EROSION AND SEDIMENT CONTROL PLAN
STORMWATER MANAGEMENT PLAN

Proposed Mixed Use Development
Lot 73 and 74 on RP210268
1332 - 1346 Waterford Tamborine Road, Logan Village

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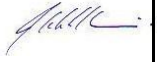
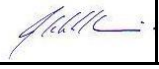
Final	B	JAW	18/02/25		18/02/25	URBIS	1
Update	C	JAW	30/04/25		30/04/25	URBIS	1

PROPOSED MIXED USE DEVELOPMENT
WATERFORD TAMBORINE ROAD, LOGAN VILLAGE
LOT 73 AND 74 ON RP210268

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1.0 INTRODUCTION

1.1 GENERAL INTRODUCTION

Cozens Regan Group Pty Ltd has been commissioned by Banner STC (Logan Village) Pty Ltd to prepare an Erosion and Sediment Control Plan and Stormwater Management Plan for the Proposed Mixed Use Development at 1332 - 1346 Waterford Tamborine Road, Logan Village.

The Erosion and Sediment Control Plan and Stormwater Management Plan are required to support a change to a current material change of use application regarding a mixed use development including proposed food and drink outlets in the Logan City Council area. The proposed plan will provide documentation for the management of erosion and sediment during the construction phase and stormwater treatment during the operational phase in order to minimise any adverse downstream impacts created by the development.

Development of the site will involve stormwater, services, building and pavement works**.** The development will obviously alter the present land use and an assessment is required to determine the impact of these proposed changes, particularly focussing on the environmental impacts associated with sediment and pollution generated.

This plan is to provide an impact assessment and any amelioration measures required to offset any potential adverse impact.

1.2 SCOPE OF PLAN

This plan focuses on the temporary impacts of sediment and erosion control likely to be encountered during the construction process as set out by Institute of Engineers Australia *"Soil Erosion and Sediment Control – Engineering Guides for Queensland Construction Sites" and* Logan City Councils' current "Stormwater Quality and Flow Management Guidelines*"*. These Guidelines provide stormwater quality objectives to be met whereby the performance of the development can be corrected if required.

Some procedures may require modification or clarification to suit the detail requirements of the development and councils requirements for the construction and operational phases.

1.3 SITE DESCRIPTION

The subject site is composed of two separate titles with a combined lot area of 2.606ha. It is described as Lot 73 and 74 on RP210268, Logan Village. Access is available from Waterford Tamborine Road to the west. The site is located on the eastern side of Waterford Tamborine Road. The site is partially developed with a service station, food outlet associated parking, driveways and servicing.

The existing site grades from the western boundary to the eastern boundary. Underlying soils are likely to comprise of sandy/silty clay which can be considered as moderately erodable. The risk of erosion is determined as medium.

2.0 DEVELOPMENT IMPACT

The proposed development is in an established area and is not known to be within a flood zone.

2.1 IMPACTS OF THE PROPOSED DEVELOPMENT

The proposed development will effect the local environment in the following ways:

a) Stormwater runoff and peak discharges from the site will increase due to an increase in impervious area
b) Air pollution during construction due to wind borne dust, and sand.
c) Noise pollution during construction.
d) Surface water pollution due to the mobilisation of sediments, nutrients and gross pollutants during rainfall events.
e) Ground water pollution may occur due to infiltration of dissolved nutrients during the clearing operation of the construction phase.

The potential for impact on the environment by these processes, particularly the surface water pollutants and how they relate to the construction and final implementation of this development is indicated below.

2.2 CONSTRUCTION PHASE

During the construction phase the following impacts are likely to occur:

a) **Air pollution**

Increase in air borne dust due to the working of material on site and from the movement of haulage vehicles. The escape of wind borne particles from cleared areas during the earthworks operation, and from finished earthworks and pavement areas will generally be in periods of strong winds.

b) **Surface Water Pollution**

Mobilisation of sediments will occur due to the clearing and grubbing of the site and subsequent earthworks operations. These impacts will occur during any rainfall events affecting the site. Mobilisation of nutrients with the soil erosion may also occur.

c) **Ground Water**

Infiltration of rainfall may affect the groundwater by increasing nutrient infiltration during clearing operation prior to sealing.

2.3 AMELIORATION MEASURES

Final assessment of the site in terms of impact and required mitigation measures should be split into two stages, being for the construction phase which is a temporary stage and the operational phase which is permanent. The operational stage for control of erosion and sediment is not required to be documented.

The construction stage, concentrating on erosion control measures and subsequently control of sediment transport is detailed in **Section 3** of this plan. The detailed analysis of the impacts and required controls is contained within this plan.

Treatment of the water to maintain water quality will be dealt with in **Section 4.**

The issues of air and ground water pollution are considered minor and will be dealt with under this section of the report.

a) **Air pollution**

Regular watering of the filling material and site will reduce the potential for air bourne pollutants. Earthworks operations need to be controlled in order to achieve compaction, and this involves adding water to control moisture content. During the operational phase air borne pollutants (dust etc.) will be negligible.

b) **Groundwater Pollution**

The underlying soils are likely sandy/silty clay and not likely to be subject to infiltration thus restricting any potential nutrient infiltration. During trenching operations there is further exposure to potential infiltration. This potential is limited with the small time frame that the underlying soils will be exposed, and by the containment the trench itself offers.

Once the development is completed the presence of impervious roof and paved areas will result in negligible infiltration thus reducing the potential for ground water pollution.

3.0 SEDIMENT AND EROSION CONTROL

3.1 POTENTIAL SEDIMENT GENERATION

The total area to be disturbed is 0.560ha. While the potential exists for sediment to be generated during the construction phase, the potential sediment volume is dependant upon rainfall, site topography, the material type exposed, flow characteristics, and the construction practices and programme.

The potential for sediment generation for the site in the pre-development stage and due to the development is calculated using the Revised Universal Soil Loss Equation. The sediment generation potential for the entire site in the pre-development stage is calculated at 9.50 **m^3/year**. Detailed calculations are contained in **Appendix A**.

The potential sediment yield during construction will vary with the extent of site exposed during the construction programme. The potential for impact will be staged as follows:

- After clearing, a portion of the entire site will be subject to the erosion impacts (total area 0.056ha).
- The estimated time for reshaping ground for the road base and building platforms will take 14 days. After this time the site, will progress directly to the construction phase.
- It is estimated the time from the completion of the reshaping to the completion of the buildings will be 150 days. After this time the site contribution to potential sediment generation, will be reduced.
- It is estimated the time from the completion of the reshaping to the completion of the road areas and buildings will be 14 days.

Based on this programme the estimated potential yield of sediment during construction is calculated at **13.54m^3** for the entire site.

The extra sediment generated as a result of construction is **10.15m^3** over the entire site for the construction period of 240 days. As there is a significant amount of sediment generated the use of sediment fencing alone will be inadequate to cater for that additional sediment generated. The areas nominated for stormwater detention will therefore be used as temporary sediment basins during the construction phase in order to ensure that the amount of sediment that leaves the site is minimised.

Upon completion of the proposed development the total potential sediment yield is **1.90m^3/year**. This is far less than the pre-development stage and is due to the increase in non-erodible surface area.

The external environment will benefit greatly as a result of the decrease in sediment load. The installation of pollution control devices will decrease further the potential sediment loading; however the effect of these is ignored.

Control of the construction impacts is therefore the primary objective for sediment and erosion control practices.

3.2 CONSTRUCTION PHASE CONTROL MEASURES

The works proposed to control erosion are:

a) Construct stabilised shake down area at the site access.
b) Erect sediment fences as required as detailed on drawings 240527/SK1 - 3 attached.
c) Strip topsoil and stockpile within the controlled area on site. Remove from the site any material which is not required for rehabilitation of disturbed areas.
d) Create building platforms and remove surplus material off site.
e) Exposed soils and stockpiles are to be watered, as required, to minimise soil losses as a result of wind.
f) Finalised earthworks to be top soiled and seeded/hydro-mulched or landscaped as directed
g) Place geo-textile field gully inlet filters around entry points to the drainage system until the pavement is complete or until grass is established.
h) Construct buildings and ramp/pavement.
i) Geo-textile filters to be replaced with mesh filters until landscaping is complete and stabilised.
j) Maintain all sediment devices and other interim controls regularly.
k) Remove sediment fences and inlet filters after the establishment of the landscaping and grass cover.

3.3 EROSION AND SEDIMENT CONTROL MANAGEMENT

The installation of erosion and sediment control devices requires maintenance of these devices to ensure their effectiveness in the control of potential environmental impact. Summary of the objectives and maintenance requirements for this project are detailed below.

3.3.1 OBJECTIVES

The objectives of this erosion and sediment control plan are:

a) To ensure that the water quality of the receiving waters is not worsened by the site development. Minimise sediment transport in surface water runoff during the construction and operational stages.
b) Meeting the water quality objectives for high risk developments set by Logan City Council. Because the developed site will have in excess of 2500m^2 of area it qualifies as a high risk development, as defined in Logan City Councils' current "Stormwater Quality and Flow Management Guidelines".

