabilities, and 3 visitor car parking spaces) • 11 bicycle spaces Advice received from Council's Development Engineering Officer indicates that the proposal is considered conditionally satisfactory with regards to Council's car parking requirements.	Yes

6.9 Basement Car Parking		
	The scale and siting of the proposed basement carparking level is such that the development as proposed satisfies Council's minimum landscaped area and deep soil zone requirements.	Yes
	The roof of the basement carparking level does protrude greater than 1.2m above natural or finished ground level.	No -refer to considerations at Chapter A1 above.
	Landscaping has been incorporated forward of the proposed development addressing the street.	
	Setbacks:	
	• 6m to front boundary;	Yes
	• Approx 6.1m to rear boundary;	Yes
	• 6m to Eastern side boundary;	Yes
	• 3.95m to South western side boundary.	Yes
	Ventilation has been oriented away from habitable rooms and private open space areas.	
6.10 Access Requirements		
	Details of the application were referred to Council's Development Engineering Officer for comments. Advice received indicates that access arrangements including dimensions and grades are conditionally satisfactory.	Yes
	Driveway is setback 1m from Eastern side boundary.	No -refer to considerations at Chapter A1 above.
6.11 Landscaping Requirements		
30% of the site area to be provided as landscaping	Approximately 49.9% of site area (701m²) provided as landscaping.	Yes
	Details of the application submission including landscaping plans were referred to Council's Landscape and Environment Officers for comment. Conditionally satisfactory referral advice was received in both instances.	
6.12 Deep Soil Zone		
15% site area = 211m²	DSZ = 302.46m² (21.5% of Site Area)	Yes
	Details of the application submission including landscaping plans were referred	

	to Council's Landscape and Environment Officers for comment. Conditionally satisfactory referral advice was received in both instances.	
6.13 Communal Open Space		
Development with more than 10 dwelling must have communal open space calculated at a rate of 5m² per dwelling (55m² req'd)	The development as proposed provides for communal open space areas along the north, central and southern areas of the site comprising approximately 487m² in area or 34.7% of the site area. Further comments on Communal Open Space are provided in Part 3D of the ADG assessment at **Attachment 3**	Yes
6.14 Private Open Space		
	The objectives, design criteria and design guidance for private open space in residential flat building development are provided in the Part 4 of the ADG. As such the proposed development has been assessed against objectives, design criteria and design guidance of the ADG for private open space at Part 4E ADG assessment at **Attachment 3.**	See 4E ADG assessment at **Attachment 3**
6.15 Adaptable Housing		
10% of dwellings must be designed to be capable of adaptation. (Min req'd 0.1 x 11 = 1.1)	2 Units provided capable of adaptation.	Yes
6.16 Access for People with a Disability		
	The proposed development is considered satisfactory with regards to Access for People with a Disability in this circumstance. The application submission including a specialist Access Consultants report was referred to Council's Design, Community Services and Development Engineering Officers for comment with satisfactory referral advice, comments and/or conditions provided.	Yes
6.17 Apartment Size and Layout Mix for Larger Residential Flat Building Developments		
Min 10% studio or 1 BR	There are two (2) apartment types ranging from 36.48m² to 62.27m² in area with a mixture of 1 and 2 bedroom units proposed. The breakdown of units is as follows:	Yes

	4 x 1 BR 7 x Studio Two (2) adaptable units are proposed. Apartment mix has been assessed under Part 4K of ADG assessment at **Attachment 3**	
6.18 Solar Access		
	The objectives, design criteria and design guidance for solar and daylight access in residential flat building development are provided in the Part 4 of the ADG. As such the proposed development has been assessed against objectives, design criteria and design guidance of the ADG for solar and daylight access at Part 4A of ADG assessment at **Attachment 3.** 81.8% of the 11 units (ie. 9 units) will achieve more than 2 hrs sunlight on June 21.	See 4A of ADG assessment at **Attachment 3**
6.19 Natural Ventilation		
	The objectives, design criteria and design guidance for natural ventilation in residential flat building development are provided in the Part 4 of the ADG. As such the proposed development has been assessed against objectives, design criteria and design guidance of the ADG for natural ventilation at Part 4B of ADG assessment at **Attachment 3.** 72% of the 11 units (8) will be cross ventilated.	See 4B of ADG assessment at **Attachment 3**

CHAPTER B2 – RESIDENTIAL SUBDIVISION

The application submission proposes to consolidate Lot 29 and Lot 30 of DP 30903 to form one (1) new allotment.

Given the proposal involves the subdivision of lots currently used for residential purposes an assessment of the application having regard to Chapter B2 has been undertaken.

The subdivision allotment sizes, widths, depths and layout satisfy Council's policies and controls.

CHAPTER D1 – CHARACTER STATEMENTS

Keiraville

Chapter D1 indicates that 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 desired future character is for Keiraville to 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 proposal provides for a residential flat building development consisting of eleven (11) units with basement parking and associated external works.

The existing character in the surrounding area is characterised by one and two storey residential dwellings. The building has been designed such that it presents as two (2) separate two (2) storey forms that respond to the topography of the site. Deep soil planting forward of the building line further minimises visual impacts on the street to ensure the building is in harmony with the low density character of the neighbourhood.

The proposed development is a permissible use in the R2 zone. The bulk and scale of the development is consistent with the applicable planning controls for the area inclusive of building height and floor space ratio and satisfies built form controls for residential flat buildings under Wollongong Development Control Plan 2009. Therefore the proposal is considered to be consistent with the existing and desired future character for the locality.

CHAPTER E1: ACCESS FOR PEOPLE WITH A DISABILITY

The proposed development is considered satisfactory with regards to Access for People with a Disability in this circumstance. The application submission including a specialist Access Consultants report was referred to Council's Design Expert and Development Engineering Officers for comment with satisfactory referral advice, comments and/or conditions provided.

CHAPTER E2: CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

Control/objective	*Comment*	*Compliance*
3.1 Lighting	Lighting to public areas to be provided according to AS1158. Entries are to be appropriately lit.	Yes
3.2 Natural surveillance and sightlines	The proposed development does account for and will improve natural surveillance of adjoining properties and the street.	Yes
3.3 Signage	Appropriate directional signage will be provided within the develop site.	Yes
3.4 Building design	The proposed development satisfies CPTED principles in minimising areas of entrapment and concealment, natural surveillance and access controls. Details of the application submission were reviewed by the DRP and Council's Design Expert and Safer Communities Officer and no issues were raised with regards to Building Design.	Yes
3.5 Landscaping	The proposed development can satisfy CPTED principles in minimising areas of	Yes

Control/objective	*Comment*	*Compliance*
	entrapment and concealment, natural surveillance and access controls. Details of the application submission were reviewed by Council's Safer Communities and Landscape Officers and no issues were raised with regards to Landscaping subject to conditions as **Attachment 8.**	
3.6 Public open space and parks.	Not Applicable. The proposal is not opposite an area of public open space or park.	N/A
3.7 Community facilities & Public Amenities	Not Applicable.	N/A
3.8 Bus stops and taxi ranks	Not Applicable. The subject site is not opposite bus stop or taxi rank.	N/A

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

Details of the application submission were referred to Council's Development Engineering Officer. Council's Traffic Officer has no objections to the proposed access, car parking and servicing arrangements subject to conditions as at **Attachment 8**.

	Rate	*Calculation*	*Required*	*Provided*	*Compliance*
Car parking	1 car parking space per dwelling (<70m2) or 1.5 car parking spaces per dwelling (70-110m2) or 2 car parking spaces per dwelling (>110m2), plus 0.2 car parking spaces per dwelling for visitors.	Resident Spaces = 11 x 1 Visitor Spaces = 0.2 x 11	11 Spaces 2.2 Visitor Spaces	11 Spaces 3 Visitor Spaces	Yes
Bicycle parking	1 bicycle space per 3 dwellings (residents) and 1 bicycle space per 12 dwellings (visitors).	11/3 Resident Spaces 11/12 Visitor Spaces	4 Resident Spaces 1 Visitor Spaces	11 Spaces	Yes

CHAPTER E6: LANDSCAPING

The proposed landscape plan was referred to Council's Landscape Officer for comment with referral advice indicating the proposal as satisfactory subject to conditions as at **Attachment 8**.

CHAPTER E7: WASTE MANAGEMENT

The proposed development satisfies the objectives of this Chapter. Council's street waste collection service is to be utilised. Council's Development Engineering Officer has reviewed the proposal providing conditionally satisfactory referral advice.

CHAPTER E11 HERITAGE CONSERVATION

It is noted that the development is not located on land mapped as Illawarra Escarpment Heritage Conservation Area it is however within the immediate vicinity of the Illawarra Escarpment Heritage Conservation Area.

Details of the application submission were referred to Council's Heritage Officer for comment. Advice received indicates that the proposal is considered conditionally satisfactory.

CHAPTER E12 GEOTECHNICAL ASSESSMENT

The application has been reviewed by Council's Geotechnical Engineer in relation to site stability and the suitability of the site for the development. Appropriate conditions have been recommended and are included at **Attachment 8**.

CHAPTER E13 FLOODPLAIN MANAGEMENT

Council's Stormwater Officer has reviewed the proposal providing conditionally satisfactory referral advice.

CHAPTER E14 STORMWATER MANAGEMENT

Council's Stormwater Officer has reviewed the proposal providing conditionally satisfactory referral advice.

CHAPTER E16 BUSHFIRE MANAGEMENT

Council records indicate that the subject site is located within a bushfire prone area therefore the proposal has been assessed having regard to the provisions of Planning for Bushfire Protection (PBP) 2019.

The applicant has submitted a bushfire assessment report prepared by Bushfire Consulting Services a FPAA accredited consultant with the application that explains the likely impact of the proposal and how it proposes to minimise these impacts.

The PBP 2019 Section 8.1.2 Increased residential densities indicates that "increased resident densities of existing lots that are bush fire prone may heighten the level of risk to the occupants. The presence of additional dwellings can impact on the evacuation and sheltering of residents during a bush fire." As such multiple occupancies are not granted the same concessions from PBP 2019 that single dwellings are. Though an increase in residential density does not necessarily require a subdivision approval the same principles and criteria associated with subdivisions in bush fire prone areas will apply. This includes adequate separation distances (APZ's) based on a radiant heat threshold of 29 kW/m^2, construction, access, water and landscaping.

As such the application was referred to the NSW RFS for comments with conditionally satisfactory referral advice received.

The proposal is considered to satisfy the aims and objectives of PBP 2019 through the provision of the following:

- establishment and maintenance of asset protection zones (APZs);
- siting and design of the development;
- construction requirements under AS3959-2018 (Standards Australia 2018);

- adequate access for emergency personnel;
- adequate water supply, and utility requirements to reduce the risk of ignition by electrical or gas supplies; and
- landscaping to reduce the risk of ignition by embers, and to minimise flame contact and radiant heat on the proposed development.

CHAPTER E17 PRESERVATION AND MANAGEMENT OF TREES AND VEGETATION

The application proposes the removal of several trees to facilitate the proposal. Council's Landscape and Environment Officers have assessed the application submission, which included an Arborist Report. Conditionally satisfactory referral advice was received and draft conditions as at **Attachment 8** specify trees to be removed, trees to be retained, compensatory plantings and tree protection and management.

CHAPTER E19 EARTHWORKS (LAND RESHAPING WORKS)

The proposal involves excavation to facilitate the basement car parking. A geotechnical report and information regarding the earthworks to reshape the land were submitted with the application.

The application was referred to Council's Geotechnical, Development Engineering and Environment Officers for comment and no objections were raised in relation to this matter subject to conditions of consent included at **Attachment 8**. Therefore it is considered that the earthworks will not have a detrimental impact on environmental functions and processes, neighbouring uses and features of the surrounding land.

CHAPTER E21 DEMOLITION AND ASBESTOS MANAGEMENT

The proposal includes demolition works. Appropriate conditions are included in **Attachment 8** of this report to minimise impacts and ensure that demolition is carried out to Council's and Safe Work requirements and AS 2601- Demolition of Structures.

CHAPTER E22 SOIL EROSION AND SEDIMENT CONTROL

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

ANNEXURE 1: DCP VARIATION REQUEST

WOLLONGONG DCP CHAPTER A1- VARIATIONS TO DCP PROVISIONS

Section 8 of Part A1 of the DCP sets out as follows:

8 VARIATIONS TO DEVELOPMENT CONTROLS IN THE DCP

The DCP aims to allow flexibility in the application of such development controls to promote innovation and design excellence. Council may consider variations to the requirements of the WDCP in certain circumstances.

Variation to development control will be considered on a case by case basis and will only be considered where written justification is provided to the satisfaction of Council, that the objectives of the development control have been achieved.

1. The variation statement must address the following points:
   (a) The control being varied; and
   (b) The extent of the proposed variation and the unique circumstances as to why the variation is requested; and
   (c) Demonstrate how the objectives are met with the proposed variations; and
   (d) Demonstrate that the development will not have additional adverse impacts as a result of the variation.
2. The variation statement should be contained within the Statement of Environmental Effects accompanying a development application.
3. Any written variation request must be supported by detailed site analysis and other necessary documentation.
4. The fact that an existing development may not comply with one or more of the development controls, does not necessarily mean that the development control is unreasonable or unnecessary, when applied to future development.
5. More specific requirements relating to variation statements may be included under the individual chapters of this DCP.

The proposal presents two (2) key variations to the DCP, notably the basement exceeding 1.2m above natural ground at the eastern portion of the building- owing to the site topography- and then the driveway setback being closer than 1.5m from the boundary at points given the irregular lot configuration and 1m is provided to these areas.

These variations are addressed in turn.

Basement Protrusion

Clause 6.9.2(2) of the DCP sets out:

2. The roof of any basement podium, measured to the top of any solid wall located on the podium must not be greater than 1.2m above natural or finished ground level, when measured at any point on the outside walls of the building. On sites with a greater slope, a change in level in the basement must be provided to achieve this maximum 1.2m height.

Generally variation to this 1.2m podium height limit will not be supported; however Council recognises that there may be occasions where this standard cannot be achieved. Should such a circumstance arise, the additional portion of the basement podium above 1.2m height must be included in the total gross floor area calculation for the development.

3. In addition, the following must be satisfied:

(a) Landscaped terraces are provided in front of the basement podium to reduce the overall visual impact;

(b) The height of the basement does not result in the building having a bulk and scale which dominates the streetscape; and

(c) The main pedestrian entry to the building is identifiable and readily accessible from the street frontage, including access by disabled persons.

It is noted firstly that GFA is defined by the LEP and the proposal complies. However the proposal does exceed 1.2m to the eastern area of the basement owing to the site topography. This is generally as shown in red on the images over the page.

Importantly from the street it is not readily perceived as it is discretely located and then landscaping is provided at the rear.

The proposal has terraced the basement as much as possible however the cross-fall dictates the need for some elements of the basement to protrude.

In addition the proposal satisfies a-c of the DCP. given the stepped building form at the upper level, clearly identifiable entry that is highly accessible and the use of landscaping to mitigate the non-compliance.

3D RENDER - VIEW FROM GEORGINA AVENUE

Note limited visual impact from street.

Note limited visual impact through stepping of the built form.

Relevant Provision	*Commentary*
1. The variation statement must address the following points:	
(a) The control being varied; and	6.9.2(2) Basement ceiling to be <1.2m above NGL.
(b) The extent of the proposed variation and the unique circumstances as to why the variation is requested; and	Exceeds by 3m at points to the east- see images.
(c) Demonstrate how the objectives are met with the proposed variations; and	*(a) To integrate the siting, scale and design of basement parking into the site and building design.* The proposal is designed to achieve this through limiting visual impact to the basement given the location of the protrusion relative to the streetscape, the stepped upper levels of the building that ensure no more 3 storeys are apparent despite the basement protrusion.

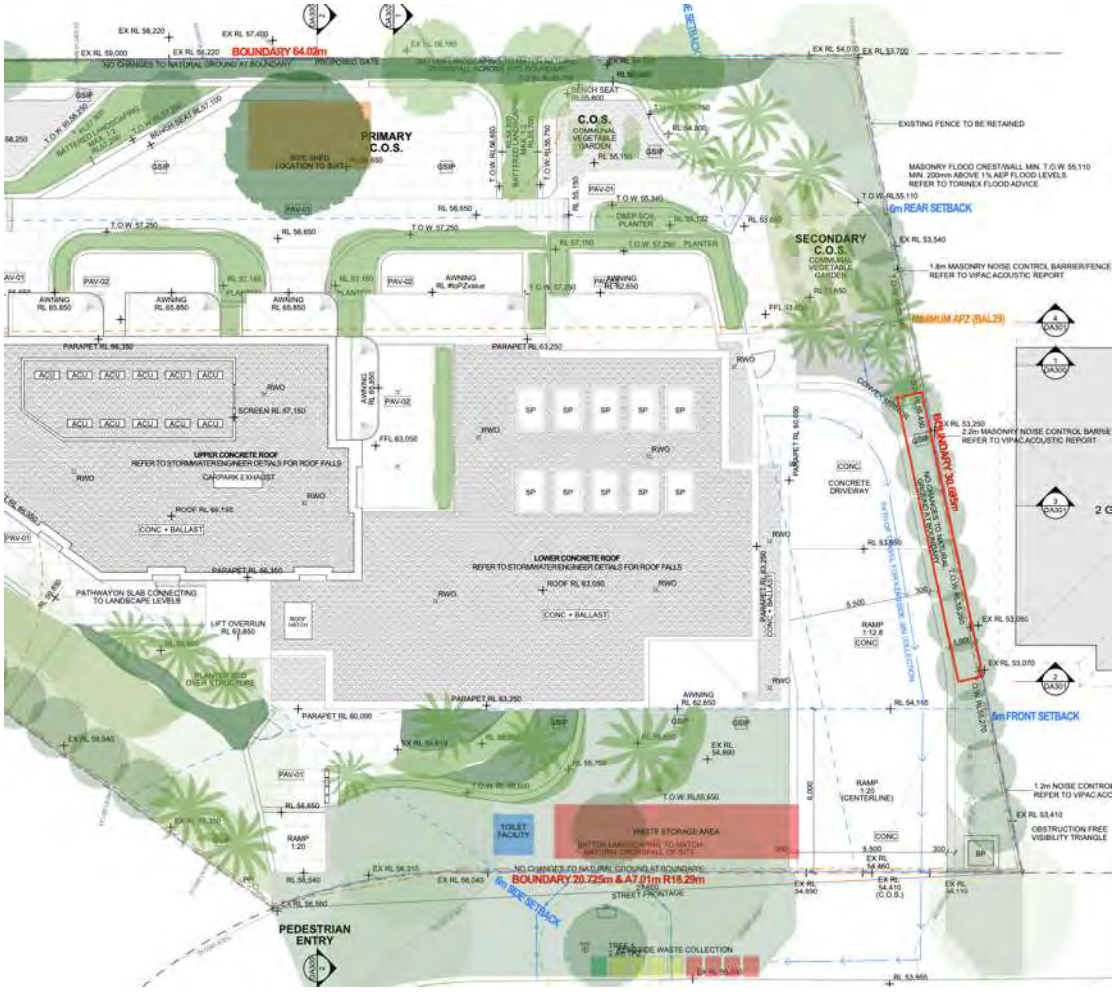
	Therefore the design does integrate the basement into the building design and scheme in a way that appropriately addresses the sites steep topography. In addition the proposal satisfies a-c of the DCP given: a) the use of landscaping to disguise this area; b) the stepped building form at the upper level, c) clearly identifiable entry that is highly accessible and the use of landscaping to mitigate the non-compliance. Therefore the proposal is suitable.
(d) Demonstrate that the development will not have additional adverse impacts as a result of the variation.	There are no adverse impacts that arise given the location of the breach, the use of landscaping as proposed and the stepped and tiered building form above that area of the breach such that the building only has a 3 storey form and appearance. There are no additional issues that arise given the compliant setbacks and building height and careful and considered design.

