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Civil Engineering Report for Proposed mixed-use development at 372-374 Mann Street & 35-37 Dwyer Street, North Gosford NSW 2250

Prepared For: Stockbridge Properties Pty Ltd

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7	05/06/2025	Issued for DA	Fatemeh Esmaeili	Kamyar Eivazzadeh B.E. (Civil) M.E.(Civil) M.I.E. (AUST) NER

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2. The limitations present in any of the referenced reports will be inherent in this report.
3. This report and associated documents have been prepared for the proposed mixed-use development at 372-374 Mann Street & 35-37 Dwyer Street, North Gosford NSW. No responsibility will be accepted for the use of any part of this report in any other context or for any other purposes.
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STANDARD PRE-AMBLE

Introduction

This Civil engineering Report accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act), in respect of a State Significant Development Application (SSDA) for a proposed mixed-use development at 35-37 Dwyer Street and 372-374 Mann Street, North Gosford. This report addresses the relevant Secretary's Environmental Assessment Requirements (SEARs) as detailed in Table 1.

Table 1 – Summary of Relevant SEARs and Response			
SEAR	Requirement	Response	Report Section
14	Water Management • Provide an Integrated Water Management Plan for the development that: - o is prepared in consultation with the local council and any other relevant drainage or water authority. - o outlines the water-related servicing infrastructure required by the development (informed by the anticipated annual and ultimate increase in servicing demand) and evaluates opportunities to reduce water demand (such as recycled water provision). - o details the proposed drainage design (stormwater and wastewater) for the site including any on-site treatment, reuse and detention facilities, water quality measures, and nominated discharge points. o demonstrates compliance with the local council or other drainage or water authority requirements and avoids adverse downstream impacts. • Where water and drainage infrastructure works are required that would be handed over to the local council, or other drainage or water authority, provide full hydraulic details and detailed plans and specification of proposed works that have been prepared in consultation with, and comply with the relevant standards of, the local council or other drainage or water authority.	• The Integrated Water Management Plan has been prepared in consultation with Central Coast Council, in accordance with the guidelines provided by the local council and relevant drainage authorities. • The water-related servicing infrastructure has been outlined, detailing the anticipated increase in servicing demand and evaluating opportunities to reduce water demand, including a proposed rainwater tank for water reuse. • The drainage design, including stormwater and wastewater management, on-site treatment, reuse, and detention facilities, has been described. The design incorporates a 130 cubic meter rainwater tank and filtration systems to treat and manage stormwater runoff. The discharge points and water quality measures comply with Council's requirements to avoid adverse downstream impacts. • The hydraulic details and plans for the proposed works have been prepared in accordance with the relevant standards of Central Coast Council and other relevant authorities, demonstrating full compliance.	Section 6.2: Water Quantity and On-site Detention Requirements Section 6.3: Water Quality Measures and Filtration System

Project Site

The project site is known as 35-37 Dwyer Street and 372-374 Mann Street, North Gosford and is legally known as Lot 4-5 in DP 15954, Lot 2A in DP 407164 and Lot 31 in DP 553523. The site is irregularly shaped and has an area of 7,038.5m². The site has a frontage of 86m to Dwyer Street to the north and 34.2m to Mann Street to the east. An aerial photograph of the site is provided in Figure 1.



Aerial Photograph

Project Description

The project is a mixed-use development which includes site preparation works, the construction of three buildings ranging in height from seven storeys to 22 storeys containing residential apartments, commercial/retail floor area and basement car parking, and the construction of a private road, landscaping and public domain improvements.

PRE-DA ENGINEERING REQUIREMENTS

Pre-DA Requirement (Summary)	Relevant Report Section	Response Summary
Traffic, Roadwork and Vehicle Access- Roads, accessways, and carparks must comply with AS 2890, Central Coast DCP 2022, and address traffic movement, safety, and entry/exit conflicts with proposed service roads. Detailed surveyed civil engineering designs must be submitted for all roadworks in line with Council standards and AS 2890. All on-site works including driveways and boundary structures must be designed at levels that facilitate compliant construction of Council's Road and footpath infrastructure. A consulting engineer must certify that access, circulation roads, parking aisles, and carparks are compliant with AS 2890 and DCP 2022, including forward entry/exit using a maximum 3-point turn. Vehicle and pedestrian sight lines must be shown, with sight triangles complying with AS 2890 Figure 3.3; only ground cover is permitted within these triangles on landscape plans. All internal circulation, overhead clearances, and parking dimensions must be clearly shown. Manoeuvring templates, allowing for 300mm clearance from structures and landscaping, must demonstrate forward vehicle movements in accordance with AS 2890.	Section 8 -Civil drawings	The civil design and access arrangements have been prepared in accordance with AS2890 and DCP 2022. Full roadworks across the Dwyer St frontage is incorporated, including kerb, gutter, subsoil drainage. Driveway and stormwater conflicts are resolved through appropriate grading. Refer to civil drawings for details. Public domain grading, long sections with RLs, and driveway designs have been prepared to comply with Council standards. Refer to civil drawings for details Sight lines, turning paths, and internal circulation are not a part of this report. Refer to architectural plans. As per above, refer to architectural plans. As per above, refer to architectural plans.

Designs from Dwyer St to parking/servicing areas must show driveway centreline and edge sections, with RLs, chainages, grades (max 3% crossfall), and be compliant with AS 2890 and Council specs. Provide site construction details behind the front boundary, including levels for driveways, retaining walls, landscaping, and accessible pedestrian entry. Footway construction across the site frontage along Dwyer St must maintain a +2.0% grade from kerb to boundary. A proposed 6m-wide public road with 1.5m and 0.3m footpaths (7.8m total) connects Dwyer St to Lindsey St, but Council does not support public roads with private basements beneath or within the reserve; the standard road width is 13.0m.		Refer to civil drawings for details Refer to civil drawings for details 6.0m wide private road with 1.5m footpath and 0.6m verge (total private road reserve 10.2m) provided along northern boundary of the development. Future road connection to be provided by adjoining developments. Refer to civil drawings for details.
Water Cycle Management & Stormwater- WCMP including retention, quality, OSD, flooding, reuse- Overland flow from upstream Mann St properties-OSD volume credit for retention tank- OSD location to be outside easements	Section 5 & 6	A comprehensive WCMP has been prepared addressing Council's requirements. Stormwater design includes a 130m³ tank (with 50% reuse credit), and an OSD tank to limit post-dev runoff.
Flooding Certificate	Section 7- Flood Report	Flooding Risk Management Report confirms the site is low hazard.

