

BCC DS
RECEIVED
04/06/2026
APPLICATION REF
A006814396



Google Maps

PREPARED FOR AZIZ DEEN

DOCUMENT CONTROL

ISSUE	DATE	ISSUE DETAILS	AUTHOR	CHECKED	APPROVED
A	26.06.2025	FOR DA APPROVAL	Haider Shah	HS	HS
B	15.05.2026	INFORMATION REQUEST RESPONSE	Haider Shah	HS	HS

Haider Shah

RPEQ: 26210

Date: 15/05/2026

Time: 11:11am

COMMERCIAL IN CONFIDENCE

This document including any intellectual property is confidential and proprietary to 72 Civil Design & Drafting and may not be disclosed in whole or in part to any third party nor used in any manner whatsoever other than for the purposes expressly consented to by 72 Civil Design & Drafting in writing. 72 Civil Design & Drafting reserves all legal rights and remedies in relation to any infringement of its rights in respect of its confidential information.

Contents

1	Introduction	1
1.1	Scope	1
1.2	Stormwater Management Objectives.....	1
2	Existing Site Features	2
2.1	Location, Land Use and Vegetation	2
2.2	Existing Topography and Drainage	2
2.3	Assessment of External Upstream Catchment.....	3
2.4	Assessment of Flooding	3
2.5	Lawful Point of Discharge	3
3	Proposed Development	4
4	Stormwater Quantity Management	4
4.1	Hydrologic Objectives.....	4
4.2	Hydrological Model Parameters Adopted	4
4.3	Design Rainfall.....	5
4.4	Pre-Development and Post-Development Hydrology	6
4.5	Portal Street Road Capacity Assessment.....	8
4.6	Proposed Drainage Works.....	9
5	Stormwater Quality Management	9
5.1	Development Triggers for Stormwater Quality Management	9
5.2	Stormwater Quality Management Objectives	9
5.3	Stormwater Quality Management Strategy	10
6	External Upstream Catchment Assessment	10
6.1	External Upstream Catchment Hydrology.....	10
6.2	External Upstream Catchment Conveyance Measures	11
7	Erosion and Sediment Management	13
7.1	Erosion and Sediment Management	13
8	Conclusions	14
Appendix		
Appendix A – Existing Site Survey Plan		
Appendix B – BCC Floodwise Property Flood Report & As-Constructed		
Appendix C – Proposed Development Plans		
Appendix D – Stormwater Management Drawings		
Appendix E – Technical Memorandum prepared by 72 Civil Design and Drafting (Dated:15.12.2025)		

1 Introduction

This Stormwater Management Plan (SMP) has been prepared to support the proposed development at 45 Portal Street, Oxley, QLD 4075. This assessment has been prepared generally in accordance with the Brisbane City Plan 2014, Queensland Urban Drainage Manual (QUDM) (current edition), Australian Rainfall and Runoff (ARR) and Healthy Waterways – Water by Design.

1.1 Scope

Specifically, this report details the following:

- Describes the environmental setting of the development site and precinct;
- Describes the nature of the proposed development as it relates to stormwater quality;
- Calculates the peak flows for both pre- and post-development conditions;
- Calculates the detention volume required to achieve the pre-development outflow in the post-development state;
- Establishment of a Lawful Point of Discharge (LPD) for the subject site;
- Stormwater Quality - including an estimate of sediment and nutrient transport from the subject site and assessment against pollutant reduction targets for runoff exiting the site; and
- Stormwater Management Controls - for the construction and operational phases.

1.2 Stormwater Management Objectives

The Objective of this SMP is to:

- Minimise the number of pollutants such as sediment, litter and nutrients entering surrounding waterways and stormwater drainage infrastructure;
- Achieve no increase in pre-development peak discharge from the subject site up to and including the 1% AEP (100-year ARI) storm event;
- Ensure stormwater is managed to minimise the impact of flooding; and
- Minimise environmental nuisance or harm from land-disturbing activities.

These objectives will be achieved through the implementation of:

- Management strategies designed to minimise water pollution from development of the subject site;
- Management strategies to maintain pre-development peak discharges at the existing lawful and practical point of discharge;
- Specific construction phase controls to minimise erosion and control sediment loss, and
- Specific operational phase controls to minimise sediment and nutrient export from the subject site.

2 Existing Site Features

2.1 Location, Land Use and Vegetation

The subject site has a total area of 5521m² and is formally described as Lot 9 on RP84473. The site comprises of an existing single-storey residential building, granny flat and associated carport. The remaining site is covered with vegetation and small to medium sized trees. Access to the subject site is via an existing driveway located on Portal Street.

Refer to Figure 1 below for aerial view and site location. Refer to Appendix A for the Existing Site Survey Plan.



Figure 1. Aerial View & Site Location (Queensland Globe)

2.2 Existing Topography and Drainage

The following topography details refer to the development area within 45 Portal Street, Oxley (subject site);

- The natural fall of the land generally grades from the northern boundary towards the southern boundary of the subject site.
- The site levels range from RL:28.50m AHD at the northern boundary of the subject site to a low point of RL:26.02m AHD at the south-eastern corner of the subject site.
- The site has an approximate average grade of 3.0%.
- No easements have been identified within the subject site.
- The following existing stormwater drainage infrastructure has been obtained from as-constructed information from BYDA, and a detailed survey plan identifying:
 - One (1) existing gully pit and associated stormwater drainage network within the Portal Street kerb and channel located approximately 30m downstream of south-eastern corner of the subject site.

- Four (4) kerb adaptor outlets discharging to the Portal Street kerb and channel adjacent to north-eastern corner of the subject site.

Refer to Appendix B for the As Constructed information obtained from BCC Online Interactive Mapping.

2.3 Assessment of External Upstream Catchment

A review of the surrounding area has been undertaken to determine if any external upstream catchment is present that may flow to the subject site. Based on contour maps obtained from the BCC Online Interactive Mapping, there appears to be external upstream catchment from the northern neighbouring properties which may contribute to overland flow through the subject site. The discharge flows from the external catchment will therefore need to be considered for this development. Refer to Section 6.0 for the assessment of the contributing external upstream catchment.

2.4 Assessment of Flooding

Based on an assessment of the online BCC Online Interactive Mapping, the subject site has not been identified to be within a flood hazard area; therefore, the flood hazard overlay code is not triggered for the subject site.

Refer to Appendix B for the property FloodWise Property Report obtained from the BCC Online Interactive Mapping.

2.5 Lawful Point of Discharge

In accordance with the Queensland Urban Drainage Manual (QUDM) Fourth Edition 2016, when proposing a development, it must demonstrate that a lawful point of discharge (LPD) exists. A lawful point of discharge exists at a particular location when the following two (2) tests can be demonstrated as per QUDM:

- (i) The location of the discharge is under the lawful control of the local government or other statutory authority from whom permission to discharge has been received. This can include a park, drainage or road reserve, stormwater drainage easement; and
- (ii) In discharging to that location, the discharge will not cause an actionable nuisance (i.e. a nuisance for which the current or some future neighbouring proprietor may bring an action or claim for damages arising out of the nuisance), or environmental or property damage.

Surface runoff from the pervious and impervious areas within the subject site generally sheet flows to the southern boundary and to the downstream neighbouring property being 51 Portal Street, Oxley, QLD 4075 (*Lot 8 on RP84472*). Roofwater runoff the existing residential dwelling discharges via kerb adaptor to the Portal Street kerb and channel adjacent to north-eastern corner of the subject site. An existing retaining wall aligned with the northern boundary of the site located adjacent to the existing residential dwelling directs surface runoff from the northern upstream property (*Lot 10 on RP84474*) towards the Portal Street kerb and channel, therefore the site frontage is not impacted from external surface runoff from the upstream neighbouring property.

In order to improve on the site's existing drainage conditions, it is proposed to extend the stormwater drainage infrastructure spanning from the new Access Road within the development site and connecting to the existing gully (BCC Asset ID: S11191801) located within the Portal Street kerb and channel approximately 35m south of the subject site. Therefore the proposed drainage infrastructure within the Access Road (Road 01), will be considered the lawful point of discharge (LPD) for the subject site.

3 Proposed Development

The proposed development comprises of a Reconfiguration of a Lot (RAL) application submission to Brisbane City Council, based on the following.

- A subdivision comprising of a total of six (6) residential lots.
- Access and egress to the development will be via a new Access Road (Road 01), consisting of a 5.50m carriageway within a 10.75m wide road reserve, connecting to Portal Street provided for vehicle manoeuvring within the proposed development.
- A dedicated environmental covenant located at the rear proposed Lots 303-306.
- The total development site area is 5521m² (or 0.552ha).

Refer to Appendix C for the Proposed Development Plan.

4 Stormwater Quantity Management

4.1 Hydrologic Objectives

Hydrologic objectives for the subject site have been set in accordance with the Brisbane City Plan (2014) and the Queensland Urban Drainage Manual (QUDM), Fourth Edition 2016, including but not limited to:

- No increase in pre-development flows, up to and including the 100-year ARI (or 1% AEP);
- No adverse impact on adjoining or downstream properties;
- The proposed development shall ensure that all stormwater is directed to a LPD;
- A Major Design Storm Event of 100-year ARI (or 1% AEP); and
- A Minor Design Storm Event of 2-year ARI (or 39.35% AEP).

4.2 Hydrological Model Parameters Adopted

Catchment hydrology has been assessed for the pre- and post-development scenarios and has been calculated using a DRAINS hydrological computer model (ILSAX Method). Calibration of the DRAINS hydrological computer model (ILSAX Method) was achieved by comparing the DRAINS (ILSAX Method) flow rates to the Rational Method calculations in accordance with QUDM (Fourth Edition, 2016), Section 4 and Section 5, and AS3500 – Stormwater Drainage.

The Default Hydrological Model used for this Assessment was the ILSAX Model. The following parameters were established in setting up the model:

- Paved (impervious) area depression storage (mm): 1
- Supplementary area depression storage (mm): 1
- Grassed (pervious) area depression storage (mm): 5
- Soil Type: Normal with antecedent rainfall depth for AMC 3 mm
- Rainfall Zone: Zone 3 – N.E. Coast
- AR&R 2016

4.3 Design Rainfall

The design rainfall Intensity Frequency Duration (IFD) data for all storm events up to an including 100-year ARI (or 1% AEP) has been obtained for the subject site from the Bureau of Meteorology (BOM) for nominated ARI's and used in the DRAINS computer model. The design IFD data for the subject site can be seen in Figure 2 below. Rainfall temporal patterns used in the DRAINS hydrological computer model (ILSAX Method) analysis were prepared in accordance with Australian Rainfall and Runoff (AR&R 2016). Rainfall is modelled for the catchment in equal time intervals under each storm event and the subsequent runoff routed through a drainage system. To establish the most likely rain event that would require the greatest volume of detention, design storm durations of 5, 10, 15, 20, 25, 30, 45, 60, 90, 120, 180 and 360 minutes were modelled.

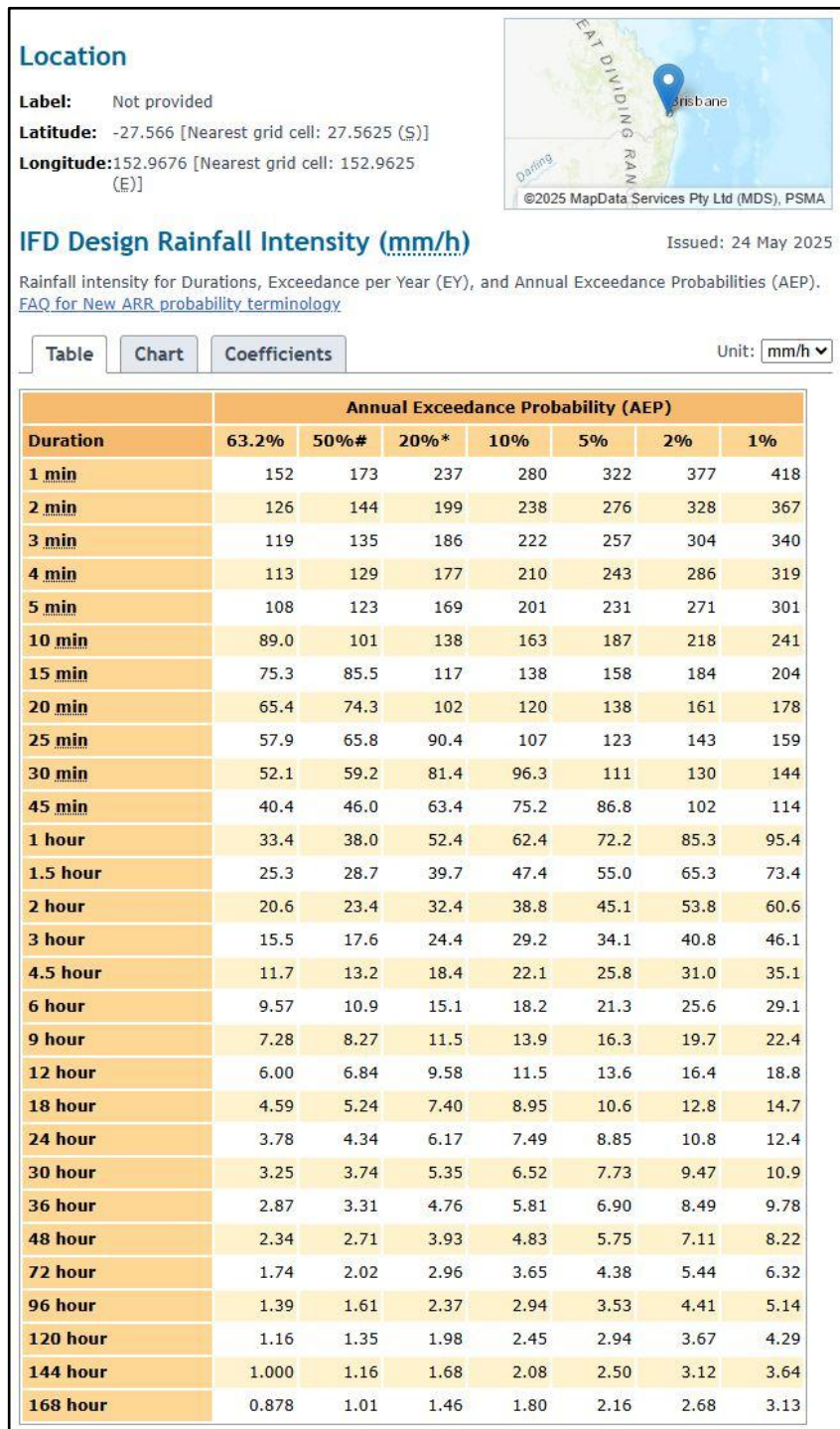


Figure 2. IFD Design Rainfall Intensity (mm/hr) for Oxley (BOM)

4.4 Pre-Development and Post-Development Hydrology

The natural hydrology of the site has been assessed in accordance with QUDM Fourth Edition, Section 4 and the following parameters have been adopted:

Pre-Development Parameters:

- Catchment Area (CAT C1) = 0.552 ha
- Time of Concentration, t_c = 11.0 minutes
- Fraction Impervious, f_i = 0.13 (13% Impervious)
- Discharge Co-efficient, C_{10} value = 0.70

Post-Development Parameters:

- Catchment Area (CAT C2) = 0.467 ha
- Time of Concentration, t_c = 6.9 minutes
- Fraction Impervious, f_i = 0.71 (71% Impervious)
- Discharge Co-efficient, C_{10} value = 0.81
- Catchment Area (CAT C3 - Bypass) = 0.085 ha
- Time of Concentration, t_c = 5.0 minutes
- Fraction Impervious, f_i = 0.0 (0% Impervious)
- Discharge Co-efficient, C_{10} value = 0.70

The above catchment area split result in an overall fraction impervious of **0.60** with respect to total site area.

4.4.1 Pre-Development DRAINS Model Parameters

Table 1 below show the parameters used in the DRAINS computer model for the pre-development catchment scenario.

Table 1 – Pre-Development DRAINS Model Parameters – CAT C1

	Paved	Supplementary	Grassed
Percentage of Area (%)	13	0	87
Time of Concentration (minutes)	5.0	0	11.0

4.4.2 Post-Development DRAINS Model Parameters

Tables 2 and 3 below show the parameters used in the DRAINS computer model for the post-development catchment scenario.

Table 2 – Post-Development DRAINS Model Parameters – CAT C2

	Paved	Supplementary	Grassed
Percentage of Area (%)	71	0	29
Time of Concentration (minutes)	6.9	0	6.9

Table 3 – Post-Development DRAINS Model Parameters – CAT C3

	Paved	Supplementary	Grassed
Percentage of Area (%)	0	0	100
Time of Concentration (minutes)	0	0	5.0

4.4.1 Pre- and Post-Development DRAINS Model Results

Summaries of the hydrological calculations are contained in Tables 4-7 below, for pre- and post-development (unmitigated) scenarios respectively. The results show the median temporal pattern storm of the critical duration for each design storm event (for the ILSAX).