Driveway Setback

Clause 6.10.2 sets out:

d) Any driveway servicing a residential development is to be setback a minimum of 1.5m from any side property boundary.

The driveway is predominantly setback 1.5m from side property boundary, noting that the setback is reduced to 1m for a portion of the driveway which is reflected on the plan extract below.



Despite the small variation, the landscape plan demonstrates that appropriate landscape screening is proposed between the driveway and boundary, which will result in adequate levels of amenity are retained for the adjoining property in terms of achieving screen planting- i.e. a similar level of planting is achieve in the 1m as it is the 1.5m and the balance of the driveway near the streetscape is fully compliant.

The below discusses the framework of the variation request.

Relevant Provision	*Commentary*
1. The variation statement must address the following points:	
(a) The control being varied; and	Clause 6.10.2 1.5m setback from driveway to side boundary
(b) The extent of the proposed variation and the unique circumstances as to why the variation is requested; and	Proposal adopts 1m minimum that widens to 2m in the front setback area- i.e. the variation is only in the area shown in red in the figure above. The unique circumstances are the offset boundary configuration. Despite the small variation, the landscape plan demonstrates that appropriate landscape screening is proposed between the driveway and boundary, which will result in adequate levels of amenity are retained for the adjoining property in terms of achieving screen planting- i.e. a similar level of planting is achieve in the 1m as it is the 1.5m and the balance of the driveway near the streetscape is fully compliant
(c) Demonstrate how the objectives are met with the proposed variations; and	The objectives state: *(a) To provide adequate and safe vehicular access to basement car parking areas.* The non-compliance still enables adequate and safe vehicular access to the basement as set out in the traffic report.

	(b) To ensure that all car parking areas have satisfactory manoeuvring areas to enable vehicles to leave the site in a forward direction. The non-compliance still enables adequate and safe manoeuvring and vehicles can enter and leave the site in a forward direction. <u>Other matters</u> In addition it is considered that the 1.5m offset also seeks landscaping to be provided to this area. Despite the small variation, the landscape plan demonstrates that appropriate landscape screening is proposed between the driveway and boundary, which will result in adequate levels of amenity are retained for the adjoining property in terms of achieving screen planting- i.e. a similar level of planting is achieve in the 1m as it is the 1.5m and the balance of the driveway near the streetscape is fully compliant.
(d) Demonstrate that the development will not have additional adverse impacts as a result of the variation.	There are no adverse impacts that arise because: - Basement access remains suitable and achieves the stated objectives; - Suitable screen planting to the neighbour is provided.

SRH A

20 Nov. 23

WOLLONGONG CITY COUNCIL
41 Burelli Street
Wollongong NSW 2500
P +61 2 4227 7111

Attention: General Manager/ Council Planner

Property: **4-6 GEORGINA AVENUE, KEIRAVILLE, NSW 2500**

Proposal: **The proposal seeks to consolidate 2 separate land parcels and demolish all existing structures in-order to construct a boutique small-scale 2-3 storey residential flat building at 4-6 Georgina Avenue, Keiraville.**

This letter is to confirm that the proposed design to the above-mentioned project have been designed and undertaken by the office of SRH A, under my direction. Through the evaluation of this project, it is considered that the design objectives set out in the NSW State Environmental Planning Policy No 65 – Design Quality of Residential Apartment Development (SEPP 65) and the Apartment Design Guide (ADG), have been considered in the design process, and have been met.

Yours sincerely,

SRH A

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SRH A

APARTMENT DESIGN GUIDE
DESIGN QUALITY PRINCIPLES

4-6 GEORGINA AVENUE, KEIRAVILLE, NSW 2500

20.11.2023

1.1. The Proposal

The proposal seeks to consolidate 2 separate land parcels and demolish all existing structures in-order to construct a boutique small-scale 2-3 storey residential flat building at 4-6 Georgina Avenue, Keiraville.

The development is designed to integrate into the site and the locality and reflect the style and design of character provided for in the Councils future vision for the area.

1.2. Introduction

This report should be read in conjunction with the architectural drawings provided. It responds to each of the nine SEPP65 Design Quality Principals in the Apartment Design Guide (ADG), and includes an attached compliance table with responds to each of the relevant 'Objectives' contained within the Apartment Design Guide (ADG) Part 3 & 4.

2. Design Quality Principles (SEPP 65)

The proposed development has been assessed against the relevant design quality principles under Page 12 and 13 of the ADG as follows:

2.1. Context and Neighbourhood Character

Good design responds and contributes to its context. Context is the key natural and built features of an area, their relationship and the character they create when combined. It also includes social, economic, health and environmental conditions.

Responding to context involves identifying the desirable elements of an area's existing or future character. Well designed buildings respond to and enhance the qualities and identity of the area including the adjacent sites, streetscape and neighbourhood.

Consideration of local context is important for all sites, including sites in established areas, those undergoing change or identified for change.

The subject site is located on the northern side of Georgina Avenue within close proximity to the University of Wollongong (UoW). The development site once consolidated will be a large irregular shaped north-south oriented mid-block land parcel with a frontage to Georgina Avenue to the south and to the north overlooks protected forestry managed and maintained by UoW. The site has a significant cross fall from west to east. The subject site is currently occupied by two dwelling houses. The local context contains a mixture of single residences and is within 200m of the UoW student housing precinct.

The proposal is for a new boutique small-scale residential flat building with basement carparking and associated external site works and landscaping. The site orientation and steep slope has informed the proposal's arrangement on site, with the building stepping up natural crossfall of the site. The building envelope has been designed to present as two 2-storey volumes. Presenting to Georgina Avenue is a 2-storey brick volume that displays a desirable architectural

aesthetic that relates to the materials and volumes of the neighbouring dwelling houses. The upper levels of the proposal area set back from the front setback as the building steps up the site. Vertical metal cladding utilising muted bushland tones are proposed for to a allow the upper volume of the proposal to blend into the natural bushland beyond the site.

Two of the proposed 11 units are oriented to Georgina Ave and the other 9 units take advantage of the northern orientation to the bushland beyond. Privacy screening and considered landscaping has been proposed to ensure that the amenity of the neighbours is retained and enhanced.

2.2. Built Form and Scale

Good design achieves a scale, bulk and height appropriate to the existing or desired future character of the street and surrounding buildings.

Good design also achieves an appropriate built form for a site and the building's purpose in terms of building alignments, proportions, building type, articulation and the manipulation of building elements.

Appropriate built form defines the public domain, contributes to the character of streetscapes and parks, including their views and vistas, and provides internal amenity and outlook.

The proposed built form and scale is based on the following observations and requirements:

The local area has a range of one, two and 3 storey single residences with larger residential developments becoming more common in the area to utilize the proximity to UoW. AS described above the proposals volume has been designed to present as two smaller volumes to Georgina Avenue ensuring that the building sits within the existing scale of the neighbouring dwellings.

The proposed envelope increases the side and rear setbacks from the existing dwellings on the site increasing the building separation to the neighbours at 2 Georgina Avenue to the east and 8 Georgina Avenue to the west. This increased separation and the proposed landscaping ensures the amenity of the neighbours is retained and enhanced.

2.3. Density

Good design has a density appropriate for a site and its context, in terms of floor space yields (or number of units or residents).

Appropriate densities are sustainable and consistent with the existing density in an area or, in precincts undergoing a transition, are consistent with the stated desired future density. Sustainable densities respond to the regional context, availability of infrastructure, public transport, community facilities and environmental quality.

The area is zoned R2 Low Density Residential under the Wollongong Local Environmental Plan 2009 with a maximum FSR of 0.5:1 and a maximum height limit of 9m. It is noted that *'Residential Flat Buildings'*, are permissible with consent within the R2 Zone. Given the residential context of the site the proposal has been designed to present at a smaller residential scale than a typical

residential flat building. The proposal sits under the maximum height limit and does not exceed the maximum FSR. The development is more akin to a micro-apartment scheme designed to take advantage of the proximity to the UoW campus and is intended to be rented out with the target market being for students and/or staff associated with the university.

2.4. Sustainability

Good design combines positive environmental, social and economic outcomes.

Good sustainable design includes use of natural cross ventilation and sunlight for the amenity and liveability of residents and passive thermal design for ventilation, heating and cooling reducing reliance on technology and operation costs. Other elements include recycling and reuse of materials and waste, use of sustainable materials and deep soil zones for groundwater recharge and vegetation.

The proposal has been designed to respond sensitively to the environment and to minimise ongoing environmental costs using materials with low ongoing maintenance. The orientation and layout of apartments is such that the proposal maximises access to natural light and ventilation. Water management will be addressed through efficient landscaping and hydraulic schemes.

An increased rear setback has provided a generous deep soil provision, allowing for significant green space and vegetation. Native and local plant species have been utilised in the landscaping proposal to minimise water use. Water management has been further addressed through efficient hydraulic schemes. The proposal has been modelled for energy and water efficiency in the process of achieving its BASIX certification.

2.5. Landscape

Good design recognises that together landscape and buildings operate as an integrated and sustainable system, resulting in attractive developments with good amenity. A positive image and contextual fit of well-designed developments is achieved by contributing to the landscape character of the streetscape and neighbourhood.

Good landscape design enhances the development's environmental performance by retaining positive natural features which contribute to the local context, co-ordinating water and soil management, solar access, micro-climate, tree canopy, habitat values and preserving green networks.

Good landscape design optimises useability, privacy and opportunities for social interaction, equitable access, respect for neighbours' amenity and provides for practical establishment and long term management.

The proposed landscape design has been prepared by a qualified and experienced landscape architect and represents a coordinated landscape response with consideration for the existing site conditions, arboricultural & bushfire assessments, proposed architectural, vehicular and stormwater design.

As demonstrated in the landscape plan by TWLA, the development proposes extensive soft landscaping using mostly native Australian flora that is indigenous to the region. This will not only blend with the surrounding native vegetation, but will also soften the interface between to proposed architecture and the street providing a buffer to the public domain and neighbouring properties.

The overall scheme adds value to the residents' quality of life, contributing to biodiversity and improving air quality and provides for more desirable outdoor space and public domain.

2.6. Amenity

Good design positively influences internal and external amenity for residents and neighbours. Achieving good amenity contributes to positive living environments and resident well-being.

Good amenity combines appropriate room dimensions and shapes, access to sunlight, natural ventilation, outlook, visual and acoustic privacy, storage, indoor and outdoor space, efficient layouts and service areas and ease of access for all age groups and degrees of mobility.

The proposal presents a high level of amenity for residents; units 1-7 have been designed with a contemporary open plan living while unit 8-11 have been design as 2-storey studios to maximise natural cross ventilation and a north facing orientation. All units are provided with generous private open spaces and the provision of additional bicycle parking to provide each unit with a space is in response to the intended residents being associated UoW.

The generous sizes of the apartments give well-proportioned spaces to users. Indoor-outdoor living is encouraged with spacious balconies, designed to be adapted to their use, allowing both a sense of privacy and a plentiful amount of natural light into the space.

2.7. Safety

Good design optimises safety and security within the development and the public domain. It provides for quality public and private spaces that are clearly defined and fit for the intended purpose. Opportunities to maximise passive surveillance of public and communal areas promote safety.

A positive relationship between public and private spaces is achieved through clearly defined secure access points and well-lit and visible areas that are easily maintained and appropriate to the location and purpose.

Living spaces and balconies face the public domain to provide passive surveillance. The entry path is clearly defined at the street elevation and leads directly to a secure lobby. Common areas of the building will require key, fob or security intercom access. Public and private spaces are clearly delineated by layers of planting, metal screens and level changes.

2.8. Housing Diversity and Social Interaction

Good design achieves a mix of apartment sizes, providing housing choice for different demographics, living needs and household budgets.

Well-designed apartment developments respond to social context by providing housing and facilities to suit the existing and future social mix.

Good design involves practical and flexible features, including different types of communal spaces for a broad range of people and providing opportunities for social interaction among residents.

It is noted that the development is more akin to a micro-apartment scheme designed to take advantage of the proximity to the University of Wollongong campus that is a short walk from the site. The development is intended to be rented out with the target market being for students associated with the university. Hence the proposal adopts a different design approach to a typical apartment building in terms of the apartment mix and size of apartments which is geared towards studio and 1-bedroom units. The communal living area along the rear setback is accessible from each public level of the building and creates a series of spaces for the residents to enjoy. The primary communal space is accessible from the ground floor lobby with a direct visual link to the front entrance. Some seating has been designed withing the landscaped retaining walls while loose outdoor furniture is to be provided to allow flexibility in the use of the outdoor spaces.

2.9. Aesthetics

Good design achieves a built form that has good proportions and a balanced composition of elements, reflecting the internal layout and structure. Good design uses a variety of materials, colours and textures.

The visual appearance of a well-designed apartment development responds to the existing or future local context, particularly desirable elements and repetitions of the streetscape.

The development balances a number of quality design principles and strategies in order to present a well-resolved design intent. It is both a synthesis of its scale, built form, density and materiality as outlined in the previous sections of this document. The resulting aesthetic is an expression of contemporary, high quality apartment living within a smaller scaled residential setting.

The proposal represents a carefully designed aesthetic that balances the demands of context, environment and character. The building's presentation to Georgina Avenue is more akin to a two storey residential dwelling. The considered architectural form is in response to unique site topography creates a well-proportioned development envelope and affords excellent amenity to the residents while maintaining the amenity of the neighbouring dwelling houses. Muted bushland tones have been proposed for the material finishes to allow the proposal to sit quietly in its context.