1. INTRODUCTION

Smart Structures Australia has been engaged by Stockbridge Properties Pty Ltd to provide Civil and Stormwater Engineering consultancy services for the proposed mixed-use development at 372-374 Mann Street & 35-37 Dwyer Street, North Gosford NSW. This report has been prepared for the Development Application in support of the proposed Civil Road and Stormwater management component of the works.

The purpose of this report is to evaluate the quantity and quality of stormwater associated with the proposed development to demonstrate that an appropriate stormwater management strategy has been adopted to satisfy council's Development Control Plan (DCP) 2022 requirements. Additionally, the report provides details on the proposed civil works, including the design of internal roads and associated infrastructure.

2. PROPOSED DEVELOPMENT AND SCOPE OF CIVIL WORK

The proposed development will be a residential mixed-use development containing three buildings of varying heights with some minor ground floor commercial space, comprises of site A tower covering 22 levels of residential apartments plus ground floor commercial space and site B including two separate residential buildings over four levels with frontage to a new road. The development will involve the construction of an associated stormwater drainage system and the design of internal roads to support the site. The following documents have been referenced in the preparation of this report:

- Central coast Council's DCP 2022, Chapter 2.3, Section 10.2- Stormwater Management
- Central coast Council's DCP 2022, Chapter 3.1, Section 10.2- Floodplain Management/Water Cycle Management
- Central coast Council's civil work specification design guideline 2020, Section 10, Stormwater management
- Gosford DCP 2013
- Australian Rainfall and Runoff 2019
- Australian Standards 3500.3:2021

3. SITE CHARACTERISTICS

3.1 Site Locality

The subject site, located at 372-374 Mann Street & 35-37 Dwyer Street, North Gosford NSW and is legally known as Lots 4&5 in DP15954, Lot 2A in DP407164 and Lot 31 in DP553523.

The subject site is bordered to the east by the Mann Street, to the north by the Dwyer Street, and to the South and west by neighbouring commercial lots. The subject site benefits from access points through Mann Street and Dwyer Street.



Figure 1: site locality plan

3.2 Topography

The subject site spans 7,038.5 square meters according to the survey plan (appendix A) and is currently occupied by residential dwellings and a commercial building fronting Mann Street. Stormwater runoff on the site follows the natural topography, flowing from Mann Street and Dwyer Street intersection towards two directions:

- 1- from Dwyer Street towards west following natural contour lines towards Lot 31 and Lot 2A
- 2- from Mann Street towards south following natural contour lines towards Lot 10

which eventually both directions will be discharged to the existing stormwater pit located on southern boundary of Lot 2A.

4. PROPOSED CIVIL AND STORMWATER DESIGN STRATEGY

The post-development scenario aims to establish a comprehensive stormwater management system that systematically collects runoff from roofs, hardstand, landscaping areas, and proposed internal roads, ensuring compliance with Council's DCP 2022 requirements. To achieve this, runoff from roofs will be directed into sizable rainwater tanks designed to cater to various water reuse demands, including outdoor use and irrigation, thereby reducing dependence on potable water sources.

Additionally, the stormwater runoff will be treated to remove a targeted percentage of pollutants, in alignment with Gosford DCP 2013, section 5.12.4.6.

Furthermore, flood information received from central coast council have determined that the subject site falls under a low hazard categorization. The site is partially affected by the 1% AEP flood event, impacting Lot 2A (35 Dwyer St, North Gosford) and Lot 31 (37 Dwyer St, North Gosford). To ensure that the proposed development does not exacerbate flooding or disrupt floodwater behaviour elsewhere, the development plan incorporates an internal road running from south to north, following the site's natural topography. This road will facilitate the effective conveyance of floodwater through the site, mitigating potential flooding issues and integrating with the overall stormwater management strategy. Also, a Flood Risk Management plan has been prepared by this office to protect the subject site against flood risk.

5. STORMWATER MANAGEMENT STRATEGY

The stormwater management strategy is designed to meet the requirements of Central coast Council's DCP 2022, Chapter 3.1, Section 10.2- Floodplain Management/Water Cycle Management, which sets performance standards for water quality and quantity. This section outlines the necessary civil works and stormwater measures to comply with these standards, to support the proposed Development Application.

5.1 Proposed Drainage Network

The proposed mixed-use development entails the systematic collection of stormwater runoff originating from the roofs of the proposed buildings. Collected runoff from roofs will be directed into sizable rainwater tanks to meet various water reuse demands, such as for outdoor use and irrigation. Additionally, surface runoff generated from hardstand and proposed road areas will be efficiently managed through a new underground drainage network, designed to cater stormwater flows from minor storm events and combination of belowground drainage network and road overland flow paths to handle flows from major storm events.

Subsequently, the collected surface runoff will undergo treatment through a below ground On-Site Detention system to remove targeted percentage of pollutants and to attenuate flows to pre-development level in order to meet the council's requirements. Ultimately, the stormwater discharged from the OSD system will flow into the existing stormwater pit located on southern boundary of Lot 2A, safely managing stormwater flows and mitigating the risk of flooding.

5.1.1 Minor and Major Design Storm Events

The design of the piped stormwater system complies with the standards specified in Council's Civil Work Specification Design Guideline 2020, Section 10.4.

To ensure compliance with the council's requirements, the drainage system for minor storm events has been designed to handle a 20-year ARI (5% AEP), ensuring that the proposed underground drainage network effectively manages runoff during 5% AEP events, preventing overflow from pits. For major storm events, the system has been designed to accommodate a 100-year ARI (1% AEP), with the underground drainage network and overland flow paths combined to safely contain stormwater flows and convey the generated runoff to the discharge point during 1% AEP events.

Table 1: Design Storm Events

Drainage systems	Design Storm AEP	Conveyance Method
Minor	5%	Belowground (Piped)
Major	1%	Combination of belowground and Overland flow paths

5.1.2 Hydrology and Hydraulics

The intensity-frequency-duration (IFD) data of the site's specific location was extracted from Bureau of Meteorology's web-based data and Australian Rainfall and Runoff Data Hub (ARR 2019) as shown in Figure 4.