Table 4 – Pre-Development DRAINS Model Parameters (CAT C1)

PRE-DEVELOPMENT PEAK DISCHARGE (Q) – CAT C1				
ARI Storm Event (yr)	Cy	ly (mm/hr)	Peak Qy (Rational) (m ³ /s)	Peak Qy (ISLAX) (m ³ /s)
2	0.595	108	0.099	0.103
5	0.665	136	0.139	0.150
10	0.700	157	0.169	0.176
20	0.735	180	0.203	0.208
50	0.805	210	0.260	0.250
100	0.840	233	0.300	0.281

Table 5 – Post-Development DRAINS Model Parameters (CAT C2)

POST-DEVELOPMENT PEAK DISCHARGE (Q) – CAT C2				
ARI Storm Event (yr)	Cy	ly (mm/hr)	Peak Qy (Rational) (m ³ /s)	Peak Qy (ISLAX) (m ³ /s)
2	0.689	126	0.113	0.130
5	0.770	159	0.159	0.171
10	0.810	184	0.194	0.204
20	0.851	212	0.234	0.238
50	0.932	247	0.299	0.276
100	0.972	275	0.346	0.309

Table 6 – Post-Development DRAINS Model Parameters (CAT C3 - BYPASS)

POST-DEVELOPMENT PEAK DISCHARGE (Q) – CAT C3				
ARI Storm Event (yr)	Cy	ly (mm/hr)	Peak Qy (Rational) (m ³ /s)	Peak Qy (ISLAX) (m ³ /s)
2	0.595	137	0.019	0.019
5	0.665	173	0.027	0.027
10	0.700	201	0.033	0.034
20	0.735	231	0.040	0.041
50	0.805	271	0.051	0.048
100	0.840	301	0.060	0.054

Table 7 – Pre-vs-Post Development (Unmitigated) Peak Flow Comparison

PRE-VS-POST-DEVELOPMENT (UNMITIGATED) PEAK DISCHARGE (Q)				
ARI Storm Event (yr)	Pre-Development Peak Q _y (ILSAX) (m ³ /s)	Post-Development Unmitigated Peak Q _y (ILSAX) (m ³ /s)	Difference (m ³ /s)	Increase / Decrease (%)
2	0.103	0.149	0.046	+45%
5	0.150	0.198	0.048	+32%
10	0.176	0.238	0.062	+35%
20	0.208	0.279	0.071	+34%
50	0.250	0.324	0.074	+30%
100	0.281	0.363	0.082	+29%

The DRAINS Model results comparing the ILSAX method of the pre- and post-development peak discharge flows shows there is an increase of 0.046m³/s (46 L/s) to 0.082m³/s (82 L/s) in peak discharge from the subject site for all design storms (Q₂ to Q₁₀₀) as a result of the proposed development.

4.5 Portal Street Road Capacity Assessment

The hydraulic analysis of the existing and proposed Portal Street pit and pipe network has been undertaken using the DRAINS model to ensure it can cater for increased flows generated from the development site in the post-developed scenario. The results confirm that the drainage infrastructure can sufficiently convey runoff flows generated during the minor (10% AEP) design storm event within the underground drainage network and all surface flows are contained within the Portal Street kerb and channel and do not overtop the crown of the road up to and including the major (1% AEP) design storm event.

For further details refer to the Technical Memorandum (Document reference: 25-006_45 Portal Street_Tech Memo_Rev A dated 15.12.2025) within Appendix E submitted by Santoshi Development Consultants to Brisbane City Council on 20 January 2026.

Since extending the existing drainage system and providing a new lawful point of discharge will safely manage stormwater during both minor and major storm conditions without causing flooding of the road or impacts to neighbouring properties no on-site stormwater detention is required. The outcomes and findings of the memorandum were subsequently reviewed and accepted by Council, confirming that no detention requirements apply to the proposed development.

Council's response is reproduced below (email from Kayal Chandrasekar dated 26 February 2026).

BCC response: *"The Stormwater Code specifically requires development to demonstrate ultimate catchment conditions with respect to likely future structure planning. There is no requirement in the stormwater code to achieve non-worsening, and the code is orientated more to orderly development outcomes, the required standard of service for stormwater, roads and lots and minimising adverse impacts on downslope flowpaths. Additionally, it is noted that the stormwater from this development drains to Portal Street then through other private property (86 Portal Street) and this development does increase flows into that private property that are not being mitigated. Council was supportive of such an outcome, but non-worsening and detention cannot be expected for the upslope catchment when this site is not implementing an equivalent outcome."*

4.6 Proposed Drainage Works

As shown in the Stormwater Management Drawings within Appendix D, all new lots within the development are proposed to convey stormwater runoff to the kerb adaptors provided within the Access Road. The stormwater drainage network will discharge all stormwater from the development area (CAT C2) and a portion of the external catchment (CAT EXT2) to the drainage network located under the proposed Access Road (Road 01).

An extension of the Portal Street underground drainage infrastructure is proposed spanning from the development site and connecting to the existing gully pit (BCC Asset ID: S11191801) located approximately 35m south of the subject site. The proposed drainage system has been designed to capture and convey generated flows from both existing and the development site. A lawful point of discharge (being a 375mm RCP connection stub) has been provided for connection of the future development upstream of the subject site.

Refer to Appendix D for the Stormwater Management Drawings.

5 Stormwater Quality Management

5.1 Development Triggers for Stormwater Quality Management

The proposed development has been assessed against the latest State Planning Policy 2017 (SPP 2017). As the proposed development is a Reconfiguration of a Lot (ROL) for urban purposes that involves a land area greater than 2,500m² and will result in the creation of six (6) or more lots, consequently the State Planning Policy (SPP) 2017 is triggered for stormwater quality management. Therefore, Stormwater quality design objectives against the State Planning Policy (SPP) 2017 and MBRC Planning Scheme is required for the development site.

5.2 Stormwater Quality Management Objectives

The following pollutants have been identified as part of the Stormwater Management Design objectives (for the Post Construction phase of the development) based on “Section 7.9.3 – Permanent Methods of Water Quality Control” of the BCC Planning Scheme SC6.16 – Infrastructure Design Planning Scheme Policy – Chapter 7 Stormwater Drainage. The Stormwater Quality Objectives (WQO's) provide the criteria for the design of an effective treatment system, as per Table 8 below:

Table 8 – Stormwater Quality Objectives (WQO's)

Pollutant	Stormwater Quality Objectives (% Reduction in Mean Annual Load)
Total Suspended Solids (TSS)	80%
Total Phosphorus (TP)	60%
Total Nitrogen (TN)	45%
Gross Pollutants (GP)	90%

5.3 Stormwater Quality Management Strategy

There are several factors which restrict incorporating traditional stormwater treatment measures within the development site including Council's stated preference for a standard two way road crossfall to be provided for the Access Road in addition to a reduced road verge along the southern side of the development. Therefore, with consideration of the development proposal, a best fit stormwater quality treatment approach is proposed that will not alter the natural stormwater flow regime of the site or impose adverse burdening of downstream properties or Council drainage infrastructure. This approach is aligned with similar development projects nearby being accepted by Council.

Stormwater quality treatment for the operational phase of the development is to be maximised by providing of a series of bioretention pods within the new Access Road's verge (Road 01) that will connect to the proposed drainage infrastructure within the new Access Road. Refer to Appendix D which details the location of the proposed bioretention pods.

6 External Upstream Catchment Assessment

6.1 External Upstream Catchment Hydrology

As described in Section 2.3 above, there appears to be external upstream catchment identified from the northern neighbouring properties which may contribute to overland flow through the subject site.

Catchment hydrology has been assessed for the external upstream catchment using a DRAINS hydrological computer model (ILSAX Method). Calibration of the DRAINS hydrological computer model was achieved by comparing the DRAINS flow rates to the Rational Method calculations in accordance with QUDM (Fourth Edition, 2016).

The following parameters have been adopted for the external upstream catchment assessed in accordance with QUDM Fourth Edition, Section 4:

External Catchment Parameters:

- Catchment Area (CAT EXT1 - Western) = 0.276 ha
- Time of Concentration, t_c = 13.8 minutes
- Fraction Impervious, f_i = 0.36 (36% Impervious)
- Discharge Co-efficient, C_{10} value = 0.70

- Catchment Area (CAT EXT2 - Eastern) = 0.032 ha
- Time of Concentration, t_c = 5.0 minutes
- Fraction Impervious, f_i = 0.0 (0% Impervious)
- Discharge Co-efficient, C_{10} value = 0.70

The fraction impervious for the external upstream catchments was estimated using Metromaps. Refer to Appendix D for the external catchment delineation.

Table 17 and 18 below show the summary of the hydrological calculations for the external upstream catchments.

Table 17 – Western External Catchment DRAINS Model Parameters (CAT EXT1)

EXTERNAL CATCHMENT PEAK DISCHARGE (Q) – CAT EXT1				
ARI Storm Event (yr)	Cy	ly (mm/hr)	Peak Qy (Rational) (m ³ /s)	Peak Qy (ISLAX) (m ³ /s)
2	0.595	99	0.045	0.052
5	0.665	124	0.063	0.071
10	0.700	143	0.077	0.086
20	0.735	164	0.093	0.102
50	0.805	191	0.118	0.123
100	0.840	212	0.136	0.139

Table 18 – Eastern External Catchment DRAINS Model Parameters (CAT EXT2)

EXTERNAL CATCHMENT PEAK DISCHARGE (Q) – CAT EXT2				
ARI Storm Event (yr)	Cy	ly (mm/hr)	Peak Qy (Rational) (m ³ /s)	Peak Qy (ISLAX) (m ³ /s)
2	0.595	137	0.007	0.007
5	0.665	173	0.010	0.010
10	0.700	201	0.012	0.013
20	0.735	231	0.015	0.015
50	0.805	271	0.019	0.018
100	0.840	301	0.023	0.021

6.2 External Upstream Catchment Conveyance Measures

It is proposed to provide a concrete lined channel (Manning’s n = 0.013) to convey the surface runoff generated from the western external upstream catchment and it proposed to provide a grassed swale drain (Manning’s n = 0.030) to convey surface runoff generated from the eastern external upstream catchment in the minor and major storm events.

The swale drain will be aligned with the northern (rear) boundaries of proposed Lots 301-302 and with the eastern (side) boundary of proposed Lot 301. The swale drain will discharge surface runoff to an inlet pit and associated drainage network at the south-eastern corner of proposed Lot 301, which will convey discharge flows the underground drainage network within the proposed Access Road. The swale drain will be 1.2m wide with 1:3 batters with a minimum longitudinal grade of 2.0%.

The concrete channel will be aligned with the northern (side) boundary of proposed Lot 305. The concrete channel will discharge surface runoff to an inlet pit and associated drainage network at the north-eastern corner of proposed Lot 305. The concrete lined channel will be 600mm wide with a minimum longitudinal grade of 0.5%.

The swale drain and concrete channel were sized in the DRAINS computer model to provide sufficient freeboard in order to safely convey incoming stormwater discharges (in a safe manner) away from the proposed development site and direct runoff towards their respective Lawful Point of Discharge.

Refer to Figures 4-5 below for the swale drain and concrete lined channel flows properties during the 100-year ARI (or 1% AEP) major storm event.

Figure 3. Swale Drain Flow Calculations from DRAINS Model

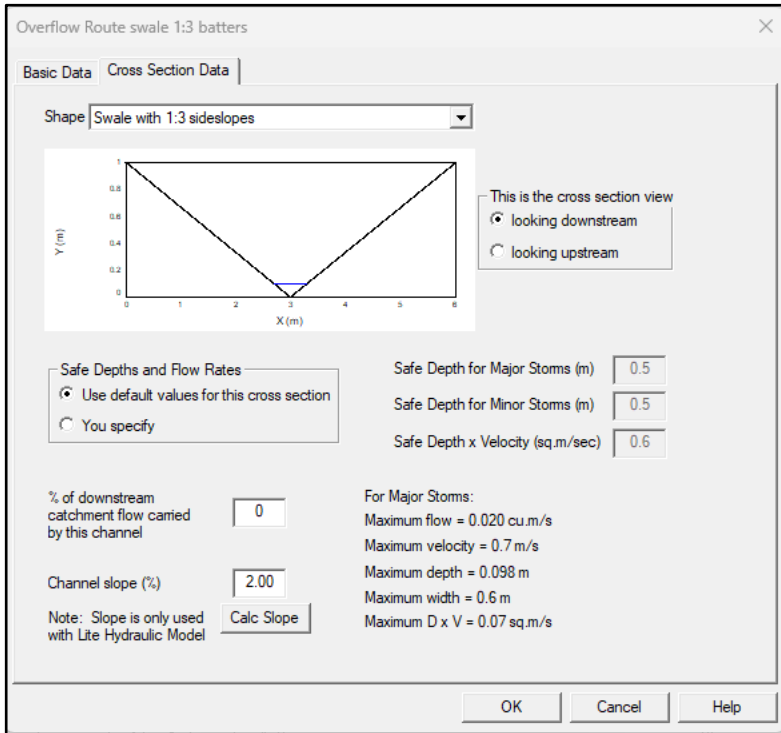
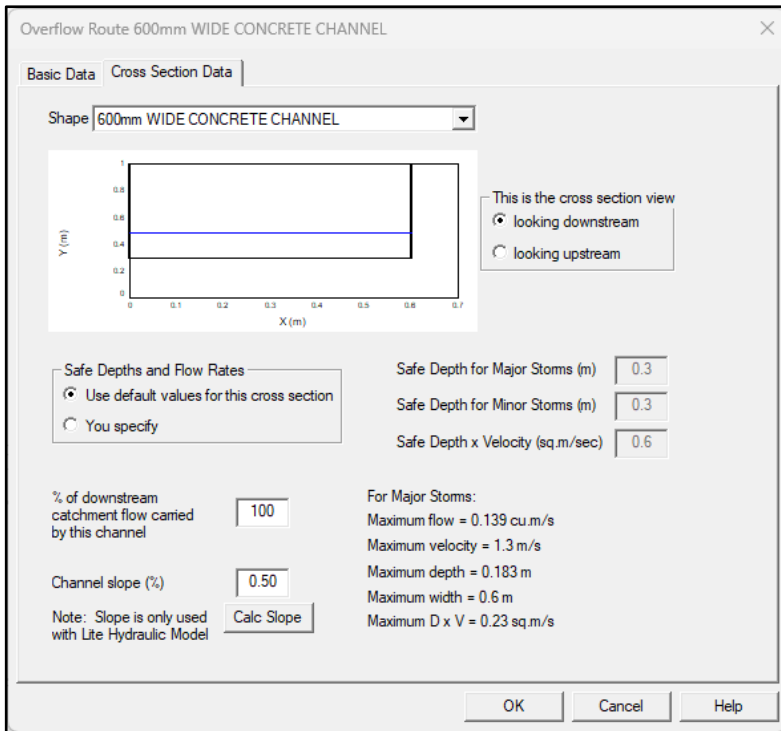


Figure 4. Concrete Lined Channel Flow Calculations from DRAINS Model



In order to facilitate stormwater conveyance through the development site, in the fully-developed scenarios of the upstream neighbouring properties, one (1x) 375mm RCP connection stub has been provided at the upstream end of the upgraded Portal Street drainage network (Structure 1/7) and the new Access Road (Structure 3/1) respectively. The connection stub provided within the new Access Road (Road 01) has been sized to cater for a post-developed catchment area of approximately 0.5ha adjacent to the northern boundary of the site in accordance BCC Stormwater Code (PO11/AO11).

7 Erosion and Sediment Management

7.1 Erosion and Sediment Management

7.1.1 Pre-Development

Prior to construction commencing, the following sediment and erosion control measures will be implemented, where appropriate, to minimise disturbance and ensure water quality is maintained:

- Designation of transport routes to ensure minimal vegetation disturbance. Transport routes will have construction exits in accordance with Best Practice Erosion and Sediment Control (BPESC) document of International Erosion Control Association (IECA) Australia
- Maximise vegetated open space areas to reduce soil disturbance and provide filter strip treatment for runoff.
- Construction entry/exit to be installed and will comprise of a designed gravel pad or equivalent material in accordance with (BPESC) document of (IECA) Australia.
- Install sediment fences around the proposed bulk earthworks site (along toe of batter alignment).
- Regularly water spray adjacent to the proposed bulk earthworks site (along property boundary) for dust suppression.

7.1.2 Bulk Earthworks

A number of erosion and sediment control measurements listed below should be implemented, where appropriate, when the construction involves bulk earthwork. The typical control measures are listed below:

- Construct chutes to control runoff over earthworks batters.
- Construction of temporary bund at the top of all earthworks batters to ensure runoff is directed to chutes and away from exposed batters.
- Drainage structure sediment barriers will be installed at all field inlets and gully inlets.
- Vehicle shake down area will be constructed at all vehicle entry/exist points to and from the site.
- Sediment fences will be installed at all downstream developable area boundaries and down slope areas of material stockpile bases.
- All batters to be top-soiled and seeded immediately upon reaching finished earthworks levels.

7.1.3 Construction

The following measures will be undertaken, where appropriate, to mitigate water quality impacts during construction phase:

- Sediment fences to be erected at the downstream site boundaries and at the base of all batters and stockpiles to prevent sediment transportation off site.
- Grass filter strips to be placed along all road verges.
- Re-vegetation of all disturbed areas within two weeks of completion.
- All sediment control structures to be maintained in an effective manner and inspected after each storm event. No structure is to accumulate sediment above 40% of its capacity.

8 Conclusions

The Stormwater Management Plan has reviewed the hydrology and hydraulics of the proposed development at 45 Portal Street, Oxley, QLD 4132 for pre-development and post-development scenarios and investigated the impact of the proposed development on downstream properties and receiving waters.

