Appendix E – Stormwater Management Plan

CONCEPTUAL STORMWATER MANAGEMENT PLAN

Proposed Residential Subdivision
18 Emerald Street, Marsden 4132

Lot 33 on RP135423

For Waydon Property Pty Ltd

5 December 2025

File No: WP01-0003

CIVIL | STRUCTURAL | HYDRAULIC

DOCUMENT CONTROL SHEET

Title:	Conceptual Stormwater Management Plan
Document No:	WP01-0003
Original Date of Issue:	5 December 2025
Project Manager:	Trent Purdon
Author:	Erin Way
Client:	Waydon Property Pty Ltd
Client Contact:	Waydon Property Pty Ltd
Client Reference:	18 Emerald Street, Marsden
Synopsis:	This *Conceptual Stormwater Management Plan* describes the existing site characteristics, proposed stormwater devices, strategy and infrastructure and corresponding stormwater quantity and quality management controls to be implemented during the operation phase of the development.

Reviewed by RPEQ	Reg. No.	Signed	Date
Trent Purdon	12190		5 December 2025

Revision/Checking History			
Revision No	**Date**	**Checked By**	**Issued By**
A	5 December 2025	Trent Purdon	Erin Way

Distribution		
Recipient	**No of Copies**	**Method**
Waydon Property Pty Ltd	1	PDF

The information contained within this report is provided in good faith in the belief that no information, opinions or recommendations made are misleading. All comments and opinions given in this report are based on information supplied by the client, their agent and third parties.

CONTENTS

1.0 INTRODUCTION 1
1.1 Background 1
1.2 Scope 1
2.0 SITE DESCRIPTION 2
2.1 Location 2
2.2 Site Topography 3
2.3 Vegetation and Land Use 3
2.4 Proposed Development 3
2.5 Proposed Stormwater Drainage 3
2.6 Rainfall Data 4
3.0 DATA 4
4.0 SITE HYDROLOGY 5
4.1 Background 5
4.2 Pre Development 5
4.2.1 Catchment Definition and Lawful Point of Discharge 5
4.2.2 Coefficient of Runoff 5
4.2.3 Time of Concentration 6
4.2.4 Design Flow Rates 6
4.3 Post Development 6
4.3.1 Catchment Definition and Lawful Point of Discharge 6
4.3.2 Coefficient of Runoff 7
4.3.3 Time of Concentration 7
4.3.4 Design Flow Rates 7
4.4 Change in Flow Rates 7
4.5 External Catchments 8
5.0 STORMWATER QUANTITY ASSESSMENT 9
5.1 Background 9
5.2 Objective 9
5.3 Hydraulic Model 9
5.3.1 Detention Volume 11
6.0 STORMWATER QUALITY ASSESSMENT 12
6.1 Background 12
6.2 Construction Phase 12
6.2.1 Key Pollutants 12
6.2.2 Sediment and Erosion Controls 12
6.2.3 Water Quality Monitoring and Inspections 13
6.2.4 Reporting 14
6.3 Operational Phase 14
7.0 CONCLUSIONS 15

TABLES

Table 1: Site Description 2
Table 2: Pre Development Coefficient of Runoff 6
Table 3: Pre-Development Time of Concentration 6
Table 4: Pre Development Peak Flow Estimation – Rational Method 6
Table 5: Post Development Coefficient of Runoff 7
Table 6: Post-Development Catchment Peak Flow Estimation – Rational Method 7
Table 7: Change in Peak Flow Rates Estimation – Rational Method 8
Table 8: Adopted Sub-catchment Parameters 9
Table 9: Anticipated Peak Site Discharge Rate – Extracted from DRAINS Model (m^3/s) 10
Table 10: Adopted Detention Tank Parameters (each tank) 11
Table 11: Comparison of Pre-Development and Mitigated Flow Rates – Extracted from DRAINS . 11
Table 12: Key Pollutants, Construction Phase 12

FIGURES

Figure 1: Locality Plan (Source: Google Maps) 2
Figure 2: Aerial Image of the Site (Source: Google Maps) 3
Figure 3: DRAINS model setup 10
Figure 4: DRAINS Detention Tank Volume 11

APPENDICES

Appendix A Stewart McIntyre, Detail Survey over Lot 33 RP135423 (Ref: 2599OMR)
Appendix B Stewart McIntyre, Plan of Proposed Lots 1, 2 & 3 (Ref: 25990MR-PROP1)
Appendix C OSKA Consulting Group, Pre-Development Catchment Plan (Ref: WP01-P001-A)
Appendix D OSKA Consulting Group, Post-Development Catchment Plan (Ref: WP01-P002-A)
Appendix E OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: WP01-P003-A)
Appendix F OSKA Consulting Group, Sediment and Erosion Control Plan (Ref: WP01-P004-A); OSKA Consulting Group, Sediment and Erosion Control Details (Ref: WP01-P005-A)

1.0 INTRODUCTION

1.1 Background

OSKA Civil Consultants has been commissioned by Waydon Property Pty Ltd to prepare a Conceptual Stormwater Management Plan (CSWMP) to support a Development Application (DA) to the Logan City Council (LCC) for the proposed Residential Subdivision situated at 18 Emerald Street, Marsden.

The subject site is described as Lot 33 on RP135423 and has a total site area of 0.1457ha.

1.2 Scope

This CSWMP details the planning, layout and design of the stormwater management infrastructure for both the construction and operational phases of this development.

This CSWMP aims to:

- Establish the required performance criteria for both the existing and proposed stormwater quantity and quality improvement systems;
- Provide the proposed design of stormwater infrastructure including stormwater quantity management controls;
- Assess the requirements of the site in regard to Stormwater Quality Controls;;
- Demonstrate stormwater runoff is conveyed through the site to a Lawful Point of Discharge (LPOD) in accordance with the Queensland Urban Drainage Manual (QUDM); and
- Provide reporting and monitoring mechanisms whereby the performance of this system can be measured enabling identification of corrective actions/alterations required to ensure the above mentioned objectives are maintained.

This CSWMP has been prepared in accordance with the IEAust *Australian Runoff Quality: Guide to Water Sensitive Urban Design, Queensland State Planning Policy 2017*, IPWEA *Queensland Urban Drainage Manual (QUDM) Fourth Edition (2017)* and Logan City Council (LCC), *Schedule 6 Planning Scheme Policies – SC6.2.5 Infrastructure.*

2.0 SITE DESCRIPTION

2.1 Location

The subject site is located at 18 Emerald Street, Marsden. The site fronts Emerald Street to the East and the unformed Ruby Street road reserve to the West. The property is surrounded by residential properties to the north and south. The site covers a total combined area of 0.1457ha, with details as summarised in Table 1 and as located in Figure 1.

Table 1: Site Description

Client	Lot and Property Description	Street Address
Waydon Property Pty Ltd	*Lot 33 on RP135423*	*18 Emerald Street, Marsden*

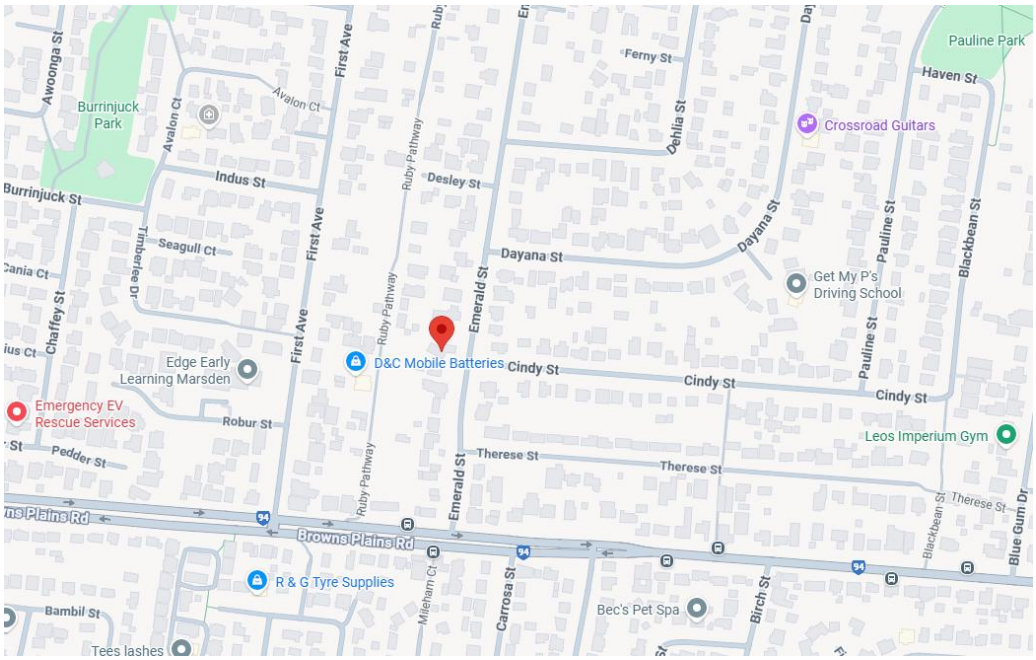


Figure 1: Locality Plan (Source: Google Maps)

2.2 Site Topography

The existing site gently grades to the rear boundary flat with spot heights ranging from approximately RL 28.6m AHD to 26.39 m AHD. The site generally slopes at approximately 3% towards the western boundary, the unformed Ruby Street road reserve. Based on the provided survey and site inspection, any stormwater runoff from the site drains to the stormwater swale in the Ruby Street road reserve.