Duration	Annual Exceedance Probability (AEP)						
	63.2%	50%#	20%*	10%	5%	2%	1%
1 min	131	150	216	265	317	393	456
2 min	109	126	183	227	272	335	388
3 min	101	116	169	208	249	307	355
4 min	95.1	109	157	194	232	286	331
5 min	89.9	103	148	182	218	269	312
10 min	70.9	81.3	117	143	171	212	246
15 min	59.0	67.7	97.3	119	143	178	206
20 min	50.9	58.5	84.2	104	124	154	179
25 min	45.0	51.7	74.6	91.9	110	137	159
30 min	40.5	46.6	67.3	82.9	99.5	123	144
45 min	31.6	36.4	52.8	65.1	78.2	97.0	113
1 hour	26.4	30.4	44.1	54.4	65.3	81.0	94.2
1.5 hour	20.5	23.5	34.1	42.0	50.3	62.4	72.4
2 hour	17.1	19.6	28.3	34.8	41.7	51.6	59.9
3 hour	13.3	15.3	21.9	26.8	32.1	39.6	45.9
4.5 hour	10.5	12.0	17.0	20.8	24.7	30.5	35.3

Figure 2: IFD Design Rainfall Intensity (mm/hr)- Extracted from BOM website

5.2 Water Quantity and on-site detention requirements

In accordance with Council's Civil Work Specification Design Guideline 2020, Section 10, Stormwater management, the On-Site Detention (OSD) System is required to attenuate the runoff to discharge levels expected from the pre-developed site for the major and minor storm events. Based on Council's DCP 2022, Chapter 3.1, Section 11.4- Onsite Detention Target, to size the OSD system, the primary objective is to match post-development peak flow for all storm events up to 100-year ARI (1% AEP) storm event as closely as possible to pre-development condition for the site considered as 100% pervious where the pre-development coverage is taken as the natural vegetation. As discussed earlier in order to limit the peak outflows to pre-development levels, an On-Site Detention system has been designed to attenuate the discharge flows from proposed mixed-use development impervious and pervious areas, roads and driveways to the pre-development flows for all storm events up to 1% AEP storm event.

Based on section 10.4.3.1 of the council's civil work specifications Guideline 2020, the minimum design impervious percentage for lots other than single residential lots is 90% for medium and high-density residential developments.

The Impervious fractions for existing and proposed scenarios are provided in the table below:

Table 2: Pre-Development catchment analysis

description	Total site area (m2)	Impervious Area %
Subject site	7,038	0

Table 3: Post-Development catchment analysis

description	Total site area (m2)	Impervious Area %
Area draining to OSD tank	5,846	90
Area bypassing OSD tank	1,192.30	42

To analyse the characteristics of stormwater flows and to determine the appropriate volume for the OSD tank, hydrology and hydraulics models were established for the proposed stormwater drainage network, for 5% AEP and 1% AEP storm events using DRAINS model, to satisfy Central Coast Council's Civil Work Specification Design Guideline 2020.

5.2.1 DRAINS Modelling

DRAINS is an Australian made software program used for designing and analysing stormwater drainage systems and catchments, which widely utilised in the Australian market and recognised by various authorities across Australia.

For urban catchment analysis, DRAINS uses the Horton / ILSAX Hydrological modelling and the time-area routing procedure to convert rainfall hyetographs to runoff hydrographs. Also, Kinematic Wave Equation is used to estimate Times of Concentration for respective sub-

catchments with specific flow path lengths, surface roughness, rainfall intensity and surface slope.

DRAINS models show that with implementation of OSD tank, peak discharges flows generated from proposed mixed-use development and associated road and driveways will be limited to below discharge rates in pre-development conditions during all storm events.

In accordance with the council's DCP 2022, Chapter 3.1, Section 11.4.4, a maximum of 50% of the total volume of rainwater tanks can be claimed as part of the OSD volume. To meet this requirement, a 130 cubic meters rainwater tank is proposed. Based on council guidelines, 50% of the proposed rainwater tank volume, equating to 65 cubic meters, will be deducted from the total onsite stormwater detention requirement. Further details on proposed rainwater tank is provided in section 5.3.2 of this report.

Table 4: revised OSD volume

Name/location	Volume Required (m3)	50% volume of RWTs (m3)	Revised OSD Required Volume(m3)	OSD volume Provided(m3)
Below ground OSD system	108.82	65	43.82	49.28

Discharges from the OSD tank will be controlled with a dual low flow orifice and high flow overflow weir fitted within the OSD system (Refer to details plans). This combination is to optimise outflow rate during various stormwater events and to ensure outflow is limited to the flows in pre-development condition which is aligned with the objectives set out in DCP.

Table 5: Summary of OSD components

Name	Volume (m3)	Orifice 1 (mm)	Orifice 2(mm)	1% AEP Top Water Level (m AHD)
OSD system	49.28	420	460	14.83

Refer tables below for pre and post developed peak flow with implementation of OSD tank.

Table 6: Post and Pre developed peak flows

	5% AEP	1% AEP
Post- Developed Peak Flow (m3/s)	0.239(0.194+0.045)	0.332(0.26+0.072)
Pre- Developed Peak Flow (m3/s)	0.243	0.384

Models and Results from the DRAINS provided in appendix A.

5.3 Water Quantity

In accordance with Council's Civil Work Specification Design Guideline 2020, Section 11.2, the development is required to incorporate appropriate Water Sensitive Urban Design (WSUD) measures.

The water quality measures for the proposed site are provided to reduce pollutant loads in accordance with the requirements of Gosford Council's DCP 2013, section 5.12.4.6. The key pollutant reduction targets are summarised in the table below.

Table 7: Stormwater Runoff Pollutant Reduction Targets

Pollutant	Reduction Target
Gross Pollutants	90%
Total Suspended Solids	80%
Total Phosphorus	45%
Total Nitrogen	45%
Litter	Retention of litter greater than 40mm in size for flows up to 25% of the 1-year ARI peak flow in all catchments
Oil and Grease	No oil or grease to be visible downstream of urban and industrial areas for flows up to 25% of the 1-year ARI peak flow in all catchments

Furthermore, Gosford council's Water Cycle Management Guidelines 2007, section 10, outlines several types of WSUD treatment measures. For the proposed development, rainwater tanks and filtration systems are selected as the primary WSUD treatment measures to ensure effective water quality management.

5.3.1 Proposed Filtration System

The proposed filtration system includes three key components designed to ensure effective stormwater management and pollutant removal.

- Ocean Guard Baskets
- Rainwater tanks
- Filter system (Psorb Storm filters)

For non-roof areas, including landscaped spaces, hardstand surfaces, and driveways, runoff is initially directed to Ocean Guard baskets. These baskets are designed to remove large debris and gross pollutants from the stormwater. Following the initial treatment in the Ocean Guard baskets, the runoff undergoes further treatment through storm filters. These filters are designed to remove finer sediments and contaminants, ensuring that the stormwater meets above mentioned targets before draining to the discharge point. Furthermore, Runoff from areas that

cannot be treated effectively—referred to as bypass areas—also passes through the Ocean Guard baskets before being discharged to the final discharge point

5.3.2 Proposed Rainwater Tanks

As mentioned in section 5.2.1, a total of 130 cubic meters rainwater tank is proposed for the subject site. Therefore, generated stormwater run-off from roof areas is directed to the proposed rainwater tanks. The proposed tanks are designed to collect and store rainwater, to be utilised for various non-potable purposes such as outdoor water re-use and irrigation. To determine the optimal rainwater tank size and meet high water reuse demands, an efficiency curve has been developed, analysing roof areas as the primary source of rainwater harvesting against various tank sizes to achieve the most effective water cycle management system and meet the DCP's targets.