Based on the stormwater management assessment, the following conclusions have been drawn:

- The new drainage infrastructure within the proposed Access Road (Road 01), will be considered the lawful point of discharge (LPD) for the subject site.
- The proposed development results in increased peak discharge of 0.046m³/s (46 L/s) to 0.082m³/s (82 L/s) for all design storms (Q₂ to Q₁₀₀). A hydraulic assessment of the existing and proposed Portal Street stormwater drainage network has previously been undertaken which confirms the drainage infrastructure has sufficient capacity to safely convey runoff generated during the minor (10% AEP) and major (1% AEP) design storm events. Therefore no further detention measures are proposed for the development.
- The development triggers requirements for stormwater quality management in accordance with State Planning Policy 2017, however due to the site constraints it is proposed to provide a best fit stormwater quality treatment approach is proposed that will not alter the natural stormwater flow regime of the site or impose adverse burdening of downstream properties or Council drainage infrastructure. Therefore stormwater quality treatment for the operational phase of the development is to be maximised by providing of a series of bioretention pods within the new Access Road's verge (Road 01) that will connect to the proposed drainage infrastructure within the new Access Road.
- An external upstream catchment is identified from the northern neighbouring properties which may contribute to overland flow through the subject site. It is proposed to provide a 600mm wide concrete channel and a 1.2m wide grassed swale drain to convey surface runoff generated from the upstream catchments in the minor and major storm events up to and including the 100-year ARI (1% AEP) peak storm event.
- The stormwater management solution also addresses the conveyance of external catchment flows for ultimate developed conditions through the site in accordance with the Stormwater Code (PO11/AO11). One (1x) 375mm RCP connection stub has been provided at the upstream end of the extended Portal Street drainage network (Structure 1/7) and the new Access Road (Structure 3/1) respectively. The connection stub provided within the Access Road (Road 01) has been sized to cater for a post-developed catchment area of approximately 0.5ha adjacent to the northern boundary of the site.
- Based on an assessment of the online BCC Online Interactive Mapping, the subject site has not been identified to be within a flood hazard area, therefore the flood hazard overlay code is not triggered for the subject site.

This report has demonstrated that the proposed development provides an acceptable solution for stormwater management and has been designed to comply accordance with Brisbane City Council Plan 2014, Queensland Urban Drainage Manual (QUDM, 2016), Australian Rainfall and Runoff (ARR) and Healthy Waterways – Water by Design.

Appendix - A

Existing Site Survey Plan

- ⊙ SERVICES WARNING
SANTOSHI DEVELOPMENT CONS P/L TAKE NO RESPONSIBILITY FOR THE LOCATION, SPECIES, HEIGHTS, OTHER DETAILS OF TREES ON SITE. TREE DETAIL WILL BE PROVIDED BY OTHERS ON SEPARATE SURVEYS.
- ⊙ HEIGHTS BY GNSS
HEIGHTS HAVE BEEN MEASURED BY GNSS EQUIPMENT AND DO NOT NECESSARILY AGREE WITH AHD LEVELS.
- ⊙ TITLE SEARCH WARNING
SANTOSHI DEVELOPMENT CONS P/L HAS NOT CARRIED OUT A TITLE SEARCH FOR THIS SURVEY. CHECK D.N.R.M FOR EASEMENTS AND ENCUMBRANCES.
- ⊙ SERVICES WARNING
SANTOSHI DEVELOPMENT CONS P/L TAKE NO RESPONSIBILITY FOR THE LOCATION OF ANY NON VISIBLE SERVICES. GAS, SEWER AND WATER MAINS ARE PLOTTED FROM INFORMATION AVAILABLE FROM DIAL BEFORE YOU DIG AND MUST BE LOCATED BY UNDERGROUND LOCATION SERVICES PRIOR TO ANY EXCAVATIONS.
- ⊙ IDENTIFICATION SURVEY WARNING
THIS CONTOUR AND FEATURE SURVEY, AS PREPARED BY SANTOSHI DEVELOPMENT CONS P/L, DOES NOT GUARANTEE THE LOCATION OF BOUNDARY PEGS OR FENCES. PLEASE CONTACT THIS OFFICE FOR A QUOTE OR FURTHER ADVICE.

5
RP53326

6
RP53326

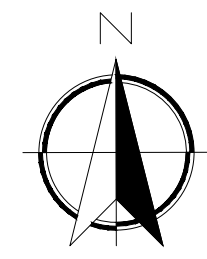
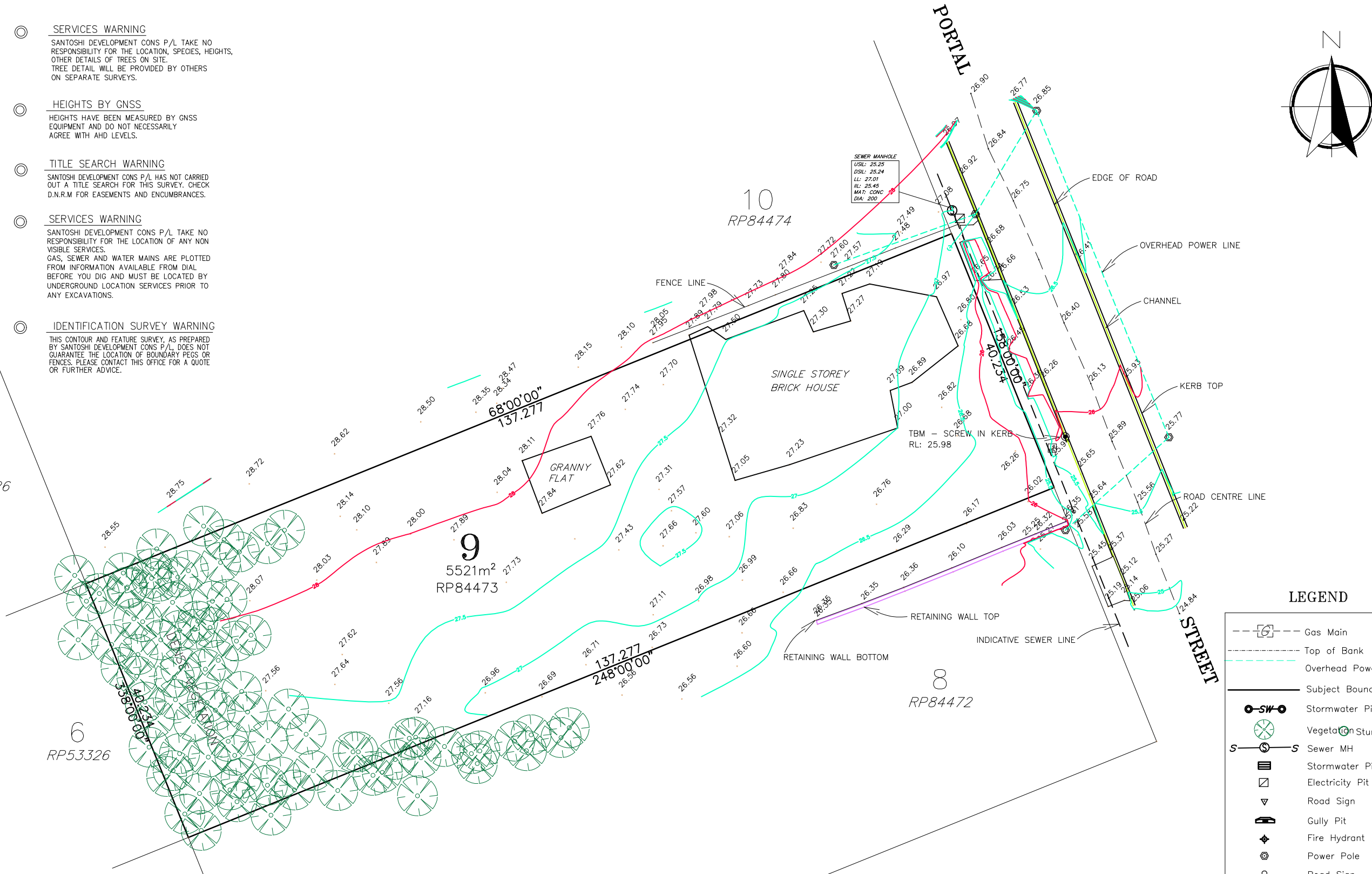
14
SP252002

13
SP252002

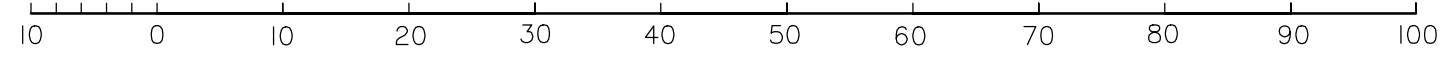
10
RP84474

9
5521m²
RP84473

8
RP84472



Scale 1:600 @ A3 – Lengths are in Metres.



BOUNDARIES HAVE BEEN ADOPTED FROM PREVIOUS SURVEY PLANS IDENTIFICATION SURVEY REQUIRED TO CONFIRM CORRECT BOUNDARY MEASUREMENTS

LEGEND

- Gas Main
- Top of Bank
- Overhead Power
- Subject Boundary
- Stormwater Pipe
- Vegetation Stump
- Sewer MH
- Stormwater Pit
- Electricity Pit
- Road Sign
- Gully Pit
- Fire Hydrant
- Power Pole
- Road Sign
- Stop Valve
- Telstra Pit
- Inspection Pit
- Water Meter
- TBM - Screw In Kerb RL: 75.0
- Electrical Transformer
- Stormwater MH
- Street Light
- Bollard
- Pipe
- Natural Contours
- Kerb Adaptor

JOB No: SDC2142	SURVEYED: CI
ORIGIN: GNSS	DRAWN: CI
ASSOCIATES:	CHECKED: BK
SCALE: 1:600	QT: BK
DRAWING No.: SDC2142-208	DATE: 10.12.25
	AMEND. No.: A

CLIENT: Aziz Deen	LEVEL DATUM: AHD
TITLE: Contour & Detail Survey	AZIMUTH: ARB
45 Portal Street	COORD SYSTEM: ARB
DXLEY	
LOT 9 on RP84473	
	ORIGIN: PSM26564

Notes: Boundary dimensions have been adopted from Services noted on the plan, are located from field surveys only. The person utilizing the information shown on this plan should make detailed prior to carrying out any excavations. This note is an integral part of this plan.

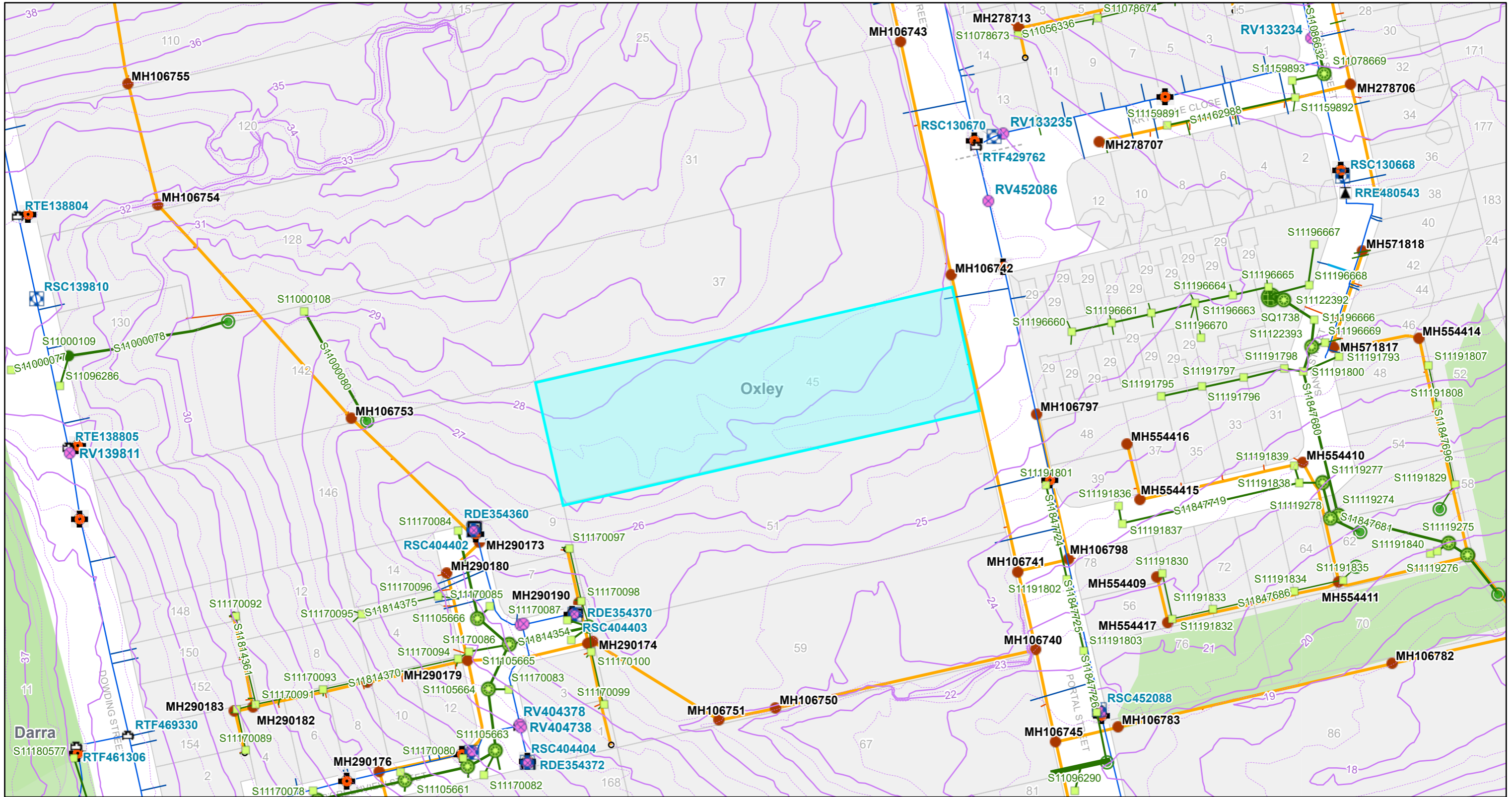
AMENDMENT	DESCRIPTION
No.	
DATE	

Notes: Boundary dimensions have been adopted from Services noted on the plan, are located from field surveys only. The person utilizing the information shown on this plan should make detailed prior to carrying out any excavations. This note is an integral part of this plan.

Appendix - B

BCC FloodWise Property Report & As-Constructed

Community Maps



6/16/2025, 1:31:49 PM

1:1,208

Contours — 2002

Intermediate - 1m Contour
Supplementary - 0.5m Contour

Culvert
End Structure
Pipe End Outlet

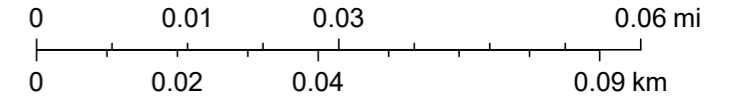
Gully
Junction
Stormwater Manhole
Pipe
DRAIN
GULLY CONNECT

ROOF WATER
SQID
Water Control Valve
Scour
Water System Valve
GATE

Water Fitting
END CAP
REDUCER
TEE
Water Hydrant
INGROUND HYDRANT
MANHOLE

Water Pressure Main
Reticulation Main
Water Service
SERVICE
COMMON SERVICE
Sewer Manholes

Sewer Fitting
END CAP
Sewer Gravity Main
RETICULATION MAIN
Sewer Service
SERVICE




THE PURPOSE OF THIS REPORT IS FOR BUILDING AND DEVELOPMENT

Brisbane City Council's FloodWise Property Report provides technical flood planning information including estimated flood levels, habitable floor level requirements and more. This report uses the adopted flood planning information in Brisbane City Plan 2014, that guides how land in Brisbane is used and developed for the future. Find out more about [planning and building](#). To understand how to be resilient and prepare for floods, visit Council's [Be Prepared](#) webpage. Find more information about [how to read a FloodWise Property Report](#).

This property has no flood levels

Brisbane City Council has not assigned flood level information for this property however it may be affected by one or more flood or property development flags. Please refer to the Flood Planning and Development Information below for details. The property may have 0.2% AEP flood level which will appear on the Flood Planning Information table if applicable. For professional advice or detailed assessment of a property contact a Registered Professional Engineer of Queensland.

Visit the [Be Prepared](#) page to find more information on how to prepare your home or business for potential flooding.

 **Combined** 1% AEP for river, creek and storm tide flood extent (if applicable) from the adopted Brisbane City Plan 2014. Read more about [Brisbane City Plan 2014](#).



Brisbane City Council | Includes material ©The State of Queensland, all rights reserved, 2019. | ©Brisbane City C... Powered by Esri

Are you resilient and ready for flood?

- Sign up to the Brisbane Severe Weather Alert at brisbane.qld.gov.au/beprepared
- Visit bom.gov.au for the latest weather updates.
- Have an evacuation plan, emergency kit and important phone numbers ready.
- Observe where water flows from and to during heavy rain.
- Consider how flood-resilient building techniques will have you home faster and with less damage.

Life threatening emergencies
000 Police/fire/ambulance
(mobiles **000** and **112**)

State Emergency Service (SES) **132 500**
Energex **13 19 62**
Brisbane City Council **3403 8888**

Technical Summary

This section of the FloodWise Property Report contains more detailed flood information for this property so **surveyors, builders, certifiers, architects, and engineers can plan and build** in accordance with Council's planning scheme.

Find more information about [planning and building](#) in Brisbane or talk to a Development Services Planning Information Officer via Council's Contact Centre on (07) 3403 8888.

Flood Planning and Development Information

This section of the FloodWise Property Report contains information about Council's planning scheme overlays. Overlays identify areas within the planning scheme that reflect distinct themes that may include constrained land and/or areas sensitive to the effects of development.

Flood overlay code

The Flood overlay code of Council's planning scheme uses the following information to provide guidelines when developing properties. The table below summarises the flood planning areas (FPAs) that apply to this property. Development guidelines for the FPAs are explained in [Council's planning scheme](#).

Flood planning areas (FPA)		
River	Creek / waterway	Overland flow
		Not Applicable

To find more information about Council's flood planning areas (FPAs) for Brisbane River and Creek/waterway flooding to guide future building and development in flood prone areas, please review [Council's Flood Planning Provisions](#).

Coastal hazard overlay code

The Coastal hazard overlay code of Council's planning scheme uses the following information to provide guidelines when conducting new developments. The table below summarises the coastal hazard categories that apply to this property. Development guidelines for the following Coastal hazard overlay sub-categories are explained in Council's [planning scheme](#).