For further information, the site survey has been provided by Stewart McIntyre, Detail Survey over Lot 33 RP135423 (Ref: 2599OMR) included as Appendix A.

2.3 Vegetation and Land Use

The subject site currently consists of a single residential house with separate garage, with grass covering the remainder of the site.

An aerial photograph taken on 20 September 2024 of the subject site is included in Figure 2.

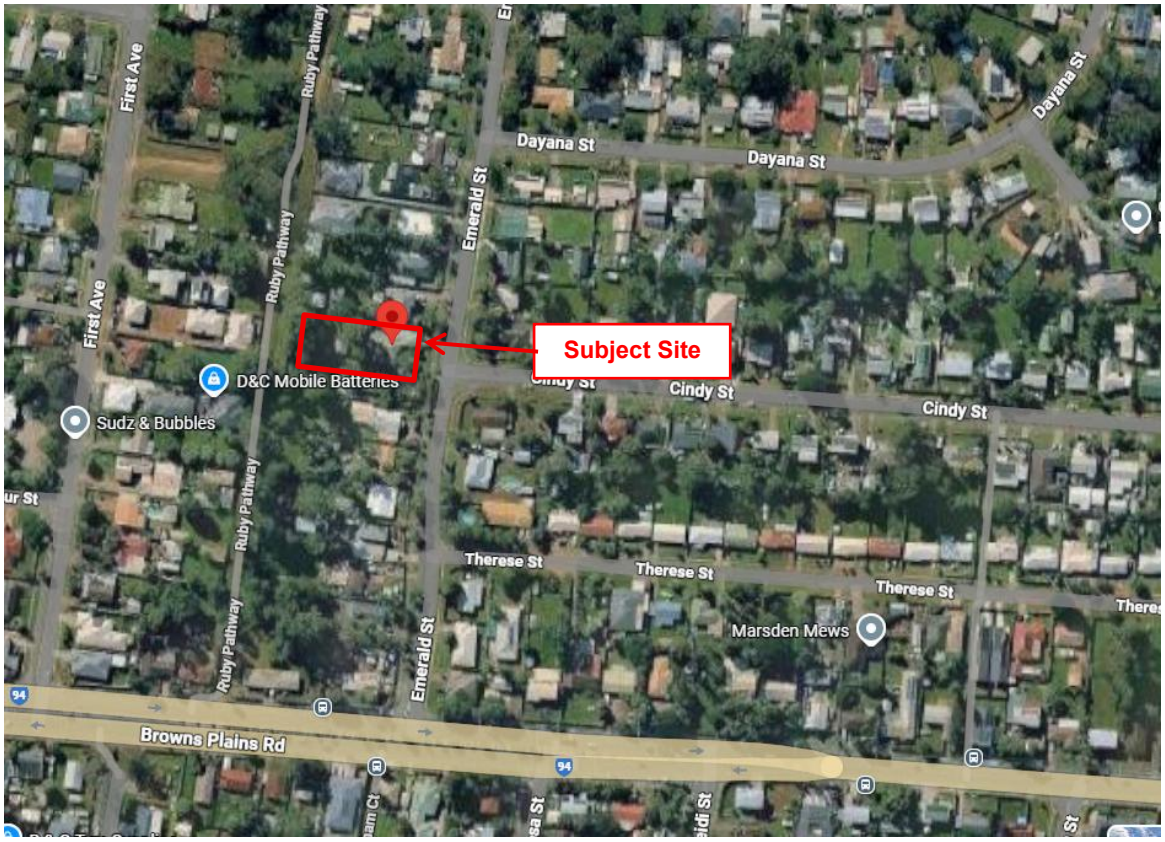


Figure 2: Aerial Image of the Site (Source: Google Maps)

2.4 Proposed Development

The proposed development for the site consists of a three (3) lot residential subdivision with shared driveway for access and services.

Refer to Appendix B for further proposed subdivision layout prepared by Stewart McIntyre & Associates, *Stewart McIntyre, Plan of Proposed Lots 1, 2 & 3 (Ref: 25990MR-PROP1)* .

2.5 Proposed Stormwater Drainage

It is proposed that the site's captured roofwater from the new residential lots up to the 1% AEP event are to be conveyed to proposed above ground detention tanks. The captured flows within

the tanks are to be conveyed via the proposed pit and pipe network, to the stormwater channel contained in the Ruby Street road reserve at the rear of the site. The majority of runoff from the remaining ground areas is to be captured by the proposed pit and pipe network and discharged into the existing this stormwater channel also.

2.6 Rainfall Data

Rainfall intensity data has been obtained from the Australian Bureau of Meteorology's 2016 Design IFD Rainfall System. The data has been extracted for the nearest grid cell at Latitude 27.6875 (S) and Longitude 153.1125 (E). The IFD data and average rainfall intensities used in this report are in accordance with the procedures outlined in Geosciences Australia, Australian Rainfall and Runoff 2019.

3.0 DATA

Data which has been sourced or provided, in order to prepare this report for the site, was gathered from the following sources:

- Stewart McIntyre, Detail Survey over Lot 33 RP135423 (Ref: 2599OMR) included as Appendix A;
- Proposed site layout provided by Stewart McIntyre, Plan of Proposed Lots 1, 2 & 3 (Ref: 25990MR-PROP1) ;
- LIDAR data for the subject site sourced from Australian Government Elevation and Depth Foundation Spatial Data (ELVIS), Date Source: 2014, DEM Data;
- Rainfall and Meteorological 2016 IFD Data by the Australian Bureau of Meteorology;
- Information Extracted from LCC PD Hub - Interactive Mapping; and
- Site Inspection.

4.0 SITE HYDROLOGY

4.1 Background

The following sections define the method and parameters utilised within the hydraulics of the site, in order to establish a simulation of the anticipated flow regime and peak discharge at the Existing Point of Discharge (EPOD) and nominated Lawful Point of Discharge (LPOD). A Rational Method calculation has been provided for comparison of the pre and post development peak flow rates.

The Rational Method (Section 4.3 of the Queensland Urban Drainage Manual - QUDM 2017) is a suitable estimation technique, given its flexibility in its data requirements and is able to produce satisfactory estimates of peak site discharges based on the following data input:

- specific intensity frequency duration (IFD) data;
- length/type of flow path;
- contributing catchment areas; and
- coefficient of discharge.

4.2 Pre Development

4.2.1 Catchment Definition and Lawful Point of Discharge

The pre-development site has been analysed as a single internal catchment with a total contributing area of 1,457m^2.

All stormwater runoff from the pre-development catchment (as defined above) is conveyed as sheet flow to the existing channel in the Ruby Street road reserve to the west of the site (LPOD).

The catchment area and LPOD for the subject site are shown on OSKA Consulting Group, Pre-Development Catchment Plan (Ref: WP01-P001-A) included as Appendix C.

4.2.2 Coefficient of Runoff

The pre-development coefficient of runoff (C year) was determined based on the fraction impervious method specified in QUDM. The pre-development catchment, based on the provided survey information, has 335m^2 of impervious surfaces, which equates to a fraction impervious (fi) of 0.23. Using a one hour, ten-year rainfall intensity ($^1I_{10}$) of 61.2 mm/hr and Table 4.5.4 in QUDM a C10 value of 0.66 has been adopted for the pre-development catchment.

The following pre-development coefficients of runoff (as shown in Table 2) have been adopted in accordance with QUDM Table 4.5.2, which apply the frequency factors for the standard Annual Exceedance Probability (AEP) design storms of 39%, 10%, 5% and 1% (corresponding to the 2, 10, 20 and 100 year Average Recurrence Interval (ARI) storms).

Table 2: Pre Development Coefficient of Runoff

Catchment	C_2	C_{10}	C_{20}	C_{100}
PRE	0.56	0.66	0.69	0.79

4.2.3 Time of Concentration

The Time of Concentration (TOC) for the pre-development catchment has been calculated in accordance with QUDM Section 4.6.6 – Overland Flow. Friend's Equation ($t = (107*n*L^{0.333})/S^{0.2}$) has been used to calculate the travel time using sheet flow. Please refer to *Table 3* for the calculated time of concentration for the pre-developed catchment.