Refer table below for proposed rainwater tank sizes and percentage of demand met for the subject site.

Table 8: Summary of RWT sizes and details

Location	Volume (KL)	Total RWT Volume (KL)	% Demand Met
Site B1	41.5	130	80.43
Site B2	39		
Site B3	49.5		

Tables and diagrams are provided in appendix D.

The effectiveness of the treatment devices and measures proposed has been modelled using MUSIC (Ver 6.3.0) with the overall treatment train efficiency results shown in Table 3 below.

Table 9: Treatment Train Efficiencies

Indicator	Percentage of Pollutant Reduction Achieved	Targets
Gross Pollutants	100 %	90%
Total Suspended Solids	81.6%	80%
Total Phosphorus	67.1 %	45%
Total Nitrogen	49.2 %	45%

Refer to civil drawings package for further details on WSUD design strategy and appendix B for MUSIC model results.

6. FLOODING

The subject site is affected by floodwater during a 100-year ARI storm event. A detailed assessment of flooding has been conducted in a separate report titled "Flood Risk Management Report," prepared by this office.

7. PROPOSED ROAD DESIGN

The proposed road design for the development includes upgrades to existing roadways as well as the creation of a new private road to accommodate access for the three proposed buildings. The design aims to meet the requirements set by the Central Coast Council while ensuring efficient stormwater management and safe vehicle movement.

The following road formations are proposed for existing roads and new private road in accordance with the requirements of the DCP and design recommendation as per Pre-Development Advice from Central Coast Council.

Table 10: Cross section formation details

Street Name	Road Type	Overall Width of Road Reserve	Width of Carriageway	Width of Footpath
Mann Street	Collector	20.10m	12.5m	1.5m
Dwyer Street	Local	20m	11m	1.5m
New private Road	Internal	11.20m	6m	1.5m

Refer to civil drawings package for further details on Road design and proposed civil works.

8. EROSION AND SEDIMENT CONTROL PLAN

Prior to the demolition stage and before any construction can take place, erosion and sediment control measures must be set in place. The measures that have been proposed are as follows:

- Site security fence surrounding the site
- Sedimentation fences around downstream areas, surrounding disturbed areas and any soil stockpiles
- Geotextile filter fabric sediment traps
- Temporary site access cattle grid
- Sedimentation basin in excavated areas
- Pump and filtration system
- Haybales through which the pumped-out water will be discharged as a secondary method of filtration

Refer to Erosion and Sediment control plans prepared as part of Civil drawings for proposed development for further details.

9. CONCLUSION

In conclusion, the proposed development at 372-374 Mann Street and 35-37 Dwyer Street has been designed to address both stormwater quality and quantity, in full compliance with Central Coast Council's Development Control Plan (DCP) 2022. The development includes the implementation of an On-Site Detention (OSD) system to manage stormwater runoff, ensuring that peak discharge rates from the site during both minor and major storm events are limited to pre-development conditions. This system, combined with the installation of rainwater tanks to collect runoff from roof areas and filtration systems for pollutant removal, ensures that the stormwater management strategy meets council requirements.

Furthermore, the proposed road design integrates with the stormwater management plan, upgrading existing roads and creating a new private road for the development's access. It ensures safe vehicle movement while also efficiently collecting and conveying stormwater runoff. The design complies with the Central Coast Council's guidelines, contributing to both flood management and overall site resilience.

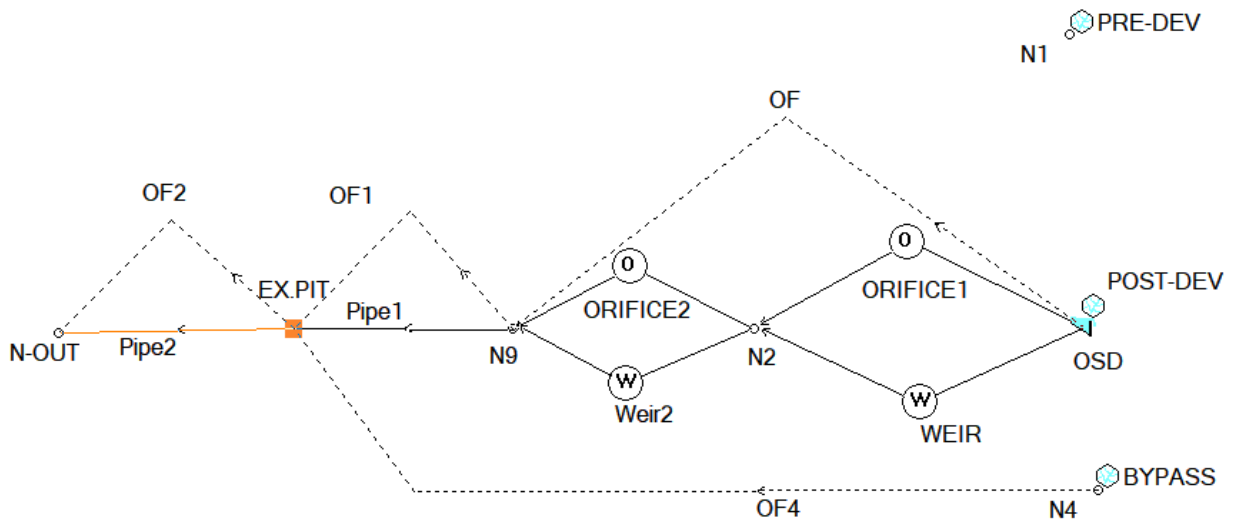
A Flood Risk Management Plan has also been prepared to protect the site from flood-related issues, in line with council guidelines.

Together, these measures ensure the development effectively manages stormwater, mitigates flooding risks, and aligns with the environmental and operational objectives of the development.