Coastal hazard overlay sub-categories
There are currently no Coastal hazard overlay sub-categories that apply to this property.

Note: Where land is identified within one or more flood planning areas on the Flood overlay or is identified within one of the Storm tide inundation area sub-categories on the Coastal hazard overlay, the assessment criteria that provides the highest level of protection from any source of flooding applies.

Property development flags

Large allotment - This property is either a Large Allotment of over 1000 square metres or is located within a Large Allotment. Flood levels may vary significantly across allotments of this size. Further investigations may be warranted in determining the variation in flood levels and the minimum habitable floor level across the site.

For more information or advice, please consult a Registered Professional Engineer of Queensland (RPEQ).

Useful Flood Information Definitions

Australian Height Datum (AHD) - The reference level for defining ground levels in Australia. The level of 0.0m AHD is approximately mean sea level.

Annual Exceedance Probability (AEP) - The probability of a flood event of a given size occurring in any one year, usually expressed as a percentage annual chance.

- **0.2% AEP** - A flood event of this size is considered rare but may still occur. A flood of size or larger has a 1 in 500 chance or a 0.2% probability of occurring in any year.
- **1% AEP** - A flood of this size or larger has a 1 in 100 chance or a 1% probability of occurring in any year.
- **2% AEP** - A flood of this size or larger has a 1 in 50 chance or a 2% probability of occurring in any year.
- **5% AEP** - A flood of this size or larger has a 1 in 20 chance or a 5% probability of occurring in any year.
- **20% AEP** - A flood of this size or larger has a 1 in 5 chance or a 20% probability of occurring in any year.

Data quality

- **Data Quality Code A** - Level data based on recent surveyor report or approved as-constructed drawings.
- **Data Quality Code B** - Level data based on ground-based mobile survey or similar.
- **Data Quality Code C** - Level data derived from Airborne Laser Scanning or LiDAR information.

Defined Flood Level (DFL) - The DFL is used for commercial and industrial development. The Defined flood level (DFL) for Brisbane River flooding is a level of 3.7m AHD at the Brisbane City Gauge based on a flow of 6,800 m/s. DFL is only applicable for non-residential uses affected by Brisbane River flooding.

Flood planning area (FPA) - Council has developed five Flood planning areas (FPAs) as part of Brisbane City Plan 2014 Flood overlay mapping for Brisbane River, Creek/waterway flooding and Overland flow to guide future building and development in flood prone areas. Storm tide flooding is mapped separately. The FPAs are designed to recognise the flood hazard for different flooding types. Flood hazard is a combination of frequency of flooding, the flood depth, and the speed at which the water is travelling. [Find more information here.](#)

Maximum and minimum ground level - Highest and lowest ground levels on the property based on available ground level information. A Registered Surveyor can confirm exact ground levels.

Minimum habitable floor level (dwelling house) - The minimum level in metres AHD at which habitable areas of development (generally including bedrooms, living rooms, kitchen, study, family, and rumpus rooms) must be constructed as required by the Brisbane City Plan 2014.

Indicative existing floor level - The approximate level in metres AHD of the lowest habitable floor in the existing building (excluding apartments). The data is sourced from a range of sources with varying accuracy levels.

Property - A property will contain 1 or more lots. The multiple lot warning is shown if you have selected a property that contains multiple lots.

Residential flood level (RFL) - This flood level for the Brisbane River equates to the 1% annual exceedance probability (AEP) flood level.

To learn more, visit [Brisbane City Council's Flood Information Hub](#)

Brisbane City Council's Online Flood Tools

Council provides several online flood tools:

- to guide planning and development
- to help residents and businesses understand their flood risk and prepare for flooding.

Council's online flood tools for planning and development purposes include:

- **FloodWise Property Report**
- **Flood Overlay Code**

For more information on Council's planning scheme and online flood tools for planning and development:

- phone (07) 3403 8888 and ask to talk to a Development Services Planning Information Officer

- visit brisbane.qld.gov.au/planning-building

Council's Planning Scheme - The Brisbane City Plan 2014 (planning scheme) has been prepared in accordance with the Sustainable Planning Act as a framework for managing development in a way that advances the purpose of the Act. In seeking to achieve this purpose, the planning scheme sets out the Council's intention for future development in the planning scheme area, over the next 20 years.

Disclaimer

1. Defined flood levels and residential flood levels, minimum habitable floor levels and indicative existing floor levels are determined from the best available information to Council at the date of issue. These levels, for a particular property, may change if more detailed information becomes available or changes are made in the method of calculating levels.
2. Council makes no warranty or representation regarding the accuracy or completeness of a FloodWise Property Report. Council disdaims any responsibility or liability in relation to the use or reliance by any person on a FloodWise Property Report.



Planning to build or renovate?

For information, guidelines, tools and resources to help you track, plan or apply for your development visit brisbane.qld.gov.au/planning-building

You can also find the Brisbane City Plan 2014 and Neighbourhood Plans as well as other information and training videos to help, with your building and development plans.

Appendix - C

Proposed Development Plans

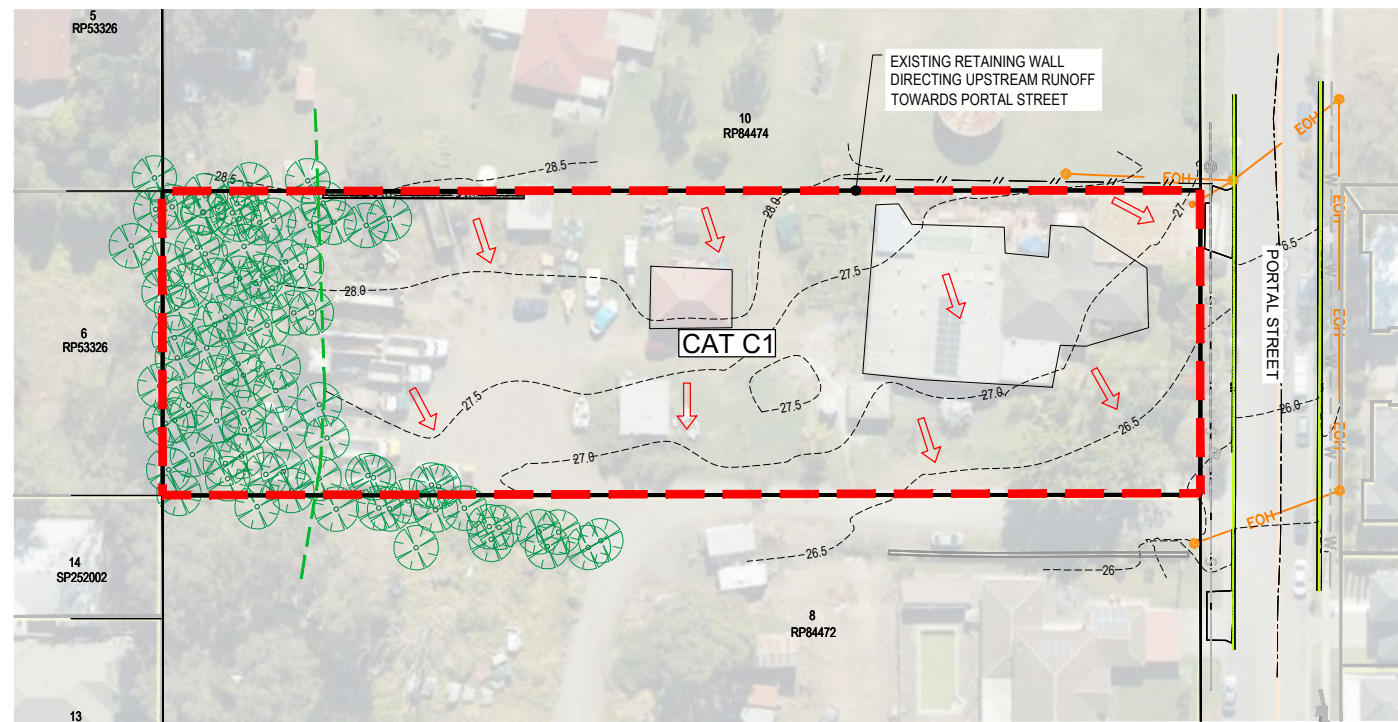
Appendix - D
Stormwater Management
Drawings

LEGEND

- KA PROPOSED KERB ADAPTOR
- PROPOSED STORMWATER
- EXISTING FENCE
- EXISTING WATER MAIN
- EXISTING SEWER MAIN
- EXISTING KERB & CHANNEL
- EXISTING OVERHEAD ELECTRICAL LINES
- EXISTING TELSTRA PIT
- EXTENT OF VEGETATION COVENANT AREA
- PROPOSED SWALE
- PROPOSED WALL 1.5m HIGH (MAX)
- FINAL DESIGN MERGE CONTOURS (0.25m)
- PRE-DEVELOPMENT CATCHMENT
- POST-DEVELOPMENT CATCHMENT
- PRE-DEVELOPMENT FLOW DIRECTION
- POST-DEVELOPMENT FLOW DIRECTION
- LPD
- LAWFUL POINT OF DISCHARGE

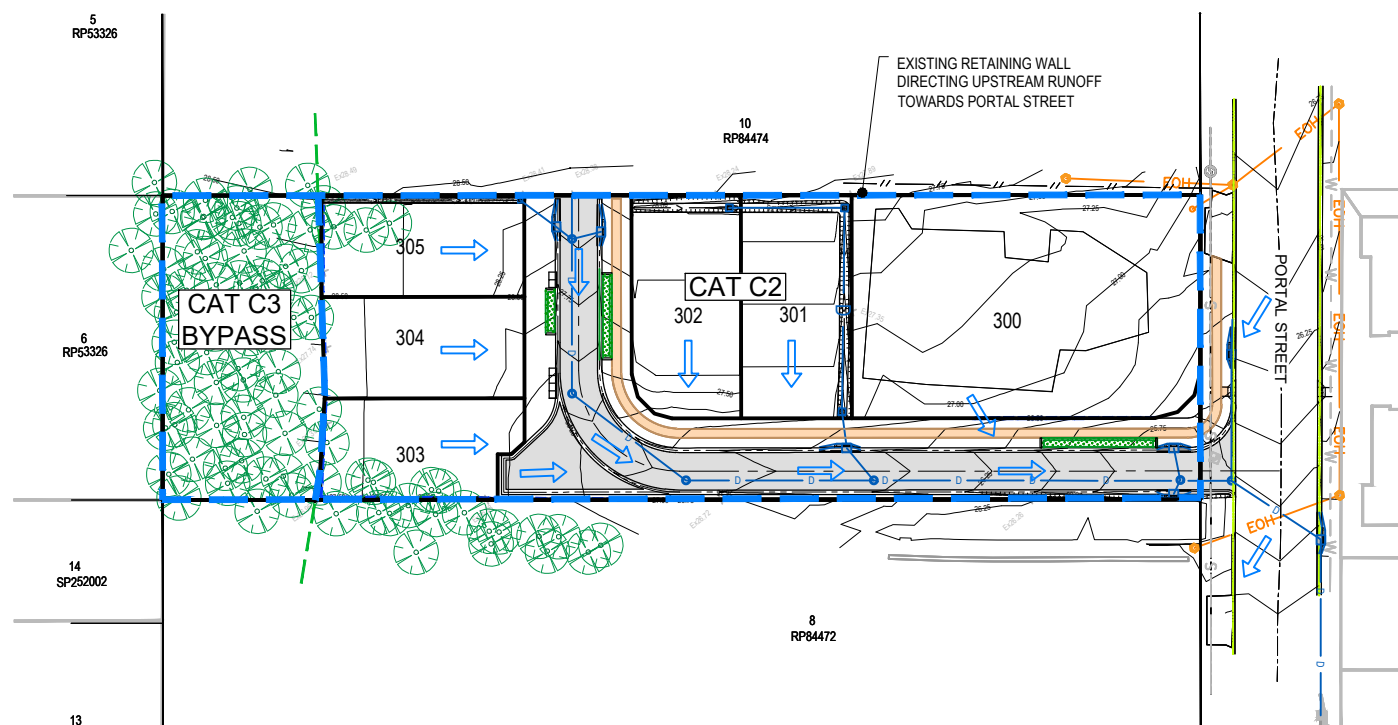
RATIONAL METHOD - CALCULATION TABLE

PRE-DEVELOPMENT CATCHMENT	CAT C1
TOTAL SITE AREA (Ha)	0.552
IMPERVIOUS AREA (Ha)	0.074
FRACTION IMPERVIOUS (fi)	0.13
TIME OF CONCENTRATION, Tc (Min.)	11.0
DISCHARGE COEFFICIENT, C ₁₀	0.70
RUNOFF COEFFICIENT, Q ₂ / Q ₁₀₀	0.595 / 0.840
MINOR STORM PEAK FLOW RATE, Q ₂ (m ³ /s)	0.099
MAJOR STORM PEAK FLOW RATE, Q ₁₀₀ (m ³ /s)	0.300



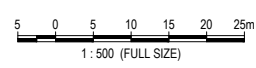
RATIONAL METHOD - CALCULATION TABLE

POST-DEVELOPMENT CATCHMENT	CAT C2	CAT C3 (BYPASS)
TOTAL SITE AREA (Ha)	0.467	0.085
IMPERVIOUS AREA (Ha)	0.331	0.00
FRACTION IMPERVIOUS (fi)	0.71	0.00
TIME OF CONCENTRATION, Tc (Min.)	6.9	5.0
DISCHARGE COEFFICIENT, C ₁₀	0.81	0.70
RUNOFF COEFFICIENT, Q ₂ / Q ₁₀₀	0.689 / 0.972	0.595 / 0.840
MINOR STORM PEAK FLOW RATE, Q ₂ (m ³ /s)	0.113	0.019
MAJOR STORM PEAK FLOW RATE, Q ₁₀₀ (m ³ /s)	0.346	0.060



NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DES	DRN	CHK	APP	SCALE
1	26.06.2025	ISSUED FOR DA APPROVAL	AN	HS	HS	HS	



ASSOCIATED CONSULTANTS
GAIA ENVIRONMENTAL CONSULTING
 VELOCITY TRAFFIC ENGINEERING
 SANTOSHI DEVELOPMENT CONSULTANTS

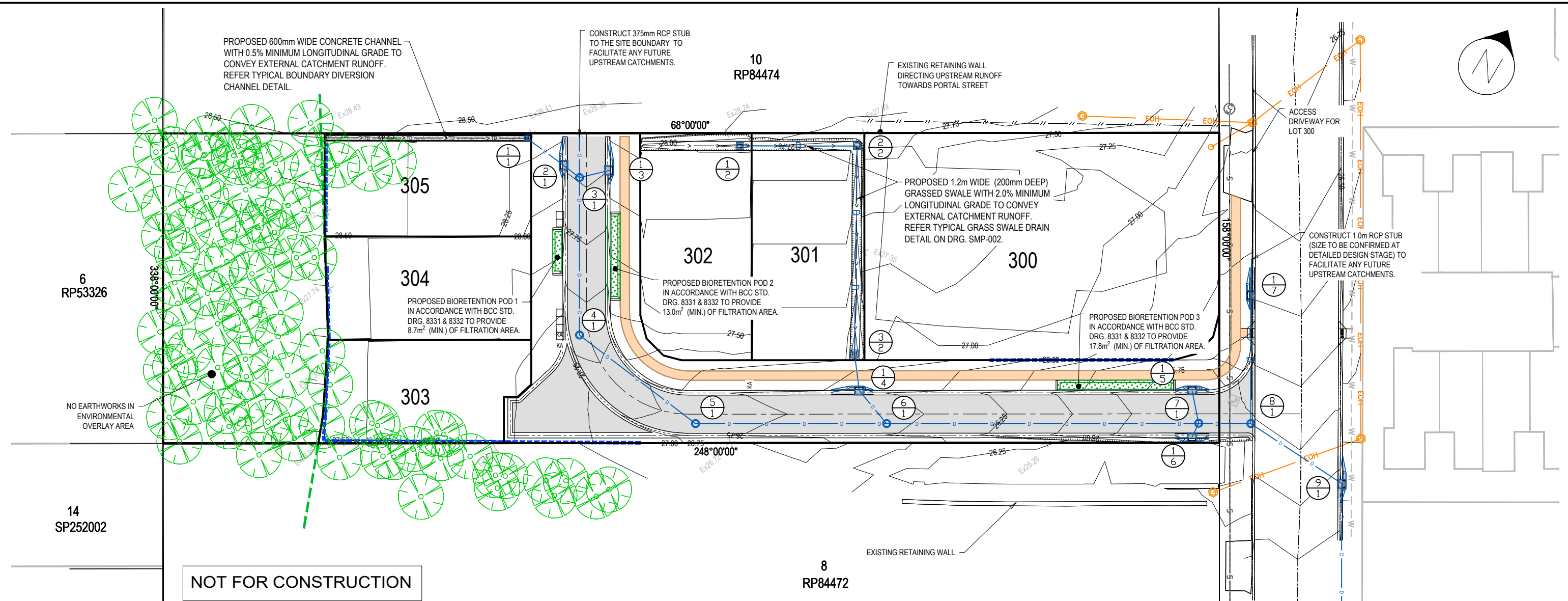
DESIGN CHECK: HS
 APPROVED: HAIDER SHAH
 RPEQ: 26210
 DRAWN CHECK: HS
 Approved for and on behalf of 72 CIVIL DESIGN & DRAFTING
 This drawing is intended solely for the client named in this document & issued for status provided herein. No third party may rely on this document without written permission from 72 CIVIL DESIGN & DRAFTING. This drawing should not be used for construction unless it is marked "Issued for construction" and signed by an RPEQ.