SRH A

Attachment 1: Apartment Design Guide (ADG) Part 3 & 4 compliance table

SRH A

4-6 GEORGINA AVENUE, KEIRAVILLE, NSW 2500

20.11.2023

Apartment Design Guide Checklist

Parts 3 & 4 compliance table

(State Environmental Planning Policy No. 65)

OBJECTIVES	DESIGN CRITERIA	DESIGN GUIDANCE	COMPLIANCE/ARCHITECTS COMMENTS
3A Site analysis			
3A-1 Site analysis illustrates that design decisions have been based on opportunities and constraints of the site conditions and their relationship to the surrounding context		Each element in the Site Analysis Checklist should be addressed.	Yes
3B Orientation			
3B-1 Building types and layouts respond to the streetscape and site while optimising solar access within the development.		Buildings along the street frontage define the street, by facing it and incorporating direct access from the street. Where the street frontage is to the east or west, rear buildings should be orientated to the north. Where the street frontage is to the north or south, overshadowing to the south should be minimised and buildings behind the street frontage should be orientated to the east and west.	Yes

3B-2 Overshadowing of neighbouring properties is minimised during mid-winter.		Living areas, private open space and communal open space should receive solar access in accordance with sections 3D Communal and public open space and 4A Solar and daylight access. Solar access to living rooms, balconies and private open spaces of neighbours should be considered. Where an adjoining property does not currently receive the required hours of solar access, the proposed building ensures solar access to neighbouring properties is not reduced by more than 20%. If the proposal will significantly reduce the solar access of neighbours, building separation should be increased beyond minimums contained in section 3F Visual privacy. Overshadowing should be minimised to the south or downhill by increased upper level setbacks. It is optimal to orientate buildings at 90 degrees to the boundary with neighbouring properties to minimise overshadowing and privacy impacts, particularly where minimum setbacks are used and where buildings are higher than the adjoining development. A minimum of 4 hours of solar access should be retained to solar collectors on neighbouring buildings.	Yes Refer to shadow diagrams
3C Public domain interface			
3C-1 Transition between private and public domain is achieved without compromising safety and security.		Terraces, balconies and courtyard apartments should have direct street entry, where appropriate. Changes in level between private terraces, front gardens and dwelling entries above the street level provide surveillance and improve visual privacy for ground level dwellings. Upper level balconies and windows should overlook the public domain. Front fences and walls along street frontages should use visually permeable materials and treatments. The height of solid fences or walls should be limited to 1m.	Yes

		Length of solid walls should be limited along street frontages Opportunities should be provided for casual interaction between residents and the public domain. Design solutions may include seating at building entries, near letter boxes and in private courtyards adjacent to streets In developments with multiple buildings and/or entries, pedestrian entries and spaces associated with individual buildings/entries should be differentiated to improve legibility for residents, using a number of the following design solutions: • architectural detailing • changes in materials • plant species • colours Opportunities for people to be concealed should be minimised.	
3C-2 Amenity of the public domain is retained and enhanced.		Planting softens the edges of any raised terraces to the street, for example above sub-basement car parking. Mail boxes should be located in lobbies, perpendicular to the street alignment or integrated into front fences where individual street entries are provided. The visual prominence of underground car park vents should be minimised and located at a low level where possible. Substations, pump rooms, garbage storage areas and other service requirements should be located in basement car parks or out of view. Ramping for accessibility should be minimised by building entry location and setting ground floor levels in relation to footpath levels. Durable, graffiti resistant and easily cleanable materials should be used.	Yes

		Where development adjoins public parks, open space or bushland, the design positively addresses this interface and uses a number of the following design solutions: • street access, pedestrian paths and building entries which are clearly defined • paths, low fences and planting that clearly delineate between communal/private open space and the adjoining public open space • minimal use of blank walls, fences and ground level parking On sloping sites protrusion of car parking above ground level should be minimised by using split levels to step underground car parking.	
3D Communal and public open space			
3D-1 An adequate area of communal open space is provided to enhance residential amenity and to provide opportunities for landscaping.	1. Communal open space has a minimum area equal to 25% of the site (see figure 3D.3). 2. Developments achieve a minimum of 50% direct sunlight to the principal usable part of the communal open space for a minimum of 2 hours between 9am and 3pm on 21 June (mid-winter).	Communal open space should be co-located with deep soil areas. Direct, equitable access should be provided to communal open space areas from common circulation areas, entries and lobbies. Where communal open space cannot be provided at ground level, it should be provided on a podium or roof Where developments are unable to achieve the design criteria, such as on small lots, sites within business zones, or in a dense urban area, they should: •provide communal spaces elsewhere such as a landscaped roof top terrace or a common room •provide larger balconies or increased private open space for apartments •demonstrate good proximity to public open space and facilities and/or provide contributions to public open space	Yes
3D-2		Facilities are provided within communal open spaces and common spaces for a range of age groups.	Yes

Communal open space is designed to allow for a range of activities, respond to site condition and be attractive and inviting.		Common circulation and spaces, incorporating some of the following elements: •seating for individuals or groups •barbecue areas •play equipment or play areas •swimming pools, gyms, tennis courts or common rooms The location of facilities responds to microclimate and site conditions with access to sun in winter, shade in summer and shelter from strong winds and down drafts. Visual impacts of services should be minimised, including location of ventilation duct outlets from basement car parks, electrical substations and detention tanks.	
3D-3 Communal open space is designed to maximise safety.		Communal open space and the public domain should be readily visible from habitable rooms and private open space areas while maintaining visual privacy. Design solutions may include: •bay windows • corner windows • balconies Communal open space should be well lit. Where communal open space/facilities are provided for children and young people they are safe and contained.	Yes
3D-4 Public open space, where provided is responsive to the existing pattern and uses of the neighbourhood.		The public open space should be well connected with public streets along at least one edge. The public open space should be connected with nearby parks and other landscape elements. Public open space should be linked through view lines, pedestrian desire paths, termination points and the wider street grid.	Yes

<table>
<tr><td></td><td></td><td>Solar access should be provided year round along with protection from strong winds.
Opportunities for a range of recreational activities should be provided for people of all ages.
A positive address and active frontages should be provided adjacent to public open space.
Boundaries should be clearly defined between public open space and private areas.</td><td></td></tr>
<tr><td colspan="4">3E Deep soil zones</td></tr>
<tr><td>3E-1
Deep soil zones provide areas on the site that allow for and support healthy plant and tree growth. They improve residential amenity and promote management of water and air quality.</td><td>Design Criteria:
1. Deep soil zones are to meet the following minimum requirements:
<table><tr><th>Site Area</th><th>Minimum Dimensions</th><th>Deep soil zone (% of site area)</th></tr><tr><td>Less than 650m^2</td><td>-</td><td rowspan="3">7%</td></tr><tr><td>650 m^2 – 1,500 m^2</td><td>3m</td></tr><tr><td>Greater than 1,500 m^2</td><td>6m</td></tr></table></td><td>On some sites it may be possible to provide larger deep soil zones, depending on the site area and context:
• 10% of the site as deep soil on sites with an area of 650m² - 1,500m²
• 15% of the site as deep soil on sites greater than 1,500m²

Deep soil zones should be located to retain existing significant trees and to allow for the development of healthy root systems, providing anchorage and stability for mature trees. Design solutions may include:
• basement and sub-basement car park design that is consolidated beneath building footprints
• use of increased front and side setbacks
• adequate clearance around trees to ensure long term health
• co-location with other deep soil areas on adjacent sites to create larger contiguous areas of deeps oil

Achieving the design criteria may not be possible on some sites including where:
• the location and building typology have limited or no space for deep soil at ground level (e.g. central business district, constrained sites, high density areas, or in centres)</td><td>Yes</td></tr>
</table>

<table>
<tr><td></td><td></td><td>• there is 100% site coverage or non-residential uses at ground floor level

Where a proposal does not achieve deep soil requirements, acceptable stormwater management should be achieved and alternative forms of planting provided such as on structure.</td><td></td></tr>
<tr><td colspan="4">3F Visual privacy</td></tr>
<tr><td>3F-1
Adequate building separation distances are shared equitably between neighbouring sites, to achieve reasonable levels of external and internal visual privacy.</td><td>1. Separation between windows and balconies is provided to ensure visual privacy is achieved. Minimum required separation distances from buildings to the side and rear boundaries are:

<table><tr><th>Building Height</th><th>Habitable rooms and balconies</th><th>Non-habitable rooms</th></tr><tr><td>Up to 12m (4 storeys)</td><td>6m</td><td>3m</td></tr><tr><td>Up to 25m (5-8 storeys)</td><td>9m</td><td>4.5m</td></tr><tr><td>Over 25m (9+ storeys)</td><td>12m</td><td>6m</td></tr></table>
Note: separation distances between buildings on the same site should combine required building</td><td>Generally one step in the built form as the height increases due to building separations is desirable.
Additional steps should be careful not to cause a 'ziggurat' appearance.
For residential buildings next to commercial buildings, separation distances should be measured as follows:
• for retail, office spaces and commercial balconies use the habitable room distances
• for service and plant areas use the non-habitable room distances

New development should be located and oriented to maximise visual privacy between buildings on site and for neighbouring buildings.
Design solutions include:
• site layout and building orientation to minimise privacy impacts
• on sloping sites, apartments on different levels have appropriate visual separation distances

Apartment buildings should have an increased separation distance of 3m (in addition to the requirements set out in design criteria 1) when adjacent to a different zone that permits lower density residential development to provide for a transition in scale and increased landscaping.</td><td>Yes
The habitable rooms are orientated away from neighbouring properties</td></tr>
</table>

	separations depending on the type of room (see figure 3F.2). Gallery access circulation should be treated as habitable space when measuring privacy separation distances between neighbourhood properties.	Direct lines of sight should be avoided for windows and balconies across corners. No separation is required between blank walls.	
3F-2 Site and building design elements increase privacy without compromising access to light and air and balance outlook and views from habitable rooms and private open space.		Communal open space, common areas and access paths should be separated from private open space and windows to apartments, particularly habitable room windows. Design solutions may include: • setbacks • solid or partially solid balustrades to balconies at lower levels • fencing and/or trees and vegetation to separate spaces • screening devices • bay windows or pop out windows to provide privacy in one direction and outlook in another • raising apartments/private open space above the public domain or communal open space • planter boxes incorporated into walls and balustrades to increase visual separation • pergolas or shading devices to limit overlooking of lower apartments or private open space • on constrained sites where it can be demonstrated that building layout opportunities are limited, fixed louvres or screen panels to windows and/or balconies Bedrooms, living spaces and other habitable rooms should be separated from gallery access and other open circulation space by the apartment's service areas	Yes Planters and privacy screens are provided between the ground floor units and rear C.O.S.

		Balconies and private terraces should be located in front of living rooms to increase internal privacy Windows should be offset from the windows of adjacent buildings Recessed balconies and/or vertical fins should be used between adjacent balconies	
3G Pedestrian access and entries			
3G-1 Building entries and pedestrian access connects to and addresses the public domain.		Multiple entries (including communal building entries and individual ground floor entries) should be provided to activate the street edge. Entry locations relate to the street and subdivision pattern and the existing pedestrian network. Building entries should be clearly identifiable and communal entries should be clearly distinguishable from private entries. Where street frontage is limited and multiple buildings are located on the site, a primary street address should be provided with clear sight lines and pathways to secondary building entries.	Yes
3G-2 Access, entries and pathways are accessible and easy to identify.		Pedestrian links through sites facilitate direct connections to open space, main streets, centres and public transport Pedestrian links should be direct, have clear sight lines, be overlooked by habitable rooms or private open spaces of dwellings, be well lit and contain active uses, where appropriate.	Yes
3G-3 Large sites provide pedestrian links for access to streets and connection to destinations.			N/A

3H Vehicle access			
3H-1 Vehicle access points are designed and located to achieve safety, minimise conflicts between pedestrians and vehicles and create high quality streetscapes		Car park access should be integrated with the building's overall facade. Design solutions may include: • the materials and colour palette to minimise visibility from the street • security doors or gates at entries that minimise voids in the facade • where doors are not provided, the visible interior reflects the facade design and the building services, pipes and ducts are concealed Car park entries should be located behind the building line. Vehicle entries should be located at the lowest point of the site minimising ramp lengths, excavation and impacts on the building form and layout. Car park entry and access should be located on secondary streets or lanes where available. Vehicle standing areas that increase driveway width and encroach into setbacks should be avoided Access point locations should avoid headlight glare to habitable rooms. Adequate separation distances should be provided between vehicle entries and street intersections The width and number of vehicle access points should be limited to the minimum. Visual impact of long driveways should be minimised through changing alignments and screen planting The need for large vehicles to enter or turn around within the site should be avoided. Garbage collection, loading and servicing areas are screened. Clear sight lines should be provided at pedestrian and vehicle crossings. Traffic calming devices such as changes in paving material or textures should be used where appropriate.	Yes

		Pedestrian and vehicle access should be separated and distinguishable. Design solutions may include: • changes in surface materials • level changes • the use of landscaping for separation	
3J Bicycle and car parking			
3J-1 Car parking is provided based on proximity to public transport in metropolitan Sydney and centres in regional areas	1. For development in the following locations: • on sites that are within 800 metres of a railway station or light rail stop in the Sydney Metropolitan Area; or • on land zoned, and sites within 400 metres of land zoned, B3 Commercial Core, B4 Mixed Use or equivalent in a nominated regional centre The minimum car parking requirement for residents and visitors is set out in the Guide to Traffic Generating Developments, or the car parking requirement prescribed by the relevant council, whichever is less. The car parking needs for a development must be provided off street.	Where a car share scheme operates locally, provide car share parking spaces within the development. Car share spaces, when provided, should be on site. Where less car parking is provided in a development, council should not provide on street resident parking permits.	Yes Refer to the traffic report.
3J-3 Car park design and access is safe and secure		Supporting facilities within car parks, including garbage, plant and switch rooms, storage areas and car wash bays can be accessed without crossing car parking spaces Direct, clearly visible and well lit access should be provided into common circulation areas	Yes

		A clearly defined and visible lobby or waiting area should be provided to lifts and stairs For larger car parks, safe pedestrian access should be clearly defined and circulation areas have good lighting colour, line marking and/or bollards	
3J-4 Visual and environmental impacts of underground car parking are minimised		Excavation should be minimised through efficient car park layouts and ramp design Car parking layout should be well organised, using a logical, efficient structural grid and double loaded aisles Protrusion of car parks should not exceed 1m above ground level. Design solutions may include stepping car park levels or using split levels on sloping sites. Natural ventilation should be provided to basement and sub-basement car parking areas Ventilation grills or screening devices for car parking openings should be integrated into the facade and landscape design	On Merit The garage entry has been located at the lowest point of the site and the parking layout is designed around a logical and well organised grid. Due to the step crossfall of the site the garage entry is at grade and so technically exceeds 1m above ground. However, the entry is located on the side façade with the design incorporated into the overall volumes of the proposal. The landscaping provides a buffer and softening to visual impact of the basement to the street frontage
3J-5 Visual and environmental impacts of on-grade car parking are minimised		On-grade car parking should be avoided Where on-grade car parking is unavoidable, the following design solutions are used: • parking is located on the side or rear of the lot away from the primary street frontage	Yes

		• cars are screened from view of streets, buildings, communal and private open space areas • safe and direct access to building entry points is provided • parking is incorporated into the landscape design of the site, by extending planting and materials into the car park space • stormwater run-off is managed appropriately from car parking surfaces • bio-swales, rain gardens or on site detention tanks are provided, where appropriate • light coloured paving materials or permeable paving systems are used and shade trees are planted between every 4-5 parking spaces to reduce increased surface temperatures from large areas of paving	
3J-6 Visual and environmental impacts of above ground enclosed car parking are minimised		Exposed parking should not be located along primary street frontages Screening, landscaping and other design elements including public art should be used to integrate the above ground car parking with the facade. Design solutions may include: • car parking that is concealed behind the facade, with windows integrated into the overall facade design (approach should be limited to developments where a larger floor plate podium is suitable at lower levels) •car parking that is 'wrapped' with other uses, such as retail, commercial or two storey Small Office/Home Office (SOHO) units along the street frontage (see figure 3J.9) Positive street address and active frontages should be provided at ground level	N/A
4A Solar and daylight access			
4A-1	1. Living rooms and private open spaces of at least 70% of apartments	The design maximises north aspect and the number of single aspect south facing apartments is minimised	Yes

To optimise the number of apartments receiving sunlight to habitable rooms, primary windows and private open space	in a building receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid- winter in the Sydney Metropolitan Area and in the Newcastle and Wollongong local government areas 2. In all other areas, living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 3 hours direct sunlight between 9 am and 3 pm at mid-winter 3. A maximum of 15% of apartments in a building receive no direct sunlight between 9 am and 3 pm at mid- winter	Single aspect, single storey apartments should have a northerly or easterly aspect Living areas are best located to the north and service areas to the south and west of apartments To optimise the direct sunlight to habitable rooms and balconies a number of the following design features are used: • dual aspect apartments • shallow apartment layouts • two storey and mezzanine level apartments • bay windows To maximise the benefit to residents of direct sunlight within living rooms and private open spaces, a minimum of 1m2 of direct sunlight, measured at 1m above floor level, is achieved for at least 15 minutes Achieving the design criteria may not be possible on some sites. This includes: • where greater residential amenity can be achieved along a busy road or rail line by orientating the living rooms away from the noise source • on south facing sloping sites • where significant views are oriented away from the desired aspect for direct sunlight Design drawings need to demonstrate how site constraints and orientation preclude meeting the design criteria and how the development meets the objective	
4A-2 Daylight access is maximised where sunlight is limited		Courtyards, skylights and high level windows (with sills of 1,500mm or greater) are used only as a secondary light source in habitable rooms Where courtyards are used: • use is restricted to kitchens, bathrooms and service areas	Yes

		• building services are concealed with appropriate detailing and materials to visible walls • courtyards are fully open to the sky • access is provided to the light well from a communal area for cleaning and maintenance • acoustic privacy, fire safety and minimum privacy separation distances (see section 3F Visual privacy) are achieved Opportunities for reflected light into apartments are optimised through: • reflective exterior surfaces on buildings opposite south facing windows • positioning windows to face other buildings or surfaces (on neighbouring sites or within the site) that will reflect light • integrating light shelves into the design • light coloured internal finishes	
4A-3 Design incorporates shading and glare control, particularly for warmer months		A number of the following design features are used: • balconies or sun shading that extend far enough to shade summer sun, but allow winter sun to penetrate living areas • shading devices such as eaves, awnings, balconies, pergolas, external louvres and planting • horizontal shading to north facing windows • vertical shading to east and particularly west facing windows • operable shading to allow adjustment and choice • high performance glass that minimises external glare off windows, with consideration given to reduced tint glass or glass with a reflectance level below 20% (reflective films are avoided)	Yes
4B Natural ventilation			