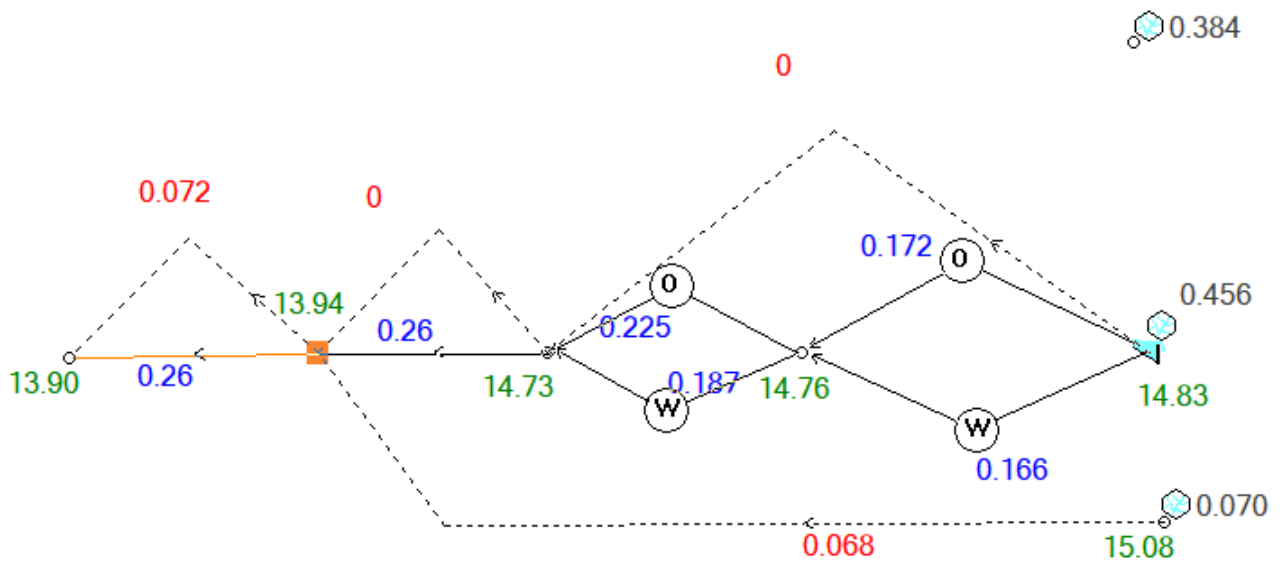
10. APPENDICES

APPENDIX A: DRAINS MODELS AND DRAINS RESULTS

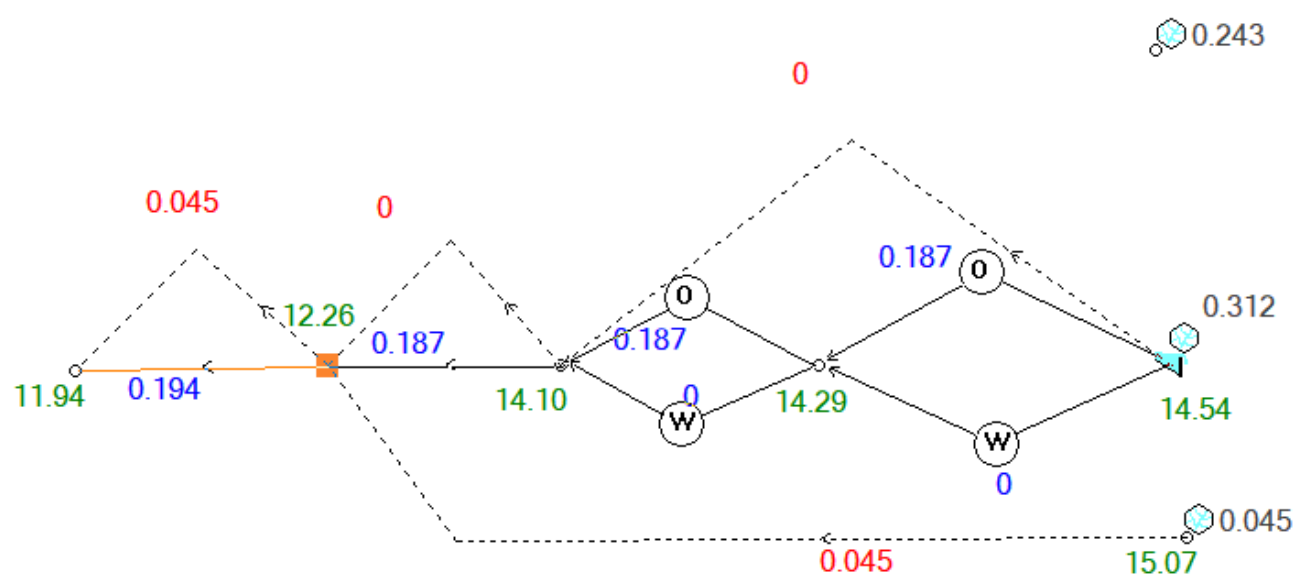
DRAINS MODEL:



DRAINS Result (1% AEP)