72 CIVIL DESIGN & DRAFTING
 A.B.N. 73 789 722 441
 Pebble Beach, Windaroo QLD 4207
 T: +61 7 3804 1399
 M: +61 422 598 075
 haider.shah@72civil.com



CLIENT: **AZIZ DEEN**
 PROJECT: **45 PORTAL STREET, OXLEY BRISBANE CITY COUNCIL**
 TITLE: **PRE & POST STORMWATER ASSESSMENT LAYOUT**
 STATUS: **FOR DA APPROVAL**

DESIGNED	DRAWN	APPROVED	DATE	
AN	HS	HS	26.06.25	
PROJECT No	DRAWING No			
25-006	SMP-001			

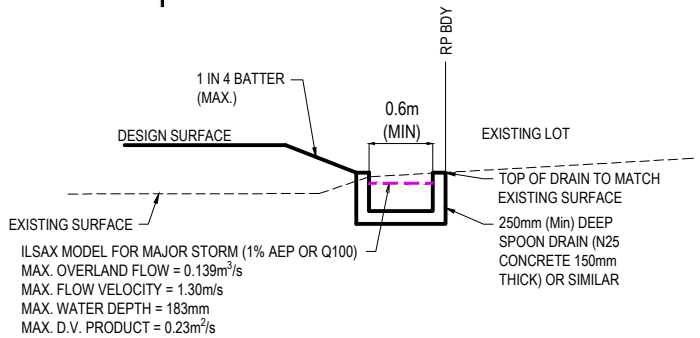


NOT FOR CONSTRUCTION

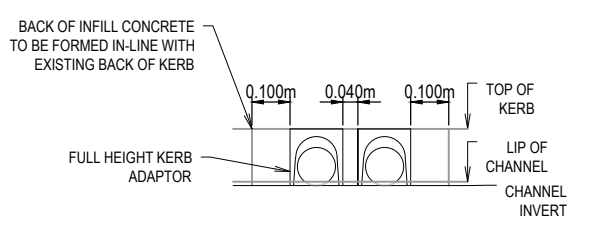
STORMWATER STRUCTURE DETAILS

STRUCTURE NUMBER	STRUCTURE DETAILS
1/1, 1/2, 2/2, 3/2	600x600mm FIELD INLET
2/1, 1/3, 1/4, 1/7, 9/1	GULLY PIT ON-GRADE WITH 2.4m LINTEL
3/1 - 8/1	1050 DIA STORMWATER MANHOLE WITH TRAFFICABLE LID
1/5, 1/6	GULLY PIT IN SAG WITH 2.4m LINTEL
EX/1	EXISTING GULLY PIT

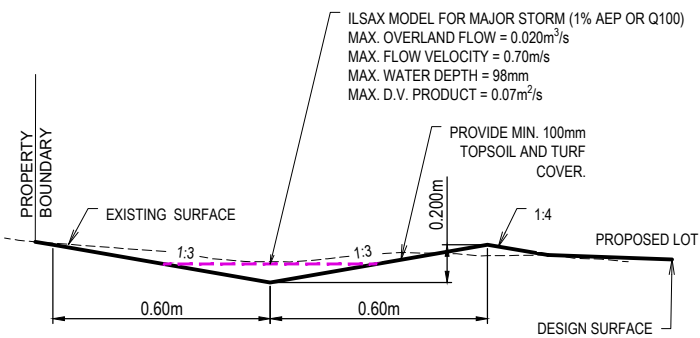
- NOTES**
- FOR SWEEP PATH ASSESSMENT DETAILS REFER TO TRAFFIC CONSULTANT PLANS.
 - FOR PROPOSED STORMWATER TREATMENT DEVICE AND DETAILS REFER TO SWMP REPORT PREPARED BY 72 CIVIL DESIGN AND DRAFTING.
 - BEWARE OF UNDERGROUND SERVICES. THE LOCATION OF UNDERGROUND SERVICES HAVE BEEN INTERPOLATED FROM GIS DATA OR KNOWN POSITIONS OF VALVES, MANHOLES ETC. OR INFORMATION SUPPLIED BY SERVICE AUTHORITIES.
 - NO RESPONSIBILITY IS TAKEN FOR THE ACCURACY OF THE INTERPOLATED INFORMATION SUPPLIED. ENSURE ALL SERVICES ARE ACCURATELY LOCATED PRIOR TO COMMENCEMENT OF WORK



TYPICAL BOUNDARY DIVERSION CHANNEL DETAIL
N.T.S.



KERB ADAPTOR ARRANGEMENT
N.T.S.



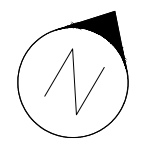
TYPICAL GRASS SWALE SECTION
N.T.S.

- LEGEND**
- PROPOSED ASPHALT PAVEMENT
 - PROPOSED KERB ADAPTOR
 - PROPOSED STORMWATER
 - PROPOSED KERB & CHANNEL
 - PROPOSED FOOTPATH
 - PROPOSED GRASS SWALE
 - PROPOSED CONCRETE CHANNEL
 - PROPOSED KERB RAMP
 - PROPOSED WALL 1.0m HIGH (MAX)
 - FINISHED CONTOURS (0.25m)
 - EXISTING FENCE
 - EXISTING WATER MAIN
 - EXISTING SEWER MAIN
 - EXISTING KERB & CHANNEL
 - EXISTING OVERHEAD ELECTRICAL LINES
 - EXISTING TELSTRA PIT

<table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>DES</th> <th>DRN</th> <th>CHK</th> <th>APP</th> <th>SCALE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>26.06.2025</td> <td>ISSUED FOR DA APPROVAL</td> <td>AN</td> <td>HS</td> <td>HS</td> <td>HS</td> <td>1:250 (FULL SIZE)</td> </tr> </tbody> </table>	REV	DATE	DESCRIPTION	DES	DRN	CHK	APP	SCALE	1	26.06.2025	ISSUED FOR DA APPROVAL	AN	HS	HS	HS	1:250 (FULL SIZE)	<p>ASSOCIATED CONSULTANTS</p> <p>GAIA ENVIRONMENTAL CONSULTING</p> <p>VELOCITY TRAFFIC ENGINEERING</p> <p>SANTOSHI DEVELOPMENT CONSULTANTS</p>	<p>DESIGN CHECK</p> <p>HS</p> <p>DRAWN CHECK</p> <p>HS</p> <p>APPROVED</p> <p>HAIDER SHAH</p> <p>RPEQ: 26210</p> <p>Approved for and on behalf of 72 CIVIL DESIGN & DRAFTING</p> <p>This drawing is intended solely for the client named in this document & issued for status provided herein. No third party may rely on this document without written permission from 72 CIVIL DESIGN & DRAFTING. This drawing should not be used for construction unless it is marked "Issued for construction" and signed by an RPEQ.</p>	<p>72 CIVIL DESIGN & DRAFTING</p> <p>A.B.N. 73 789 722 441</p> <p>Pebble Beach, Windaroo QLD 4207</p> <p>T: +61 7 3804 1399</p> <p>M: +61 422 598 075</p> <p>haider.shah@72civil.com</p>	<p>CLIENT</p> <p>AZIZ DEEN</p>	<p>PROJECT</p> <p>45 PORTAL STREET, OXLEY</p> <p>BRISBANE CITY COUNCIL</p>	<p>TITLE</p> <p>CONCEPT ROAD & DRAINAGE LAYOUT PLAN</p>	<p>STATUS</p> <p>FOR DA APPROVAL</p>	<table border="1"> <thead> <tr> <th>DESIGNED</th> <th>DRAWN</th> <th>APPROVED</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>AN</td> <td>HS</td> <td>HS</td> <td>26.06.25</td> </tr> </tbody> </table>	DESIGNED	DRAWN	APPROVED	DATE	AN	HS	HS	26.06.25	<table border="1"> <thead> <tr> <th>PROJECT No</th> <th>DRAWING No</th> <th>REV</th> </tr> </thead> <tbody> <tr> <td>25-006</td> <td>SMP-002</td> <td>-</td> </tr> </tbody> </table>	PROJECT No	DRAWING No	REV	25-006	SMP-002	-
REV	DATE	DESCRIPTION	DES	DRN	CHK	APP	SCALE																																
1	26.06.2025	ISSUED FOR DA APPROVAL	AN	HS	HS	HS	1:250 (FULL SIZE)																																
DESIGNED	DRAWN	APPROVED	DATE																																				
AN	HS	HS	26.06.25																																				
PROJECT No	DRAWING No	REV																																					
25-006	SMP-002	-																																					

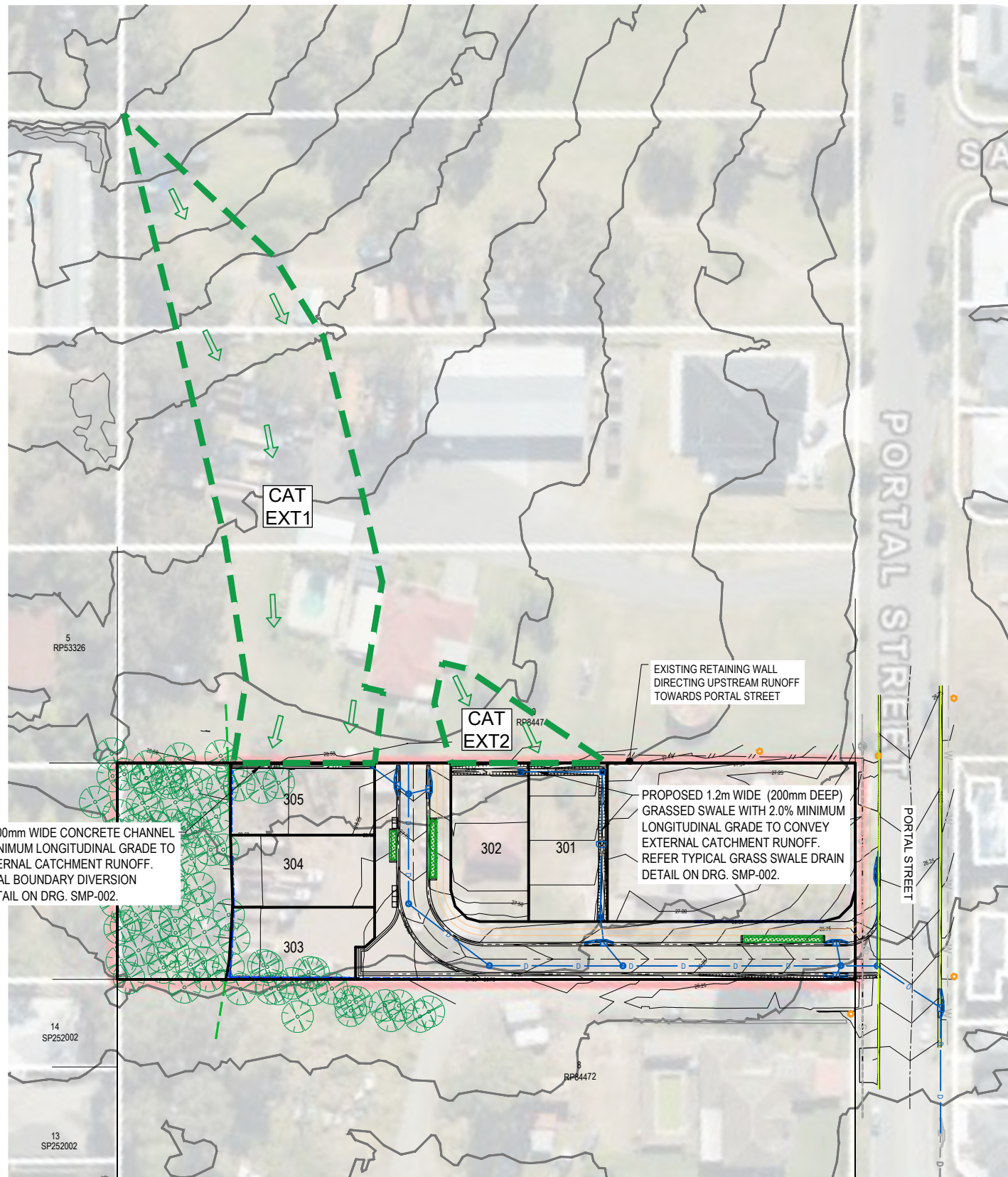
LEGEND

- KA PROPOSED KERB ADAPTOR
- D — PROPOSED STORMWATER
- // —// — EXISTING FENCE
- W — EXISTING WATER MAIN
- S — EXISTING SEWER MAIN
- — — EXISTING KERB & CHANNEL
- EOH — EXISTING OVERHEAD ELECTRICAL LINES
- — — EXISTING TELSTRA PIT
- — — EXISTING VEGETATION COVENANT AREA
- — — PROPOSED SWALE
- — — PROPOSED WALL 1.5m HIGH (MAX)
- — — FINAL DESIGN MERGE CONTOURS (0.25m)
- — — EXTERNAL CATCHMENT
- ← EXTERNAL CATCHMENT FLOW DIRECTION



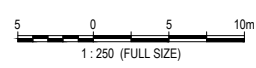
RATIONAL METHOD - CALCULATION TABLE

EXTERNAL CATCHMENT	CAT EXT1	CAT EXT2
TOTAL SITE AREA (Ha)	0.276	0.032
IMPERVIOUS AREA (Ha)	0.099	0
FRACTION IMPERVIOUS (fi)	0.36	0
TIME OF CONCENTRATION, Tc (Min.)	13.8	5.0
DISCHARGE COEFFICIENT, C _n	0.70	0.70
RUNOFF COEFFICIENT, Q ₂ / Q ₁₀₀	0.595 / 0.840	0.595 / 0.840
MINOR STORM PEAK FLOW RATE, Q ₂ (m ³ /s)	0.045	0.007
MAJOR STORM PEAK FLOW RATE, Q ₁₀₀ (m ³ /s)	0.136	0.023



NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DES	DRN	CHK	APP	SCALE
1	26.06.2025	ISSUED FOR DA APPROVAL	AN	HS	HS	HS	1:250 (FULL SIZE)



ASSOCIATED CONSULTANTS

GAIA ENVIRONMENTAL CONSULTING

VELOCITY TRAFFIC ENGINEERING

SANTOSHI DEVELOPMENT CONSULTANTS

DESIGN CHECK: HS

APPROVED: HAIDER SHAH

RPEQ: 26210

72 CIVIL DESIGN & DRAFTING

A.B.N. 73 789 722 441

Pebble Beach, Windaroo QLD 4207

T: +61 7 3804 1399

M: +61 422 598 075

haider.shah@72civil.com



CLIENT: AZIZ DEEN

TITLE: EXTERNAL STORMWATER ASSESSMENT LAYOUT

PROJECT	STATUS	DESIGNED	DRAWN	APPROVED	DATE
45 PORTAL STREET, OXLEY BRISBANE CITY COUNCIL	FOR DA APPROVAL	AN	HS	HS	26.06.25
PROJECT No: 25-006	DRAWING No: SMP-003				

Appendix - E

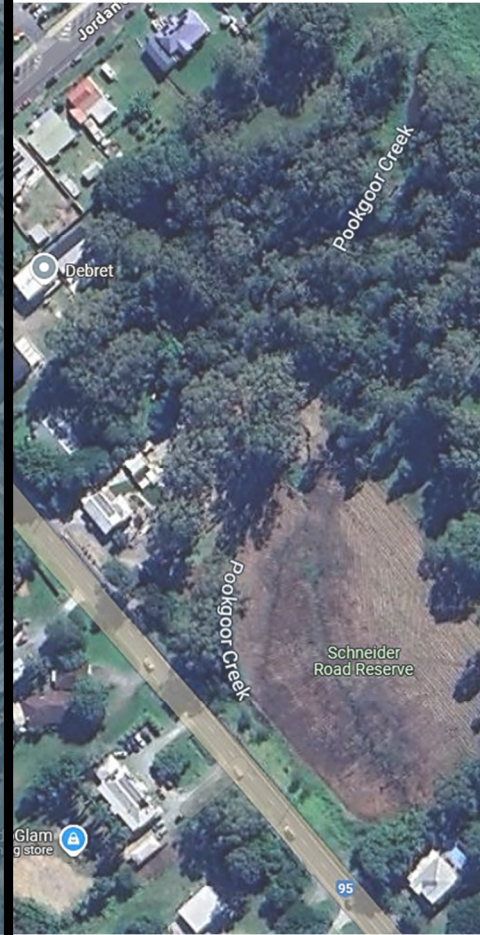
**TECHNICAL MEMORANDUM PREPARED
BY *72 CIVIL DESIGN AND DRAFTING*
(Dated: 15.12.2025)**



Civil Design & Drafting

TECHNICAL MEMORANDUM

45 Portal Street,
Oxley QLD 4075



Google Maps

PREPARED FOR AZIZ DEEN

DOCUMENT CONTROL

ISSUE	DATE	ISSUE DETAILS	AUTHOR	CHECKED	APPROVED
A	15.12.2025	FOR DA APPROVAL	Haider Shah	HS	HS

Haider Shah

RPEQ: 26210

Date: 15/12/2025

Time: 11:11am

COMMERCIAL IN CONFIDENCE

This document including any intellectual property is confidential and proprietary to 72 Civil Design & Drafting and may not be disclosed in whole or in part to any third party nor used in any manner whatsoever other than for the purposes expressly consented to by 72 Civil Design & Drafting in writing. 72 Civil Design & Drafting reserves all legal rights and remedies in relation to any infringement of its rights in respect of its confidential information.