4B-1 All habitable rooms are naturally ventilated		The building's orientation maximises capture and use of prevailing breezes for natural ventilation in habitable rooms Depths of habitable rooms support natural ventilation The area of unobstructed window openings should be equal to at least 5% of the floor area served Light wells are not the primary air source for habitable rooms Doors and openable windows maximise natural ventilation opportunities by using the following design solutions: • adjustable windows with large effective openable areas • a variety of window types that provide safety and flexibility such as awnings and louvres • windows which the occupants can reconfigure to funnel breezes into the apartment such as vertical louvres, casement windows and externally opening doors	Yes
4B-2 The layout and design of single aspect apartments maximises natural ventilation		Apartment depths are limited to maximise ventilation and airflow Natural ventilation to single aspect apartments is achieved with the following design solutions: • primary windows are augmented with plenums and light wells (generally not suitable for cross ventilation) • stack effect ventilation / solar chimneys or similar to naturally ventilate internal building areas or rooms such as bathrooms and laundries • courtyards or building indentations have a width to depth ratio of 2:1 or 3:1 to ensure effective air circulation and avoid trapped smells	Yes
4B-3 The number of apartments with natural cross ventilation is maximised to create a comfortable indoor environment for residents	1. At least 60% of apartments are naturally cross ventilated in the first nine storeys of the building. Apartments at ten storeys or greater are deemed to be cross ventilated only if any enclosure of the balconies	The building should include dual aspect apartments, cross through apartments and corner apartments and limit apartment depths In cross-through apartments external window and door opening sizes/areas on one side of an apartment (inlet side) are approximately equal to the	Yes

	at these levels allows adequate natural ventilation and cannot be fully enclosed 2. Overall depth of a cross-over or cross-through apartment does not exceed 18m, measured glass line to glass line	external window and door opening sizes/areas on the other side of the apartment (outlet side) Apartments are designed to minimise the number of corners, doors and rooms that might obstruct airflow Apartment depths, combined with appropriate ceiling heights, maximise cross ventilation and airflow	
4C Ceiling heights			
4C-1 Ceiling height achieves sufficient natural ventilation and daylight access	1. Measured from finished floor level to finished ceiling level, minimum ceiling heights are: Minimum ceiling height for apartment and mixed use buildings Habitable rooms: 2.7m Non-habitable: 2.4m For 2 storey apartments: 2.7m for main living area floor, 2.4m for second floor, where its area does not exceed 50% of the apartment area Attic spaces: 1.8m at edge of room with a 30 degree minimum ceiling slope If located in mixed used areas: 3.3m for ground and first floor to promote future flexibility of use These minimums do not preclude higher ceilings if desired	Ceiling height can accommodate use of ceiling fans for cooling and heat distribution	Yes
4C-2 Ceiling height increases the sense of space in		A number of the following design solutions can be used:	Yes

apartments and provides for well-proportioned rooms		• the hierarchy of rooms in an apartment is defined using changes in ceiling heights and alternatives such as raked or curved ceilings, or double height spaces • well-proportioned rooms are provided, for example, smaller rooms feel larger and more spacious with higher ceilings • Ceiling heights are maximised in habitable rooms by ensuring that bulkheads do not intrude. The stacking of service rooms from floor to floor and coordination of bulkhead location above non-habitable areas, such as robes or storage, can assist	
4C-3 Ceiling heights contribute to the flexibility of building use over the life of the building		Ceiling heights of lower level apartments in centres should be greater than the minimum required by the design criteria allowing flexibility and conversion to non-residential uses	N/A
4D Apartment size and layout			
4D-1 The layout of rooms within an apartment is functional, well organised and provides a high standard of amenity	1. Apartments are required to have the following minimum internal areas: **Apartment type** — **Minimum internal** Studio — 35m² 1 bedroom — 50m² 2 bedroom — 70m² 3 bedroom — 90m² The minimum internal areas include only one bathroom. Additional bathrooms increase the minimum internal area by 5m2 A fourth bedroom and further additional bedrooms increase the minimum internal area by 12m2 each	Kitchens should not be located as part of the main circulation space in larger apartments (such as hallway or entry space) A window should be visible from any point in a habitable room Where minimum areas or room dimensions are not met apartments need to demonstrate that they are well designed and demonstrate the usability and functionality of the space with realistically scaled furniture layouts and circulation areas. These circumstances would be assessed on their merits	Yes

	2. Every habitable room must have a window in an external wall with a total minimum glass area of not less than 10% of the floor area of the room. Daylight and air may not be borrowed from other room		
4D-2 Environmental performance of the apartment is maximised	1. Habitable room depths are limited to a maximum of 2.5 x the ceiling height 2. In open plan layouts (where the living, dining and kitchen are combined) the maximum habitable room depth is 8m from a window	Greater than minimum ceiling heights can allow for proportional increases in room depth up to the permitted maximum depths All living areas and bedrooms should be located on the external face of the building Where possible: • bathrooms and laundries should have an external openable window • main living spaces should be oriented toward the primary outlook and aspect and away from noise sources	Yes
4D-3 Apartment layouts are designed to accommodate a variety of household activities and needs	1. Master bedrooms have a minimum area of 10m2 and other bedrooms 9m2 (excluding wardrobe space) 2. Bedrooms have a minimum dimension of 3m (excluding wardrobe space) 3. Living rooms or combined living/dining rooms have a minimum width of: • 3.6m for studio and 1 bedroom apartments • 4m for 2 and 3 bedroom apartments	Access to bedrooms, bathrooms and laundries is separated from living areas minimising direct openings between living and service areas All bedrooms allow a minimum length of 1.5m for robes The main bedroom of an apartment or a studio apartment should be provided with a wardrobe of a minimum 1.8m long, 0.6m deep and 2.1m high Apartment layouts allow flexibility over time, design solutions may include: • dimensions that facilitate a variety of furniture arrangements and removal • spaces for a range of activities and privacy levels between different spaces within the apartment • dual master apartments • dual key apartments	Yes

	4. The width of cross-over or cross-through apartments are at least 4m internally to avoid deep narrow apartment layouts	*Note: dual key apartments which are separate but on the same title are regarded as two sole occupancy units for the purposes of the Building Code of Australia and for calculating the mix of apartments* • room sizes and proportions or open plans (rectangular spaces (2:3) are more easily furnished than square spaces (1:1)) • efficient planning of circulation by stairs, corridors and through rooms to maximise the amount of usable floor space in rooms	
4E Private open space and balconies			
4E-1 Apartments provide appropriately sized private open space and balconies to enhance residential amenity	Dwelling type / Minimum area / Minimum depth Studio apartments: 4m² / - 1 bedroom apartments: 8m² / 2m 2 bedroom apartments: 10m² / 2m 3+ bedroom apartments: 12m² / 2.4m 1. All apartments are required to have primary balconies as follows: The minimum balcony depth to be counted as contributing to the balcony area is 1m 2. For apartments at ground level or on a podium or similar structure, a private open space is provided instead of a balcony. It must have a minimum area of 15m2 and a minimum depth of 3m	Increased communal open space should be provided where the number or size of balconies are reduced Storage areas on balconies is additional to the minimum balcony size Balcony use may be limited in some proposals by: • consistently high wind speeds at 10 storeys and above • close proximity to road, rail or other noise sources • exposure to significant levels of aircraft noise • heritage and adaptive reuse of existing buildings In these situations, juliet balconies, operable walls, enclosed wintergardens or bay windows may be appropriate, and other amenity benefits for occupants should also be provided in the apartments or in the development or both. Natural ventilation also needs to be demonstrated	Yes

4E-2 Primary private open space and balconies are appropriately located to enhance liveability for residents		Primary open space and balconies should be located adjacent to the living room, dining room or kitchen to extend the living space Private open spaces and balconies predominantly face north, east or west Primary open space and balconies should be orientated with the longer side facing outwards or be open to the sky to optimise daylight access into adjacent rooms	Yes
4E-3 Private open space and balcony design is integrated into and contributes to the overall architectural form and detail of the building		Solid, partially solid or transparent fences and balustrades are selected to respond to the location. They are designed to allow views and passive surveillance of the street while maintaining visual privacy and allowing for a range of uses on the balcony. Solid and partially solid balustrades are preferred Full width full height glass balustrades alone are generally not desirable Projecting balconies should be integrated into the building design and the design of soffits considered Operable screens, shutters, hoods and pergolas are used to control sunlight and wind Balustrades are set back from the building or balcony edge where overlooking or safety is an issue Downpipes and balcony drainage are integrated with the overall facade and building design Air-conditioning units should be located on roofs, in basements, or fully integrated into the building design Where clothes drying, storage or air conditioning units are located on balconies, they should be screened and integrated in the building design Ceilings of apartments below terraces should be insulated to avoid heat loss	Yes

		Water and gas outlets should be provided for primary balconies and private open space	
4E-4 Private open space and balcony design maximises safety		Changes in ground levels or landscaping are minimised Design and detailing of balconies avoid opportunities for climbing and falls	Yes
4F Common circulation and spaces			
4F-1 Common circulation spaces achieve good amenity and properly service the number of apartments	1. The maximum number of apartments off a circulation core on a single level is eight 2. For buildings of 10 storeys and over, the maximum number of apartments sharing a single lift is 40	Greater than minimum requirements for corridor widths and/or ceiling heights allow comfortable movement and access particularly in entry lobbies, outside lifts and at apartment entry doors Daylight and natural ventilation should be provided to all common circulation spaces that are above ground Windows should be provided in common circulation spaces and should be adjacent to the stair or lift core or at the ends of corridors Longer corridors greater than 12m in length from the lift core should be articulated. Design solutions may include: • a series of foyer areas with windows and spaces for seating • wider areas at apartment entry doors and varied ceiling heights Design common circulation spaces to maximise opportunities for dual aspect apartments, including multiple core apartment buildings and cross over apartments Achieving the design criteria for the number of apartments off a circulation core may not be possible. Where a development is unable to achieve the design criteria, a high level of amenity for common lobbies, corridors and apartments should be demonstrated, including: • sunlight and natural cross ventilation in apartments	Yes

		• access to ample daylight and natural ventilation in common circulation spaces • common areas for seating and gathering • generous corridors with greater than minimum ceiling heights • other innovative design solutions that provide high levels of amenity Where design criteria 1 is not achieved, no more than 12 apartments should be provided off a circulation core on a single level Primary living room or bedroom windows should not open directly onto common circulation spaces, whether open or enclosed. Visual and acoustic privacy from common circulation spaces to any other rooms should be carefully controlled	
4F-2 Common circulation spaces promote safety and provide for social interaction between residents		Direct and legible access should be provided between vertical circulation points and apartment entries by minimising corridor or gallery length to give short, straight, clear sight lines Tight corners and spaces are avoided Circulation spaces should be well lit at night Legible signage should be provided for apartment numbers, common areas and general wayfinding Incidental spaces, for example space for seating in a corridor, at a stair landing, or near a window are provided In larger developments, community rooms for activities such as owners corporation meetings or resident use should be provided and are ideally co-located with communal open space Where external galleries are provided, they are more open than closed above the balustrade along their length	Yes

4G Storage			
4G-1 Adequate, well designed storage is provided in each apartment	1. In addition to storage in kitchens, bathrooms and bedrooms, the following storage is provided: Dwelling type — Storage size volume Studio apartments — 4m3 1 bedroom apartments — 6m3 2 bedroom apartments — 8m3 3+ bedroom apartments — 10m3 At least 50% of the required storage is to be located within the apartment	Storage is accessible from either circulation or living areas Storage provided on balconies (in addition to the minimum balcony size) is integrated into the balcony design, weather proof and screened from view from the street Left over space such as under stairs is used for storage	Yes
4G-2 Additional storage is conveniently located, accessible and nominated for individual apartments		Storage not located in apartments is secure and clearly allocated to specific apartments Storage is provided for larger and less frequently accessed items Storage space in internal or basement car parks is provided at the rear or side of car spaces or in cages so that allocated car parking remains accessible If communal storage rooms are provided they should be accessible from common circulation areas of the building Storage not located in an apartment is integrated into the overall building design and is not visible from the public domain	Yes
4H Acoustic privacy			
4H-1 Noise transfer is minimised through the siting of buildings and building layout		Adequate building separation is provided within the development and from neighbouring buildings/adjacent uses (see also section 2F Building separation and section 3F Visual privacy) Window and door openings are generally orientated away from noise sources	Yes

		Noisy areas within buildings including building entries and corridors should be located next to or above each other and quieter areas next to or above quieter areas Storage, circulation areas and non-habitable rooms should be located to buffer noise from external sources The number of party walls (walls shared with other apartments) are limited and are appropriately insulated Noise sources such as garage doors, driveways, service areas, plant rooms, building services, mechanical equipment, active communal open spaces and circulation areas should be located at least 3m away from bedrooms	
4H-2 Noise impacts are mitigated within apartments through layout and acoustic treatments		Internal apartment layout separates noisy spaces from quiet spaces, using a number of the following design solutions: • rooms with similar noise requirements are grouped together • doors separate different use zones • wardrobes in bedrooms are co-located to act as sound buffers Where physical separation cannot be achieved noise conflicts are resolved using the following design solutions: • double or acoustic glazing • acoustic seals • use of materials with low noise penetration properties • continuous walls to ground level courtyards where they do not conflict with streetscape or other amenity requirements	Yes
4J Noise and pollution			
4J-1 In noisy or hostile environments the impacts of external noise and pollution are minimised through the		To minimise impacts the following design solutions may be used: • physical separation between buildings and the noise or pollution source	N/A

careful siting and layout of buildings		• residential uses are located perpendicular to the noise source and where possible buffered by other uses • non-residential buildings are sited to be parallel with the noise source to provide a continuous building that shields residential uses and communal opens paces • Non-residential uses are located at lower levels vertically separating the residential component from the noise or pollution source. Setbacks to the underside of residential floor levels should increase relative to traffic volumes and other noise sources • Buildings should respond to both solar access and noise. Where solar access is away from the noise source, non-habitable rooms can provide a buffer • where solar access is in the same direction as the noise source, dual aspect apartments with shallow building depths are preferable • landscape design reduces the perception of noise and acts as a filter for air pollution generated by traffic and industry Achieving the design criteria in this Apartment Design Guide may not be possible in some situations due to noise and pollution. Where developments are unable to achieve the design criteria, alternatives may be considered in the following areas: • solar and daylight access • private open space and balconies • natural cross ventilation	
4J-2 Appropriate noise shielding or attenuation techniques for the building design, construction and choice of		Design solutions to mitigate noise include: • limiting the number and size of openings facing noise sources • providing seals to prevent noise transfer through gaps • using double or acoustic glazing, acoustic louvres or enclosed balconies(wintergardens)	Yes

materials are used to mitigate noise transmission		• using materials with mass and/or sound insulation or absorption properties e.g. solid balcony balustrades, external screens and soffits	
4K Apartment mix			
4K-1 A range of apartment types and sizes is provided to cater for different household types now and into the future		A variety of apartment types is provided The apartment mix is appropriate, taking into consideration: • the distance to public transport, employment and education centres • the current market demands and projected future demographic trends • the demand for social and affordable housing • different cultural and socioeconomic groups Flexible apartment configurations are provided to support diverse household types and stages of life including single person households, families, multi-generational families and group households	On merit It is noted that the development is more akin to a micro-apartment scheme designed to take advantage of the proximity to the University of Wollongong campus that is a short walk from the site. The development is intended to be rented out with the target market being for residents associated with the university. Hence the proposal adopts a different design approach to a typical apartment building in terms of the apartment mix and size of apartments being geared towards studios and one bedroom units
4K-2		Different apartment types are located to achieve successful facade composition and to optimise solar access (see figure 4K.3)	Yes

The apartment mix is distributed to suitable locations within the building		Larger apartment types are located on the ground or roof level where there is potential for more open space and on corners where more building frontage is available	
4L Ground floor apartments			
4L-1 Street frontage activity is maximised where ground floor apartments are located		Direct street access should be provided to ground floor apartments Activity is achieved through front gardens, terraces and the facade of the building. Design solutions may include: • both street, foyer and other common internal circulation entrances to ground floor apartments • private open space is next to the street • doors and windows face the street Retail or home office spaces should be located along street frontages Ground floor apartment layouts support small office home office (SOHO) use to provide future opportunities for conversion into commercial or retail areas. In these cases provide higher floor to ceiling heights and ground floor amenities for easy conversion	On merit The natural cross fall of the site restricts the opportunity to provide direct access from the street to the ground floor unit oriented to Georgina Avenue.
4L-2 Design of ground floor apartments delivers amenity and safety for residents		Privacy and safety should be provided without obstructing casual surveillance. Design solutions may include: • elevation of private gardens and terraces above the street level by 1-1.5m • landscaping and private courtyards • window sill heights that minimise sight lines into apartments • integrating balustrades, safety bars or screens with the exterior design Solar access should be maximised through:	Yes

		• high ceilings and tall windows • trees and shrubs that allow solar access in winter and shade in summer	
4M Facades			
4M-1 Building facades provide visual interest along the street while respecting the character of the local area		Design solutions for front building facades may include: • a composition of varied building elements • a defined base, middle and top of buildings • revealing and concealing certain elements • changes in texture, material, detail and colour to modify the prominence of elements Building services should be integrated within the overall facade Building facades should be well resolved with an appropriate scale and proportion to the streetscape and human scale. Design solutions may include: • well composed horizontal and vertical elements • variation in floor heights to enhance the human scale • elements that are proportional and arranged in patterns • public artwork or treatments to exterior blank walls • grouping of floors or elements such as balconies and windows on taller buildings Building facades relate to key datum lines of adjacent buildings through upper level setbacks, parapets, cornices, awnings or colonnade heights Shadow is created on the facade throughout the day with building articulation, balconies and deeper window reveals	Yes
4M-2 Building functions are expressed by the facade		Building entries should be clearly defined Important corners are given visual prominence through a change in articulation, materials or colour, roof expression or changes in height	Yes

		The apartment layout should be expressed externally through facade features such as party walls and floor slabs	
4N Roof design			
4N-1 Roof treatments are integrated into the building design and positively respond to the street		Roof design relates to the street. Design solutions may include: • special roof features and strong corners • use of skillion or very low pitch hipped roofs • breaking down the massing of the roof by using smaller elements to avoid bulk • using materials or a pitched form complementary to adjacent buildings Roof treatments should be integrated with the building design. Design solutions may include: • roof design proportionate to the overall building size, scale and form • roof materials compliment the building • service elements are integrated	Yes
4N-2 Opportunities to use roof space for residential accommodation and open space are maximised		Habitable roof space should be provided with good levels of amenity. Design solutions may include: • penthouse apartments • dormer or clerestory windows • openable skylights Open space is provided on roof tops subject to acceptable visual and acoustic privacy, comfort levels, safety and security considerations	On merit A rooftop communal open space could be explored however given the R2 context and topography of the site the potential privacy concerns (visual and acoustic) were considered and it thought best to avoid a rooftop communal area and contain common areas to the rear of the site and following the Wollongong DCP provisions.