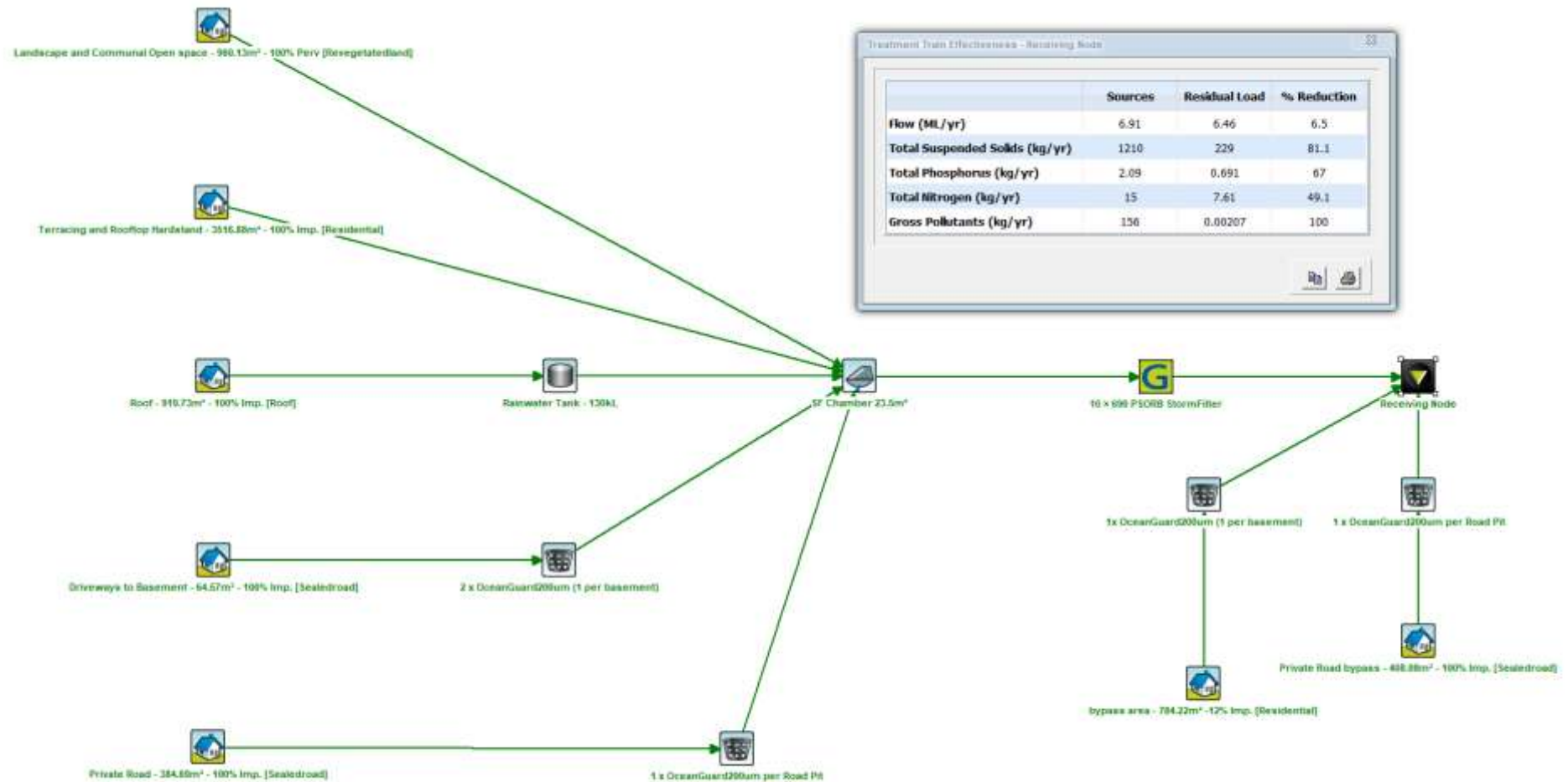


DRAINS Result (5% AEP)



APPENDIX B: MUSIC MODEL RESULTS

MUSIC Model





MUSIC-*link* Report

Project Details		Company Details	
Project:	230472	Company:	Smart Structures Australia
Report Export Date:	5/06/2025	Contact:	
Catchment Name:	Rev03-372-374 Mann Street & 35-37 Dwyer Street	Address:	372-374 Mann Street & 35-37 Dwyer Street, North Gosford
Catchment Area:	0.702ha	Phone:	
Impervious Area*:	76.56%	Email:	
Rainfall Station:	66062 SYDNEY		
Modelling Time-step:	6 Minutes		
Modelling Period:	1/01/1974 - 31/12/1993 11:54:00 PM		
Mean Annual Rainfall:	1297mm		
Evapotranspiration:	1261mm		
MUSIC Version:	6.4.0		
MUSIC-link data Version:	6.40		
Study Area:	Lowland		
Scenario:	Central Coast Development		

* takes into account area from all source nodes that link to the chosen reporting node, excluding Import Data Nodes

Treatment Train Effectiveness		Treatment Nodes		Source Nodes	
Node: Receiving Node	Reduction	Node Type	Number	Node Type	Number
Flow	6.47%	Sedimentation Basin Node	1	Urban Source Node	7
TSS	81.1%	Rain Water Tank Node	1		
TP	67%	Generic Node	1		
TN	49.1%	GPT Node	4		
GP	100%				

Comments

Passing Parameters					
Node Type	Node Name	Parameter	Min	Max	Actual
GPT	1 x OceanGuard200um per Road Pit	Hi-flow bypass rate (cum/sec)	None	99	0.04
GPT	1 x OceanGuard200um per Road Pit	Hi-flow bypass rate (cum/sec)	None	99	0.04
GPT	1x OceanGuard200um (1 per basement)	Hi-flow bypass rate (cum/sec)	None	99	0.02
GPT	2 x OceanGuard200um (1 per basement)	Hi-flow bypass rate (cum/sec)	None	99	0.04
Receiving	Receiving Node	% Load Reduction	None	None	6.47
Receiving	Receiving Node	GP % Load Reduction	90	None	100
Receiving	Receiving Node	TN % Load Reduction	45	None	49.1
Receiving	Receiving Node	TP % Load Reduction	45	None	67
Receiving	Receiving Node	TSS % Load Reduction	80	None	81.1
Sedimentation	SF Chamber 23.5m	Exfiltration Rate (mm/hr)	0	0	0
Sedimentation	SF Chamber 23.5m	Extended detention depth (m)	0.25	1	0.77
Sedimentation	SF Chamber 23.5m	High Flow Bypass Out (ML/yr)	None	None	0
Urban	bypass area - 784.22m -12% Imp.	Baseflow Total Nitrogen Mean (log mg/L)	0.11	0.11	0.11
Urban	bypass area - 784.22m -12% Imp.	Baseflow Total Phosphorus Mean (log mg/L)	-0.85	-0.85	-0.85
Urban	bypass area - 784.22m -12% Imp.	Baseflow Total Suspended Solids Mean (log mg/L)	1.2	1.2	1.2
Urban	bypass area - 784.22m -12% Imp.	Stormflow Total Nitrogen Mean (log mg/L)	0.3	0.3	0.3
Urban	bypass area - 784.22m -12% Imp.	Stormflow Total Phosphorus Mean (log mg/L)	-0.6	-0.6	-0.6
Urban	bypass area - 784.22m -12% Imp.	Stormflow Total Suspended Solids Mean (log mg/L)	2.15	2.15	2.15
Urban	Driveways to Basement - 64.57m - 100% Imp.	Baseflow Total Nitrogen Mean (log mg/L)	0.11	0.11	0.11
Urban	Driveways to Basement - 64.57m - 100% Imp.	Baseflow Total Phosphorus Mean (log mg/L)	-0.85	-0.85	-0.85
Urban	Driveways to Basement - 64.57m - 100% Imp.	Baseflow Total Suspended Solids Mean (log mg/L)	1.2	1.2	1.2
Urban	Driveways to Basement - 64.57m - 100% Imp.	Stormflow Total Nitrogen Mean (log mg/L)	0.34	0.34	0.34
Urban	Driveways to Basement - 64.57m - 100% Imp.	Stormflow Total Phosphorus Mean (log mg/L)	-0.3	-0.3	-0.3
Urban	Driveways to Basement - 64.57m - 100% Imp.	Stormflow Total Suspended Solids Mean (log mg/L)	2.43	2.43	2.43
Urban	Landscape and Communal Open space - 960.13m - 100% Perv	Baseflow Total Nitrogen Mean (log mg/L)	-0.05	-0.05	-0.05
Urban	Landscape and Communal Open space - 960.13m - 100% Perv	Baseflow Total Phosphorus Mean (log mg/L)	-1.22	-1.22	-1.22
Urban	Landscape and Communal Open space - 960.13m - 100% Perv	Baseflow Total Suspended Solids Mean (log mg/L)	1.15	1.15	1.15
Urban	Landscape and Communal Open space - 960.13m - 100% Perv	Stormflow Total Nitrogen Mean (log mg/L)	0.3	0.3	0.3
Urban	Landscape and Communal Open space - 960.13m - 100% Perv	Stormflow Total Phosphorus Mean (log mg/L)	-0.66	-0.66	-0.66
Urban	Landscape and Communal Open space - 960.13m - 100% Perv	Stormflow Total Suspended Solids Mean (log mg/L)	1.95	1.95	1.95
Urban	Private Road - 384.69m - 100% Imp.	Baseflow Total Nitrogen Mean (log mg/L)	0.11	0.11	0.11
Urban	Private Road - 384.69m - 100% Imp.	Baseflow Total Phosphorus Mean (log mg/L)	-0.85	-0.85	-0.85
		Baseflow Total Suspended Solids Mean			