Table 3: Pre-Development Time of Concentration

Catchment	Catchment Area (ha)	Time of Concentration		
		Roof time	Overland flow Friend's Equation	Total t_c
Pre-Development Catchment	0.1457	5 mins	Horton's (n) = 0.040 (Average Grassed) L = 39m Slope = 3% t = 11.6 mins	17 mins

4.2.4 Design Flow Rates

Pre-development peak flow rates have been estimated for the adopted storms using design rainfall intensities from the Bureau of Meteorology IFD Data. The Rational Method ($Q = 2.78 \times 10^{-3}$ CIA) has been used to estimate the subject site's design peak flow rates. The pre-development peak flows for the subject site are presented in Table 4.

Table 4: Pre Development Peak Flow Estimation – Rational Method

PRE					
Annual Exceedance Probability	**AEP**	39%	10%	5%	1%
Coefficient of Runoff	**C**	0.56	0.66	0.69	0.79
Area of Catchment (ha)	**A**	0.1457	0.1457	0.1457	0.1457
Average Rainfall Intensity (mm/h)	**I**	88	128	147	189
Peak Flow Rate (m^3/s)	**Q**	**0.020**	**0.034**	**0.041**	**0.060**

4.3 Post Development

4.3.1 Catchment Definition and Lawful Point of Discharge

The post-development scenario has been analysed as described in the pre-development scenario as one internal catchment with a contributing area of 1,457m^2. It is proposed in the post-development scenario to convey all site flows to the existing stormwater channel within the Ruby Street road reserve as it will act as the LPOD for the proposed development.

Stormwater (up to the 1% AEP event) collected from the roof areas of each lot shall be conveyed via downpipes to individual proposed detention tanks as part of future building works. The captured flows from the tanks shall be conveyed via the proposed pit and pipe network and discharged into the existing stormwater channel in Ruby Street. Stormwater runoff from the proposed driveway and ground areas shall be captured and conveyed via the proposed pit

and pipe network and discharged to the existing stormwater channel in Ruby Street (the site's LPOD).

The post development catchment area and LPOD are detailed on OSKA Consulting Group, Post-Development Catchment Plan (Ref: WP01-P002-A) included as Appendix D.

4.3.2 Coefficient of Runoff

The post-development coefficients of runoff (C year) were determined using the fraction impervious method as specified in QUDM.

Based on the expected future construction on each lot will contain an expected 150m^2 of roof area and driveway area of 143m2 plus assumed 10% of other hardstand per lot. The post-development catchments as approximately 739m^2 of impervious surfaces which equates to a fraction impervious (fi) of 0.51. Using a one-hour, ten-year rainfall intensity ($^1I_{10}$) of 61.2 mm/hr, a C_{10} value of 0.75 has been adopted for the post-development catchment.

The following post-development Coefficients of Runoff (as shown in *Table 5*) have been adopted in accordance with QUDM Table 4.5.2, which apply the frequency factors for the standard Annual Exceedance Probability (AEP) design storms of 39%, 10%, 5% and 1% (corresponding to the 2, 10, 20 and 100-year ARI storms).

Table 5: Post Development Coefficient of Runoff

Catchment	C_2	C_{10}	C_{20}	C_{100}
POST	0.64	0.75	0.79	0.90

4.3.3 Time of Concentration

The Time of Concentration for the post-developed catchment has been calculated in accordance with QUDM Table 4.6.3 – Recommended roof drainage system travel times.

In accordance with Table 4.6.3 of QUDM, the post-development catchment will have a time of concentration that will incorporate five (5) minutes of the roof to downpipes time plus two (2) minutes of pipe flow. This equates to a total travel time of seven (7) minutes.

4.3.4 Design Flow Rates

Post-development peak flow rates have been calculated for the adopted storms using design rainfall intensities from the Bureau of Meteorology 2016 IFD Data. The Rational Method ($Q = 2.78 \times 10^{-3}$ CIA) has been used to estimate the required design peak flow rates for the subject site. The post-development peak flows for the subject site are presented in Table 6.

Table 6: Post-Development Catchment Peak Flow Estimation – Rational Method

POST					
Annual Exceedance Probability	AEP	39%	10%	5%	1%
Coefficient of Runoff	**C**	0.64	0.75	0.79	0.90
Area of Catchment (ha)	**A**	0.1457	0.1457	0.1457	0.1457
Average Rainfall Intensity (mm/h)	**I**	123	180	207	269
Peak Flow Rate (m^3/s)	**Q**	**0.032**	**0.054**	**0.066**	**0.098**

4.4 Change in Flow Rates

The difference in peak flow rates calculated from the pre and post-developed catchment has been estimated via The Rational Method, with the results detailed in Table 7.

Table 7: Change in Peak Flow Rates Estimation – Rational Method

Annual Exceedance Probability	**AEP**	39%	10%	5%	1%
Pre-Developed Peak Flow Rate (m^3/s)	**Q**	0.020	0.034	0.041	0.060
Post-Developed Peak Flow Rate (m^3/s)	**Q**	0.032	0.054	0.066	0.098
Change in Peak Flow Rate (m^3/s)	**Q**	**0.012**	**+0.020**	**+0.025**	**+0.038**

The Rational Method assessment has demonstrated that an increase in peak flow rates discharging from the site is anticipated due to the proposed development, therefore On-Site Detention (OSD) will be required to mitigate flows to the pre-development conditions.

4.5 External Catchments

The subject site and the surrounding area were examined to determine if any localised external catchments will contribute to the subject site. The subject site was deemed not to contain any external catchments.

5.0 STORMWATER QUANTITY ASSESSMENT

5.1 Background

The development of land will increase peak flow rates from the subject site due to increased impervious areas and a reduction in the surface roughness of the site. The following section provides details of a proposed above ground detention tank to demonstrate that there will be no additional or actionable nuisance associated with the increased runoff rate on downstream properties and infrastructure.

5.2 Objective

In accordance with LCC's requirements, the following objective has been set for stormwater discharge from the site and the proposed development:

- No net increase in peak flows from the subject site for all critical events up to the 1% AEP design storm event during the post developed conditions.

This objective shall be demonstrated via a suitable hydrologic and hydraulic modelling package, by detaining site runoff from the subject site within a proposed detention tank.

5.3 Hydraulic Model

A calculation of the required detention volume to mitigate any increase in total site discharge rates has been undertaken using the DRAINS software programme.

A DRAINS model has been adopted to ensure that the above ground detention tanks volumes are calculated with a high degree of confidence. The proposed finished site levels and internal pipe levels have been used within the model to simulate the post development layout.

The model was developed by simulating the pre, post and mitigated catchment layouts and comparing the peak flow rates generated from each scenario.

In the mitigated catchment scenario the runoff generated from the roof areas of each lot (150m^2) up to the 1% AEP will be conveyed to the individual proposed above ground detention tanks with the remaining road and ground areas (1007m^2) bypassing the detention tanks. This catchment arrangement provides enough mitigation to demonstrate no increase in the peak flow rates exiting the site when compared to the pre-development scenario. The adopted sub-catchment areas for the site, time of concentration and fraction impervious, for the pre and post development have been tabulated in *Table 8.*

Note that roof gutters are to be designed to convey the major 1% AEP event into the detention tank.

Table 8: Adopted Sub-catchment Parameters

Pre Development Sub-Catchments			
DRAINS Sub-Catchment ID	***Total Area (ha)***	**Time of Concentration (mins)**	**Fi (%)**
Pre A	0.1457	17 (pervious) 7 (impervious)	0.23
Post Development Sub-Catchments			
DRAINS Sub-Catchment ID	***Total Area (ha)***	**Time of Concentration Impervious, Pervious (mins)**	**Fi**
Post (Total)	**0.1457**	**6**	**51**
Post (to tank)	0.0450	6	100.00
Post (bypass tank)	0.1007	6 (imp) 17 (per)	29

The 63%, 39%, 18%, 10%, 5%, 2% and 1% AEP design storm events were analysed for all standard durations ranging from 5 minutes to 120 minutes. The critical duration for the combined peak site and external catchment discharge was determined to be the 10 and 5 minute storms for the pre-development and post-development scenarios respectively.