			Rooftop space has been utilised for services and solar panels in-lieu of communal open space.
4N-3 Roof design incorporates sustainability features		Roof design maximises solar access to apartments during winter and provides shade during summer. Design solutions may include: • the roof lifts to the north • eaves and overhangs shade walls and windows from summer sun Skylights and ventilation systems should be integrated into the roof design	Yes
4O Landscape design			
4O-1 Landscape design is viable and sustainable		Landscape design should be environmentally sustainable and can enhance environmental performance by incorporating: • diverse and appropriate planting • bio-filtration gardens • appropriately planted shading trees • areas for residents to plant vegetables and herbs • composting • green roofs or walls Ongoing maintenance plans should be prepared Microclimate is enhanced by: • appropriately scaled trees near the eastern and western elevations for shade • a balance of evergreen and deciduous trees to provide shading in summer and sunlight access in winter • shade structures such as pergolas for balconies and courtyards	Yes

		Tree and shrub selection considers size at maturity and the potential for roots to compete Recommended tree planting in deep soil zones: Up to 850m² — 1 medium tree per 50m² of deep soil zone Between 850-1,500m² — 1 large tree or 2 medium trees per 90m² of deep soil zone Greater than 1,500m² — 1 large tree or 2 medium trees per 80m² of deep soil zone	
4O-2 Landscape design contributes to the streetscape and amenity		Landscape design responds to the existing site conditions including: • changes of levels • views • significant landscape features including trees and rock outcrops Significant landscape features should be protected by: • tree protection zones • appropriate signage and fencing during construction Plants selected should be endemic to the region and reflect the local ecology	Yes
4P Planting on structures			
4P-1 Appropriate soil profiles are provided		Structures are reinforced for additional saturated soil weight Soil volume is appropriate for plant growth, considerations include: • modifying depths and widths according to the planting mix and irrigation frequency • free draining and long soil lifespan	Yes

		• tree anchorage Minimum soil standards for plant sizes should be provided in accordance with ADG Table 5 p.116	
4P-2 Plant growth is optimised with appropriate selection and maintenance		Plants are suited to site conditions, considerations include: • drought and wind tolerance • seasonal changes in solar access • modified substrate depths for a diverse range of plants • plant longevity A landscape maintenance plan is prepared Irrigation and drainage systems respond to: • changing site conditions • soil profile and the planting regime • whether rainwater, stormwater or recycled grey water is used	Yes
4P-3 Planting on structures contributes to the quality and amenity of communal and public open spaces		Building design incorporates opportunities for planting on structures. Design solutions may include: • green walls with specialised lighting for indoor green walls • wall design that incorporates planting • green roofs, particularly where roofs are visible from the public domain • planter boxes Note: structures designed to accommodate green walls should be integrated into the building facade and consider the ability of the facade to change over time	Yes
4Q Universal design			
4Q-1 Universal design features are included in apartment		Developments achieve a benchmark of 20% of the total apartments incorporating the Livable Housing Guideline's silver level universal design features	Yes

design to promote flexible housing for all community members			
4Q-2 A variety of apartments with adaptable designs are provided		Adaptable housing should be provided in accordance with the relevant council policy Design solutions for adaptable apartments include: • convenient access to communal and public areas • high level of solar access • minimal structural change and residential amenity loss when adapted • larger car parking spaces for accessibility • parking titled separately from apartments or shared car parking arrangements	Yes
4Q-3 Apartment layouts are flexible and accommodate a range of lifestyle needs		Apartment design incorporates flexible design solutions which may include: • rooms with multiple functions • dual master bedroom apartments with separate bathrooms • larger apartments with various living space options • open plan 'loft' style apartments with only a fixed kitchen, laundry and bathroom	Yes
4R Adaptative reuse			
4R-1 New additions to existing buildings are contemporary and complementary and enhance an area's identity and sense of place		Design solutions may include: • new elements to align with the existing building • additions that complement the existing character, siting, scale, proportion, pattern, form and detailing • use of contemporary and complementary materials, finishes, textures and colours Additions to heritage items should be clearly identifiable from the original building	N/A

		New additions allow for the interpretation and future evolution of the building	
4R-2 Adapted buildings provide residential amenity while not precluding future adaptive reuse		Design features should be incorporated sensitively into adapted buildings to make up for any physical limitations, to ensure residential amenity is achieved. Design solutions may include: • generously sized voids in deeper buildings • alternative apartment types when orientation is poor • using additions to expand the existing building envelope Some proposals that adapt existing buildings may not be able to achieve all of the design criteria in this Apartment Design Guide. Where developments are unable to achieve the design criteria, alternatives could be considered in the following areas: • where there are existing higher ceilings, depths of habitable rooms could increase subject to demonstrating access to natural ventilation, cross ventilation (when applicable) and solar and daylight access • alternatives to providing deep soil where less than the minimum requirement is currently available on the site • building and visual separation – subject to demonstrating alternative design approaches to achieving privacy • common circulation • car parking • alternative approaches to private open space and balconies	N/A
4S Mixed use			
4S-1 Mixed use developments are provided in appropriate locations and provide active		Mixed use development should be concentrated around public transport and centres Mixed use developments positively contribute to the public domain. Design solutions may include: • development addresses the street	N/A

street frontages that encourage pedestrian movement		• active frontages are provided • diverse activities and uses • avoiding blank walls at the ground level • live/work apartments on the ground floor level, rather than commercial	
4S-2 Residential levels of the building are integrated within the development, and safety and amenity is maximised for residents		Residential circulation areas should be clearly defined. Design solutions may include: • residential entries are separated from commercial entries and directly accessible from the street • commercial service areas are separated from residential components • residential car parking and communal facilities are separated or secured • security at entries and safe pedestrian routes are provided • concealment opportunities are avoided Landscaped communal open space should be provided at podium or roof levels	N/A
4T Awnings and signage			
4T-1 Awnings are well located and complement and integrate with the building design		Awnings should be located along streets with high pedestrian activity and active frontages. A number of the following design solutions are used: • continuous awnings are maintained and provided in areas with an existing pattern • height, depth, material and form complements the existing street character • protection from the sun and rain is provided • awnings are wrapped around the secondary frontages of corner sites • awnings are retractable in areas without an established pattern	Yes

		Awnings should be located over building entries for building address and public domain amenity Awnings relate to residential windows, balconies, street tree planting, power poles and street infrastructure Gutters and down pipes should be integrated and concealed Lighting under awnings should be provided for pedestrian safety	
4T-2 Signage responds to the context and desired streetscape character		Signage should be integrated into the building design and respond to the scale, proportion and detailing of the development Legible and discrete way finding should be provided for larger developments Signage is limited to being on and below awnings and a single facade sign on the primary street frontage	N/A
4U Energy efficiency			
4U-1 Development incorporates passive environmental design		Adequate natural light is provided to habitable rooms Well located, screened outdoor areas should be provided for clothes drying	Yes
4U-2 Development incorporates passive solar design to optimise heat storage in winter and reduce heat transfer in summer		A number of the following design solutions are used: • the use of smart glass or other technologies on north and west elevations • thermal mass in the floors and walls of north facing rooms is maximised • polished concrete floors, tiles or timber rather than carpet • insulated roofs, walls and floors and seals on window and door openings • overhangs and shading devices such as awnings, blinds and screens	Yes Refer to the BASIX Certificate

		Provision of consolidated heating and cooling infrastructure should be located in a centralised location (e.g. the basement)	
4U-3 Adequate natural ventilation minimises the need for mechanical ventilation		A number of the following design solutions are used: • rooms with similar usage are grouped together • natural cross ventilation for apartments is optimised • natural ventilation is provided to all habitable rooms and as many non-habitable rooms, common areas and circulation spaces as possible	Yes
4V Water management and conservation			
4V-1 Potable water use is minimised		Water efficient fittings, appliances and wastewater reuse should be incorporated Apartments should be individually metered Rainwater should be collected, stored and reused on site Drought tolerant, low water use plants should be used within landscaped areas	Yes Refer to the BASIX Certificate and Stormwater Plans
4V-2 Urban stormwater is treated on site before being discharged to receiving waters		Water sensitive urban design systems are designed by a suitably qualified professional A number of the following design solutions are used: • runoff is collected from roofs and balconies in water tanks and plumbed into toilets, laundry and irrigation • porous and open paving materials is maximised • on site stormwater and infiltration, including bio- retention systems such as rain gardens or street tree pits	Yes Refer to the Stormwater Plans
4V-3 Flood management systems are integrated into site design		Detention tanks should be located under paved areas, driveways or in basement car parks On large sites parks or open spaces are designed to provide temporary on site detention basins	Yes Refer to the Stormwater Plans

4W Waste management			
4W-1 Waste storage facilities are designed to minimise impacts on the streetscape, building entry and amenity of residents		Adequately sized storage areas for rubbish bins should be located discreetly away from the front of the development or in the basement car park Waste and recycling storage areas should be well ventilated Circulation design allows bins to be easily manoeuvred between storage and collection points Temporary storage should be provided for large bulk items such as mattresses A waste management plan should be prepared	Yes Bin storage is included within basement.
4W-2 Domestic waste is minimised by providing safe and convenient source separation and recycling		All dwellings should have a waste and recycling cupboard or temporary storage area of sufficient size to hold two days worth of waste and recycling Communal waste and recycling rooms are in convenient and accessible locations related to each vertical core For mixed use developments, residential waste and recycling storage areas and access should be separate and secure from other uses Alternative waste disposal methods such as composting should be provided	Yes
4X Building maintenance			
4X-1 Building design detail provides protection from weathering		A number of the following design solutions are used: • roof overhangs to protect walls • hoods over windows and doors to protect openings • detailing horizontal edges with drip lines to avoid staining of surfaces • methods to eliminate or reduce planter box leaching • appropriate design and material selection for hostile Locations	Yes
4X-2		Window design enables cleaning from the inside of the building	Yes

Systems and access enable ease of maintenance		Building maintenance systems should be incorporated and integrated into the design of the building form, roof and facade Design solutions do not require external scaffolding for maintenance access Manually operated systems such as blinds, sunshades and curtains are used in preference to mechanical systems Centralised maintenance, services and storage should be provided for communal open space areas within the building	
4X-3 Material selection reduces ongoing maintenance costs		A number of the following design solutions are used: • sensors to control artificial lighting in common circulation and spaces • natural materials that weather well and improve with time such as face brickwork • easily cleaned surfaces that are graffiti resistant • robust and durable materials and finishes are used in locations which receive heavy wear and tear, such as common circulation areas and lift interiors	Yes

Wollongong Design Review Panel via MS Teams Meeting
Meeting minutes and recommendations

Date	9 October 2023
Meeting location	Wollongong City Council Administration Offices
Panel members	(Chair) David Jarvis
	(Member) Sonny Embleton
	(Member) Sue Hobley
Apologies	None
Council staff	John Wood – City Wide Development Manager Rodney Thew – Senior Development Project Officer Amanda Kostovski – Design Expert Kristy Robinson – Senior Development Project Officer Eliza Metcalf – Cadet Planner
Guests/ representatives of the applicant	Sue Ross – Owner Shaun Kelly – Owner Daniel Watts – Bureau SRH Architects Sion Hanson – Bureau SRHA Architects Tanya Wood - TWLA
Declarations of Interest	None
Item number	1
DA number	DA-2022/1343
Reason for consideration by DRP	SEPP 65 – Design Advice
Determination pathway	Wollongong Local Planning Panel (WLPP)
Property address	4-6 Georgina Avenue, Keiraville
Proposal	Consolidation of lots, demolition of existing structures and construction of a residential flat building with basement parking and associated external works
Applicant or applicant's representative address to the design review panel	
Background	The site was previously inspected by the Panel on 22 May 2023
Design Quality Principles SEPP 65	
Context and Neighbourhood Character	The site is located in a suburban neighbourhood in close proximity to Wollongong University. The southern site boundary fronts Georgina Avenue, which consists predominantly of low scale detached residential dwellings (1 and 2 storeys). The visual character of dwellings in the immediate vicinity of the site varies to include hipped, gabled and flat roofs. The site's northern boundary adjoins an area of natural bushland and open space, owned by the University. This provides the site with an excellent opportunity for outlook, solar access and ecological connectivity. The applicant Is encouraged to liaise with the university to determine if there is potential to provide access from the site directly to the university. The site is both bushfire and flood affected, which effectively constrains the buildable area of the site, requiring built form to be setback 10m from the rear boundary and the site to be designed and managed for bushfire risk. The site falls dramatically (13m change in level) from its north-western corner down to the street.
Built Form and Scale	The proposed building has been developed to respond to the constraints of the site in a reasonable manner. The ground floor

	has been set at an appropriate level, which provides accessible entry from the street (adjacent to the western boundary) and a reasonable connection to existing ground level at the rear of the site. Vehicle access is provided from the west at the low point of the site, allowing access into the basement car park without the need for a steep vehicular ramp. Entry and circulation In response to the Panel's previous comments the lift has been relocated and the entry reconfigured to provide a rational circulation strategy with a direct connection to the primary area of Communal Open Space. Two storey apartments, units 8, 9, 10 and 11. Two storey studio apartments have been developed, spanning levels 1 and 2. The two-level studios will receive excellent solar access, have a desirable outlook over landscape plantings / bushland and provide two clearly defined spaces that can be used for living and sleeping. Unit 8 is serviced by a large terrace located on the second floor. Further development of this unit should seek to relate the living space to the roof top terrace and configure the terrace to better integrate with the roof. To achieve this goal the living space / kitchenette could be relocated to level 2 and the extent of the roof terrace adjusted to better relate to the spaces it serves. The interface between the roof and the terrace should be developed to improve amenity, Overlooking of the roof should be limited and views directed north towards the bushland. This can be achieved with a combination of planters and screening. Any planters that are incorporated must satisfy bush fire mitigation requirements and address on-going maintenance needs. Communal Open space The steep topography of the site makes it extremely difficult to provide an accessible path of travel to all landscape areas within the site. It is inevitable that the eastern and western edges of the site will not be accessible, Australian Standard requirements for an accessible path of travel may not be achievable. To ensure that amenity to all residents is maximized it is essential that the primary area of COS that is accessed directly from the lobby is maximized in both area and amenity. Fortunately, this space has good solar access, a desirable outlook and a clear and direct connection to the entry lobby. Further detailed recommendations outlining how the quality of this space can be further improved are outlined below (Landscape). Eastern interface, units 3, 4, 6 and 7. Units 4 and 7 orientate living rooms and balconies directly towards the eastern boundary. To mitigate potential privacy issues with neighbours and provide a stronger connection to the

	street, it is recommended that the living / dining rooms be reorientated (with the long edge of the living room running in an east / west direction) and balconies reorientated towards the street. This strategy will allow a north facing window to be created in the north-east corner of each living room to provide solar access to these units. The bedrooms of units 3 and 7 are serviced by high-level windows oriented east toward the neighbour. This is contrary to objective 4A-2 of the ADG which states: *Courtyards, skylights and high level windows (with sills of 1,500mm or greater) are used only as a secondary light source in habitable rooms*. To address this issue, it is recommended that the eastern wall of the bedrooms be realigned with the prominent geometry of the building (not the geometry of the eastern boundary) to create square rooms that are serviced by a narrow north facing window. Note: it is acknowledged that this will result in a small area of building at ground floor level that does not sit within the 6m setback. However, on balance this minor non-compliance will provide a better interface with the neighbour and improved amenity for residents. <u>Rooftop plant</u> AC units have been located on the upper-level roof and enclosed by screens. It is a concern that the plant enclosure is located too close to the western edge of the building and will be visible from the public domain and the adjoining neighbour. The vista from the north-south aligned portion of Georgina Avenue is an important consideration in this regard, noting the 3D render on the front page suggests that the screening would be visible. A visual impact study should be undertaken to assist in determining the least intrusive location for the plant / enclosure. It is anticipated that this will be further away from the western edge of the building. The use of a palisade fence (PS) as a screen to the plant is also questioned. It is suggested that a more solid screen that is dark and recessive in colour be used. The type of screen must be clearly documented.
Density	The proposal will be a residential flat building set within a low-scale residential context. Every care must be taken to ensure that the scale and expression of the building are in harmony with the low-density character of neighbourhood. To ensure this goal is achieved, deep soil landscaping has been maximized within the street setback and the building form has been expressed as two separate two storey forms that respond to

	the topography of the site. The proposal is consistent with the desired future character of the neighbourhood.
Sustainability	Opportunities to harvest rainwater for use in maintaining any plantings established on the building or the site should be explored. Other water minimisation measures (reuse of rainwater for toilet flushing and washing machines) should also be considered. The use of solar power and solar water heating, as well as general electrification, is strongly encouraged, particularly to service communal circulation and parking areas. Low embodied energy should be a consideration in material and finish selections. Landscape plantings should address aims for biodiversity protection, weed minimisation and low water use. The Panel strongly recommends the use of locally indigenous species in all amenity plantings, particularly trees. The Panel recommends that electric vehicle charging stations be provided. The proposal is capable of meeting ADG requirements for both cross ventilation and solar access.
Landscape	As noted (see Built form), the steep slope of the site constrains the ability to achieve universal access to the communal open space (COS). The Panel considers that the following measures will ensure a reasonable amount of high-quality, accessible COS: - Increase the area of the 'Primary C.O.S' (this could be achieved by reconfiguring the triangular terrace to the west), delete the lawn, pave and furnish the area to provide a generously proportioned, high usage, accessible space; - Reconfigure the level of the garden bed separating the 'Primary C.O.S.' and the COS immediately to the east to provide a more permeable interface between these spaces; - Reconfigure the forms of the terracing of the western end to achieve a more organic appearance; - Delete the small sets of steps providing access to the two terraces at the western end of the COS and instead provide access to them off the large staircase; - Delete the proposed clotheslines and paving from the lower level 'secondary COS' on the eastern boundary and plant the space out with shade tolerant, trafficable ground covers (e.g. *Oplismenus aemulis; O. imbecillis* or *Dichondra repens*); and - Delete the on-slab turf in the western end of terrace (enclosed by the stairs on its eastern and northern

	sides) and create a 'service area' that includes clothes-drying facilities and, possibly, a gated screen to improve the amenity of the COS and POS to the east; Gates to provide direct access to the COS from the POS of units 1 and 2 should be provided. The design of the COS should allow for the later inclusion of a pathway to a gate in the event that the University is amenable to allowing direct access to its property from the site. *Alocasia macrorrhiza* (Elephant's Ears) is an environmental weed in parts of Sydney; it should be substituted with a locally indigenous species.
Amenity	The proposal has provided a combination of one-bedroom units and studio apartments. This appears to be reasonable strategy to create a housing option for students, given the sites close proximity to Wollongong University. Units are modestly proportioned, but generally configured to provide a reasonable level of amenity. However, further consideration of the following issues is recommended: - Further development of units 4 and 7 to better address the street, mitigate potential privacy issues and increase solar access to living areas (see comments above, Built Form). - Further development of units 3 and 6 to provide outlook to the bedrooms (see comments above, Built Form). - Further development to unit 8, to provide a direct connection between living room and roof terrace (see comments above, Built Form). - The provision of a laundry in unit 10. - Reorientation of the laundry in unit 7 to open into the circulation space rather than the living room. - Detail consideration of joinery items (kitchenettes and cupboard servicing living rooms) will play an import roll in the eventual success of each unit. Specifically, opportunities should be sought to facilitate multifunctional solutions and to maximize efficient use of space and internal storage. - Door swings should be shown on all plans. - The awning to the front entry should be lowered to ensure shelter from rain. Visitor parking spaces are located within the basement carpark, this is a reasonable strategy. However, provision must be made for residents to provide convenient access for visitor without residents leaving their units.