Contents

1	INTRODUCTION	1
2	HYDROLOGICAL MODEL DEVELOPMENT	1
3	PROPOSED DRAINAGE WORKS	3
4	RESULTS	3
5	CONCLUSIONS AND RECOMMENDATIONS	6

Appendices

Appendix A – Detailed Site Survey Plan

Appendix B – Development Site Plan

Appendix C – Stormwater Drawings

Appendix D – DRAINS Model and Results

1 INTRODUCTION

The following technical memorandum provides a review of the hydrology and hydraulics contributing to the Portal Street roadway and drainage infrastructure and provides a capacity assessment of the drainage infrastructure to support the proposed development at 45 Portal Street, Oxley, QLD 4075. This assessment has been prepared generally in accordance with the Brisbane City Plan 2014, Queensland Urban Drainage Manual (QUDM) (current edition), Australian Rainfall and Runoff (ARR) and Healthy Waterways – Water by Design.

In particular the existing contributing catchments in conjunction with the post-development site parameters (unmitigated scenario) have been developed in a DRAINS hydrological computer model to assess the impacts of the Portal Street drainage infrastructure extension/upgrade and if the existing and proposed infrastructure has sufficient capacity in the minor (10% AEP) and major (1% AEP) design storm events.

2 HYDROLOGICAL MODEL DEVELOPMENT

The default hydrological model used for this assessment was the ILSAX Model. The following parameters were established in setting up the model:

- Paved (impervious) area depression storage (mm): 1
- Supplementary area depression storage (mm): 1
- Grassed (pervious) area depression storage (mm): 5
- Soil Type: Normal with antecedent rainfall depth for AMC 3 mm
- Rainfall Zone: Zone 3 – N.E. Coast
- AR&R 2016

The existing surface and contour mapping was derived from LiDAR data was obtained from *Queensland Spatial*, while the fraction impervious for the contributing catchments was estimated using aerial imagery from *Queensland Globe*. Existing stormwater infrastructure data was sourced from the Brisbane City Council Online Community Mapping System. The proposed residential development at 45 Portal Street is expected to have an overall fraction impervious of 60% ($f_i=0.60$), which has been adopted in the hydrological modelling.

Refer to **Appendix A** for the Detailed Site Survey Plan.

Refer to **Appendix B** for the Development Site Plan.

Refer to **Appendix C** for the contributing catchment delineation and parameters used in DRAINS Model.

The design rainfall Intensity Frequency Duration (IFD) data for all storm events up to an including 100-year ARI (or 1% AEP) has been obtained from the Bureau of Meteorology (BOM) for nominated ARI's and used in the DRAINS computer model. The design IFD data can be seen in Figure 1 below. Rainfall temporal patterns used in the DRAINS hydrological computer model (ILSAX Method) analysis were prepared in accordance with Australian Rainfall and Runoff (AR&R 2016). Rainfall is modelled for the catchment in equal time intervals under each storm event and the subsequent runoff routed through a drainage system. To establish the most likely rain event that would require the greatest volume of detention, design storm durations of 5, 10, 15, 20, 25, 30, 45, 60, 90, 120, 180 and 360 minutes were modelled.

Location

Label: Not provided

Latitude: -27.566 [Nearest grid cell: 27.5625 (S)]

Longitude: 152.9676 [Nearest grid cell: 152.9625 (E)]



IFD Design Rainfall Intensity (mm/h)

Issued: 24 May 2025

Rainfall intensity for Durations, Exceedance per Year (EY), and Annual Exceedance Probabilities (AEP).
[FAQ for New ARR probability terminology](#)

Table

Chart

Coefficients

Unit:

Duration	Annual Exceedance Probability (AEP)						
	63.2%	50%#	20%*	10%	5%	2%	1%
1 min	152	173	237	280	322	377	418
2 min	126	144	199	238	276	328	367
3 min	119	135	186	222	257	304	340
4 min	113	129	177	210	243	286	319
5 min	108	123	169	201	231	271	301
10 min	89.0	101	138	163	187	218	241
15 min	75.3	85.5	117	138	158	184	204
20 min	65.4	74.3	102	120	138	161	178
25 min	57.9	65.8	90.4	107	123	143	159
30 min	52.1	59.2	81.4	96.3	111	130	144
45 min	40.4	46.0	63.4	75.2	86.8	102	114
1 hour	33.4	38.0	52.4	62.4	72.2	85.3	95.4
1.5 hour	25.3	28.7	39.7	47.4	55.0	65.3	73.4
2 hour	20.6	23.4	32.4	38.8	45.1	53.8	60.6
3 hour	15.5	17.6	24.4	29.2	34.1	40.8	46.1
4.5 hour	11.7	13.2	18.4	22.1	25.8	31.0	35.1
6 hour	9.57	10.9	15.1	18.2	21.3	25.6	29.1
9 hour	7.28	8.27	11.5	13.9	16.3	19.7	22.4
12 hour	6.00	6.84	9.58	11.5	13.6	16.4	18.8
18 hour	4.59	5.24	7.40	8.95	10.6	12.8	14.7
24 hour	3.78	4.34	6.17	7.49	8.85	10.8	12.4
30 hour	3.25	3.74	5.35	6.52	7.73	9.47	10.9
36 hour	2.87	3.31	4.76	5.81	6.90	8.49	9.78
48 hour	2.34	2.71	3.93	4.83	5.75	7.11	8.22
72 hour	1.74	2.02	2.96	3.65	4.38	5.44	6.32
96 hour	1.39	1.61	2.37	2.94	3.53	4.41	5.14
120 hour	1.16	1.35	1.98	2.45	2.94	3.67	4.29
144 hour	1.000	1.16	1.68	2.08	2.50	3.12	3.64
168 hour	0.878	1.01	1.46	1.80	2.16	2.68	3.13

Figure 1. IFD Design Rainfall Intensity (mm/hr) for Oxley (BOM)

3 PROPOSED DRAINAGE WORKS

An extension of the Portal Street underground drainage infrastructure is proposed spanning from the development site and connecting to the existing gully pit (BCC Asset ID: S11191801) located approximately 35m south of the subject site. The proposed drainage system will be designed to capture and convey both existing and development generated flows from the site and provides a lawful point of discharge for future developments upstream of the subject site.

Refer to the Stormwater Drawings within **Appendix C** for details.

4 RESULTS

The hydraulic analysis of the existing and proposed Portal Street pit and pipe network, undertaken using the DRAINS model, indicates that the drainage infrastructure can sufficiently convey runoff flows generated during the minor (10% AEP) design storm event. All surface flows are contained within the Portal Street kerb and channel and do not overtop the crown of the road. Refer to Figure 2 and Figure 3 below for the Portal Street flow properties during the 10-year ARI (or 10% AEP) minor storm event.

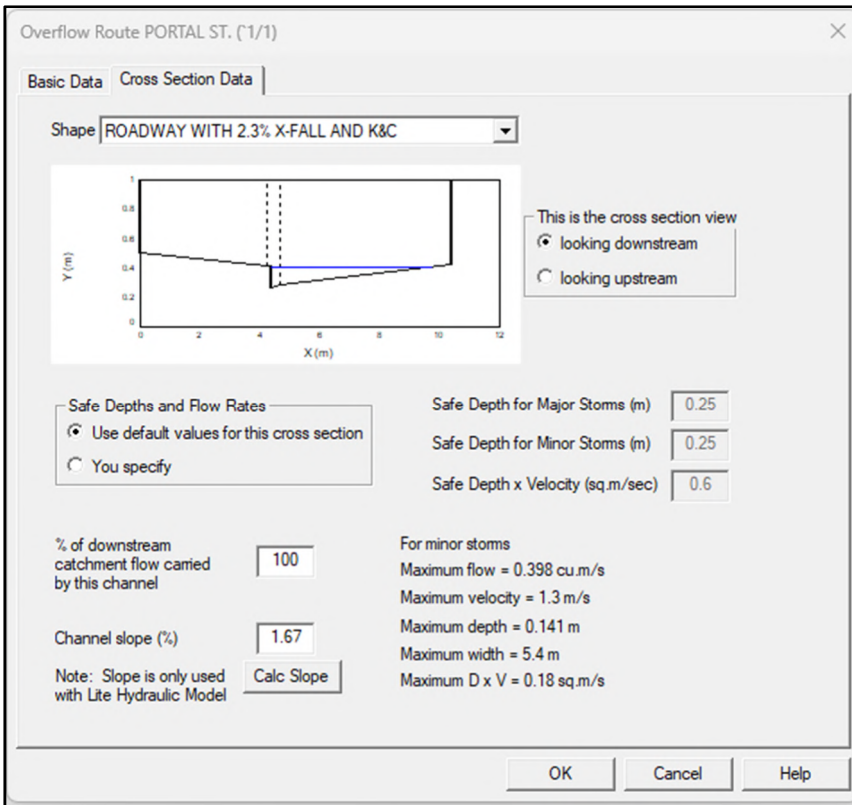


Figure 2. Portal Street Flow Results from DRAINS Model for the Minor (10% AEP) storm event - Upstream of Structure 1/1

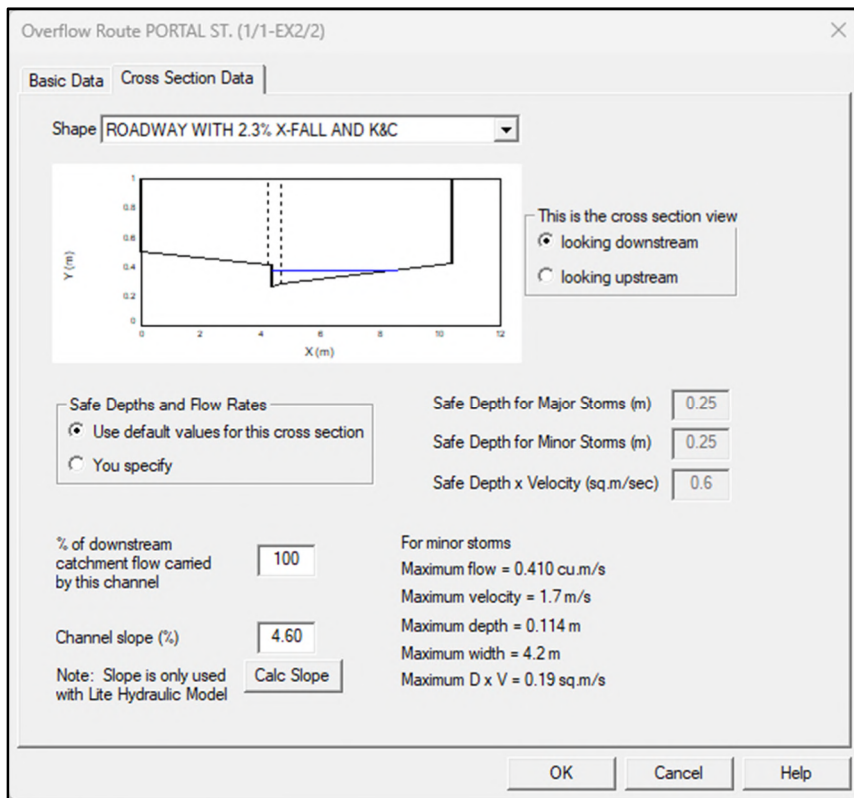


Figure 3. Portal Street Flow Results from DRAINS Model for the Minor (10% AEP) storm event - Upstream of Structure EX2/2

Refer to **Appendix C** for the hydraulic longitudinal sections of the drainage network during the minor (10% AEP) storm event.

During major storm events up to an including 100-year ARI (or 1% AEP), the Portal Street carriageway safely conveys surface flows within the road reserve with a maximum flow depth of 159mm in accordance with QUDM Table 7.4.4. Surface flows are directed to the existing SAG and Culvert crossing located approximately 126m downstream of the subject site which combines with the greater mapped overland flow path.

Refer to Figure 4 and Figure 5 below for the Portal Street flow properties during the 100-year ARI (or 1% AEP) major storm event. The results below allow for a 100% blockage factor applied to all gully pits.

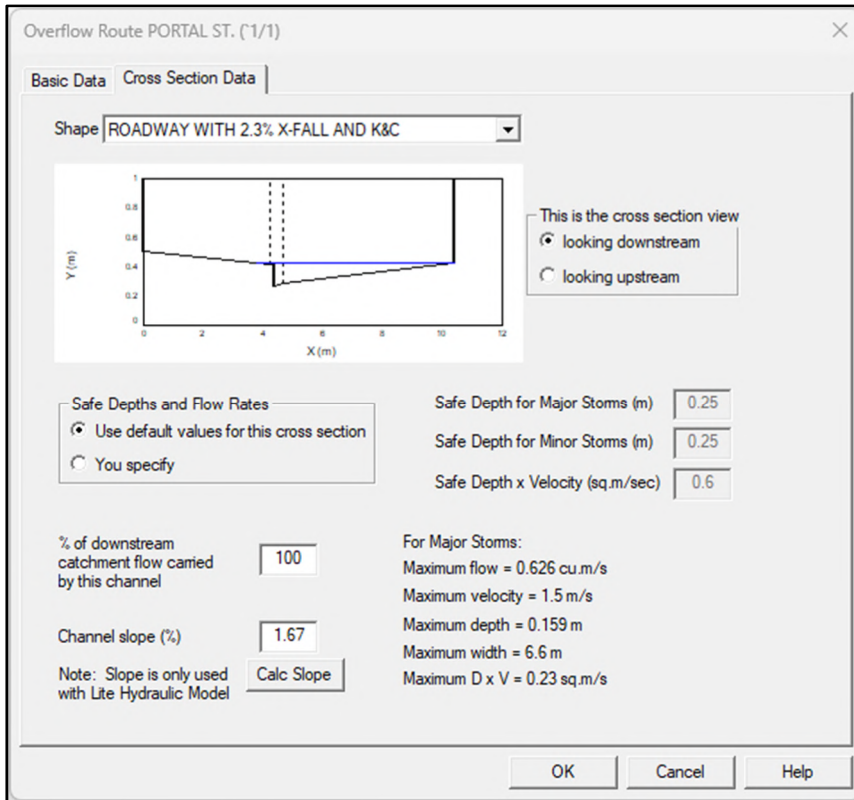


Figure 4. Portal Street Flow Results from DRAINS Model for the Major (1% AEP) storm event - Upstream of Structure 1/1

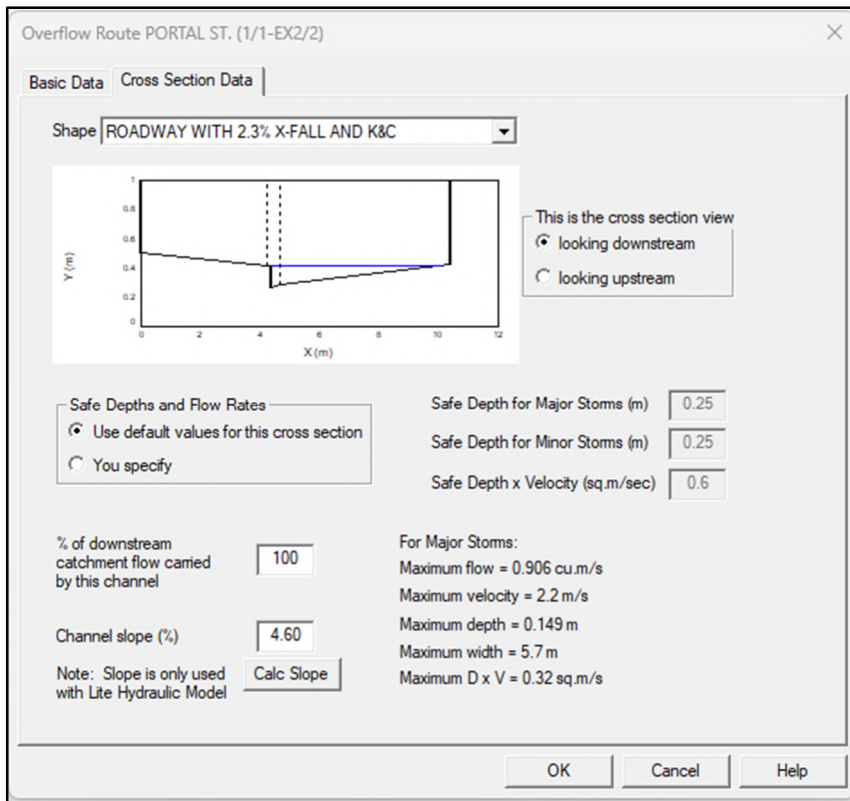


Figure 5. Portal Street Flow Results from DRAINS Model for the Major (1% AEP) storm event - Upstream of Structure EX2/2

Refer to **Appendix D** for snippets of the DRAINS Model and corresponding results.

The above results demonstrate the proposed Portal Street stormwater extension and the existing downstream infrastructure has sufficiently capacity to capture and convey increased discharge flows generated from the subject site as a result of increased impervious area from the development at 45 Portal Street. Therefore no detention system is proposed for the development.

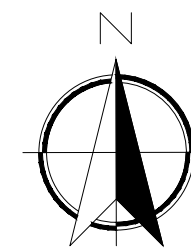
5 CONCLUSIONS AND RECOMMENDATIONS

Based on the above hydraulics assessment, the following conclusions have been drawn:

- It is proposed to provide an extension of the Portal Street underground drainage infrastructure spanning from the development site and connecting to the existing gully pit (BCC Asset ID: S11191801) located approximately 35m south of the subject site.
- The new gully pit proposed in the Portal Street kerb and channel adjacent to the south-eastern corner of the subject, constructed as part of the drainage infrastructure extension will serve as the lawful point of discharge (LPoD) for the subject site and future developments on the upstream side of the subject site.
- A fraction impervious of 60% ($f_i=0.60$) for the post-development scenario for the proposed residential development at 45 Portal Street has been adopted as part of the DRAINS Model assessment.
- Based on the above fraction impervious parameters, the DRAINS Model determines the proposed Portal Street stormwater extension and the existing downstream infrastructure has sufficiently capacity to safely convey the increased discharge flows generated from the subject site in the post-development (unmitigated) scenario.
- Since no adverse impact to the existing downstream infrastructure or downstream neighbouring properties is anticipated as a result of the proposed development, no stormwater detention system is proposed for the proposed residential development at 45 Portal Street.