The peak discharge rates for the site and external catchment calculated by the DRAINS model are shown in *Table 9.*

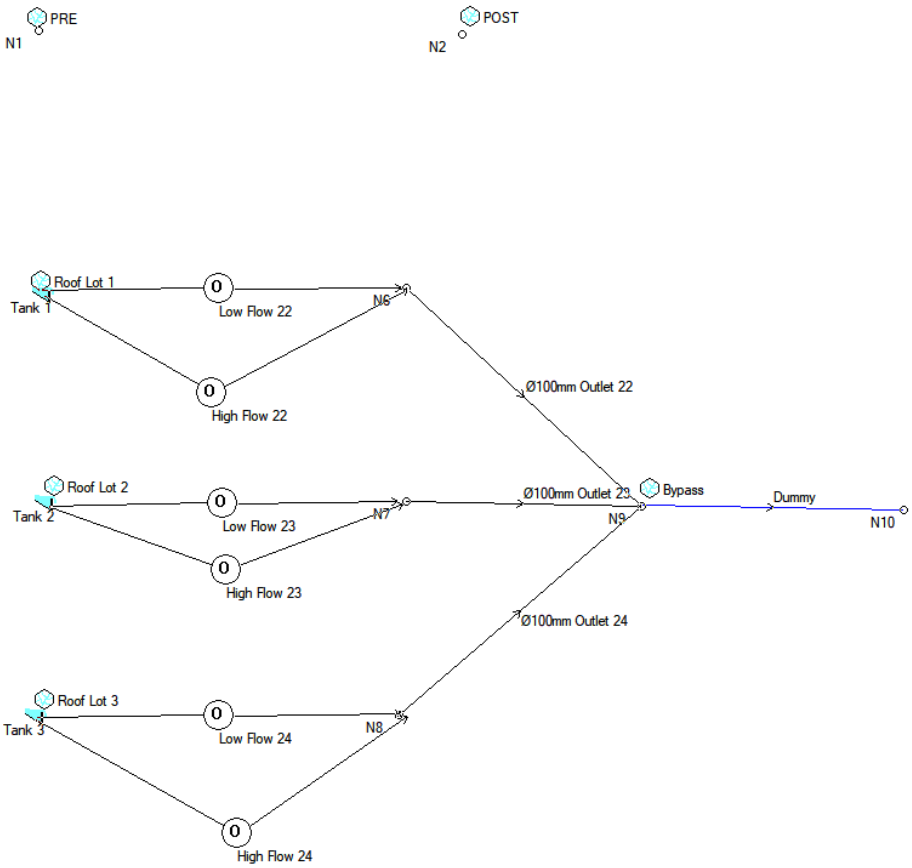


Figure 3: DRAINS model setup

The pre and post-development catchment area and LPOD are detailed on OSKA Consulting Group, *Pre Development Catchment Plan* (Ref: WP01-P001/A) and OSKA Consulting Group, *Post Development Catchment Plan* (Ref: WP01-P002-A) included respectively as *Appendix C and D*.

Table 9: Anticipated Peak Site Discharge Rate – Extracted from DRAINS Model (m^3/s)

	Peak Flow Rate Discharge (m^3/s)						
Design AEP Events	**63%**	**39%**	**18%**	**10%**	**5%**	**2%**	**1%**
Pre Development	0.018	0.024	0.034	0.037	0.045	0.056	0.066
Post Development (unmitigated)	0.027	0.036	0.051	0.043	0.052	0.066	0.076

The DRAINS assessment has demonstrated that an increase in peak flow rates discharging from the site is anticipated, therefore On-Site Detention is deemed required to mitigate flows to predevelopment conditions.

5.3.1 Detention Volume

The following detention storage parameters were adopted to achieve the target pre-development flow rates, via mitigation of the post-development flow rates.

Table 10: Adopted Detention Tank Parameters (each tank)

Minimum Detention Area:	3.00m^2
Detention Tank Internal Height:	1.70m
Low Flow (at invert of tank)	Ø40mm Pipe
High Flow (at 1.35m above tank invert)	Ø100mm Pipe
Consolidated Outlet Pipe	Ø100mm Pipe at min 1% grade
1% AEP Water Level:	1.35m
Detention Volume:	5.00m^3
Number of Tanks in Model:	3

The 15-minute design storm was determined as the critical storm duration for determining the required volume within the detention tank. A comparison of the pre-development and mitigated flow rates based on the above arrangement is shown in *Table 11.*

Table 11: Comparison of Pre-Development and Mitigated Flow Rates – Extracted from DRAINS

Annual Exceedance Probability	**63%**	**39%**	**18%**	**10%**	**5%**	**2%**	**1%**
Pre-Development Peak Flow Rate (m^3/sec)	0.016	0.022	0.030	0.037	0.045	0.056	0.066
Mitigated Peak Flow Rate (m^3/sec)	0.016	0.021	0.028	0.034	0.040	0.050	0.057

As demonstrated in the results displayed in *Table 11*, the detention arrangement can be seen to effectively mitigate the post-development flows in the adopted critical design storm AEP events.

The hydraulic analysis using the DRAINS model has determined that a minimum total of 5.00m^3 of storage is required for each tank for runoff attenuation and is to be provided in the form of an above ground detention tank on each lot at time of building works. The above ground detention tank is to be fitted with an outlet configuration (low and high flow outlets) as detailed in *Table 10* to satisfy the mitigation requirements. The tanks will be installed as part of the building works on each property.

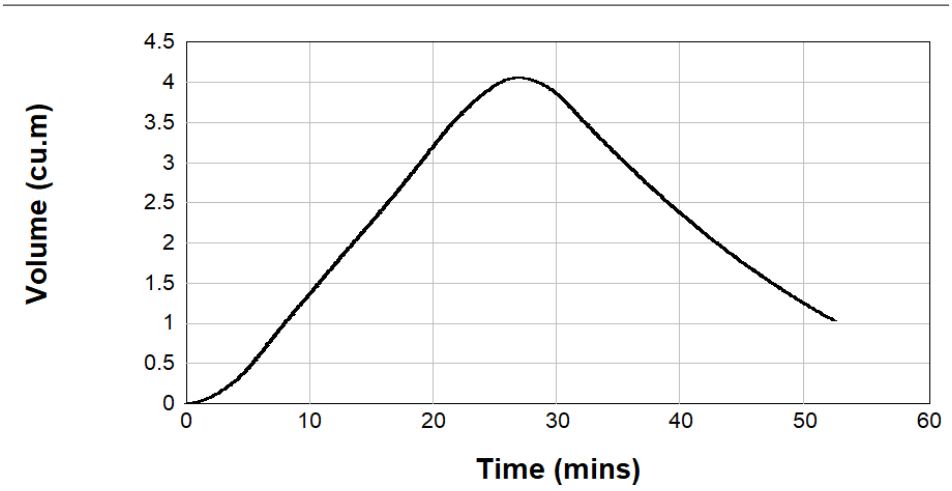


Figure 4: DRAINS Detention Tank Volume

A copy of the DRAINS model used in this report can be made available to council upon request.

6.0 STORMWATER QUALITY ASSESSMENT

6.1 Background

The development of the land has the potential to increase the pollutant loads within stormwater runoff and downstream watercourses. During the construction phase of the development, disturbances to the existing ground have the potential to significantly increase sediment loads entering downstream drainage systems and watercourses. The operational phase of the development will potentially increase the amount of sediments and nutrients washing from the site.

The following sections describe the construction and operational phase controls and water quality modelling of the proposed treatment train in compliance with Council guidelines.

6.2 Construction Phase

A high risk of stormwater pollution will occur from the site during the construction phase due to erosion and sediment transportation off-site to the receiving environment. The majority of this risk results from construction activities disturbing the site and exposing areas of soil to the direct erosive influence of the environment.

The following section outlines the procedures necessary to minimise erosion and control sediment during construction in accordance with the International Erosion Control Association (IECA) Best Practice ESC Document.

6.2.1 Key Pollutants

The key pollutants have been identified for the Construction Phase of this development.

Table 12: Key Pollutants, Construction Phase

Pollutant	Sources
Litter	Paper, construction packaging, food packaging, cement bags, material offcuts.
Sediment	Exposed soils and stockpiles during earthworks and building works.
Hydrocarbons	Fuel and oil spills, leaks from construction equipment and temporary car park areas.
Toxic Materials	Cement slurry, asphalt primer, solvents, cleaning agents, and wash waters (e.g., from tile works).
Acids or Alkaline substances	Acid sulphate soils, cement slurry and wash waters.

6.2.2 Sediment and Erosion Controls

Sediment and Erosion Control devices (S&EC) employed on the site have been designed and shall be constructed in accordance with the International Erosion Control Association (IECA) Best Practice ESC Document as shown on the concept plan within the OSKA Consulting Group, Sediment and Erosion Control Plan (Ref: WP01-P004-A); OSKA Consulting Group, Sediment and Erosion Control Details (Ref: WP01-P005-A) included in Appendix F.

Pre-Construction

- Stabilised site access/exit onto Emerald to the east;
- Sediment fences to be located around the perimeter of the site;
- Dust fencing to be installed if required; and
- Educate site personnel to the requirements of Erosion and Sediment Control Plan.

Initial Construction

- Maintain construction access/exit, sediment fencing, dust fences and all other existing controls as required;
- Construct diversion drains to convey disturbed site run-off to the temporary sediment traps; and
- Confine construction activities to stages to minimise areas of disturbance at any given time.

Second Stage Construction

- Maintain construction access/exit, sediment fencing, dust fences, diversion drain and all other existing controls as required;
- Progressively revegetate finished areas where applicable;
- Divert runoff from undisturbed areas around disturbed areas; and
- Drainage structure protection around field inlets and gully pits.