Safety	It is recommended that input of a BCA consult is provided. A direct view of the basement entry is not available from the street. This may potentially result in visitors entering the driveway, then being required to reverse their vehicles to exit the site if the basement carpark door is not opened. The applicant is encouraged to discuss this issue in further detail with Council's engineer, to assist in developing a safe and convenient vehicle entry strategy.
Housing Diversity and Social Interaction	The proposal would provide a reasonable housing option for students of Wollongong University. Further development of the COS is required to create / improved opportunities for social interaction.
Aesthetics	The strategy to express the building as two separate forms expressed with contrasting materials is a sound one that assists in mitigating the bulk of the building whilst responding to the topography of the site. The articulation of each building element, the materials and textures provided, and the sense of layering created by landscaping and contrasting/ recessive materials for the rear portion of the building, interact to make a positive contribution to the character of the building in its context. The alternating colours for the 3-storey portion of the building are supported by the Panel because they utilise a bushland palette that will enable the taller bulk of the building to sit comfortably in its context with reduced visual impact. The aesthetic merit of the hit and miss brickwork to the egress stair is acknowledged by the Panel. However, the applicant is encouraged to verify the implications of applying this finish to the egress stair adjacent to an egress path. The input of a BCA consultant is recommended. The proposed hit and miss brick work to the eastern wall of the basement is also a reasonable proposal that will contribute to the natural ventilation of the basement. However, it must be demonstrated that the level of openness provided to the basement does not compromise the amenity of the eastern neighbour (acoustic and light spill from headlights). The detail treatment of fencing along the eastern boundary will play an important role in mitigating potential privacy issues. (It is noted that an acoustic wall is to be provided along this boundary). Detail sections and a materials schedule (DA302 and DA600) have been provided to document the aesthetic of the building. However, to ensure that the design intent shown in the perspective studies is realized, further detail information is required. - Remove the words "or similar" from drawing DA600 - Provide a detail of balustrade / screens that shows dimensions and spacing of all members.

	Drawings state 'metal palisade balustrade': this term can cover a variety profiles. The profile shown in the perspectives is a flat bar profile, this typology of balustrade will provide a positive contribution to the aesthetic of the building, its dimensions should be clearly captured in the DA documentation.
Key issues, further Comments & Recommendations	The proposal will potentially provide a good housing option for students of the local university. However, further refinements are required to improve amenity, refine aesthetics and mitigate potential privacy issues: - Further development of COS. - Refinement of eastern interface. - Repositioning of roof top plant. - Further refinements to improve amenity. - Clarification of building materials.

ATTACHMENT 8 - DRAFT CONDITIONS FOR: DA-2022/1343

Consent has been granted subject to the following conditions:

1. Approved Plans and Supporting Documentation

Development must be carried out in accordance with the following approved plans and supporting documentation (stamped by Council), except where the conditions of this consent expressly require otherwise.

Plan No	Revision No	Plan Title	Drawn By	Dated
DA000	04	Cover Page	SRH Architects Pty Ltd	3 November 2023
DA004	02	Amalgamation Plan	SRH Architects Pty Ltd	3 November 2023
DA005	03	Demolition Plan	SRH Architects Pty Ltd	3 November 2023
DA100	05	Site & Roof Plan	SRH Architects Pty Ltd	3 November 2023
DA101	05	Basement Plan	SRH Architects Pty Ltd	22 November 2023
DA102	05	Ground Floor Plan	SRH Architects Pty Ltd	3 November 2023
DA103	05	First Floor Plan	SRH Architects Pty Ltd	21 November 2023
DA104	05	Second Floor Plan	SRH Architects Pty Ltd	3 November 2023
DA105	04	Adaptable Units Layouts	SRH Architects Pty Ltd	3 November 2023
DA200	05	Elevations 01	SRH Architects Pty Ltd	3 November 2023
DA201	05	Elevations 02	SRH Architects Pty Ltd	3 November 2023
DA300	04	Sections	SRH Architects Pty Ltd	16 November 2023
DA301	03	Detailed Sections 01	SRH Architects Pty Ltd	3 November 2023
DA302	01	Detailed Sections 02	SRH Architects Pty Ltd	3 November 2023

In the event of any inconsistency between the approved plans and the supporting documentation, the approved plans prevail. In the event of any inconsistency between the approved plans and a condition of this consent, the condition prevails.

Note: An inconsistency occurs between an approved plan and supporting documentation or between an approved plan and a condition when it is not possible to comply with both at the relevant time.

Reason:
To ensure all parties are aware of the approved plans and supporting documentation.

General Conditions

2. Earthworks Plan Development

An earthworks plan is to be developed by the geotechnical consultant prior to start of earthworks.

Reason:
To comply with Council's Development Control Plan.

3. **Earthworks Plan Modifications**
The earthworks plan may require modification considering any subsequent geotechnical reports commissioned to address unforeseen geotechnical conditions encountered during the site preparation works.

Reason:
To comply with Council's Development Control Plan.

4. **Earthworks Plan Recommendations**
All recommendations of Geofirst Pty Ltd in their geotechnical report dated 18 October 2022 are to be accommodated in the earthworks plan.

Reason:
To comply with Council's Development Control Plan.

5. **Ground Disturbance**
No disturbance of ground is to occur beyond site boundaries. A minimum buffer between site boundaries and the construction of retaining structures is to be recommended by the geotechnical consultant to ensure adjoining property is not adversely impacted upon by this development.

Reason:
To comply with Council's Development Control Plan.

6. **Structural Design Amendments**
The structural designs are to be confirmed or amended by the structural engineer based on the works-as-executed geotechnical report.

Reason:
To comply with Council's Development Control Plan.

7. **WAE**
At the completion of site preparation earthworks, the geotechnical consultant is to prepare a works-as-executed report detailing encountered geotechnical conditions and how the remedial works addressed these conditions so that the residual geotechnical constraints can be accommodated within the structural designs for the development.

Reason:
To comply with Council's Development Control Plan.

8. **Excavation Support**
All excavations need to be supported during and after construction particularly to protect adjoining property with nearby existing development.

Reason:
To comply with Council's Development Control Plan.

9. **Hard Bedrock**
Hard bedrock where encountered will be difficult to excavate. Alternative excavation methods should be considered to minimise noise and vibration.

Reason:
To comply with Council's Development Control Plan.

10. **Retaining Wall Design**
Retaining wall design is not to include anchors extending on to adjoining property without the written consent of the adjoining property owner.

Reason:
To comply with Council's Development Control Plan.

11. **Material Disposal**
Excavated material needs to be classified and taken to a facility licenced to take the waste.

Reason:
To comply with Council's Development Control Plan.

12. **Tree Retention/Removal**
The developer shall retain the existing tree(s) indicated on Landscape Plan, Tanya Wood Landscape Architecture, issue H date 3.11.23 consisting of tree(s) numbered 1,2,6.

Any branch pruning, which has been given approval, must be carried out by a qualified arborist in accordance with Australian Standard AS 4373:2007.

All tree protection measures are to be installed in accordance with Australian standard AS 4970:2009 Protection of Trees on development sites.

All recommendations in the Arboricultural Impact Assessment by Redgum Horticultural are to be implemented including and not restricted to: remedial tree pruning, dead wood removal, fencing and signage, sediment buffer, stem protection, establishing tree protection zones and watering and root hormone application if required.

This consent permits the removal of trees numbered 3,4,5 and 7 as indicated on the Landscape Plan, Tanya Wood Landscape Architecture, issue H date 3.11.23 No other trees shall be removed without prior written approval of Council.

Reason:
To protect the amenity of the environment and the neighbourhood.

13. Compliance with the Building Code of Australia (BCA)
Building work must be carried out in accordance with the requirements of the BCA.

Reason:
To ensure the development is built in accordance with the Building Code of Australia.

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

A Construction Certificate certifies that the provisions of Part 3 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021 have been satisfied, including compliance with all relevant conditions of Development Consent and the Building Code of Australia.

Note: The Certifier must cause notice of its determination to be given to the consent authority, and to the Council, by forwarding to it, within two (2) days after the date of the determination, the plans and documentation referred to in Section 13 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021.

Reason:
To satisfy the requirements of the legislation.

15. Disability Discrimination Act 1992
This consent does not imply or confer compliance with the requirements of the Disability Discrimination Act 1992.

It is the responsibility of the applicant to guarantee compliance with the requirements of the Disability Discrimination Act 1992. The current Australian Standard AS 1428.1:2009: Design for Access and Mobility is recommended to be referred for specific design and construction requirements, in order to provide appropriate access to all persons within the building.

Reason:
To satisfy the requirements of the legislation.

16. 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 150mm in height for each number and letter in the alphabet.

The mailboxes shall be individually keyed to avoid theft of documents/mail.

Reason:
To identify the property.

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

Reason:
To satisfy the requirements of the legislation.

18. Height Restriction

The development shall be restricted to the following maximum heights of:

63.25 metres AHD for the parapet on the Southern facade; and

67.15 metres AHD for the balustrade of the air conditioning plant;

from the natural ground level (inclusive of the lift tower and any air conditioning plant). Any alteration to the maximum height of the development will require further separate approval of Council.

Reason:
To ensure all parties are aware of the approved plans and supporting documentation.

19. Muted Bushland Tones - External Finishes

To ensure the development is compatible with the surrounding environment, colours and finishes are to be muted bushland tones. In this regard white, light or bright colours are not permissible.

Reason:
To ensure the development is compatible with the surrounding environment.

20. Adaptable Units

The nominated adaptable units within the development must be designed and constructed so as to be capable of adaptation for disabled or elderly residents. Dwellings must be designed in accordance with the Australian Adaptable Housing Standard (AS 4299-1995), which includes "pre-adaptation" design details to ensure visitability is achieved. Level access is required to be provided between the internal living space and balcony of the adaptable units and sufficient circulation space is required throughout.

Reason:
To ensure adaptable units are constructed in accordance with the Standard.

21. NSW Rural Fire Service (RFS)

Pursuant to Section 4.14 of the Environmental Planning and Assessment (EP&A) Act 1979 – requirements imposed by the NSW RFS dated 24 August 2018 as attached shall form part of this Notice of Determination.

Reason:
To satisfy the requirements of the legislation.

22. Development Contributions

In accordance with Section 4.17(1)(h) of the Environmental Planning and Assessment Act 1979 and the Wollongong City Wide Development Contributions Plan (2022), a monetary contribution of $29,400.00 (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 proposed cost of development and the applicable percentage levy rate.

The contribution amount will be indexed quarterly until the date of payment using Consumer Price Index; All Groups, Sydney (CPI) based on the formula show in the Contributions Plan.

To request an invoice to pay the contribution amount go www.wollongong.nsw.gov/contributions and submit a contributions enquiry. The following will be required:

- Application number and property address.
- Name and address of who the invoice and receipt should be issue to.
- Email address where the invoice should be sent.

A copy of the Contributions Plan and accompanying information is available on Council's website www.wollongong.gov.au.

Reason:
To ensure the development contributes to the provision of local infrastructure, through the payment of development contributions

Before the Issue of a Construction Certificate

23. Underfloor drainage design for through-flow of groundwater
Prior to the issue of the Construction Certificate amended construction plans are to be prepared implementing all the recommendations of the groundwater monitoring report prepared by Geofirst Pty Ltd dated 20 April 2023 to provide the basement carpark with an underfloor drainage design for through-flow of groundwater. A copy of amended plan must be submitted to Principal Certifier.

Reason:
To comply with Council's Development Control Plan.

24. Amend Plans with Acoustic Recommendations
Prior to issue of construction Certificate amended construction plans implementing all the recommendations of Section 6.0 – Acoustic Recommendation of the acoustic report prepared by ViPAC Engineering and Science Ltd dated 7 December 2022 to comply with the Noise Policy for Local Government and Sleep Disturbance criteria. A copy of amended plan must be submitted to Principal Certifier.

Reason:
To satisfy the requirements of the legislation.

25. Car Parking and Access
The development shall make provision for a total of 11 car parking spaces, 3 visitor spaces, and 12 bicycle spaces. 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. The parking spaces designated to Units 1 & 2 are not required to be line marked to the Australian Standard - AS2890.6 – Off-street parking for people with disabilities until such time that they are adapted.

Reason:
To ensure compliance with Australian Standards.

26. Parking Dimensions
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 AS 2890.1, except where amended by other conditions of this consent. Details of such compliance are to be reflected on the Construction Certificate plans.

Reason:
To ensure compliance with Australian Standards.

27. Disabled Person Parking Space Dimensions
Each disabled person's parking space must comply with the current relevant Australian Standard AS 2890.6 – Off-street parking for people with disabilities. This requirement shall be reflected on the Construction Certificate plans.

Reason:
To ensure compliance with Australian Standards.

28. Security Roller Shutters for Basement Car Parking Areas
The installation of any security roller shutter for the basement car parking area shall not restrict access to any designated visitor car parking space. In the event that the approved visitor car parking spaces are located behind any proposed security roller shutter, an intercom system is required to be installed to enable visitor access into the basement car parking area. This requirement is to be reflected on the Construction Certificate plans and any supporting documentation for the endorsement of the Principal Certifier prior to the release of the Construction Certificate.

Reason:
To comply with Council's Development Control Plan.

29. Depth and Location of Services
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.

Reason:
To ensure development does not impact services.

30. Certification for Landscape and Drainage
The submission of certification from a suitably qualified and experienced landscape designer and drainage consultant to the Principal Certifier prior to the issue of the Construction Certificate, confirming that the landscape plan and the drainage plan are compatible.

Reason:
To ensure development does not impact services.

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

a. a plan of the wall showing location and proximity to property boundaries;

b. an elevation of the wall showing ground levels, maximum height of the wall, materials to be used and details of the footing design and longitudinal steps that may be required along the length of the wall;

c. details of fencing or handrails to be erected on top of the wall;

d. sections of the wall showing wall and footing design, property boundaries, subsoil drainage and backfill material. Sections shall be provided at sufficient intervals to determine the impact of the wall on existing ground levels. The developer shall note that the retaining wall, subsoil drainage and footing structure must be contained wholly within the subject property;

e. the proposed method of subsurface and surface drainage, including water disposal. This is to include subsoil drainage connections to an inter-allotment drainage line or junction pit that discharges to the appropriate receiving system;

f. the assumed loading used by the engineer for the wall design; and

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

Reason:
To comply with Council's Development Control Plan.

32. 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.

Reason:
To comply with Council's Development Control Plan.

33. Sizing of 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% AEP 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.

Reason:
To comply with Council's Development Control Plan.

34. Stormwater Drainage Design

A detailed drainage design for the development must be submitted to and approved by the Principal Certifier 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 concept plan/s lodged for development approval, Reference No 200259-001-STW000 to 2000259-000-STW105, 200259-STW201 to 2000259-STW202, and 200259-STW301 to 200259-STW302 issue 4, dated 29/06/2023.

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% AEP 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.

Reason:
To comply with Council's Development Control Plan.

35. Flood Level Requirements

The following requirements shall be reflected on the Construction Certificate plans, prior to the release of the Construction Certificate:

a. Any portion of the north-eastern retaining wall (flood wall) below RL 55.11 metres AHD should be built from flood compatible materials. Where materials are proposed and not listed in Appendix B of Chapter E13 of the Wollongong DCP 2009, relevant documentation from the manufacturer shall be provided demonstrating that the materials satisfy the definition of 'flood compatible materials' as stated in Chapter E13 of the Wollongong DCP 2009.

b. The proposed north-eastern retaining wall (flood wall) shall be designed to withstand the forces of floodwater, debris and buoyancy up to and including the 1% AEP flood level plus freeboard being RL 55.11 metres AHD.

Reason:
To comply with Council's Development Control Plan.

36. On-Site Stormwater Detention (OSD) Design

The developer must provide 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 Certifier 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 10.2.4 of Chapter E14 of the Wollongong DCP 2009.

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 600/900mm x 600/900mm 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 10.2.6 and 10.4.4 of Chapter E14 of the Wollongong DCP 2009.

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/Subdivision Certificate:

    i. The structure is an OSD facility, being part of the stormwater drainage network, and is not to be tampered with.

    ii. Identification number (DA-2022/1343).

    iii. Any specialist maintenance requirements.

h. Must include a maintenance schedule for the OSD system, generally in accordance with Chapter E14 of the Wollongong DCP 2009.

Reason:
To comply with Council's Development Control Plan.

37. Site Filling
Filling on the site being within the floodplain shall be restricted to within the proposed building footprint and ramped areas immediately adjacent to the garage only. No wholesale filling of the site within the floodplain is permitted. This requirement shall be reflected on the Construction Certificate plans.

Reason:
To comply with Council's Development Control Plan.