SECTION 3 – STORMWATER QUALITY LOAD REDUCTION OBJECTIVES

Pollutant Type	Objective
Total Suspended Solids	80% reduction in developed unmitigated levels
Total Phosphorus	55% reduction in avg. annual load for developed unmitigated levels
Total Nitrogen	45% reduction in avg. annual load for developed unmitigated levels
Gross Pollutants	90% reduction in avg. annual load for developed unmitigated levels

c) Provide a monitoring and maintenance programme for implementation during the construction phase.

3.3.2 MAINTENANCE OF CONTROLS

The Contractor is responsible for the installation and maintenance of the sediment and erosion control measures during the construction phase and the defects liability period (normally six months).

Maintenance responsibilities for the establishment of vegetation, that is the requirement to irrigate the plants and grass used to generate ground cover lies with the Contractor initially but ultimately reverts to the Owner once the defects liability period has expired.

Maintenance will require:

a) Inspection of silt fences during construction and after any rainfall event.
b) Clean out sediment build-up following each event that causes deposits.
c) Clean up soil and sediment deposits promptly as they occur.
d) Provide inlet protection where soil disturbance is to occur.

3.3.3 RESPONSES TO COMPLAINTS

Complaints during this type of construction usually relate to noise and dust. Generally the complaint is made known to the Contractor, the Principal, the Superintendent and/or the Council.

The Contractor shall keep a record of all complaints identifying the nature of the complaint and any remedial action taken to address such complaint. The Contractor shall act as soon as possible to remedy the problem, if the complaint is considered valid and reasonable. A complaints record shall be made available by the contractor for regular inspection by the Superintendent. For the purpose of direction by others, the Contractor's details are to be supplied to Council prior to commencement of the works.

Complaints relating to dust shall require the Contractor to immediately water the exposed earth surfaces and any soil stockpile areas as well as haul roads to control dust. Such watering shall occur immediately the complaint is registered with the Contractor. Watering should continue periodically until conditions suit, or the works are completed to a state that prevents dust transport.

3.4 MONITORING

The installation of the erosion and sediment control measures as detailed in this plan will ameliorate potential impact to water quality in the receiving waters. A monitoring program is proposed to ensure that the control measures achieve the desired goals.

A visual monitoring program is proposed due to the size of the development and the amount of staged earthworks to take place.

Following rainfall events and prior to discharge water quality monitoring will be conducted on the water within the temporary sediment basins to check suspended solids and pH. The water quality parameters to be monitored during construction are:

Table 3.4 – Construction Phase Water Quality Parameters

Insitu	Laboratory Parameters
pH Turbidity Temperature Dissolved Oxygen Salinity Specific Conductance	Suspended Solids

4.0 STORMWATER QUALITY ASSESSSMENT

4.1 WATER QUALITY OBJECTIVES

Logan City Councils' current "Stormwater Quality and Flow Management Guidelines" identifies site discharge performance criteria. Councils load based performance criteria for the key pollutants being sediments, nutrients and litter have been detailed in their guidelines. Four criteria that will be used to assess the proposed treatment of stormwater discharge from the development site:

- 80% reduction in Total Suspended Solids
- 55% reduction in Total Phosphorus
- 45% reduction in Total Nitrogen
- 90% reduction in Gross Pollutants

4.2 WATER QUALITY ASSESSMENT

Councils' "Stormwater Quality and Flow Management Guidelines" and the State Planning Policy 2013 states that, a Site Based Stormwater Quality Management Plan is required for a development application that involves land greater than 2500m^2.

To meet the requirements of a site based stormwater quality management plan it is proposed to provide a combination of treatment measures in a stormwater treatment train to reach the stormwater quality reduction targets outlined in the previous section.

4.3 STORMWATER TREATMENT

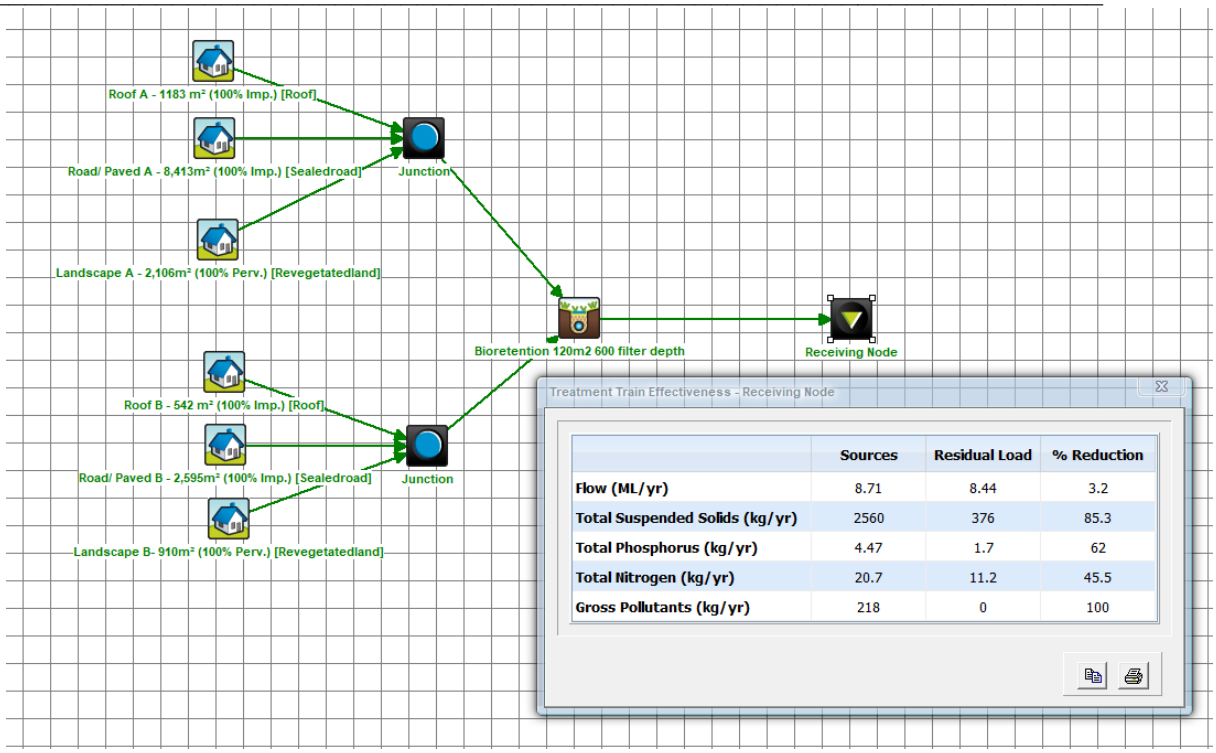
In accordance with Logan City Council' '"Stormwater Quality and Flow Management Guidelines" and the State Planning Policy the Quality Targets are,

Total Suspended Solids (TSS) Reduction – 80%
Total Phosphorus (TP) Reduction – 60%
Total Nitrogen (TN) Reduction – 45%

Stormwater Treatment Train
The site has been assessed with a treatment train within MUSIC to address the water quality targets. The treatment train consists of a bioretention basin with a sediment forebay and biorention filtration media.

Previous stages of the development provided a bioretention / detention basin arrangement which will be modified to allow for the proposed development footprint.

The proposed treatment train and increase bioretention area will include sufficient capacity for existing hardstand and building areas previously catered for in the previous a bioretention basin. The following figure outlines the treatment train and targets achieved. The concept sketches 240527 Sk6 – 8 & Sk15 detail the proposed treatment arrangement and typical device arrangement.



	Sources	Residual Load	% Reduction
Flow (ML/yr)	8.71	8.44	3.2
Total Suspended Solids (kg/yr)	2560	376	85.3
Total Phosphorus (kg/yr)	4.47	1.7	62
Total Nitrogen (kg/yr)	20.7	11.2	45.5
Gross Pollutants (kg/yr)	218	0	100

Figure 4.3 –Treatment Train

As demonstrated in the in the above figure the preliminary treatment train sufficiently treats runoff to the required targets set out in the relevant guidelines by achieving the following reductions for the respective pollutant 85.2% TSS, 62% TP, 45.5% TN. The Catchment A & B treatment consists of a total of 120m^2 filter area which is an increase of 40m^2 in filter area. The proposed additional filter media can be incorporated within the existing basin the augmentations are outlined in sketches 240527 SK4-Sk7.

4.4 Monitoring

The objective is to provide a stormwater drainage system that reduces the impact the development may pose to the local environment. Management practices to assist in the reduction of the reliance on the primary treatment structures will be implemented.

Provision of long term water quality monitoring for this development is considered impractical.

The Contractor/Builder is responsible for the installation and maintenance of the primary control measures, being the stormwater treatment device during the construction phase and the defects liability period.

Maintenance responsibilities for the operating life of the project revert to the Owner/ business operators once the defects liability period has expired.

Maintenance will require as a minimum:

a) Regular inspections after rainfall events.
b) Cleaning of the treatment devices in accordance with the manufacturers recommendations and the Water by Design Technical Guidelines.
c) Removal of accumulated gross pollutants.