Appendix - A
DETAILED SITE
SURVEY PLAN

- SERVICES WARNING
SANTOSHI DEVELOPMENT CONS P/L TAKE NO RESPONSIBILITY FOR THE LOCATION, SPECIES, HEIGHTS, OTHER DETAILS OF TREES ON SITE. TREE DETAIL WILL BE PROVIDED BY OTHERS ON SEPARATE SURVEYS.
- HEIGHTS BY GNSS
HEIGHTS HAVE BEEN MEASURED BY GNSS EQUIPMENT AND DO NOT NECESSARILY AGREE WITH AHD LEVELS.
- TITLE SEARCH WARNING
SANTOSHI DEVELOPMENT CONS P/L HAS NOT CARRIED OUT A TITLE SEARCH FOR THIS SURVEY. CHECK D.N.R.M FOR EASEMENTS AND ENCUMBRANCES.
- SERVICES WARNING
SANTOSHI DEVELOPMENT CONS P/L TAKE NO RESPONSIBILITY FOR THE LOCATION OF ANY NON VISIBLE SERVICES. GAS, SEWER AND WATER MAINS ARE PLOTTED FROM INFORMATION AVAILABLE FROM DIAL BEFORE YOU DIG AND MUST BE LOCATED BY UNDERGROUND LOCATION SERVICES PRIOR TO ANY EXCAVATIONS.
- IDENTIFICATION SURVEY WARNING
THIS CONTOUR AND FEATURE SURVEY, AS PREPARED BY SANTOSHI DEVELOPMENT CONS P/L, DOES NOT GUARANTEE THE LOCATION OF BOUNDARY PEGS OR FENCES. PLEASE CONTACT THIS OFFICE FOR A QUOTE OR FURTHER ADVICE.



JOB No: SDC2142	SURVEYED: CI
ORIGIN: GNSS	DRAWN: CI
ASSOCIATES:	CHECKED: BK
SCALE: 1:600	QT: BK
DRAWING No.: SDC2142-208	DATE: 10.12.25
	AMEND. No.: A

CLIENT: Aziz Deen	LEVEL DATUM: AHD
TITLE: Contour & Detail Survey	AZIMUTH: ARB
45 Portal Street	COORD SYSTEM: ARB
DXLEY	
LOT 9 on RP84473	

5
RP53326

6
RP53326

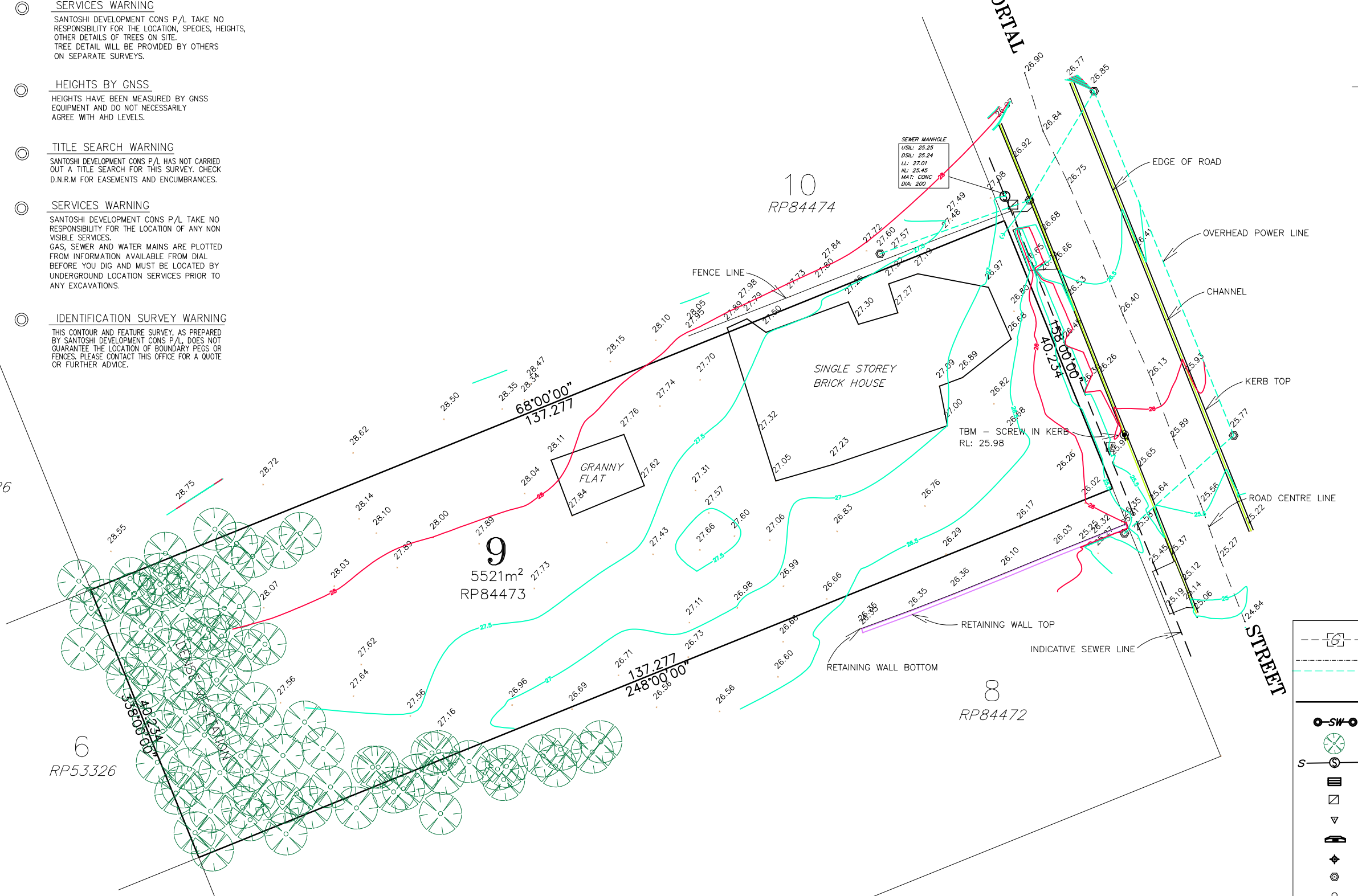
14
SP252002

13
SP252002

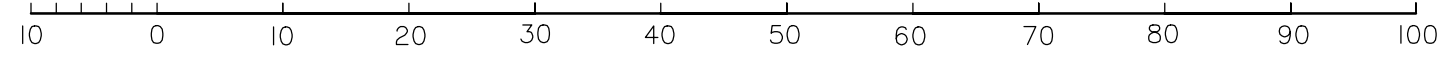
10
RP84474

9
5521m²
RP84473

8
RP84472



Scale 1:600 @ A3 – Lengths are in Metres.



BOUNDARIES HAVE BEEN ADOPTED FROM PREVIOUS SURVEY PLANS IDENTIFICATION SURVEY REQUIRED TO CONFIRM CORRECT BOUNDARY MEASUREMENTS

LEGEND

- Gas Main
- Top of Bank
- Overhead Power
- Subject Boundary
- SW-○ Stormwater Pipe
- Vegetation Stump
- S-○-S Sewer MH
- Stormwater Pit
- Electricity Pit
- ▽ Road Sign
- Gully Pit
- ◆ Fire Hydrant
- Power Pole
- Road Sign
- Stop Valve
- Telstra Pit
- Inspection Pit
- Water Meter
- TBM – Screw In Kerb RL: 75.0
- Electrical Transformer
- Stormwater MH
- ┌ Street Light
- Bollard
- Pipe
- Natural Contours
- Kerb Adaptor

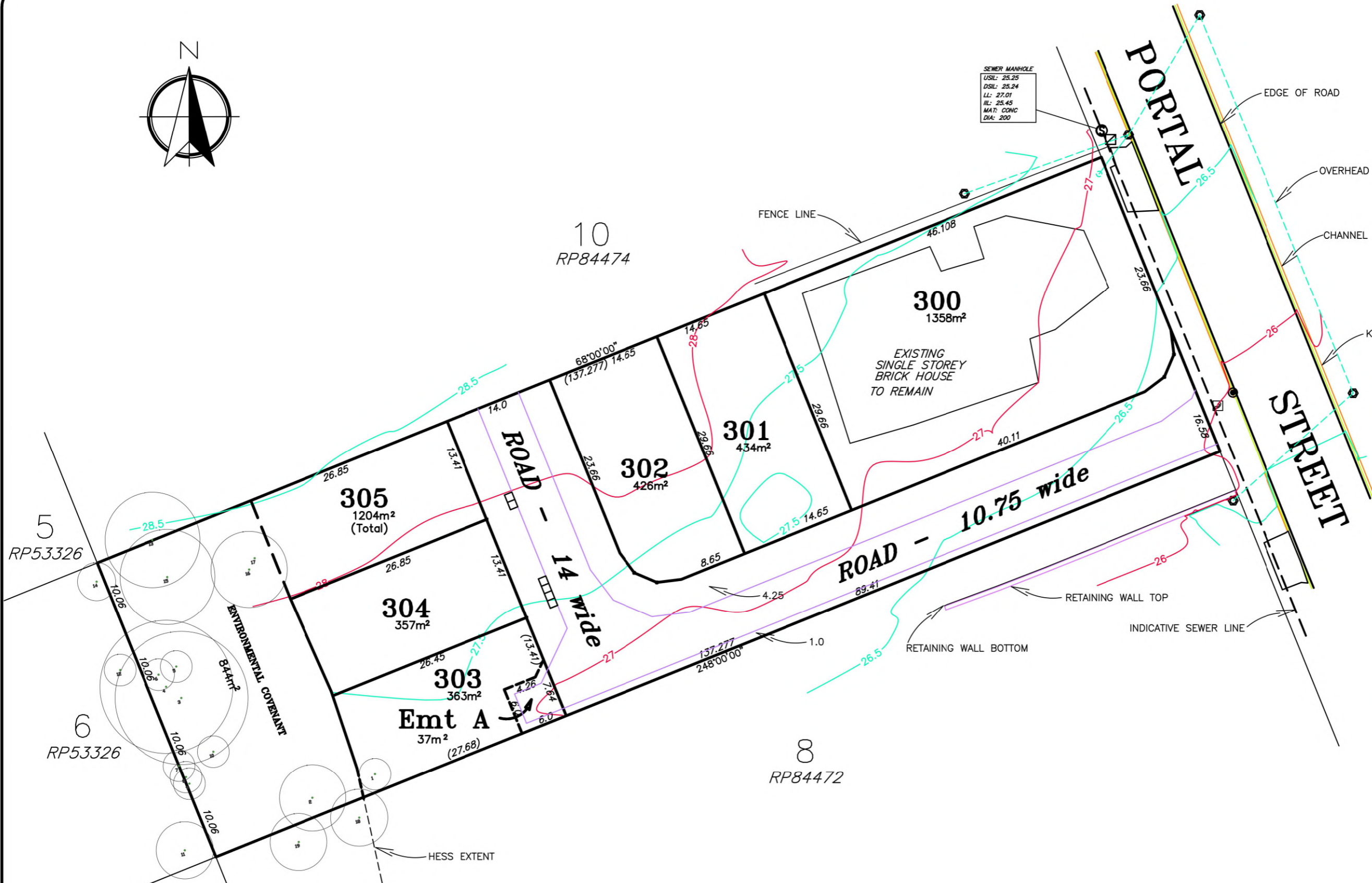
CLIENT'S NAME/SANTOSHI DEVELOPMENT CONSULTANTS/STATEMENT OF WORKS/DATE: 10.12.25

AMENDMENT	DESCRIPTION
No.	
DATE	

NOTES :
Boundary dimensions have been adopted from Services noted on the plan, are located from field surveys only. The person utilizing the information shown on this plan should make detailed prior to carrying out any excavations. This note is an integral part of this plan.

Appendix - B

DEVELOPMENT SITE PLAN



5
RP53326

6
RP53326

10
RP84474

8
RP84472

14
SP252002

Scale 1: 600 @ A3 – Lengths are in Metres.



SEWER MANHOLE
USL: 25.25
DSL: 25.24
LL: 27.01
HL: 25.45
MAT: CONC
DIA: 200

JOB No: SDC2142	SURVEYED: CI	DRAWN: DK	CHECKED: DK	QT: DK	DATE: 28.10.25	AMEND. No:
ORIGIN: GNS	ASSOCIATES:	SCALE: 1:500	DRAWING No: SDC2142-308			

CLIENT: Aziz Deen	TITLE: Proposed Development Plan 45 Portal Street DIXLEY LOT 9 on RP84474	PARISH: DIXLEY	COUNTY: ARB	COORD SYSTEM: ARB
LEVEL DATUM: AHD	AZIMUTH: ARB	ORIGIN: PSM26564		

SANTOSHI
DEVELOPMENT CONSULTANTS

38 Lochside Drive, North Lakes QLD 4509
P: 3886 5183 F: 3886 5183 M: 0403 629 381
E: deepak@santoshi.com.au
PO BOX 986, North Lakes QLD 4509

DATE	No.	AMENDMENT DESCRIPTION

NOTES :

Appendix - C
STORMWATER DRAWINGS

LEGEND

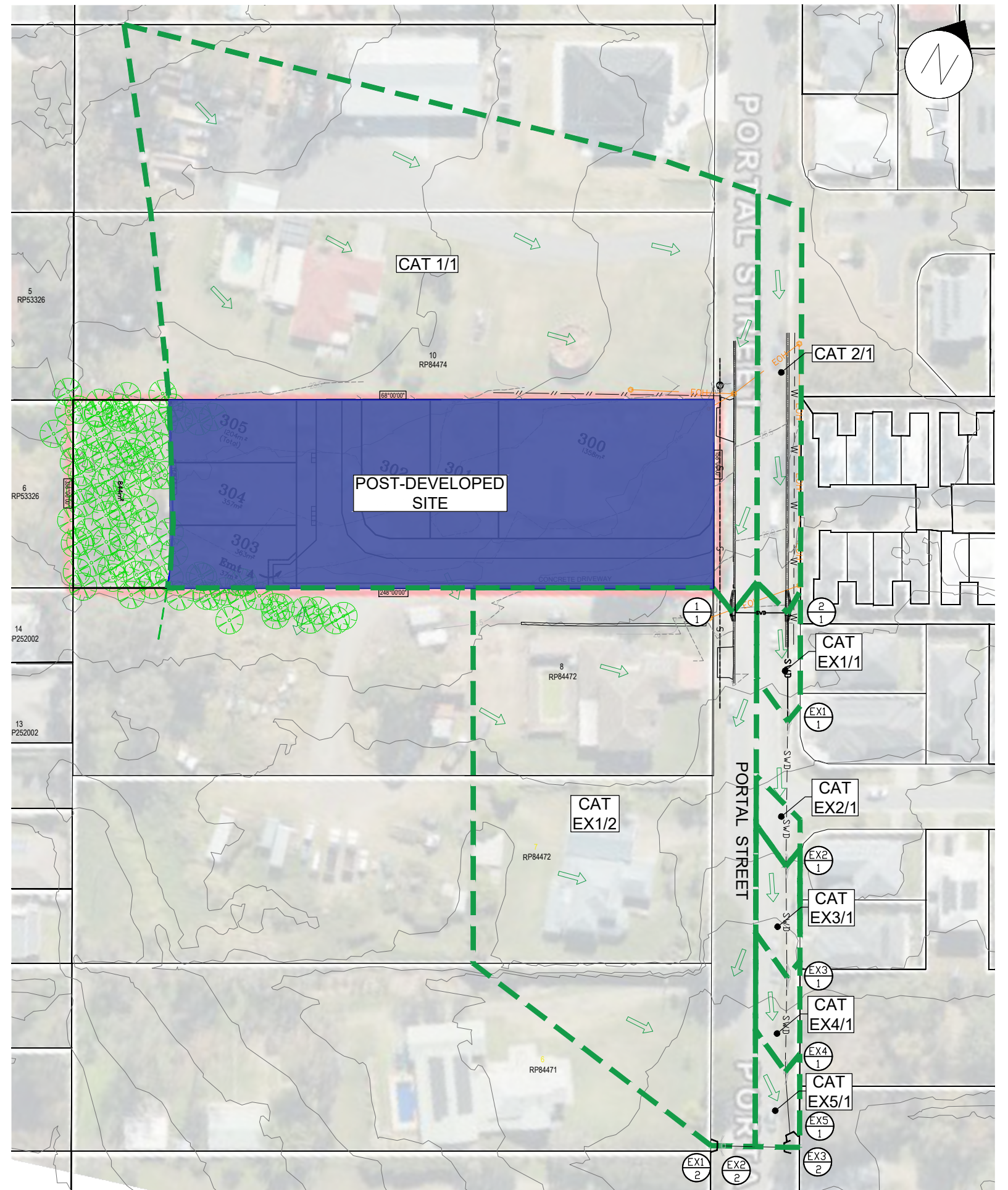
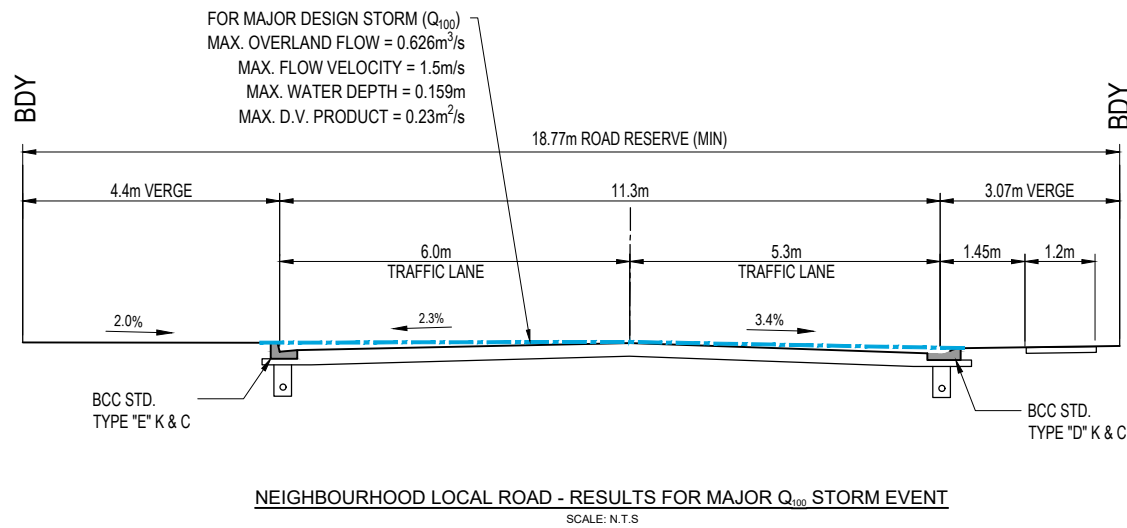
- EXISTING LIDAR CONTOURS
- EXISTING FENCE
- EXISTING WATER MAIN
- EXISTING SEWER MAIN
- EXISTING KERB & CHANNEL
- EXISTING OVERHEAD ELECTRICAL LINES
- EXISTING TELSTRA PIT
- PROPOSED SWALE
- PROPOSED KERB ADAPTOR
- PROPOSED STORMWATER
- PROPOSED DRAINAGE EASEMENT
- CATCHMENT BOUNDARY
- CATCHMENT FLOW DIRECTION