38. No Adverse Runoff Impacts on Adjoining Properties
The design of the development shall ensure there are no adverse effects to adjoining properties or upon the land as a result of flood or stormwater runoff.

Reason:
To protect neighbourhood amenity.

39. Pump System
A pump system shall be provided in association with the detailed drainage design for the site to cater for stormwater from a prolonged/extreme storm event entering the basement. The pump system shall be designed by a suitably qualified and experienced civil engineer and reflected on the Construction Certificate plans and supporting documentation.

Reason:
To comply with Council's Development Control Plan.

40. Basement Waterproofing
Full engineering details of the proposed wall around the basement car park shall be submitted to the Principal Certifier prior to the issue of the Construction Certificate. These shall include construction details indicating that no ingress of stormwater is possible into the basement levels other than from sub-soil drainage, vehicle wash water and runoff from the driveway that drains towards the basement. This applies to any proposed opening such as doors or ventilation louvres. The problem of backwater from the stormwater pipeline entering the basement car park level shall be addressed by a method such as a flap gate or one-way valve system.

Reason:
To comply with Council's Development Control Plan.

41. Crime Prevention Through Environmental Design (CPTED) - Landscaping
In order to reduce the opportunities for "hiding places" adjacent to pedestrian entries the proposed landscaping must:

a. Use shrubs/plants which are no higher than one (1) metre.

b. The type of trees proposed must have a sufficiently high canopy, when fully grown, so that pedestrian vision is not impeded.

This requirement shall be reflected on the Construction Certificate plans.

Reason:
To satisfy the requirements of Australian Standards.

42. Final Landscape Plan Requirements
The submission of a final Landscape Plan to the Principal Certifier is required, prior to the issue of the Construction Certificate. The final Landscape Plan shall address the following requirements:

a. planting of indigenous plant species native to the Illawarra Region such as: Syzygium smithii (syn Acmena smithii) Lilly pilly, Archontophoenix cunninghamiana Bangalow palm, Backhousia myrtifolia Grey myrtle, Elaeocarpus reticulatus Blueberry ash, Glochidion ferdinandii Cheese tree, Livistona australis Cabbage palm tree, Syzygium paniculatum Brush cherry. A further list of suitable suggested species may be found in Wollongong Development Control Plan 2009 – Chapter E6: Landscaping;

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

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

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

Reason:
To comply with Council's Development Control Plan.

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

Reason:
To comply with Council's Development Control Plan.

44. 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 Certifier prior to release of the Construction Certificate.

Reason:
To comply with Council's Development Control Plan.

45. Street Trees
The developer must address the street frontage by installing street tree planting. The number and species for this development is two (2) Waterhousia floribunda (2) 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. 'Before You Dig Australia' 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 Wollongong City Council. Staking is to consist of minimum 3

x 2400 x 50 x 50mm hardwood stakes driven minimum 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.

Reason:
To comply with Council's Development Control Plan.

46. Redundant Crossings

All redundant vehicular crossings and laybacks rendered unnecessary by this development must be reconstructed to normal kerb and gutter or existing edge of carriageway treatment to match the existing. The verge from the back of kerb to the boundary must be restored 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. Any redundant linemarking such as 'marked parking bays' are adjusted/removed at the developer's expense by a Council recognised contractor with the relevant insurances. Details and locations are to be shown on the Construction Certificate Plans.

Reason:
To comply with Council's Development Control Plan.

47. Bush Fire Attack Level (BAL)

a. New construction shall comply with Sections 3 and 7 (BAL 29) Australian Standard AS 3959:2018: Construction of Buildings in Bush Fire Prone Areas and Section 7.5 of 'Planning for Bush Fire Protection' or the applicable version (as prescribed by the current National Construction Code) of NASH Standard 'National Standard Steel Framed Construction in Bush Fire Areas' as appropriate.

   The construction requirements for BAL 29 Australian Standard AS 3959:2018: Construction of Buildings in Bush Fire Prone Areas and Section 7.5 of 'Planning for Bush Fire Protection' or the applicable version (as prescribed by the current National Construction Code) of NASH Standard 'National Standard Steel Framed Construction in Bush Fire Areas' as appropriate shall be reflected on the Construction Certificate plans and supporting documentation for the endorsement of the Principal Certifier prior to the issue of the Construction Certificate.

b. New fences and gates must comply with Section 7.6 of Planning for Bush Fire Protection 2019. New fences and gates are to be made of either hardwood or non-combustible material. Where a fence or gate is constructed within 6m of a dwelling or in areas of BAL-29 or greater, they must be made of non-combustible material only. These construction requirements shall be reflected on the Construction Certificate plans and supporting documentation for the endorsement of the Principal Certifier prior to the issue of the Construction Certificate

Reason:
To satisfy the requirements of the legislation and Australian Standards.

48. Structural Engineering Details

The submission of structural engineering details by a suitably qualified and experienced structural engineer (with appropriate insurance coverage) to the Principal Certifier, prior to the release of the Construction Certificate addressing the following matters:

a. Footings;

b. reinforced concrete slabs;

c. retaining walls;

d. structural steelwork;

e. wall bracing and tie-down requirements;

f. the structural engineer, in producing a design is to complement the Geotechnical Engineer's Stability Report (Report No. GF1535-A dated 18 October 2022 prepared by

Geofirst Pty Ltd) to make a clear statement that “any structure designed and erected in accordance with the plans and specifications will achieve the performance requirements described in Clause 1.3 of 2870 (1996) and any other relevant codes and standards.”

Reason:
To satisfy the requirements of the legislation and Australian Standards.

49. Present Plans to Sydney Water

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

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

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

Reason:
To satisfy the requirements of the legislation.

50. Utilities and Services

Before the issue of the relevant construction certificate, the applicant must submit the following written evidence of service provider requirements to the certifier:

a. a letter of consent from Endeavour Energy demonstrating that satisfactory arrangements can be made for the installation and supply of electricity

b. a response from Sydney Water as to whether the plans proposed to accompany the application for a construction certificate would affect any Sydney Water infrastructure, and whether further requirements need to be met.

c. other relevant utilities or services - that the development as proposed to be carried out is satisfactory to those other service providers, or if it is not, what changes are required to make the development satisfactory to them.

Reason:
To ensure relevant utility and service providers' requirements are provided to the certifier.

51. Crime Prevention Through Environmental Design (CPTED) - Lighting

The proposed development shall incorporate ‘low impact’ lighting to ameliorate any light spillage and/or glare impacts upon surrounding properties in accordance with Council’s CPTED principles. The final design details of the proposed lighting system shall be reflected on the Construction Certificate plans. The erection of the lighting system shall be in accordance with the approved final design.

Reason:
To protect neighbourhood amenity.

52. Bicycle Parking Facilities

Bicycle parking facilities must have adequate weather protection and provide the appropriate level of security as required by the current relevant Australian Standard AS 2890.3: Bicycle Parking Facilities and Austroads Guide to Traffic Management Part 11: Parking (Commentary 9: C9.2). In the absence of internal bicycle storage areas in private residential garages, the proposed external bicycle spaces are to have adequate weather protection, passive surveillance, and be secured within a lockable enclosure with access via a combination lock or communal key. This requirement shall be reflected on the Construction Certificate plans.

Reason:
To satisfy the requirements of Australian Standards.

53. Glass Reflectivity Index

The reflectivity index of the glass used in the external façade of the building shall not exceed 20 per cent. The details and samples of the glass to be used are to be submitted with the Construction Certificate together with written evidence that the reflectivity of the glass is 20 per cent or less.

Reason:
To comply with Council's Development Control Plan.

54. Permeable Garage Shutter

Any shutters provided within the basement car park shall be permeable so as to improve basement ventilation, as per the requirements of 3J-4 of the Apartment Design Guide.

Reason:
To ensure compliance with the ADG.

55. Fire Safety Schedule

When issuing a Construction Certificate, a Principal Certifier must attach a Fire Safety Schedule specifying all of the fire safety measures required for the building to ensure the safety of persons in the building in the event of fire.

Reason:
To satisfy the requirements of the legislation.

Before the Commencement of Building Work

56. Dilapidation Report

A dilapidation report is required for all structures located within the zone of influence of the proposed earthworks as determined by the geotechnical consultant.

Reason:
To comply with Council's Development Control Plan.

57. Hazardous Material Survey

At least one (1) week prior to demolition, the applicant must prepare a hazardous materials survey of the site and submit to Council a report of the results of the survey. Hazardous materials include, but are not limited to, asbestos materials, synthetic mineral fibre, roof dust, PCB materials and lead based paint. The report must include at least the following information:

a. the location of hazardous materials throughout the site;

b. a description of the hazardous material;

c. the form in which the hazardous material is found, eg AC sheeting, transformers, contaminated soil, roof dust;

d. an estimation (where possible) of the quantity of each particular hazardous material by volume, number, surface area or weight;

e. a brief description of the method for removal, handling, on-site storage and transportation of the hazardous materials, and where appropriate, reference to relevant legislation, standards and guidelines;

f. identification of the disposal sites to which the hazardous materials will be taken.

Reason:
To comply with Council's Development Control Plan.

58. Asbestos Hazard Management Strategy

An appropriate hazard management strategy shall be prepared by a suitably qualified and experienced licensed asbestos assessor pertaining to the removal of contaminated soil, encapsulation or enclosure of any asbestos material. This strategy shall ensure any such proposed demolition works involving asbestos are carried out in accordance with SafeWork NSW requirements (https://www.safework.nsw.gov.au). The strategy shall be submitted to the Principal Certifier and Council (in the event that Council is not the Principal Certifier prior to the commencement of any works.

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

Reason:
To satisfy the requirements of the legislation.

59. 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.

Reason:
To satisfy the requirements of the legislation.

60. 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.

Reason:
To comply with Council's Development Control Plan.

61. Construction Environmental Management Plan

a. A construction environmental management shall be submitted to the Principal Certifier, the plan shall address as a minimum the vehicle traffic, odour and vapour, dust, plant and construction noise safeguards recommended by ViPAC Engineering and Science Ltd, water and sediment management, surface water, subsurface seepage and accumulated excavation water, sediment from equipment and cleaning operations, site security, working hours, contact information, incident response and contingency management.

b. An excavated soil material disposal plan shall be submitted to the Principal Certifier, with the batching, sampling and analysis procedures as per the DECCW (2009) *Waste Classification Guidelines*. The plan shall be prepared by a suitably qualified and experienced consultant. A copy of the plan shall be forwarded to council.

Reason:
To satisfy the requirements of the legislation and Council's Development Control Plan.

62. 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.

Reason:
To satisfy the requirements of the legislation.

63. 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.

Reason:
To ensure all parties are aware of the approved plans and supporting documentation.

64. 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 Certifier 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.

Reason:
To ensure all parties are aware of the approved plans and supporting documentation.

65. Bush Fire - Inner Protection Area
At the commencement of building works and in perpetuity the entire property shall be managed as an Inner Protection Area (IPA) as outlined within Appendix 4 of 'Planning for Bush Fire Protection 2019' and the NSW Rural Fire Service's document 'Standards for Asset Protection Zones'.

Reason:
To satisfy the requirements of the legislation.

66. Appointment of Principal Certifier
Prior to commencement of work, the person having the benefit of the Development Consent and a Construction Certificate must:

a. appoint a Principal Certifier and notify Council in writing of the appointment irrespective of whether Council or a Registered Certifier is appointed; and

b. notify Council in writing of their intention to commence work (at least two [2] days' notice is required).

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

Reason:
To satisfy the requirements of the legislation.

67. Home Building Act Requirements
Residential building work within the meaning of the Home Building Act 1989 must not be carried out unless the Principal Certifier for the development to which the work relates (not being the Council) has given the Council written notice of the following information:

a. In the case of work for which a principal contractor is required to be appointed:

    i. the name and licence number of the principal contractor; and

    ii. the name of the insurer by which the work is insured under Part 6 of that Act.

b. In the case of work to be done by an owner-builder:

    i. the name of the owner-builder; and

    ii. if the owner-builder is required to hold an owner-builder permit under that Act, the number of the owner-builder permit.

If arrangements for doing the residential building work are changed while the work is in progress so that the information notified becomes out of date, further work must not be carried out unless the Principal Certifier for the development to which the work relates (not being the Council) has given the Council written notice of the updated information.

Reason:
To satisfy the requirements of the legislation.

68. Signs On Site
A sign must be erected in a prominent position on any site on which building work or demolition work is being carried out:

a. showing the name, address and telephone number of the Principal Certifier for the work, and

b. showing the name of the principal contractor (if any) for any building work and a telephone number on which that person may be contacted outside working hours, and

c. stating that unauthorised entry to the worksite is prohibited.

Any such sign is to be maintained while the building work or demolition work is being carried out but must be removed when the work has been completed.

Note: This does not apply in relation to building work or demolition work that is carried out inside an existing building that does not affect the external walls of the building.

Reason:
To satisfy the requirements of the legislation.

69. 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.

Reason:
To satisfy the requirements of the legislation.

70. Hoardings (within any Public Road Reserve)

The site must be enclosed with a suitable hoarding (type A or B) or security fence of a type in accordance with the Works and Services Division Design Standard, and must satisfy the requirements of the Occupational Health and Safety Act, the Occupational Health and Safety Regulations and Australian Standard AS 2601. This application must be submitted to Council's Works and Services Division, and a permit obtained, before the erection of any such hoarding or fence.

Reason:
To satisfy the requirements of the legislation and Australian Standards.

71. Enclosure of the Site

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

Reason:
To ensure safety.

72. 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 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 Certifier. 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.

Reason:
To satisfy the requirements of the legislation and Australian Standards.

73. 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.

Reason:
To advise neighbourhood.

74. 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.

Reason:
To protect neighbourhood amenity.

75. 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.

Reason:
To protect neighbourhood amenity.

While Building Work is Being Carried Out

76. Level 1 Supervision

Due to the sensitivity of the site to changing geotechnical conditions, all work must be undertaken with geotechnical supervision as defined in Australian Standard AS3798 Guidelines for Earthworks for Commercial and Residential Developments.

Reason:
To satisfy the requirements of the legislation.

77. Foundation Inspections

All excavations for foundations are to be inspected by the geotechnical consultant and certified that the ground has been suitably prepared for the placement of footings and to confirm adequacy of founding stratum.

Reason:
To satisfy the requirements of the legislation.

78. Excess Excavated Material - Disposal

Excess excavated material shall be classified according to the NSW Environment Protection Authority's Waste Classification Guidelines – Part 1: Classifying Waste (2014) prior to being transported from the site and shall be disposed of only at a location that may lawfully receive that waste.

Reason:
To satisfy the requirements of the legislation.

79. Hours of Work

The Principal Certifier must ensure that building work, demolition or vegetation removal is only carried out between:

- 7:00am to 5:00pm on Monday to Saturday

The Principal Certifier must ensure building work, demolition or vegetation removal is not carried out on Sundays and public holidays and also implement all the recommendations of construction noise control prepared by ViPAC consultants, except where there is an emergency.

Unless otherwise approved within a construction site management plan, construction vehicles, machinery, goods or materials must not be delivered to the site outside the approved hours of site works.

Any variation to the hours of work requires Council's approval.

Any request to vary the approved 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; and

f. any proposed measures required to mitigate the impacts of the works

Prior to the commencement of any site works, the Proponent shall undertake a vibration assessment to identify all sensitive receivers where vibration limits exceed

1. levels recommended by a registered Geotechnical/Structural Engineer with regards to structural damage buildings;
2. German Standard DIN 4150 Part 3 Structural Vibration in Buildings. Effects on Structures; and
3. For human exposure to vibration, the evaluation criteria presented in British Standard BS 6472- Guide to Evaluate Human. Exposure to Vibration in Buildings (1Hz to 80 Hz) for low probability of adverse comment.

Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

(a) 7:00am to 12:00pm, Monday to Friday;

(b) 2:00pm to 6:00pm Monday to Friday; and

(c) 8:00am to 1:00pm Saturday.

Note: The developer is advised that other legislation, such as Noise Guidelines for Local Government January 2023, may control the activities for which Council has granted consent, including but not limited to, the *Protection of the Environment Operations Act 1997*.

Reason:
To satisfy the requirements of the legislation.

80. Implementation of all the recommendations of acoustic report
Building acoustic treatments as recommended in Section 6.0, including noise barrier (Figure 6.2), of acoustic report prepared by ViPAC Engineering and Science Ltd. Shall be implemented to achieve compliance with the with the NSW Noise Policy for Local Government.

Reason:
To satisfy the requirements of the legislation.

81. Mechanical Plants and Exhaust Ventilation system
Outdoor Air Conditioning or refrigeration units

The outdoor units for refrigeration system including air conditioners shall have suitable acoustic enclosure to comply with the noise guidelines.

Reason:
To satisfy the requirements of the legislation.

82. Implement underfloor drainage design for through-flow of groundwater
All the recommendations of groundwater monitoring report prepared by Geofirst Pty Ltd date 20 April 2023 to provide the basement carpark underfloor drainage design for through-flow of groundwater shall be implemented. A copy of amended plan must be submitted to Principal Certifier.

Reason:
To comply with Council's Development Control Plan.

83. 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 (https://www.safework.nsw.gov.au).

Reason:
To satisfy the requirements of the legislation.

84. Asbestos Waste Collection, Transportation and Disposal

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

Reason:
To satisfy the requirements of the legislation.

85. 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 14 days of the completion of renovations (or prior to the Occupation Certificate being issued).

Reason:
To satisfy the requirements of the legislation.

86. Site Management

Stockpiles of sand, gravel, soil and the like must be located to ensure that the material:

a. Does not spill onto the road pavement and

b. is not placed in drainage lines or watercourses and cannot be washed into these areas.

Reason:
To comply with Council's Development Control Plan.

87. Spillage of Material

Should, during construction, any waste material or construction material be accidentally or otherwise spilled, tracked or placed on the road or footpath area without the prior approval of Council's Works Division shall be removed immediately. Evidence that any approval to place material on the road or road reserve shall be available for inspection by Council officers on site at any time.