Failure to maintain the proposed stormwater treatment devices and infrastructure will lead to poor site amenity, increased potential for erosion, scouring, increased discharges of stormwater pollutants, and higher potential for adverse stormwater impacts to be imposed on adjacent and downstream properties and waterways.

5.0 STORMWATER QUANTITY

5.1 External Catchments

The proposed development is located to the east of the Waterford Tamborine road and falls to the east. Two external catchments exist within proximity to the site, one catchment consists of a small portion of Waterford Tamborine road. Based on supplied survey there is no existing piped drainage in the road reserve and the existing road forms a high point at the intersection of Stockleigh road and Waterford Tamborine road directly adjacent to the site. As the intersection forms the high point it is proposed to collect the minor area which falls towards the site in the internal drainage to be provided for the site. The other external catchment discharges in the south west corner consisting of a portion of the Stockleigh road intersection and Waterford tamborine road. It is proposed to bypass this external catchment around the southern boundary of the site via a proposed augmentations to the existing drainage channel. The southern external catchment has been documented on sketch 240527 SK15 and an appropriately sized drain detailed on Sketches SK05 and SK16 attached to this report.

Waterford Tamborine road was upgraded in previous stages of the development with kerb and channel and piped drainage provided as part of the works. The proposed drainage augmentations to the channel in the south west corner represent the only works proposed regarding external catchments.

5.2 Stormwater Detention

The proposed site will result in an increase in stormwater runoff therefore to meet the requirement of “non worsening” in accordance with QUDM and the council quidelines on site stormwater detention is required.

Previous stages of the development provided an on site pit and pipe stormwater drainage system which included an above ground on site detention basin with a capacity of 281m^3. The existing constructed basin has been reviewed to assess if it provides adequate volume for the additional development the detention calculations which follow utilise the existing basin in it’s current arrangement including discharge control pit configuration.

An initial assessment of the pre development and post development peak flows for each catchment was undertaken using the rational formula which is provided in Appendix B. The assessment also details preliminary estimates of detention storage and the catchment parameters as shown in the following table.

Table 5.0 – Pre and Post Developed Flow Rational Method Calculations

Catchment	ARI (year)	Pre-developed Flow Rates (m^3/s)	Post-developed Flow Rates (m^3/s)	Post-developed Flow Rates mitigated (m^3/s)	On Site Detention Required (m^3)
A	2	0.247	0.296	0.247	23
	10	0.402	0.481	0.402	51
	100	0.700	0.824	0.700	79
B	2	0.067	0.092	0.067	14
	10	0.112	0.150	0.112	30
	100	0.196	0.257	0.196	49

A detailed assessment of the storage requirement for the site has been undertaken to cater for all storm events up to the major event on a per lot basis. Detention is to be accounted for within the existing on site bioretention / detention basin.

The method used for the final calculation of stormwater detention was the “DRAINS” hydraulic routing program. This program was used to model the relationship between the pre-developed and post-developed flow rates up to the 1% AEP or 100 year ARI for each the post development arrangement utilising the AR&R 2016 ensembles methodology.

The results from the routing program have resulted in a required detention volume of produced the following on site detention storage requirements

The combined detention volume resulting from the Drains stormwater detention calculations encompassing all events from to 1EY (Q1), to 1%AEP (Q100) is 226m^3. The required stormwater detention volume is a result of analysing the updated catchments in the current basin arrangement and it is confirmed that the required volume is available in the existing basin. No further provision for detention is therefore required and no changes to the existing basin are required. Detailed Drains results are provided in Appendix C.

The concept layout, detention arrangement and catchments are outlined in sketches 240527 Sk4 - Sk7.

5.0 QUALIFICATIONS

This plan for part of 1332 and 1346 Waterford Tamborine Road, Logan Village has been prepared specifically for this site and as requested by Banner STC (Logan Village) Pty Ltd. Our analysis and approach has been specifically catered for the particular requirements of the site and the client, Banner STC (Logan Village) Pty Ltd, and may not be applicable beyond this scope. As such third parties are not authorised to utilise this report without the written approval and advice from Cozens Regan Group Pty Ltd.

Cozens Regan Group Pty Ltd relied on the following supplied information in preparation of this report:

- Detailed existing site survey supplied by Intrax Consulting Group.
- Building and site layout supplied by URBIS.
- Rainfall data for Logan Village supplied by the BOM.

The accuracy of this report is dependant on the accuracy of the information supplied.

While Cozens Regan Group Pty Ltd has taken every precaution to ensure the accuracy of the assessment it should be noted that the catchment is ungauged and as such future observed flows may vary from that predicted.

Pollutant assessments have been based on published typical land use parameters and are therefore indicative only. Monitoring would be required to accurately reflect pollutant impacts of this development. This document should therefore be considered a “living document” throughout the construction and operational phases of this development.

REFERENCES

1. NSW, Environment Protection Authority, 11/97, “Managing Urban Stormwater: Council Handbook, (Draft)”.
2. NSW, Environment Protection Authority, 11/97, “Managing Urban Stormwater: Treatment Techniques”.
3. The Institution of Engineers, Australia, Queensland Division, June 1996, “Soil Erosion and Sediment Control, Engineering Guidelines for Queensland Construction Sites”.
4. NSW Department of Housing, 8/98, “Managing Urban Stormwater: Soils and Construction”.
5. Gold Coast City Council, November 2002, “Stormwater Management and Water Quality Guidelines”
6. Logan City Council, “Stormwater Quality and Flow Management Guidelines”.
7. Brisbane City Council, Feb 2000, “Sediment Basin Design, Construction and Maintenance”.

APPENDIX A

Sediment Yield Calculations

Appendix A - Sediment Yield Design Calculations

A.1 Sediment Generation Rates

Use the Revised Universal Soil Loss Equation as detailed in Reference 4. Appendix A was used to calculate the annual soil loss due to erosion, (A), as tonne/hectare/year.

The RUSLE parameters are determined as follows:-

Rainfall erosivity factor	R	= 3,958	($^6I_2$ = 13.5 mm/hr)
Soil erodibility factor	K	= 0.017 (1)	
Slope length	L	= 120 m (limiting value before interception occurs)	
Slope grade (ave.)	S_o	= 5% (ave.)	
	Ls	= 1.53(2)	
Cover and management factor	C	= 0.10 (3)	(existing ground cover)
		= 1.00	(construction)
		= 0.1	(establishment period)
		= 0.02	(post-development)
Erosion Control practice factor	P	= 1.2 (4)	(existing ground cover / post establishment)
		= 0.9	(construction / establishment)

(1) The exact value was not known. This value chosen from interpolation of Table B4.3 and Table 8.2 of the Brisbane City Council publication "Sediment Basin Design Construction and Maintenance" and Appendix B of Reference 4.
(2) Extrapolated from table A1
(3) Factor adopted from Table A4 Reference 4.
(4) Adopted for worst case design, Table A2 Reference 4.

Pre-development Sediment Rates
Thus for the site prior to construction:-

A = 12.35 t/ha/year
A = 9.50 m^3/ha/year (Assumed density 1.3 t/m^3)

Construction Sediment Rates
Thus for the site during construction:-

A = 92.65 t/ha/year
A = 71.27 m^3/ha/year (Assumed density 1.3 t/m^3)

For the site during establishment:-

A = 9.27 t/ha/year
A = 7.13 m^3/ha/year (Assumed density 1.3 t/m^3)

Post - development Sediment Rates
Thus for the site after construction and establishment:-

A = 2.47 t/ha/year
A = 1.90 m^3/ha/year (Assumed density 1.3 t/m^3)

A.2 Sediment Yield

The sediment yield is determined using the above calculated rates and the areas as tabulated below. The disturbed earthworks area is 1.06ha. Upon completion of the earthworks the area for establishment is in the order of 0.304ha with the remaining area being attributed to impervious area such as buildings and roads.

Table A2 - Sediment Yield

Element	Area (Ha)	Work Programme (Days)	Yield Rate (m^3/ha/year)	Sediment Yield (m^3)	Total (m^3)
Pre-development	0.56	365	9.50		5.32
Construction					
Earthworks	0.56	60	71.27	6.56	
Grass Establishment	0.168	60	7.13	0.2	
Building & Pavement Works	0.392	90	71.27	6.89	13.65
Post Development	0.56	365	1.90		1.06

From the above results it can be seen that the sediment yield expected during the construction period is in the order of 10.15 m^3 more than for the undeveloped site the period of construction. Also of note is the drop in sediment yield in the post development phase.