NOTE: A successful self-validation check of your model does not constitute an approved model by Central Coast Council
MUSIC-link now in MUSIC by eWater – leading software for modelling stormwater solutions

Urban	Private Road - 384.69m - 100% Imp.	mg/L	SW	SW	SW
Urban	Private Road - 384.69m - 100% Imp.	Stormflow Total Suspended Solids Mean (log mg/L)	2.43	2.43	2.43
Urban	Private Road bypass - 408.08m - 100% Imp.	Baseflow Total Nitrogen Mean (log mg/L)	0.11	0.11	0.11
Urban	Private Road bypass - 408.08m - 100% Imp.	Baseflow Total Phosphorus Mean (log mg/L)	-0.85	-0.85	-0.85
Urban	Private Road bypass - 408.08m - 100% Imp.	Baseflow Total Suspended Solids Mean (log mg/L)	1.2	1.2	1.2
Urban	Private Road bypass - 408.08m - 100% Imp.	Stormflow Total Nitrogen Mean (log mg/L)	0.34	0.34	0.34

Only certain parameters are reported when they pass validation

Node Type	Node Name	Parameter	Min	Max	Actual
Urban	Private Road bypass - 408.08m - 100% Imp.	Stormflow Total Phosphorus Mean (log mg/L)	-0.3	-0.3	-0.3
Urban	Private Road bypass - 408.08m - 100% Imp.	Stormflow Total Suspended Solids Mean (log mg/L)	2.43	2.43	2.43
Urban	Roof - 919.73m - 100% Imp.	Baseflow Total Nitrogen Mean (log mg/L)	0.32	0.32	0.32
Urban	Roof - 919.73m - 100% Imp.	Baseflow Total Phosphorus Mean (log mg/L)	-0.82	-0.82	-0.82
Urban	Roof - 919.73m - 100% Imp.	Baseflow Total Suspended Solids Mean (log mg/L)	1.1	1.1	1.1
Urban	Roof - 919.73m - 100% Imp.	Stormflow Total Nitrogen Mean (log mg/L)	0.3	0.3	0.3
Urban	Roof - 919.73m - 100% Imp.	Stormflow Total Phosphorus Mean (log mg/L)	-0.89	-0.89	-0.89
Urban	Roof - 919.73m - 100% Imp.	Stormflow Total Suspended Solids Mean (log mg/L)	1.3	1.3	1.3
Urban	Terracing and Rooftop Hardstand - 3516.88m - 100% Imp.	Baseflow Total Nitrogen Mean (log mg/L)	0.11	0.11	0.11
Urban	Terracing and Rooftop Hardstand - 3516.88m - 100% Imp.	Baseflow Total Phosphorus Mean (log mg/L)	-0.85	-0.85	-0.85
Urban	Terracing and Rooftop Hardstand - 3516.88m - 100% Imp.	Baseflow Total Suspended Solids Mean (log mg/L)	1.2	1.2	1.2
Urban	Terracing and Rooftop Hardstand - 3516.88m - 100% Imp.	Stormflow Total Nitrogen Mean (log mg/L)	0.3	0.3	0.3
Urban	Terracing and Rooftop Hardstand - 3516.88m - 100% Imp.	Stormflow Total Phosphorus Mean (log mg/L)	-0.6	-0.6	-0.6
Urban	Terracing and Rooftop Hardstand - 3516.88m - 100% Imp.	Stormflow Total Suspended Solids Mean (log mg/L)	2.15	2.15	2.15

Only certain parameters are reported when they pass validation

Failing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Sedimentation	SF Chamber 23.5m	Notional Detention Time (hrs)	8	12	0.404
Sedimentation	SF Chamber 23.5m	Total Nitrogen - k (m/yr)	500	500	1
Sedimentation	SF Chamber 23.5m	Total Phosphorus - k (m/yr)	6000	6000	1
Sedimentation	SF Chamber 23.5m	Total Suspended Solids - k (m/yr)	8000	8000	1

Only certain parameters are reported when they pass validation

APPENDIX C: ARCHITECTURAL PLANS



- GENERAL LEGEND
- BOUNDARY LINE
 - PROPOSED TREES
 - RL 15.80 PROPOSED LEVELS
 - A/C AIR CONDITIONING
 - HWS HOT WATER SYSTEM
 - RKE KITCHEN EXHAUST RISER
 - SE SMOKE EXHAUST
 - BIN BIN/REFUSE CHUTE
 - E/C ELECTRICAL COMMS
 - W/M WATER METER
 - MECH MECHANICAL SERVICES RISER
 - A AWNING WINDOW

- PAVING/ DECK
- PLANTING
- 1 BEDROOM
- 2 BEDROOM
- 3 BEDROOM
- MULTISTOREY
- THROUGH APARTMENTS
- COMMERCIAL/RETAIL
- COMMUNAL
- SERVICES

NOTE:
GLAZED SLIDING DOORS TO ALL STUDY ROOMS TO ALLOW SOLAR ACCESS AND NATURAL VENTILATION FROM ADJOINING LIVING ROOM AREA.