CATCHMENT TABLE

CATCHMENT LABEL	TOTAL CATCHMENT AREA	FRACTION IMPERVIOUS	TIME OF CONCENTRATION
CAT 1/1	1.323	0.51 (Site fi=0.60)	16.3
CAT EX1/2	0.622	0.50	14.4
CAT 2/1	0.080	0.76	5.0
CAT EX1/1	0.021	0.80	5.0
CAT EX2/1	0.010	0.84	5.0
CAT EX3/1	0.022	0.75	5.0
CAT EX4/1	0.020	0.76	5.0
CAT EX5/1	0.019	0.76	5.0

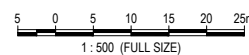
STORMWATER STRUCTURE DETAILS

STRUCTURE NUMBER	STRUCTURE DETAILS
1/1 - 2/1	PROPOSED GULLY PIT ON GRADE WITH 2.4m LINTEL
EX1/1 - EX4/1	EXISTING GULLY PIT ON GRADE
EX1/2, EX3/2, EX5/1	EXISTING HEADWALL
EX2/2	EXISTING GULLY PIT IN SAG



NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DES	DRN	CHK	APP	SCALE
15.12.2025		ISSUED FOR INFORMATION	AN	HS	HS	HS	



ASSOCIATED CONSULTANTS
GAIA ENVIRONMENTAL CONSULTING
 VELOCITY TRAFFIC ENGINEERING
 SANTOSHI DEVELOPMENT CONSULTANTS

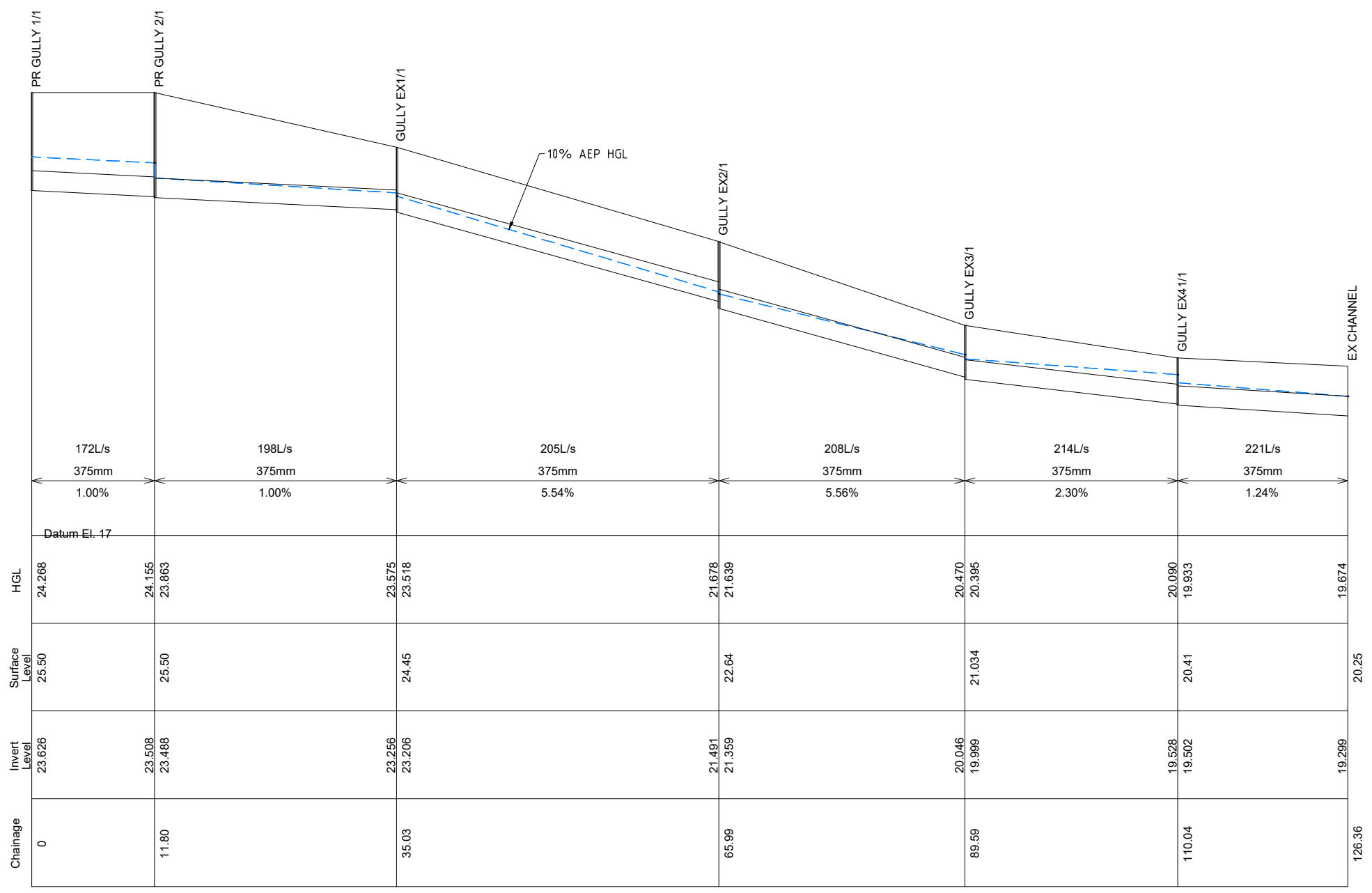
DESIGN CHECK: HS
 APPROVED: HAIDER SHAH
 DRAWN CHECK: HS
 Approved for and on behalf of 72 CIVIL DESIGN & DRAFTING
 This drawing is intended solely for the client named in this document & issued for status provided herein. No third party may rely on this document without written permission from 72 CIVIL DESIGN & DRAFTING. This drawing should not be used for construction unless it is marked "Issued for construction" and signed by an RPEQ.

RPEQ: 26210
72 CIVIL DESIGN & DRAFTING
 A.B.N. 73 789 722 441
 Pebble Beach, Windaroo QLD 4207
 T: +61 7 3804 1399
 M: +61 422 598 075
 haider.shah@72civil.com



CLIENT: **AZIZ DEEN**
 PROJECT: **45 PORTAL STREET, OXLEY**
 BRISBANE CITY COUNCIL
 TITLE: **STORMWATER CATCHMENT PLAN AND DETAILS**

STATUS	DESIGNED	DRAWN	APPROVED	DATE
FOR DA APPROVAL	AN	HS	HS	15.12.25
PROJECT No:	25-006	DRAWING No:	SK-001	REV: -



STORMWATER DRAINAGE LONGITUDINAL SECTIONS - Q₁₀ (10% AEP)
N.T.S

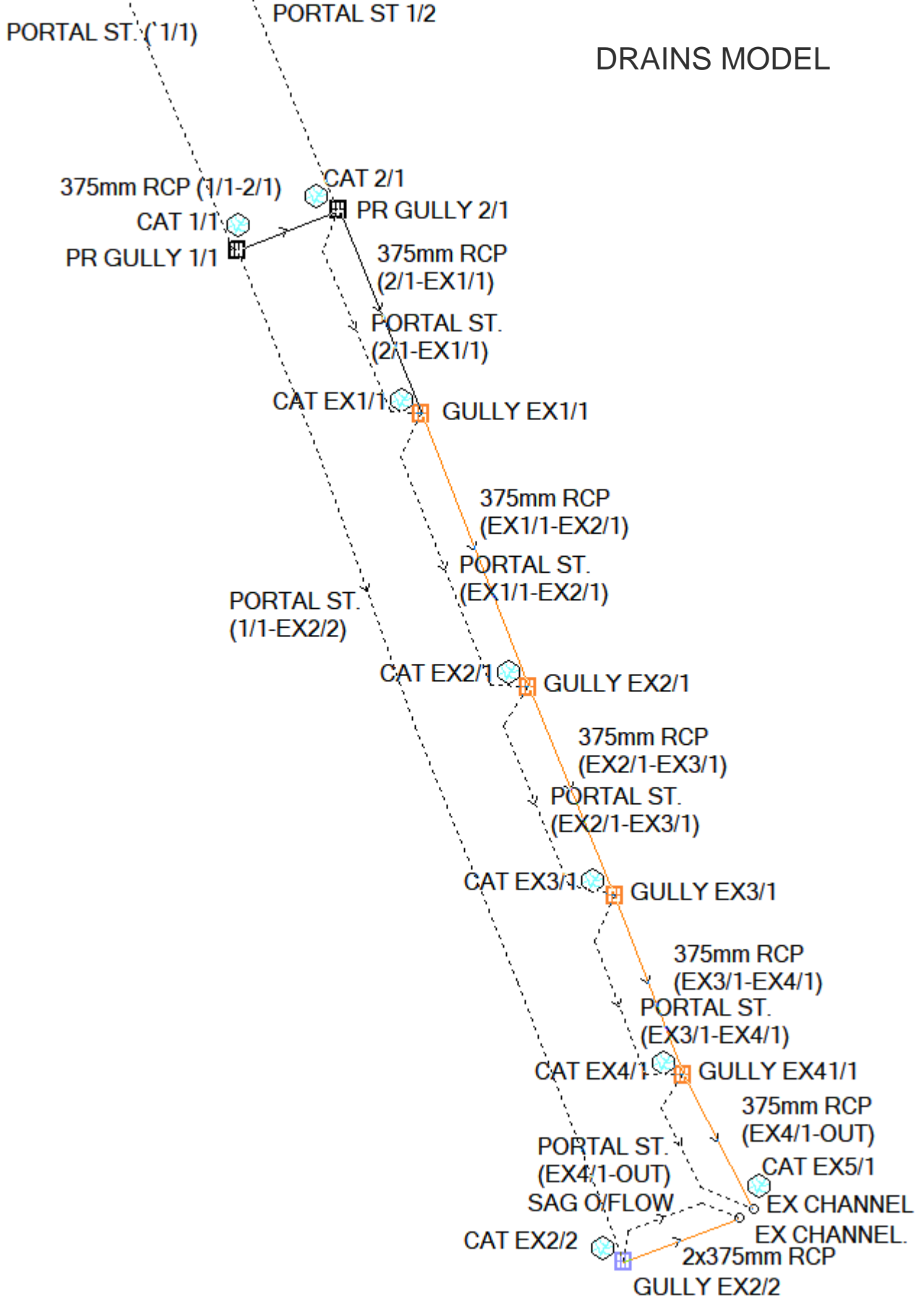
NOTE:
TAILWATER LEVEL ASSUMED AT
OBVERT OF OUTLET PIPE "EX CHANNEL"

NOT FOR CONSTRUCTION

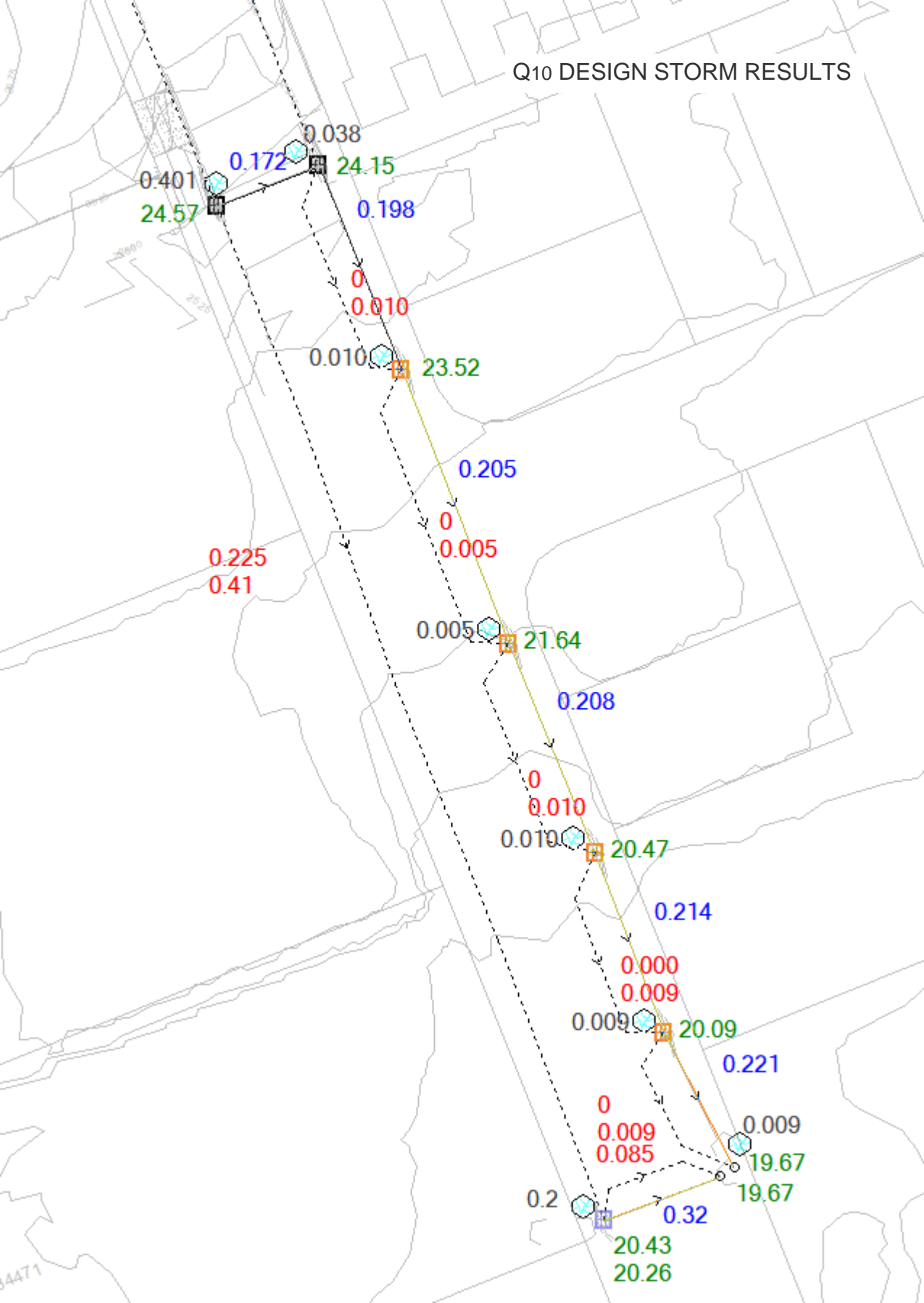
REV	DATE	DESCRIPTION	DES	DRN	CHK	APP	SCALE	ASSOCIATED CONSULTANTS	DESIGN CHECK	APPROVED	RPEQ. 26210	CLIENT	PROJECT			
15.12.2025		ISSUED FOR INFORMATION	AN	HS	HS	HS		GAIA ENVIRONMENTAL CONSULTING VELOCITY TRAFFIC ENGINEERING SANTOSHI DEVELOPMENT CONSULTANTS	HS HS	HAIDER SHAH		AZIZ DEEN	45 PORTAL STREET, OXLEY BRISBANE CITY COUNCIL			
								Approved for and on behalf of 72 CIVIL DESIGN & DRAFTING			72 CIVIL DESIGN & DRAFTING A.B.N. 73 789 722 441 Pebble Beach, Windaroo QLD 4207 T: +61 7 3804 1399 M: +61 422 598 075 haider.shah@72civil.com		72		PROJECT	
								This drawing is intended solely for the client named in this document & issued for status provided herein. No third party may rely on this document without written permission from 72 CIVIL DESIGN & DRAFTING. This drawing should not be used for construction unless it is marked "Issued for construction" and signed by an RPEQ.			Civil Design & Drafting		TITLE		STATUS	
											STORMWATER DRAINAGE LONGITUDINAL SECTION 1		FOR DA APPROVAL		DESIGNED AN DRAWN HS APPROVED HS DATE 15.12.25	
													PROJECT No 25-006		DRAWING No SK-002	
															REV -	

Appendix - D
**DRAINS MODEL AND
RESULTS**

DRAINS MODEL



Q10 DESIGN STORM RESULTS



Q100 DESIGN STORM RESULTS
100% BLOCKAGE SENSITIVITY ANALYSIS