APPENDIX B

DETAILED RATIONAL CALCULATIONS

Cozens Regan Williams Prove

Project Number: 240527

Description: Proposed Commercial Development

Designed: JL 23/1/2025

Location: Logan Village **CATCHMENT A**

A

Length	30	m
Slope	1	%
Hortons Roughness	0.018	

Equation (107nL^0.333)/S^0.2

Time of Concentration 5.984529739 min

Channel/ Pipe Flow

Flow length	100	m
Pipe flow velocity	1.5	m/s
Time of flow	2.222222222	min

Total time of Concentration 8.206751961

Say 8 min

CALCULATION OF INITIAL RUNOFF - QUDM Section 4.00

	PRE-DEV'T	POST-DEV'T	
Catchment area (ha)	1.170	1.170	
Impervious area (ha)	0.234	0.936	Ha
Fraction impervious	0.2	0.8	
Intensity - 1 hr, 10 yr (mm/hr)	64.4		IFD: Logan City
t_c existing (min.)	8.00		
t_c post-developed (min.)	8.00		

ESTIMATION OF PEAK FLOWS

ARI	Existing				Post development				Difference in runoff	
	C	I (mm/hr)	Q (m^3/min)	**Q (m^3/s)**	C	I (mm/hr)	Q (m^3/min)	**Q (m^3/s)**	Increase (L/s)	Increase %
1	0.57	99	11.02	0.184	0.68	99	13.15	0.219	35	19.3%
2	0.6	127	14.80	0.247	0.72	127	17.76	0.296	49	20.0%
5	0.67	157	20.45	0.341	0.81	157	24.72	0.412	71	20.9%
10	**0.71**	174	**24.09**	0.402	**0.85**	174	28.84	0.481	**79**	**19.7%**
20	**0.75**	198	**28.96**	0.483	**0.89**	198	34.36	0.573	**90**	**18.7%**
50	0.82	230	36.70	0.612	0.98	230	43.86	0.731	119	19.5%
100	**0.85**	254	**42.02**	**0.700**	**1.00**	254	**49.43**	**0.824**	**124**	**17.6%**

APPROX. PEAK FLOWS LESS THAN Q1

ARI	% of Q1	Existing (L/s)	Post dev't (L/s)	% inc
1 mth	25%	45.9	54.8	19.3%
2 mth	40%	73.5	87.6	19.3%
3 mth	**50%**	91.8	**109.6**	**19.3%**
4 mth	60%	110.2	131.5	19.3%
6 mth	75%	137.8	164.3	19.3%
9 mth	90%	165.3	197.2	19.3%
12 mths (Q1)	100%	183.7	219.1	19.3%

SUMMARY

			CHECKED	COMMENT
Item	**Existing**	**Proposed**		
Area Ha	**1.170**	**1.170**		
Imperv A	0.234	0.936		
Fi %	0.2%	0.8%		
tc mins	8.00	8.00		
10yr 1hr I	64.4	64.4		
C10	**0.71**	**0.85**		
C100	0.85	1.00		
Q10 m^3/s	0.402	0.481		
Q20 m^3/s	0.483	0.573		
Q50 m^3/s	0.612	0.731		
Q100 m^3/s	0.700	0.824		
Initial Vs	**Ave (m^3)**	**Max Est Vs (m^3)**		
Q10	33.5	50.7		
Q20	37.9	57.7		
Q50	50.4	76.4		
Q100	51.8	79.1		

CHECKED:

INITIAL DETENTION SIZING

Written by OC 17/07/2009

Based on QUDM 5.05 'Flood-Routing for Small Basins - Initial Sizing' Updated by TWN Jan 2013

Flood Event	Discharge Coeff. of Runoff		Rainfall Intensity		Qi (m3/s)	Qo (m3/s) (allowable outlet flow)	Vi Approx. Inflow Volume (m^3) 4 * Qi * tc/ 3 Vi =	Ratio r = (Qi-Qo)/Qi	INITIAL ESTIMATED Vs					
	Existing Cy	Post-D'ment Cy	Existing I mm/hr	Post-D'ment I mm/hr					Culp (1948) Vs=r{(1+2r)/3}Vi Vs m^3/s	Boyd (1989) Vs=r*Vi Vs m^3/s	Carroll (1990) Vs={r(3+5r)/8}Vi Vs m^3/s	Basha (1994) Vs={r(2+r)/3}Vi Vs m^3/s	Average Vs	Maximum Estimated Vs
3 months			**39.66**	**39.66**	**0.109561**	0.091838	70	0.16	**5.0**	**11.3**	**5.4**	**8.2**	**7.5**	**11.3**
1	0.57	0.68	99	99	0.219	0.183675	140	0.16	10.0	22.7	10.8	16.3	15.0	22.7
2	0.6	0.72	127	127	0.296	0.246675	189	0.17	14.0	31.6	15.1	22.8	20.9	31.6
5	0.67	0.81	157	157	0.412	0.340779	264	0.17	20.4	45.6	22.0	33.0	30.3	45.6
10	**0.71**	**0.85**	**174**	**174**	**0.481**	0.401505	308	**0.16**	**22.5**	**50.7**	**24.2**	**36.6**	**33.5**	**50.7**
20	**0.75**	**0.89**	**198**	**198**	**0.573**	0.482625	367	**0.16**	**25.3**	**57.7**	**27.3**	**41.5**	**37.9**	**57.7**
50	0.82	0.98	230	230	0.731	0.611618	468	0.16	33.8	76.4	36.4	55.1	**50.4**	**76.4**
100	**0.85**	**1.00**	**254**	**254**	**0.824**	0.700294	527	**0.15**	**34.3**	**79.1**	**37.1**	**56.7**	**51.8**	**79.1**

Initial Sizing: QUDM (5.05.1)

Note: Initial sizing in above table does not allow for any run-off routing or relationship between catchment size and time of concentration

Cozens Regan Williams Prove

Project Number: 240527

Description: Proposed Commercial Development

Designed: JL 23/1/2025

Location: Logan Village

CATCHMENT B

Existing			**Proposed**		
B			B		
Length	82.5	m	Length	80	m
Slope	4.8	%	Slope	1	%
Hortons Roughness	0.04		Hortons Roughness	0.018	
Equation	(107nL^0.333)/S^0.2		Equation	(107nL^0.333)/S^0.2	
Time of Concentration	13.61486997	min	Time of Concentration	8.2988823	min
Total time of Concentration	13.61486997 Say 14 min				

Channel/ Pipe Flow

Flow length	95	m
Pipe flow velocity	1.5	m/s
Time of flow	2.11111111	min
Total time of Concentration	10.4099934 Say 10 min	

CALCULATION OF INITIAL RUNOFF - QUDM Section 4.00

	PRE-DEV'T	POST-DEV'T	
Catchment area (ha)	**0.405**	**0.405**	
Impervious area (ha)	**0.081**	**0.324**	**Ha**
Fraction impervious	0.2	0.8	
Intensity - 1 hr, 10 yr (mm/hr)	**64.4**		**IFD: Logan City**
t_c existing (min.)	14.00		
t_c post-developed (min.)	10.00		

ESTIMATION OF PEAK FLOWS

ARI	Existing				Post development				Difference in runoff	
	C	I (mm/hr)	Q (m^3/min)	**Q (m^3/s)**	C	I (mm/hr)	Q (m^3/min)	**Q (m^3/s)**	Increase (L/s)	Increase %
1	0.57	80	3.07	0.051	0.68	89	4.10	0.068	17	33.4%
2	0.6	102	4.12	0.069	0.72	114	5.54	0.092	24	34.2%
5	0.67	126	5.70	0.095	0.81	141	7.70	0.128	33	35.1%
10	**0.71**	141	**6.73**	0.112	**0.85**	157	9.00	0.150	**38**	**33.7%**
20	**0.75**	160	**8.10**	0.135	**0.89**	179	10.75	0.179	**44**	**32.6%**
50	0.82	186	10.28	0.171	0.98	207	13.68	0.228	57	33.1%
100	**0.85**	205	**11.78**	**0.196**	**1.00**	229	**15.45**	**0.257**	**61**	**31.2%**

APPROX. PEAK FLOWS LESS THAN Q1

ARI	% of Q1	Existing (L/s)	Post dev't (L/s)	% inc
1 mth	25%	12.8	17.1	33.4%
2 mth	40%	20.5	27.3	33.4%
3 mth	**50%**	25.6	**34.1**	**33.4%**
4 mth	60%	30.7	41.0	33.4%
6 mth	75%	38.4	51.2	33.4%
9 mth	90%	46.1	61.4	33.4%
12 mths (Q1)	100%	51.2	68.3	33.4%

SUMMARY			CHECKED	COMMENT
Item	**Existing**	**Proposed**		
Area Ha	**0.405**	**0.405**		
Imperv A	0.081	0.324		
Fi %	0.2%	0.8%		
tc mins	14.00	10.00		
10yr 1hr I	64.4	64.4		
C10	**0.71**	**0.85**		
C100	0.85	1.00		
Q10 m^3/s	0.112	0.150		
Q20 m^3/s	0.135	0.179		
Q50 m^3/s	0.171	0.228		
Q100 m^3/s	0.196	0.257		
Initial Vs	**Ave (m^3)**	**Max Est Vs (m^3)**		
Q10	21.0	30.2		
Q20	24.4	35.2		
Q50	31.6	45.4		
Q100	33.8	48.9		

CHECKED:

INITIAL DETENTION SIZING

Written by OC 17/07/2009

Updated by TWN Jan 2013

Based on QUDM 5.05 'Flood-Routing for Small Basins - Initial Sizing'

Flood Event	Discharge Coeff. of Runoff		Rainfall Intensity		Qi (m3/s)	Qo (m3/s) (allowable outlet flow)	Vi Approx. Inflow Volume (m^3) 4 * Qi * tc/ 3	Vi =	Ratio r = (Qi-Qo)/Qi	INITIAL ESTIMATED Vs					
	Existing Cy	Post-D'ment Cy	Existing I mm/hr	Post-D'ment I mm/hr						Culp (1948) Vs=r{(1+2r)/3}Vi	Boyd (1989) Vs=r*Vi	Carroll (1990) Vs={r(3+5r)/8}Vi	Basha (1994) Vs={r(2+r)/3}Vi	Average Vs	Maximum Estimated Vs
										Vs m^3/s	Vs m^3/s	Vs m^3/s	Vs m^3/s		
3 months			**31.944**	**35.72**	**0.034132**	0.025586	27		0.25	**3.4**	**6.8**	**3.6**	**5.1**	**4.8**	**6.8**
1	0.57	0.68	80	89	0.068	0.051172	55		0.25	6.8	13.7	7.3	10.3	9.5	13.7
2	0.6	0.72	102	114	0.092	0.068745	74		0.25	9.5	18.8	10.1	14.1	13.1	18.8
5	0.67	0.81	126	141	0.128	0.095053	103		0.26	13.5	26.7	14.3	20.1	18.6	26.7
10	**0.71**	**0.85**	**141**	**157**	**0.150**	0.112221	120		**0.25**	**15.2**	**30.2**	**16.1**	**22.7**	**21.0**	**30.2**
20	**0.75**	**0.89**	**160**	**179**	**0.179**	0.135069	143		**0.25**	**17.5**	**35.2**	**18.6**	**26.4**	**24.4**	**35.2**
50	0.82	0.98	186	207	0.228	0.171274	182		0.25	22.7	45.4	24.1	34.0	**31.6**	**45.4**
100	**0.85**	**1.00**	**205**	**229**	**0.257**	0.196268	206		**0.24**	**24.1**	**48.9**	**25.6**	**36.5**	**33.8**	**48.9**

Initial Sizing: QUDM (5.05.1)

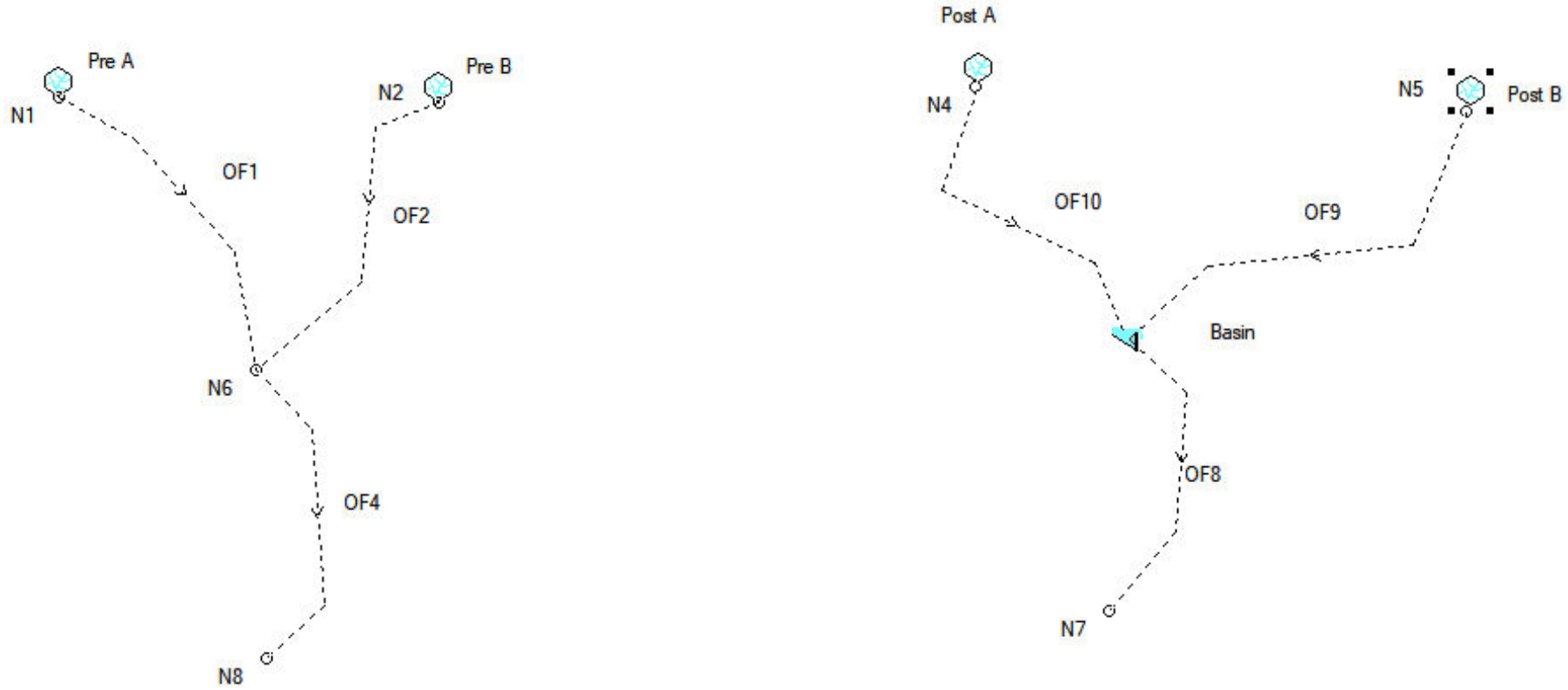
Note: Initial sizing in above table does not allow for any run-off routing or relationship between catchment size and time of concentration