During construction, all areas of exposed soils allowing dust generation are to be suitably treated. Treatments will include covering the soil and watering. Road accesses are to be regularly cleaned to prevent the transmission of soil on vehicle wheels and eliminate any build-up of typical road dirt and tyre dust from delivery vehicles.

Adequate waste disposal facilities are to be provided and maintained on the site to cater for all waste materials such as litter, hydrocarbons, toxic materials, acids or alkaline substances.

6.2.3 Water Quality Monitoring and Inspections

To ensure that the water quality objectives are being met during the construction phase of the development, water quality monitoring shall be conducted. Water quality monitoring shall use a calibrated probe or sampling and testing at a NATA registered laboratory.

Location: Monitoring Stations shown on the concept sediment and erosion control plans within the OSKA Consulting Group, Sediment and Erosion Control Plan (Ref: WP01-P004-A); OSKA Consulting Group, Sediment and Erosion Control Details (Ref: WP01-P005-A) included in Appendix F.

Parameters: Site discharge criteria shown on the concept sediment and erosion control plans within the OSKA Consulting Group, Sediment and Erosion Control Plan (Ref: WP01-P004-A); OSKA Consulting Group, Sediment and Erosion Control Details (Ref: WP01-P005-A) included in Appendix F.

Frequency: Following at least 10 mm of rainfall in a 24-hour period.

The contractor shall be responsible for the inspection and maintenance of all sediment and erosion control devices. Additional controls and review of existing controls shall be undertaken in response to the results of the above-mentioned monitoring program.

6.2.4 Reporting

An inspection report shall be written by a suitably qualified and experienced scientist/engineer following each water quality monitoring episode. The report shall include at least the following information:

- Name, address and real property description for the development site;
- Council file reference number (if known);
- Monitoring locations;
- Performance criteria;
- Results for each monitoring location, identifying any breaches of performance criteria;
- Recommended corrective actions to be taken and additional sediment and erosion controls, if required; and
- Inspection reports shall be provided to the contractor for their action and compilation in an on-site register.

If the above-mentioned performance criteria are exceeded and results from the downstream monitoring stations show significant deterioration from upstream results (if applicable), the contractor shall implement all recommendation of the inspection report within one (1) working day of receipt of the report.

6.3 Operational Phase

The proposed development has been assessed against the State Planning Policy 2017 (SPP 2017) which is applicable when:

(1) A material change of use for an urban purpose that involves premises 2500m^2 or greater in size and:
    a. Will result in six or more dwellings; or
    b. An impervious area greater than 25% of the net developable area
(2) Reconfiguring a lot for urban purposes that involves premises 2500m2 or greater in size and will result in six or more lots.

Based on the above, there is no requirement for operational phase stormwater quality devices for this proposed development.

7.0 CONCLUSIONS

OSKA Civil Consultants has been commissioned by Waydon Property Pty Ltd to prepare a Conceptual Stormwater Management Plan (CSWMP) to support a Development Application (DA) to the Logan City Council (LCC) for the proposed Residential Subdivision situated at 18 Emerald Street, Marsden. This CSWMP intends to provide an optimised stormwater management system that would be compatible and readily integrated into the proposed site use.

This CSWMP details the planning, layout and design of the stormwater management infrastructure for both the construction and operational phases of this development and satisfies the requirements of the Logan City Council Guidelines.

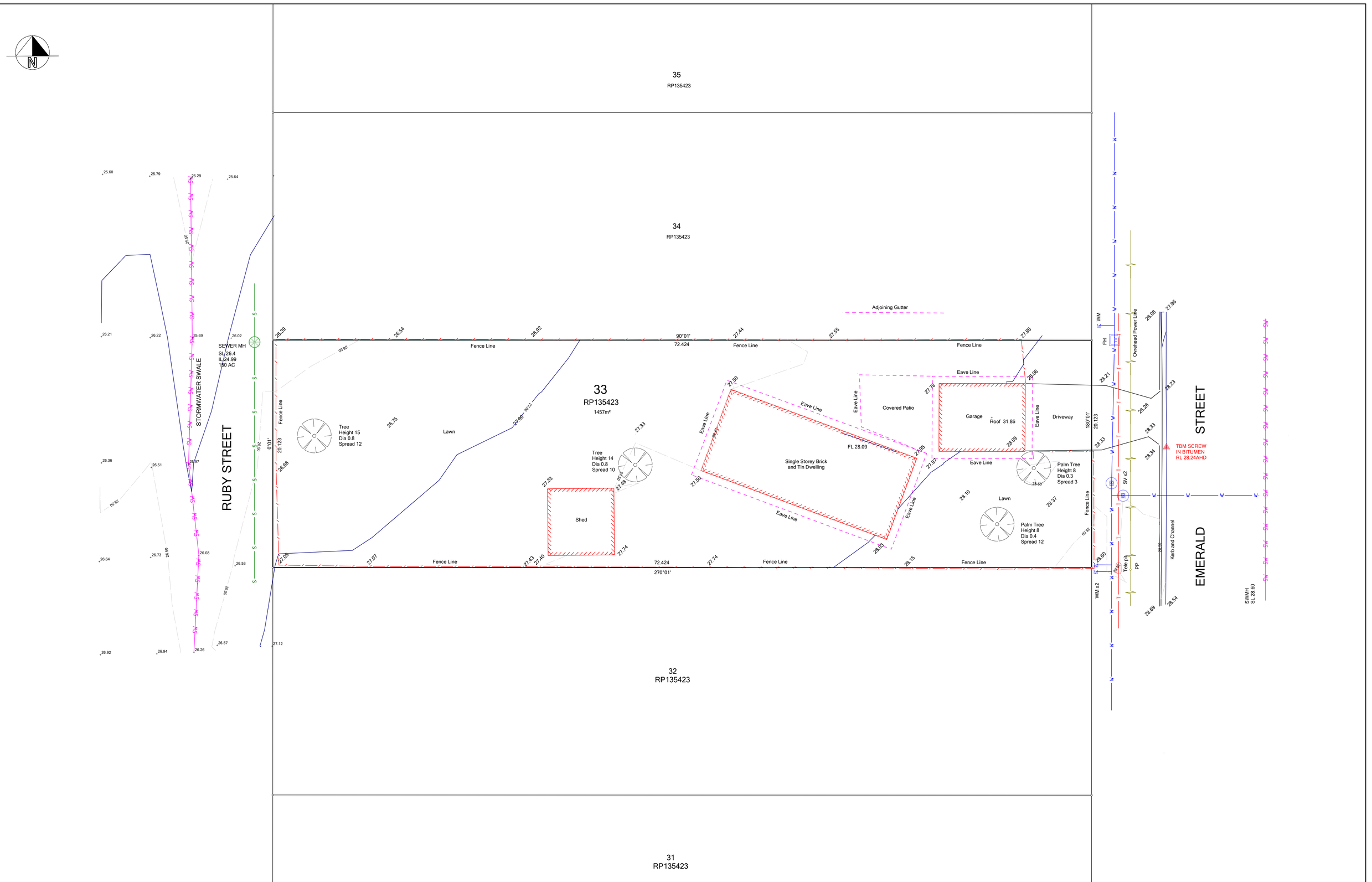
A hydrological analysis demonstrated that the anticipated post-development peak flow rates discharging from the site are higher than pre-development flow rates. A hydraulic model was built using the DRAINS software program, to estimate the required detention volume and arrangement to effectively mitigate the post development flows. The report and stormwater management plan define the size and layout of the proposed above ground detention tanks to be installed within each lot with a volume of 5.00m^3 for each tank.

No stormwater quality devices are required due to the low intensity scale and being under the State Planning Policy requirements for Water Quality triggers.

APPENDIX

A

Stewart McIntyre, Detail Survey over Lot 33 RP135423 (Ref: 2599OMR)



Stewart McIntyre & Associates
Consulting Surveyors
14/2 Mieke Court, Burleigh Heads
Phone: (07) 5598 3334 Email: admin@mcsurvey.com.au

TITLE: CONTOUR AND DETAIL SURVEY OVER LOT 33 ON RP135423

LOCALITY: MARSDEN LGA: LOGAN CITY COUNCIL

CLIENT: WAYDON PROPERTY PTY LTD

SURVEYOR LSL	DATE 21/11/2025
DRAWN LSL	
JOB NO. : 25990MR	
DRAWING NO.: 25990MR - CONTOUR AND DETAIL	

SCALE 1:150 A1 LEVEL DATUM AHD

THE SURFACE EXPRESSION OF THE SERVICES SHOWN ON THIS PLAN HAVE BEEN LOCATED BY FIELD SURVEY. PRIOR TO DEMOLITION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR POSSIBLE LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.