Reason:
To protect neighbourhood amenity.

88. 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.

Reason:
To protect neighbourhood amenity.

89. Piping of Stormwater to Existing Stormwater Drainage System

Stormwater for the land must be piped to the street kerb and gutter.

Reason:
To comply with Council's Development Control Plan.

90. 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.

Reason:
To comply with Council's Development Control Plan.

91. Fences

Any new fences constructed on the site and located in the flood plain shall be of a type that will not obstruct the free flow of floodwaters and not cause damage to surrounding land in the event of a flood.

Reason:
To comply with Council's Development Control Plan.

92. Copy of Consent in the Possession of Person carrying out Tree Removal
The Developer/Applicant must ensure that any person carrying out tree removal is in possession of this development consent and/or the approved landscape plan, in respect to the tree(s) which has/have been given approval to be removed in accordance with this consent.

Reason:
To ensure all parties are aware of the approved plans and supporting documentation.

93. Restricted Washing of Equipment or Disposal of Materials on any Tree Dripline Area
No washing of equipment and or the disposal of building materials such as cement slurry must occur within the drip line of any tree which has been nominated for retention of the site and adjacent property.

Reason:
To ensure all parties are aware of the approved plans and supporting documentation.

94. 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.

Reason:
To comply with Council's Development Control Plan.

95. Screen Planting
To mitigate impact to adjoining dwelling a continuous hedge is to be established along the eastern and western boundary for the length of property boundary.

Recommended species:

a. Acmena smithii var. minor
b. *Syzygium australe* "Aussie Southern",
c. *Syzygium australe* "Aussie Compact",
d. *Syzygium luehmannii x S.wilsonii* "Cascade",
e. *Westringia fruticosa*.

Minimum spacing 900mm.

Minimum pot size 75 lt.

A further list of suitable suggested species may be found in Wollongong Development Control Plan 2009 – Chapter E6: Landscaping.

Reason:
To comply with Council's Development Control Plan.

96. Podium Planting
All podium planting areas are to have a waterproofing membrane that can provide a minimum 10 year warranty on product. Protective boarding is to be installed to protect membrane from damage.

All podium planting areas to be provided with an adequate drainage system connected to the stormwater drainage system. The planter box is to be backfilled with free draining planter box soil mix.

If selected mulch is decorative pebbles/gravel, the maximum gravel pebble size is 10mm diameter.

Reason:
To comply with Council's Development Control Plan.

97. Excavation/Filling/Retaining Wall Structures
Any proposed filling on the site must not:

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

Reason:
To ensure ongoing protection of the environment and neighbourhood amenity.

98. Cut and Fill Retained
All proposed cut and filling works must be adequately retained with all battered slopes being no steeper than 2H:1V.

Reason:
To ensure ongoing protection of the environment and neighbourhood amenity.

99. Excavation Protection and Notification
If an excavation associated with the erection or demolition of a building extends below the level of the base of the footings of a building on adjoining allotment of land, the person causing the excavation to be made:

a. Must preserve and protect the adjoining building from damage; and

b. if necessary, must underpin and support the building in an approved manner; and

c. must, at least seven (7) days before excavation below the level of the base of the footings of a building on an adjoining allotment of land, give notice of intention to do so to the owner of the adjoining allotment of land and furnish particulars of the excavation.

Reason:
To ensure compliance with relevant Standards.

100. Safe Excavations and Backfilling
All excavations and backfilling associated with the erection of a building must be executed safely and in accordance with appropriate professional standards.

Reason:
To ensure compliance with relevant Standards.

101. Water and Utilities
Water, electricity and gas are to comply with Section 7 of 'Planning for Bush Fire Protection 2019'.

Reason:
To satisfy the requirements of the legislation.

102. Survey Report
The submission of a survey report by a registered Land Surveyor to the Principal Certifier is required, prior to the work proceeding beyond each of the following respective stages so as to guarantee that each stage of the development is completed in accordance with the approved plans:

a. footing excavation;

b. slab formwork;

c. foundation walls;

d. walls and completed eaves/gutter/parapet/gable;

e. building on the site.

Reason:
To ensure all parties are aware of the approved plans and supporting documentation.

103. 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.

Reason:
To comply with Council's Development Control Plan.

104. Implementation of BASIX commitments

While building work is being carried out, the applicant must undertake the development strictly in accordance with the commitments listed in the BASIX certificate(s) approved by this consent, for the development to which the consent applies.

Reason:
To satisfy the requirements of the legislation.

105. Survey Certificate

The submission of a Survey Certificate to the Principal Certifier confirming that the height level of all rooftop or exposed structures including lift rooms, plant rooms together with air conditioning units, ventilation and exhaust systems accords with the following maximum height levels as per the approved plans under this consent being:

a. 63.25 metres AHD for the parapet on the Southern facade; and

b. 67.15 metres AHD for the balustrade of the air conditioning plant;

Reason:
To ensure all parties are aware of the approved plans and supporting documentation.

106. Where Polystyrene Waffle Pods Are Used During Construction

Management of waffle pods at the site must comply with the Industry Code of Practice - Waffle Pods (2023/2024)

https://epsa.org.au/wp-content/uploads/2023/07/Pod-Code-of-Practice-EPSA_2023.pdf

- Pods must be secured using the approved tie down method at time of delivery, immediately upon completion of installation and any other time not in use.
- Scrap pods, offcuts and beads must be collected immediately after installation and placed in approved bags provided by the supplier.
- Waffle pods, waffle pod offcuts or waffle pod fragments must not be permitted to lie or accumulate on the property.

Reason:
To ensure protection of the environment.

107. Loading/Unloading Operations/Activities

All loading/unloading operations during building works 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.

Reason:
To comply with legislation and Australian Standards.

Before the Issue of an Occupation Certificate

108. 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 DCP 2009. This information must be submitted to the Principal Certifier prior to the issue of the final Occupation Certificate.

Reason:
To comply with Council's Development Control Plan.

109. 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 Detention System and Maintenance Schedule (DA-2022/1343).

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

Reason:
To comply with Council's Development Control Plan.

110. On-Site Detention - Structural Certification

The submission of a certificate from a suitably qualified practising civil and/or structural engineer to the Principal Certifier is required prior to the issue of the 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.

Reason:
To comply with Council's Development Control Plan.

111. Structural Soundness Certification

The submission of a report from a suitably qualified and experienced structural engineer to the Principal Certifier is required, prior to the issue of the Occupation Certificate and commencement of use. This report is required to verify that the development can withstand the forces of floodwater, debris and buoyancy up to and including the 1 in 100 year flood level plus freeboard, being RL 55.11 metres AHD or greater.

Reason:
To comply with Council's Development Control Plan.

112. Restriction on Use - On-Site Detention System (OSD)

The applicant must create a restriction on use under the Conveyancing Act 1919 over the OSD 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 detention system on the lot(s) burdened without the prior consent in writing of the authority benefited. The expression 'on-site 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 Certifier for endorsement prior to the issue of the Occupation Certificate and the use of the development.

Reason:
To comply with Council's Development Control Plan.

113. Retaining Wall Certification

The submission of a certificate from a suitably qualified and experienced structural engineer or civil engineer to the Principal Certifier is required, prior to the issue of the Occupation Certificate or commencement of the use. This certification is required to verify the structural adequacy of the retaining walls and that the retaining walls have been constructed in accordance with plans approved by the Principal Certifier.

Reason:
To comply with the relevant Standards.

114. Compensatory Planting

The developer must make compensatory provision for the trees required to be removed as a result of the development. In this regard, eleven (11) 200 litre container mature plant stock shall be placed in appropriate locations within the property boundary of the site. The suggested species are Tristaniopsis laurina, Waterhousia floribunda, Elaeocarpus eumundii

Reason:
To comply with Council's Development Control Plan.

115. Bush Fire Compliance Certificate

A Compliance Certificate shall accompany any Occupation Certificate for Bushfire Protection Measures as have been completed, verifying that the development has been constructed/completed in accordance with the relevant Bush Fire Attack Level (BAL) and Planning for Bushfire Protection requirements of the Development Consent and Construction Certificate.

Reason:
To satisfy the requirements of the legislation.

116. Section 73 Certificate
A Section 73 Certificate must be submitted to the Principal Certifier prior to occupation of the development/release of the plan of subdivision.

Reason:
To satisfy the requirements of the legislation.

117. Fire Safety Certificate
A Fire Safety Certificate must be issued for the building prior to the issue of an Occupation Certificate. As soon as practicable after a Fire Safety Certificate is issued, the owner of the building to which it relates:

a. Must cause a copy of the certificate (together with a copy of the current fire safety schedule) to be given to the Commissioner of Fire and Rescue NSW, and

b. must cause a further copy of the certificate (together with a copy of the current fire safety schedule) to be prominently displayed in the building.

Reason:
To satisfy the requirements of the legislation.

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

Reason:
To satisfy the requirements of the legislation.

119. BASIX
An Occupation Certificate must not be issued unless accompanied by the BASIX Certificate applicable to the development. The Principal Certifier must not issue the Occupation Certificate unless satisfied that selected commitments have been complied with as specified in the relevant BASIX Certificate.

NOTE: Clause 44 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021 provides for independent verification of compliance in relation to certain BASIX commitments.

Reason:
To satisfy the requirements of the legislation.

120. Completion of landscape and tree works
Before the issue of an Occupation Certificate, the Principal Certifier must be satisfied that all landscape and tree works, including pruning in accordance with *AS 4373-2007 Pruning of amenity trees* and the removal of all noxious weed species, have been completed in accordance with the approved plans and any relevant conditions of this consent.

Reason:
To ensure the approved landscaping works have been completed in accordance with the approved landscaping plan(s).

Occupation and Ongoing Use

121. Maintenance of Inner Protection Area
The Inner Protection Area must be maintained, at all times as follows:

- There shall be minimal fine fuel at ground level which could be set alight by a bush fire. Leaves and vegetation debris should be removed.
- Use of non combustible ground surfaces such as gravel roads, paved areas, in-ground pools, etc is acceptable.
- Lawn areas shall be maintained low cut and clear.

- Areas under fences, fence posts, gates and trees shall be raked and kept clear of fine fuel.
- Gutters, roofs and roof gullies shall be kept free of leaves and other debris.
- Verandahs, decks, carports, etc shall not be used to store combustible materials and shall be kept free of leaves and other debris.
- Areas within courtyards shall be maintained free of leaves and other debris.
- Climbing species are avoided to walls and pergolas.
- Reticulated or bottle gas services shall be installed and maintained in accordance with AS 1596.
- Gas cylinder relief valves shall be directed away from the building and away from any hazardous materials such as firewood, etc.
- Trees may be retained within the IPA where:
    - tree canopy cover should be less than 15% at maturity;
    - trees at maturity should not touch or overhang the building;
    - lower limbs should be removed up to a height of two (2) metres above the ground;
    - the canopy is discontinuous such that such that tree canopies should be separated by two (2) to five (5) metres;
    - they are smooth barked species or, if rough barked, shall be maintained free of decorticating bark and other ladder fuels (rough barked species are not encouraged);
    - create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards a building should be provided;
    - shrubs should not be located under trees;
    - shrubs should not from more than 10% ground cover;
    - clumps of shrubs should be separated from exposed windows and doors be a distance of at least twice the height of the vegetation;
    - no part of a tree shall be closer to a power line than the distances set out in the current edition of “Planning for Bush Fire Protection 2019" and
    - the use of local native plants with features that minimise the extent to which they contribute to the spread of bush fires is encouraged within the above constraints.

Reason:
To comply with legislation and Australian Standards.

122. CCTV

A closed circuit television system (CCTV) should be installed to record all images of the basement car park. The camera views are not to be obstructed by temporary or permanent structures, signage or other impediments. The cameras should operate 24 hours a day.

Reason:
For resident safety.

Reasons

The reasons for the imposition of the conditions are:

1. To minimise any likely adverse environmental impact of the proposed development.
2. To ensure the protection of the amenity and character of land adjoining and in the locality.
3. To ensure the proposed development complies with the provisions of Environmental Planning Instruments and Council’s Codes and Policies.
4. To ensure the development does not conflict with the public interest.

NSW GOVERNMENT

NSW RURAL FIRE SERVICE

Wollongong City Council
Locked Bag 8821
WOLLONGONG DC NSW 2500

Your reference: (CNR-51244) DA-2022/1343
Our reference: DA20230130000386-CL55-1

ATTENTION: Rodney Thew

Date: Thursday 20 April 2023

Dear Sir/Madam,

Development Application
s4.14 – Infill – Residential Flat Building
4-6 GEORGINA AV KEIRAVILLE NSW 2500, 29//DP30903, 30//DP30903

I refer to your correspondence dated 18/04/2023 seeking advice regarding bush fire protection for the above Development Application in accordance with Clause 55(1) of the *Environmental Planning and Assessment Regulation 2000*.

The New South Wales Rural Fire Service (NSW RFS) has considered the information submitted and provides the following recommended conditions:

General Conditions

1. The recommendations are based on the documents/plans supplied via Councils referral to the NSW RFS.
   - The plan titled "Site Management/Staging Plan, Drawn by Bureau SRH Architecture, Project No: 22049, Drawing No: DA005, Rev: 01-WIP, Undated"
   - The bush fire assessment prepared "Bushfire Consulting Services, Job No: J22/0868, Version 3, Date completed 13/03/2023"

Council is advised that where a minor amendment to the above-noted documents is proposed, Council may use its discretion to determine whether the minor amendment warrants further assessment by the NSW RFS.

Asset Protection Zones

The intent of measure is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.

2. From the commencement of building works and in perpetuity, the property around the proposed residential flat building must be maintained as an inner protection area to the following distances and aspects in accordance with the following requirements of Appendix 4 of *Planning for Bush Fire Protection 2019*:
   - north for a minimum distance of 24 metres;
   - north-west for a minimum distance of 14 metres;

Postal address
NSW Rural Fire Service
Locked Bag 17
GRANVILLE NSW 2142

Street address
NSW Rural Fire Service
4 Murray Rose Ave
SYDNEY OLYMPIC PARK NSW 2127

T (02) 8741 5555
F (02) 8741 5550
www.rfs.nsw.gov.au

- north-east for a minimum distance of 23 metres; and,
- east, south, and west to the boundary.

When establishing and maintaining an inner protection area, the following requirements apply:

- tree canopy cover should be less than 15% at maturity;
- trees at maturity should not touch or overhang the building;
- lower limbs should be removed up to a height of 2 m above the ground;
- tree canopies should be separated by 2 to 5 m;
- preference should be given to smooth-barked and evergreen trees;
- large discontinuities or gaps in the shrubs layer should be provided to slow down or break the progress of fire towards buildings;
- shrubs should not be located under trees;
- shrubs should not form more than 10% ground cover;
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation;
- grass should be kept mown (as a guide, grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed regularly.

Note: Council is to be satisfied that the proposals off site APZ's directly to the north (over Lot 100 DP 1257652) are maintained for the life of the development as per the University of Wollongong's Bushfire Risk Assessment and Maintenance Plan .

Construction Standards

The intent of measure is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.

3. New construction must comply with section 3 and section 7 (BAL 29) Australian Standard AS3959-2018 *Construction of buildings in bushfire-prone areas* or the relevant requirements of the *NASH Standard - Steel Framed Construction in Bushfire Areas* (incorporating amendment A - 2015). New construction must also comply with the construction requirements in Section 7.5 of *'Planning for Bush Fire Protection 2019.*

4. New fences and gates must comply with Section 7.6 of *Planning for Bush Fire Protection 2019*. New fences and gates are to be made of either hardwood or non-combustible material. Where a fence or gate is constructed within 6m of a dwelling or in areas of BAL-29 or greater, they must be made of non-combustible material only.

Water and Utility Services

The intent of measure is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.

5. The provision of water, electricity and gas must comply with the following in accordance with Table 7.4a of *Planning for Bush Fire Protection 2019*:

- reticulated water is to be provided to the development,
- all above-ground water service pipes external to the building are metal, including and up to any taps,
- where practicable, electrical transmission lines are underground,
- where overhead, electrical transmission lines are proposed as follows:
  - lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas, and
  - no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for Managing Vegetation Near Power Lines.
- reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used,
- all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side,
- connections to and from gas cylinders are metal,
- polymer-sheathed flexible gas supply lines are not used, and

- above-ground gas service pipes are metal, including and up to any outlets.

Landscaping Assessment

The intent of measure is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.

6. New landscaping within the required asset protection zone must comply with Appendix 4 of *Planning for Bush Fire Protection 2019*. In this regard, the following principles are to be incorporated:
- A minimum 1 metre wide area (or to the property boundary where the setbacks are less than 1 metre), suitable for pedestrian traffic, must be provided around the immediate curtilage of the building;
- Planting is limited in the immediate vicinity of the building;
- Planting does not provide a continuous canopy to the building (i.e. trees or shrubs are isolated or located in small clusters);
- Landscape species are chosen to ensure tree canopy cover is less than 15% (IPA), and less than 30% (OPA) at maturity and trees do no touch or overhang buildings;
- Avoid species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopies;
- Use smooth bark species of trees species which generally do not carry a fire up the bark into the crown;
- Avoid planting of deciduous species that may increase fuel at surface/ ground level (i.e. leaf litter);
- Avoid climbing species to walls and pergolas:
- Locate combustible materials such as woodchips/mulch, flammable fuel stores away from the building;
- Locate combustible structures such as garden sheds, pergolas and materials such as timber garden furniture away from the building; and
- Low flammability vegetation species are used.

General Advice – Consent Authority to Note

- The proposal is such that it presents an ongoing bush fire risk to its occupants. As such, a Bush Fire Survival Plan is to be prepared by the appropriate persons. Information to assist in the preparation of a Bush Fire Survival Plan can be found at www.rfs.nsw.gov.au.

For any queries regarding this correspondence, please contact Jamie Winter on 1300 NSW RFS.

Yours sincerely,

Anna Jones
Supervisor Development Assessment & Plan
Built & Natural Environment