APPENDIX C

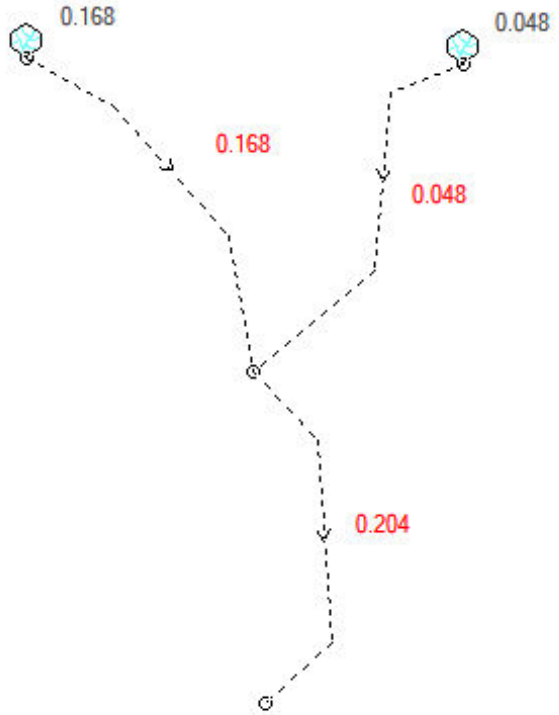
DRAINS RESULTS

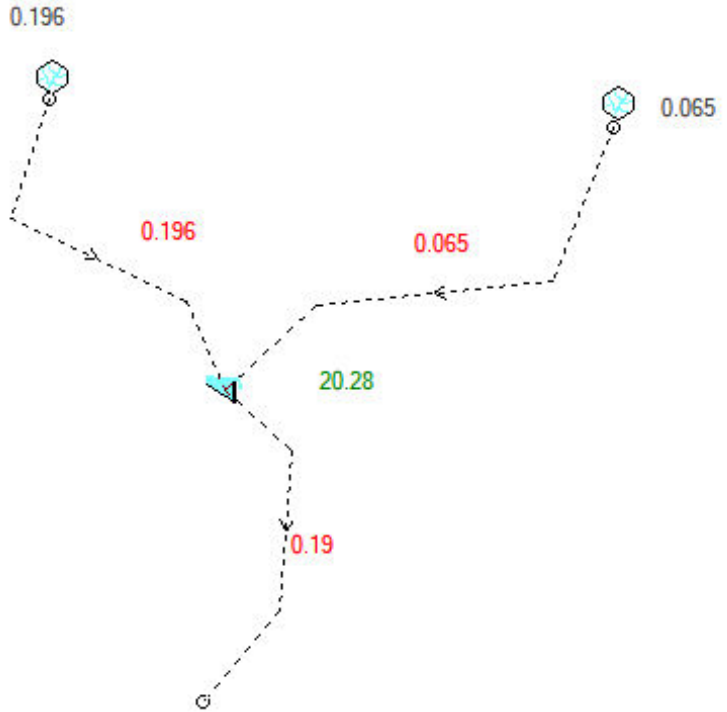
240527 Drains 250116.drn - DRAINS

File Edit Project View Draw Run Help

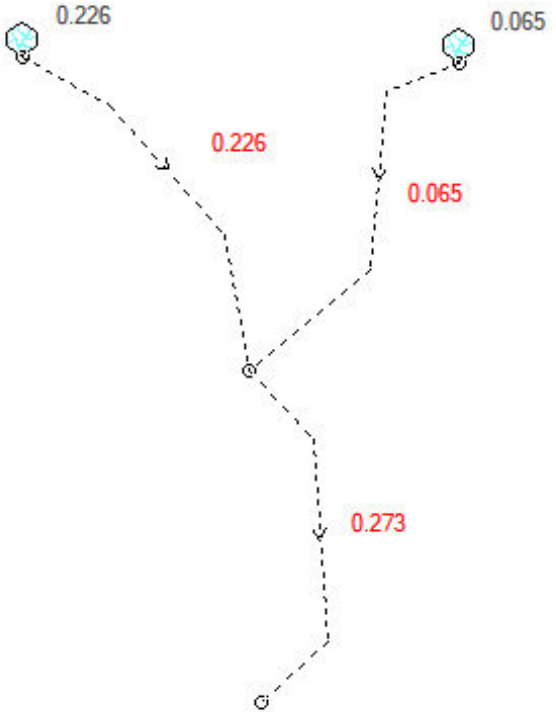


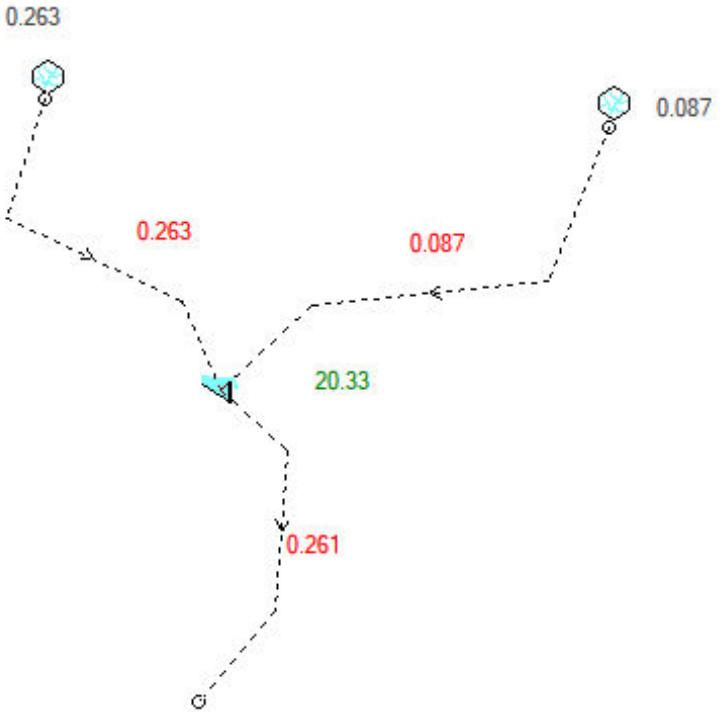
Results for median storm in critical 1EY ensembles
using Lite hydraulic model.



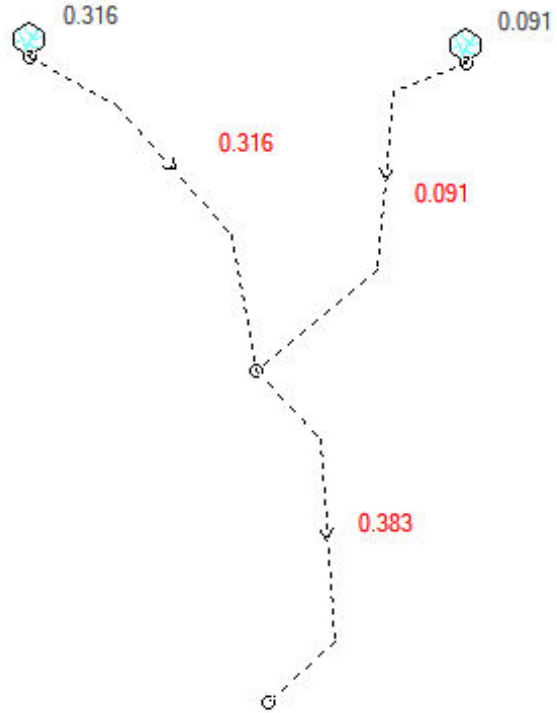


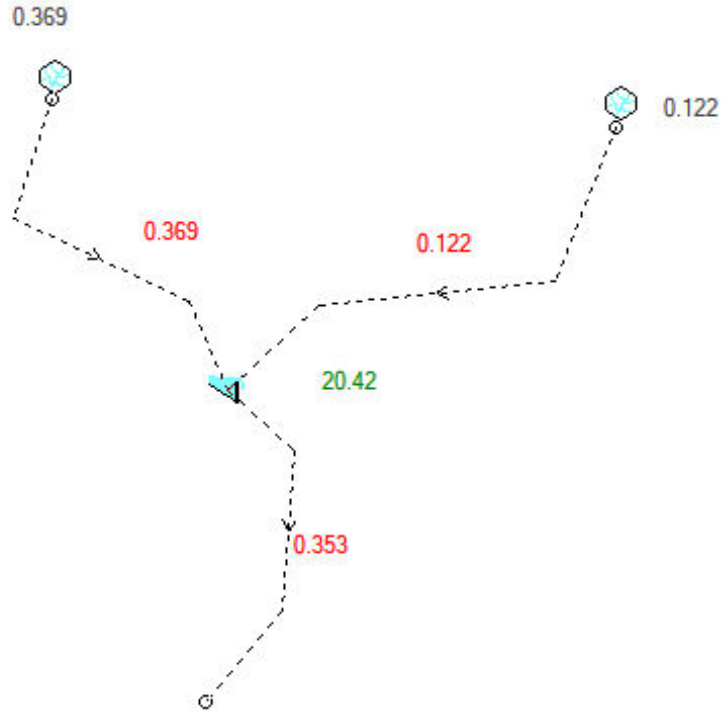
Results for median storm in critical 0.5EY ensembles
using Lite hydraulic model.



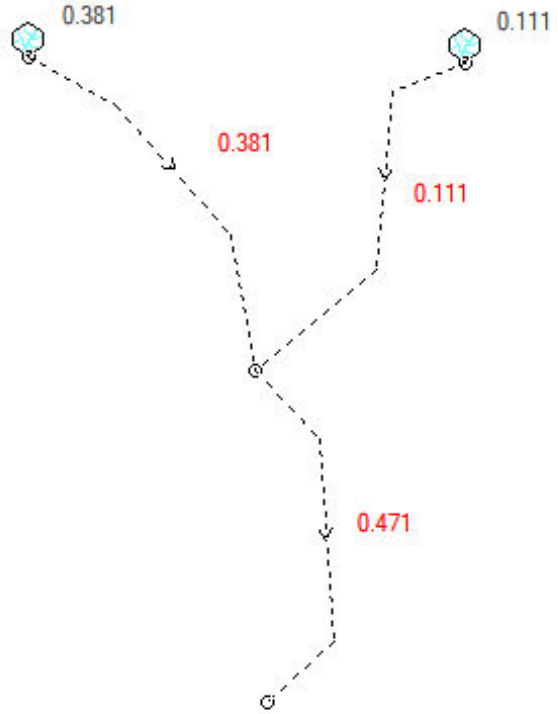


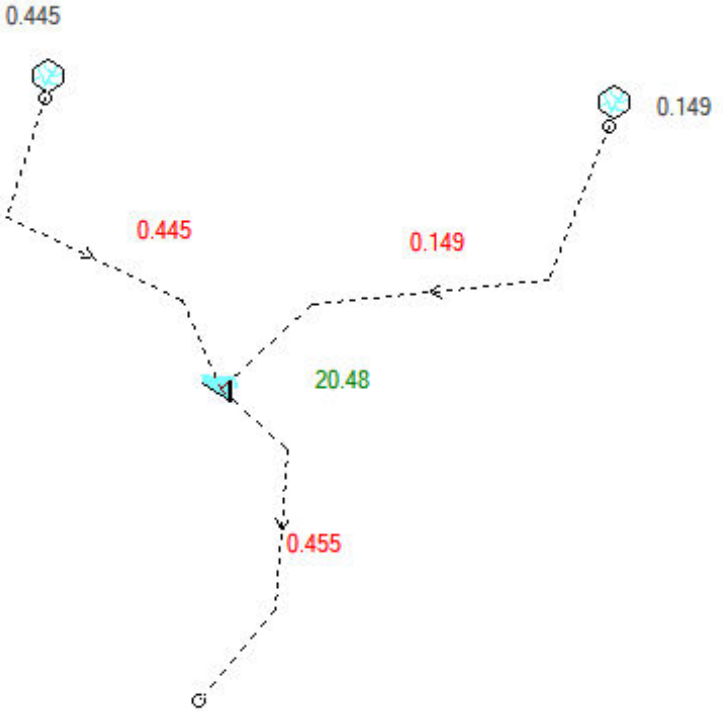
Results for median storm in critical 0.2EY ensembles
using Lite hydraulic model.