SEWER LINE — S — S —
TELECOM CABLE — T — T —
UNDERGROUND POWER — E — E —
OVERHEAD POWERLINE
GAS PIPE — G — G —
WATER PIPE — W — W —
STORMWATER PIPE
FENCE LINE

ELP - ELECTRIC LIGHT POLE
ELEC - ELECTRICAL PIT OR PILLAR
PP - POWER POLE
TELE - TELECOMMUNICATION PIT
GV - GAS VALVE
WM - WATER METER
FH - FIRE HYDRANT
GT - GULLY TRAP
FI - FIELD INLET
IO - INSPECTION OPENING
GPT - GROSS POLLUTANT TRAP

TR - TREE
FL - FLOOR LEVEL
MH - SEWER OR STORMWATER MANHOLE

APPENDIX

B

Stewart McIntyre, Plan of Proposed Lots 1, 2 & 3 (Ref: 25990MR-PROP1)

34
RP135423

RUBY STREET

STREET

EMERALD

EMT C
37 m²
270°01'
24.85

EMT B
131 m²
90°01'
10.0
101°13'10"
7.721
90°01'
10.0

EMT A
110 m²
90°01'
20.0

3
500 m²
0°01'
(20.123)
180°01'
(20.123)

2
555 m²
0°01'
5.5
180°01'
(20.123)

1
402 m²
0°01'
5.5
180°01'
(20.123)

90°01'
24.85
90°01'
27.574
90°01'
20.0

270°01'
24.85
270°01'
27.574
270°01'
20.0

1.5
1.5
2.5

Ovrehead Power Line
WM
FH
SV x2
Tele pit
PP
WM x2
SWMH
SL 28.60

32
RP135423

0 5 10 15 20 25

Stewart McIntyre & Associates
Consulting Surveyors
14/2 Mieke Court, Burleigh Heads
Phone: (07) 5598 3334 Email: admin@mcsurvey.com.au

TITLE

PLAN OF PROPOSED LOTS 1, 2 & 3 AND EASEMENT A IN LOT 1, EASEMENT B IN LOT 2 AND EASEMENT C IN LOT 3 Cancelling Lot 33 on RP135423

LOCALITY: MARSDEN
LGA: LOGAN CITY

SURVEYOR	DATE	DRAWING NO. :
LSL & AF	26/11/2025	25990MR - PROP1
DRAWN	SCALE	CLIENT
JL	1:250	WAYDON PROPERTY PTY LTD

COMFILE: **SP356441**

NOTES:
All areas and dimensions are subject to final survey.
Subject to Gold Coast City Council Approval.

APPENDIX

C

OSKA Consulting Group, Pre-Development Catchment Plan (Ref: WP01-P001-A)

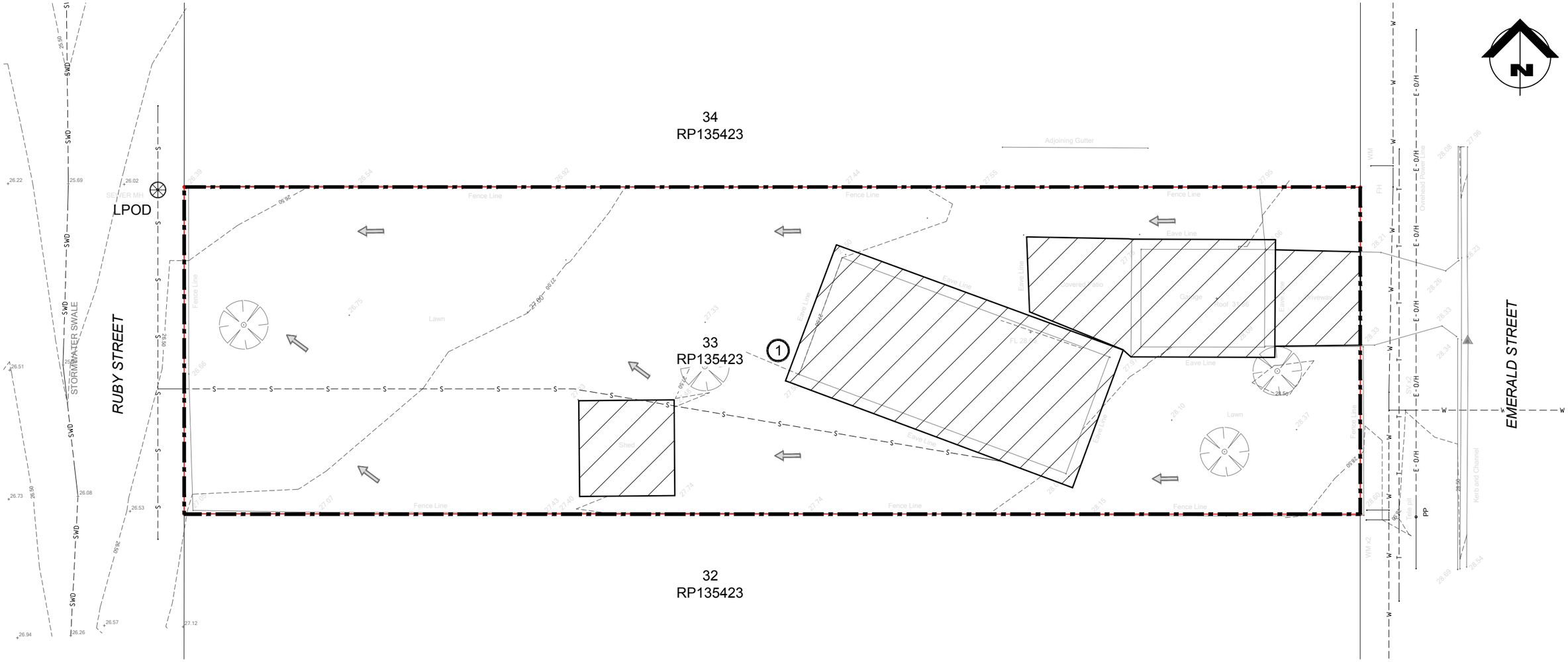
LEGEND

- STORMWATER CATCHMENT BOUNDARY
- (1) STORMWATER CATCHMENT I.D.
- 27.0 EXISTING SURFACE CONTOURS
- LPOD LAWFUL POINT OF DISCHARGE
- FLOW DIRECTION
- EXISTING HARDSTAND

STORMWATER CATCHMENT TABLE		
STORMWATER CATCHMENT I.D.	AREA (m²)	IMPERVIOUS AREA
1	1457	23 %
TOTAL	1457	

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS



			CLIENT	DESIGN	DRAWN	APPROVED	TITLE	PROJECT NO.	
			WAYDON PROPERTY PTY LTD	EW	EW	TP	PRE DEVELOPMENT STORMWATER CATCHMENT PLAN	WP01	
			PROJECT					DWG NO.	ISSUE
A	05-12-25	ISSUED FOR APPROVAL	PROPOSED RESIDENTIAL SUBDIVISION 18 EMERALD STREET MARSDEN QLD 4132				SCALE 1:125 AT A1 1:250 AT A3	P001	A
ISSUE No.	DATE	AMENDMENT							

OSKA CONSULTING GROUP

APPENDIX

D

OSKA Consulting Group, Post-Development Catchment Plan (Ref: WP01-P002-A)