1 B3 LOWER GROUND FLOOR PLAN
SCALE 1 : 100

REVISION		
G	FOR INFORMATION	27/02/25
H	FOR INFORMATION	10/03/25
I	FOR INFORMATION	14/03/25
J	DEVELOPMENT APPLICATION	20/03/25
K	DEVELOPMENT APPLICATION	23/04/25
L	FOR INFORMATION	29/05/25

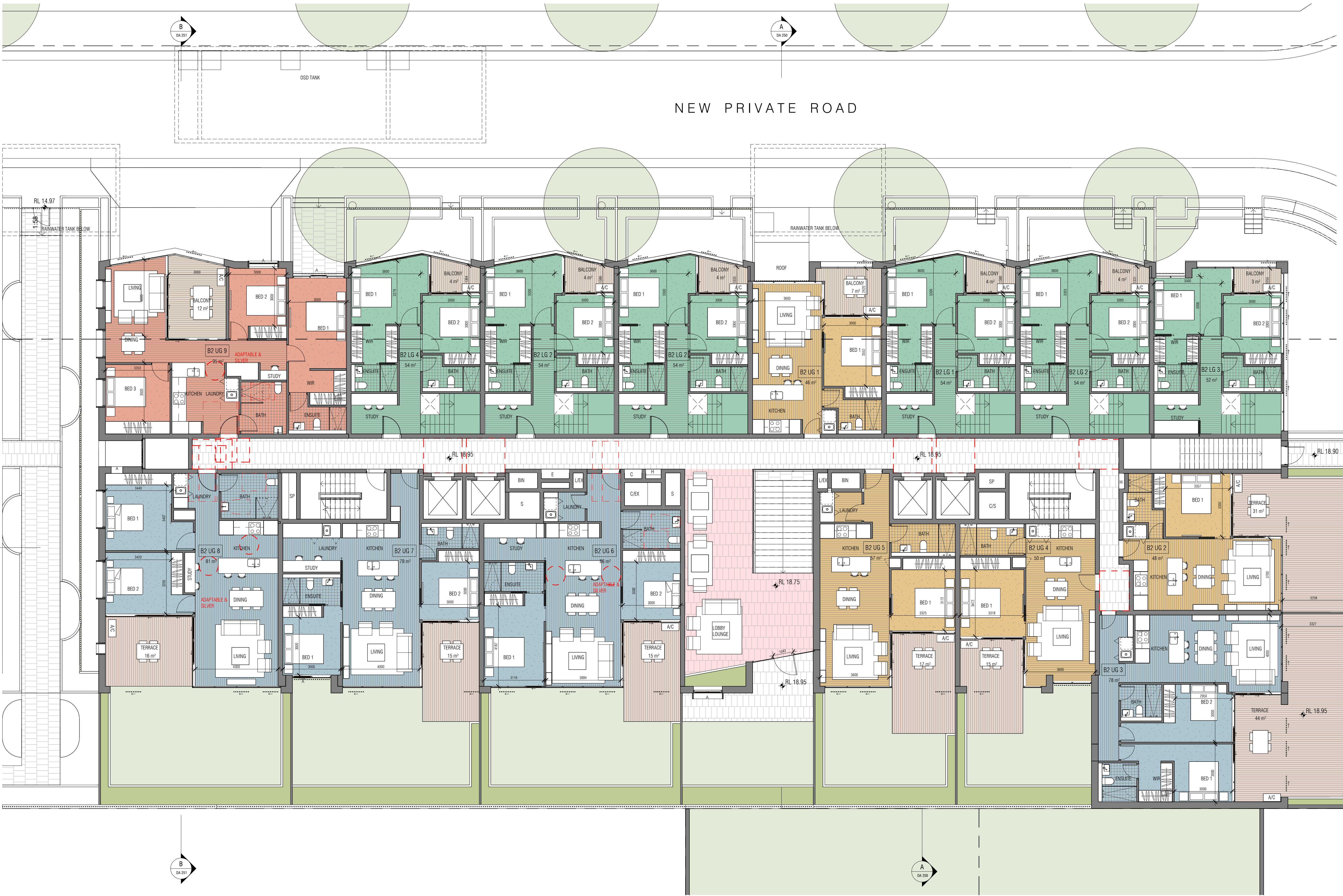
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DRAWN	CHECKED	JOB NO.	SCALE
KC	MC	23001	As indicated @A1

PROJECT	
372-374 MANN ST & 35-37 DWYER ST NORTH GOSFORD NSW 2250	
DRAWING TITLE	
B3 LOWER GROUND FLOOR PLAN	

CLIENT	
STOCKBRIDGE PROPERTIES PTY LTD	

CURZON + PARTNERS	
L 13, 234 GEORGE STREET SYDNEY NSW 2000 T: +61 87055475 CURZON AND PARTNERS PTY LTD ACN 649993377	

ISSUE PURPOSE	REV	DRAWING NO.
SSDA	L	DAB3-100



- GENERAL LEGEND
- BOUNDARY LINE
 - PROPOSED TREES
 - PROPOSED LEVELS
 - A/C AIR CONDITIONING
 - HWS HOT WATER SYSTEM
 - RKE KITCHEN EXHAUST RISER
 - SE SMOKE EXHAUST
 - BIN BIN/REFUSE CHUTE
 - E/C ELECTRICAL COMMS
 - W/M WATER METER
 - MECH MECHANICAL SERVICES RISER
 - A AWNING WINDOW

- PAVING/ DECK
- PLANTING
- 1 BEDROOM
- 2 BEDROOM
- 3 BEDROOM
- MULTISTOREY
- THROUGH APARTMENTS
- COMMERCIAL/RETAIL
- COMMUNAL
- SERVICES

NOTE:
GLAZED SLIDING DOORS TO ALL STUDY
ROOMS TO ALLOW SOLAR ACCESS AND
NATURAL VENTILATION FROM
ADJOINING LIVING ROOM AREA.

2 B2 UPPER GROUND FLOOR PLAN
SCALE 1:100

REVISION		
E	FOR INFORMATION	21/02/25
F	FOR INFORMATION	27/02/25
G	FOR INFORMATION	10/03/25
H	FOR INFORMATION	14/03/25
I	DEVELOPMENT APPLICATION	23/04/25
J	FOR INFORMATION	29/05/25

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DRAWN	CHECKED	JOB NO.	SCALE
KC	MC	23001	As indicated @A1

PROJECT	
372-374 MANN ST & 35-37 DWYER ST NORTH GOSFORD NSW 2250	
DRAWING TITLE	
B2 UPPER GROUND FLOOR PLAN	

CLIENT	
STOCKBRIDGE PROPERTIES PTY LTD	

CURZON + PARTNERS		
L 13, 234 GEORGE STREET SYDNEY NSW 2000 T: +61 87055475 CURZON AND PARTNERS PTY LTD ACN 649993377		
ISSUE PURPOSE	REV	DRAWING NO.
SSDA	J	DAB2-101

APPENDIX D: EFFICIENCY CURVE FOR SIZING RETENTION SYSTEM

RWT SIZE (KL)	PERCENTAGE OF DEMAND MET
10	35.6
20	47.6
30	55.05
40	60.46
50	64.57
60	67.6
70	70.61
80	73.16
90	75.23
100	76.91
110	78.22
120	79.39
130	80.43
140	81.36
150	82.17
160	82.99
170	83.81
180	84.61
190	85.31
200	86.02