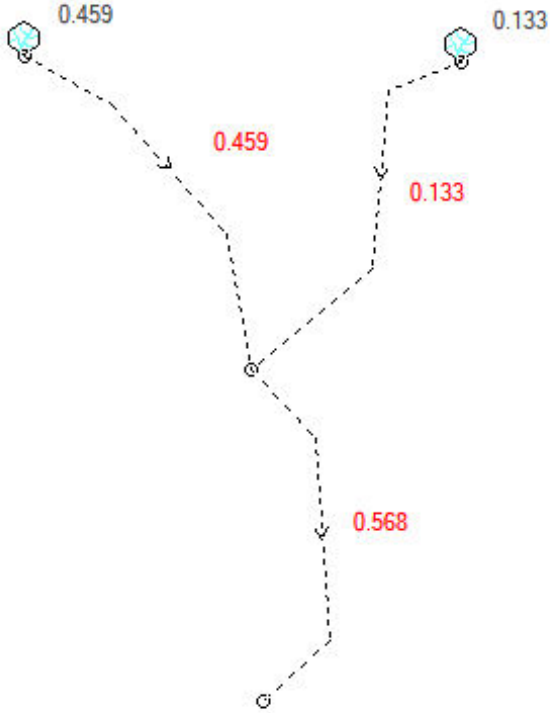


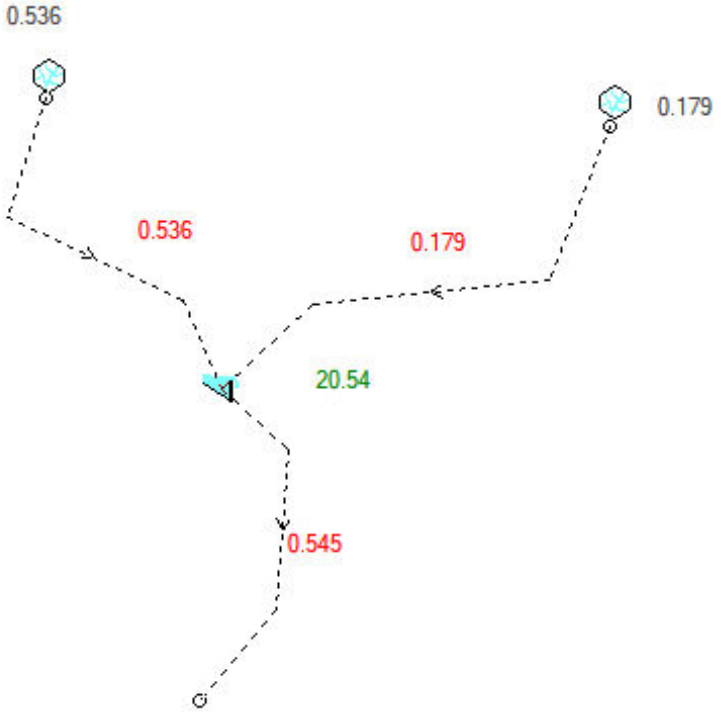
Results for median storm in critical 10% AEP ensembles using Lite hydraulic model.



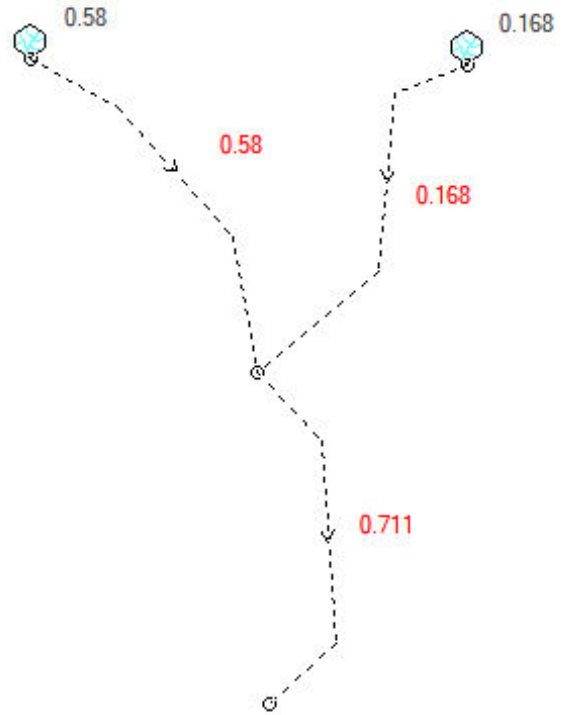


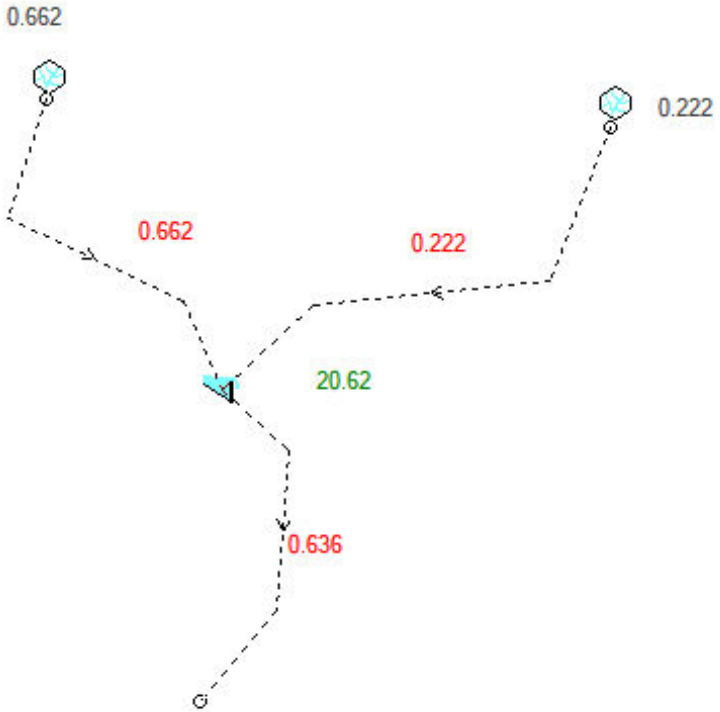
Results for median storm in critical 5% AEP ensembles using Lite hydraulic model.



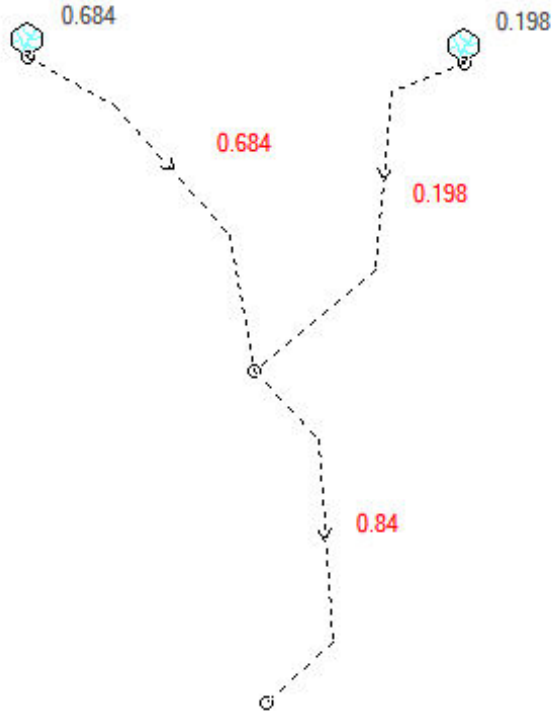


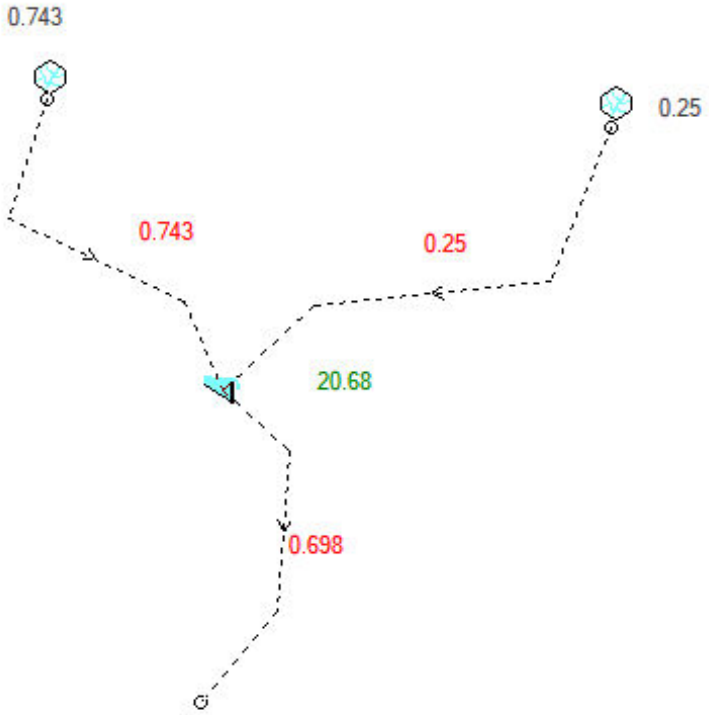
Results for median storm in critical 2% AEP ensembles using Lite hydraulic model.