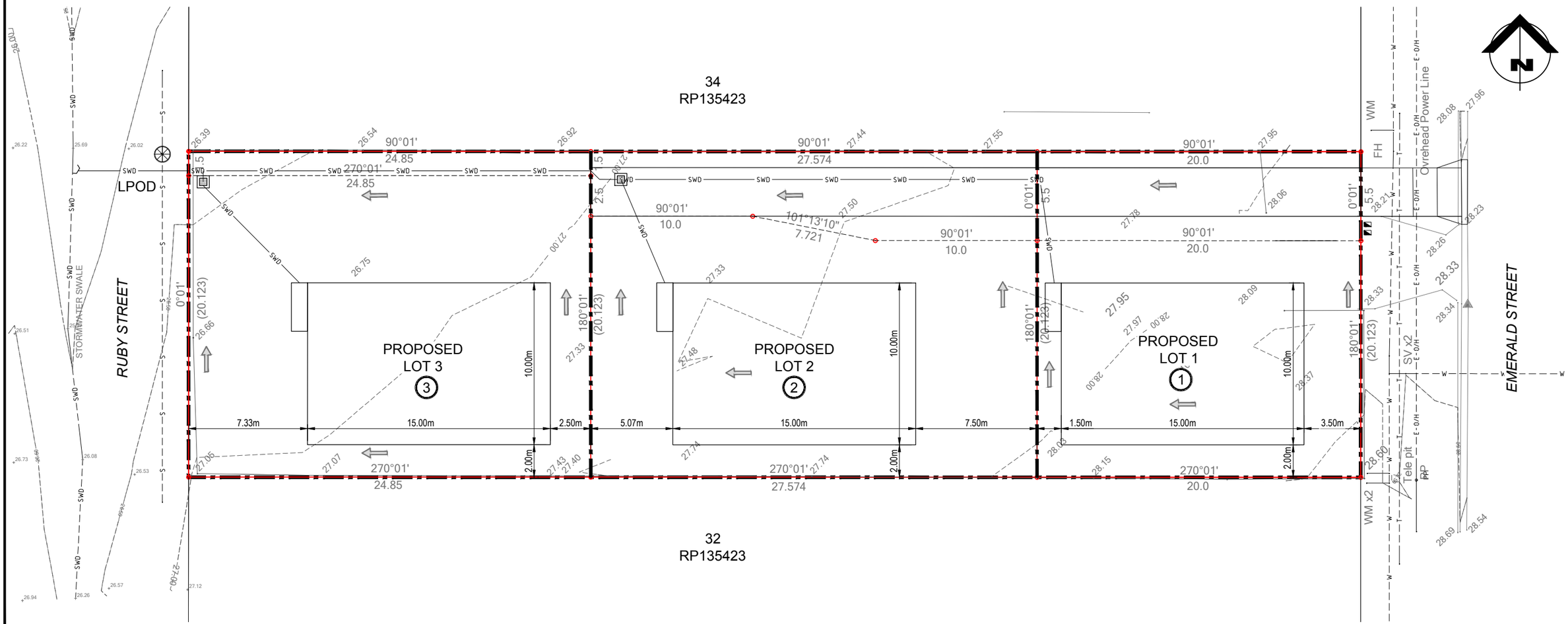
LEGEND

- STORMWATER CATCHMENT BOUNDARY
- (1) STORMWATER CATCHMENT I.D.
- 27.0 EXISTING SURFACE CONTOURS
- PROPOSED EASEMENT
- LPOD LAWFUL POINT OF DISCHARGE
- FLOW DIRECTION

STORMWATER CATCHMENT TABLE	
STORMWATER CATCHMENT I.D.	AREA (m²)
1	402
2	555
3	500
TOTAL	1457

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS



							CLIENT	DESIGN	DRAWN	APPROVED	TITLE	PROJECT NO.
							WAYDON PROPERTY PTY LTD	EW	EW	TP	POST DEVELOPMENT STORMWATER CATCHMENT PLAN	WP01
							PROJECT					DWG NO. / ISSUE
A	05-12-25	ISSUED FOR APPROVAL					PROPOSED RESIDENTIAL SUBDIVISION 18 EMERALD STREET MARSDEN QLD 4132				SCALE 1:125 AT A1, 1:250 AT A3 (0 5 10m)	P002 / A
ISSUE No.	DATE	AMENDMENT										

OSKA CONSULTING GROUP

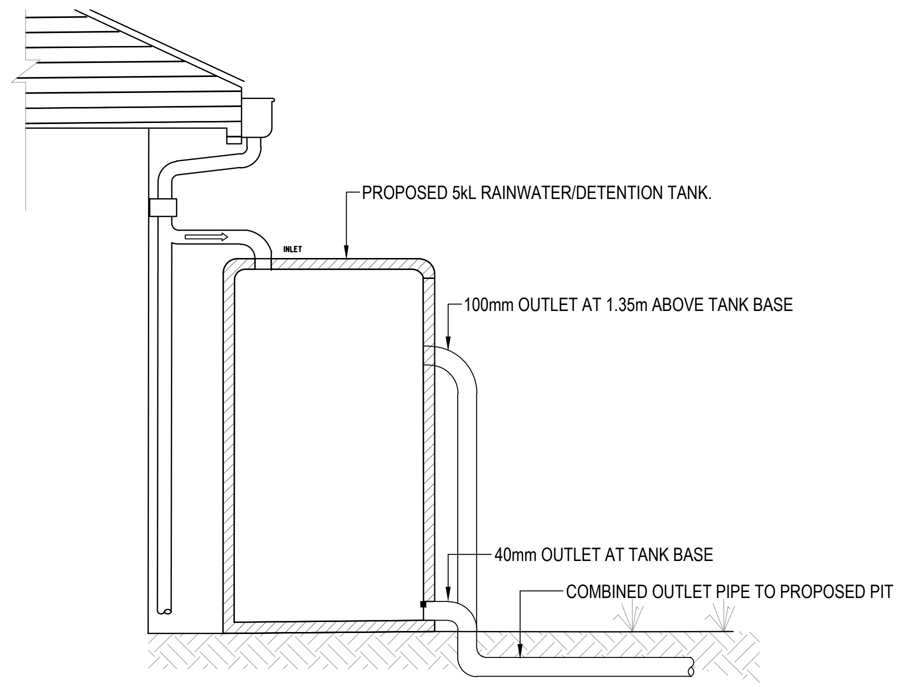
APPENDIX

E

OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: WP01-P003-A)

LEGEND

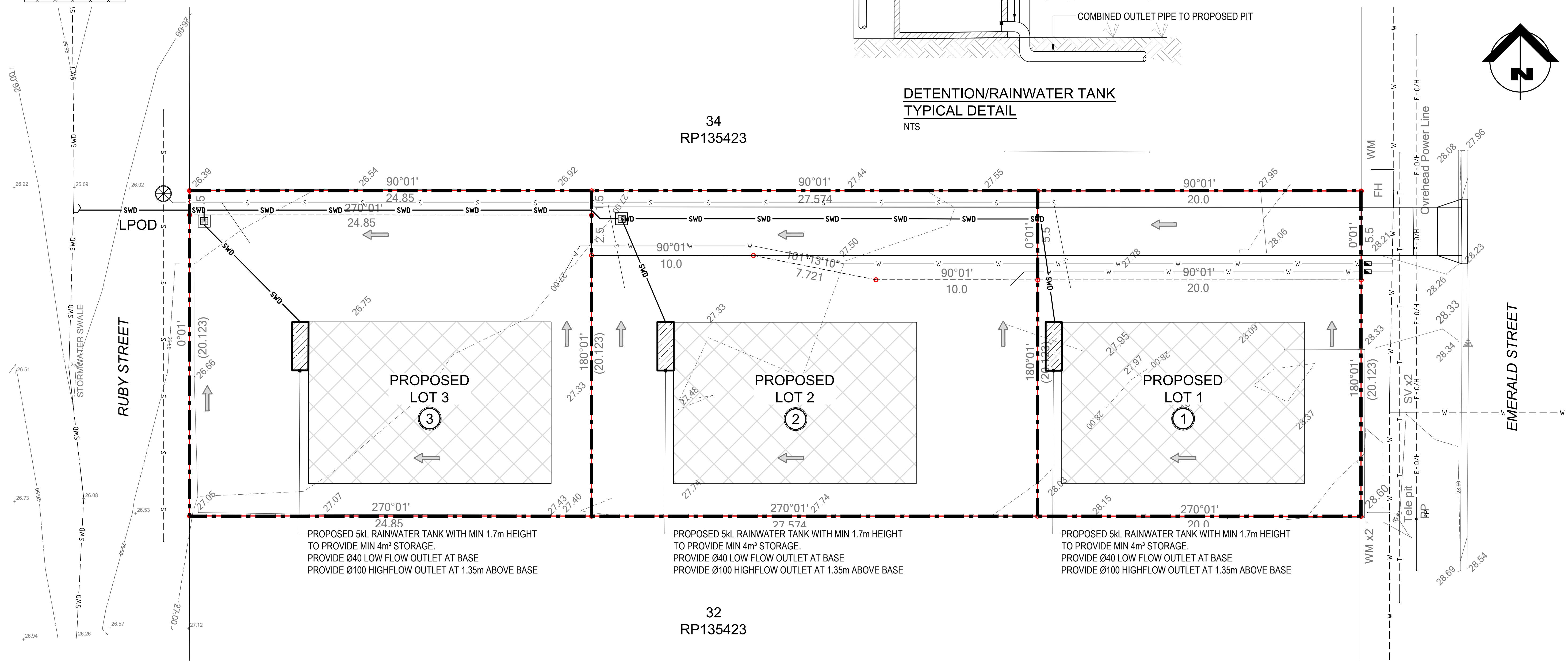
- STORMWATER CATCHMENT BOUNDARY
- (1) STORMWATER CATCHMENT I.D.
- SWD — PROPOSED STORMWATER PIPE
- PROPOSED FIELD INLET
- PROPOSED RAINWATER TANK (INDICATIVE LOCATION)
- LPOD — LAWFUL POINT OF DISCHARGE
- FLOW DIRECTION
- SWD — EXISTING STORMWATER PIPE
- 27.0 — EXISTING SURFACE CONTOURS
- PROPOSED EASEMENT
- PROPOSED BUILDING PAD (INDICATIVE LOCATION)



DETENTION/RAINWATER TANK
TYPICAL DETAIL
NTS

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS



ISSUE No.	DATE	AMENDMENT
A	05-12-25	ISSUED FOR APPROVAL

OSKA CONSULTING GROUP

CLIENT	WAYDON PROPERTY PTY LTD
PROJECT	PROPOSED RESIDENTIAL SUBDIVISION 18 EMERALD STREET MARSDEN QLD 4132
DESIGN	EW
DRAWN	EW
APPROVED	TP
TITLE	CONCEPTUAL STORMWATER MANAGEMENT PLAN
SCALE	1:125 AT A1 1:250 AT A3 (0 – 5 – 10m)
PROJECT NO.	WP01
DWG NO.	P003
ISSUE	A

APPENDIX

F

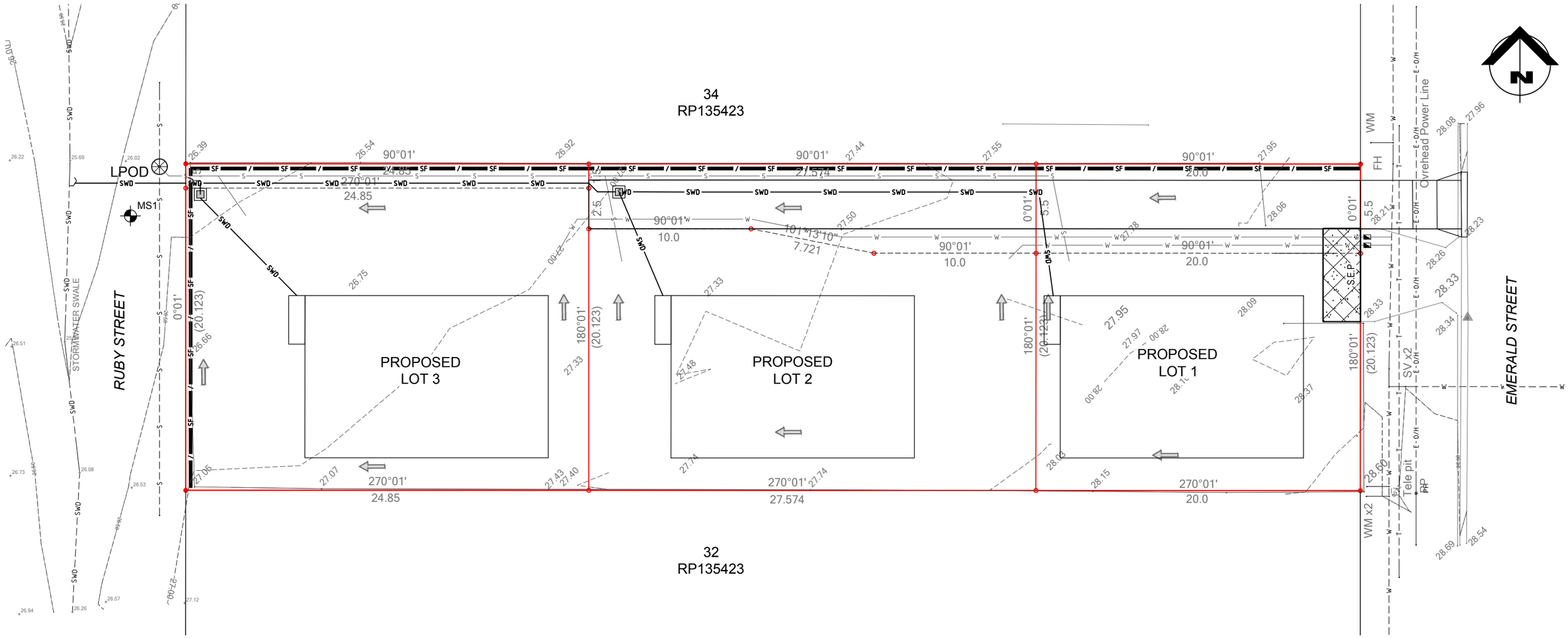
OSKA Consulting Group, Conceptual Sediment and Erosion Control Plan (Ref: WP01-P004-A) And Conceptual Sediment and Erosion Control Details (Ref: WP01-P005-A)

SEDIMENT & EROSION CONTROL LEGEND

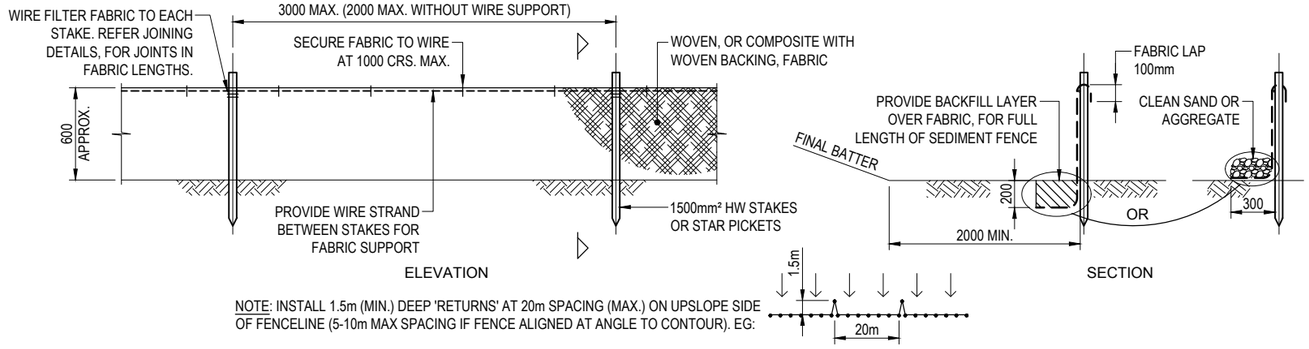
- SF — SEDIMENT FENCE
- S.E.P. — LOCATION OF STABILISED ENTRY/EXIT POINT
- MS1 — WATER QUALITY MONITORING STATION
- LPOD — LAWFUL POINT OF DISCHARGE
- FLOW DIRECTION
- 27.0 — EXISTING SURFACE CONTOURS
- PROPOSED EASEMENT

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS



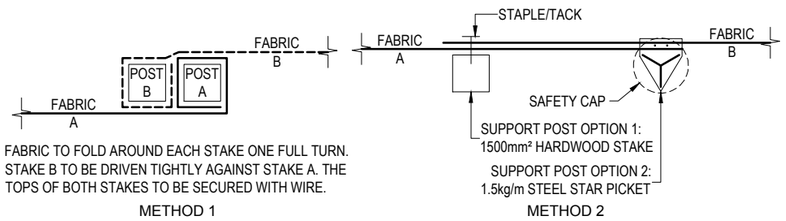
			OSKA CONSULTING GROUP	CLIENT: WAYDON PROPERTY PTY LTD	DESIGN: EW	DRAWN: EW	APPROVED: TP	TITLE: CONCEPTUAL SEDIMENT AND EROSION CONTROL PLAN	PROJECT NO.: WP01
				PROJECT: PROPOSED RESIDENTIAL SUBDIVISION 18 EMERALD STREET MARSDEN QLD 4132				SCALE: 1:125 AT A1 1:250 AT A3 0 5 10m	DWG NO.: P004 ISSUE: A
A	05-12-25	ISSUED FOR APPROVAL							
ISSUE No.	DATE	AMENDMENT							



SEDIMENT FENCE DETAILS

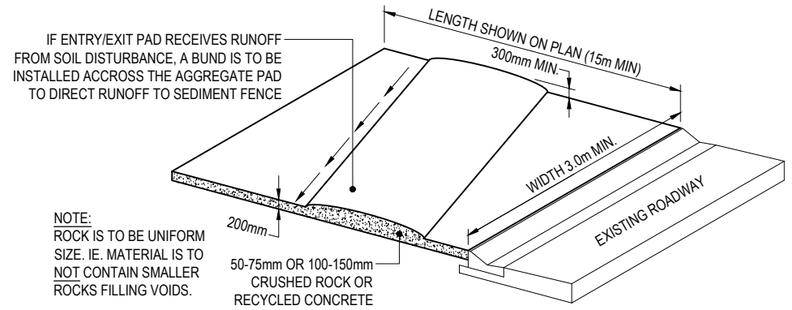
N.T.S.

—— / —— SF —— DENOTES SEDIMENT FENCE. REFER PLAN FOR LOCATION AND EXTENTS.



SEDIMENT FENCE FABRIC JOINING DETAILS

N.T.S.



STABILISED ENTRY/EXIT POINT

N.T.S. OR APPROVED EQUIVALENT

SEP DENOTES STABILISED ENTRY/EXIT POINT, REFER PLAN FOR LOCATIONS.

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

ISSUE No.	DATE	AMENDMENT
A	05-12-25	ISSUED FOR APPROVAL

OSKA CONSULTING GROUP

CLIENT: WAYDON PROPERTY PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
18 EMERALD STREET
MARSDEN QLD 4132

DESIGN	DRAWN	APPROVED
EW	EW	TP

TITLE: CONCEPTUAL SEDIMENT AND EROSION CONTROL DETAILS

SCALE: NTS

PROJECT NO.: WP01

DWG NO.: P005

ISSUE: A