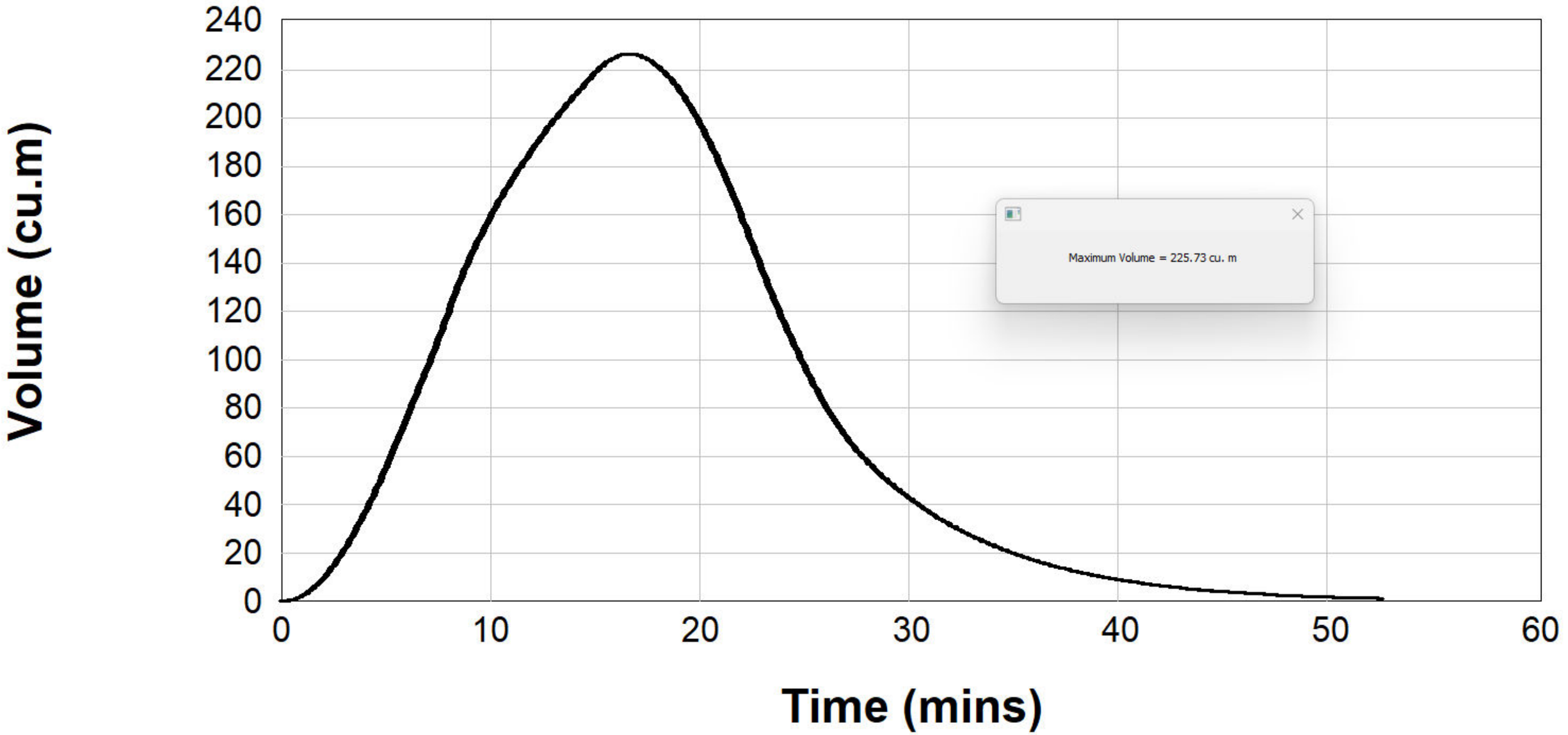
Results for median storm in critical 1% AEP ensembles using Lite hydraulic model.





Basin Storage Volume - 1% AEP, 15 min burst, Storm 6

File Edit Properties



APPENDIX D

ARCHITECTURAL PLAN

D.A ISSUE

PROPERTY DESCRIPTION
LOTS 73 & 74 on RP 210268

COUNCIL: LOGAN CITY COUNCIL

DEVELOPMENT ASSESSMENT

TOTAL SITE AREA	- 26,633m²
LANDSCAPED AREA	- 18,024m²
EXISTING SITE COVER (INCLUDES ALL ROOFED AREAS)	- 3.25%
PROPOSED SITE COVER (INCLUDES ALL ROOFED AREAS)	- 5.5%

BUILDING AREA - GFA

• EXISTING SERVICE STATION	- 347m²
• T1 - FOOD & DRINK OUTLET (INCLUDES INTERNAL REFUSE AREA)	- 265m²
• T2 - FOOD & DRINK OUTLET	- 287m²
TOTAL BUILDING GFA	- 899m²

MISCELLANEOUS AREAS

• EXISTING FORECOURT CANOPY	- 463m²
• EXIST. SERVICE STN SERVICES	- 65m²
• T2 REFUSE/SERVICES	- 40m²
TOTAL MISC. AREAS	- 568m²

CAR PARKING
(EXCLUDES EXISTING SERVICE STATION/FOOD)

• NEW PARKING REQUIRED	- 56
• NEW PARKING PROVIDED (EXCLUDES T1 & T2 WAITING BAYS) (EXCLUDES EXISTING SERVICE STATION PARKING)	- 59

LEGEND

- DENOTES PROPOSED RETAINING. REFER NOTES AND CIVIL DESIGN DRAWINGS
- DENOTES PROPOSED ACOUSTIC BARRIER. REFER NOTES OF HEIGHTS, AND ACOUSTIC REPORT
- POTENTIAL KOALA REHABILITATION
- EXTENT OF (HIGH HAZARD) FLOOD MAPPING

AREAS OF TALL/DENSE LANDSCAPING SHOWN HATCHED. REFER TO LANDSCAPING PLANS FOR DETAILS

EXTENT OF ACOUSTIC BARRIER ON TOP OF RETAINING, SHOWN DASHED BLUE.

EXTENT OF RETAINING SHOWN RED. REFER TO CIVIL DRAWINGS FOR DETAILS

EXTENT OF KOALA OVERLAY SHOWN DASHED RED

APPROX. LINE OF PRIMARY VEGETATION MANAGEMENT AREA

T1 FOOD & DRINK

DELIVERY/REFUSE COLLECTION BAY

D/THRU ENTRY

EXISTING ENTRY/EXIT

WATERFORD TAMBORINE ROAD

SITE BOUNDARY

EXISTING FUEL DISPENSING FORECOURT RL 24.00

EXISTING SERVICE STATION AND FOOD & DRINK RL 24.35

EXISTING D/THRU LANE

EXISTING BUS STOP

EXISTING CROSSOVER TO BE RETAINED

EXISTING EXIT ONLY

T2 FOOD & DRINK

AREAS OF TALL/DENSE LANDSCAPING SHOWN HATCHED. REFER TO LANDSCAPING PLANS FOR DETAILS

EXTENT OF RETAINING SHOWN RED. REFER TO CIVIL DRAWINGS FOR DETAILS

ACOUSTIC BARRIER ON TOP OF RETAINING, SHOWN DASHED BLUE. REFER TO ACOUSTIC REPORT FOR DETAILS

Consulting Engineer

VERVE DESIGN GROUP

BUILDING DESIGNERS LICENCE No. 1002212 PH. 07 3857 0942

OFFICE 2, LEVEL 1, 488 LUTWYCHE ROAD, LUTWYCHE QLD 4030 E. info@vervedesigngroup.com.au

imagine □ create □ deliver

□ commercial / industrial / retail
□ fast food restaurant design
□ travel centre / service stations
□ project concept to completion

Revision and approvals

Code	Date	Drn	Description	Dwn
A	12.02.2025	GN	D.A ISSUE	

Project Description
PROPOSED FOOD & DRINK OUTLETS
1332-1346 WATERFORD-TAMBORINE ROAD, LOGAN VILLAGE

Scale 1:500 @ A1 / 1:1000 @A3
Drawn
Approved
Issued

Drawing Title
PROPOSED SITE PLAN

Drawing Number 24198-DA02

Revision A

SKETCHES

Concept Overall Site Plan	240527 SK0
Concept Erosion and Sediment Control Plan Sheet 1 of 2	240527 SK1
Concept Erosion and Sediment Control Plan Sheet 2 of 2	240527 SK2
Concept Erosion and Sediment Control Details	240527 SK3
Concept Stormwater Management Plan Sheet 1 of 2	240527 SK4
Concept Stormwater Management Plan Sheet 2 of 2	240527 SK5
Concept Stormwater Details Plan	240527 SK6
Concept Catchment Plan	240527 SK7
Concept MUSIC Catchment Plan	240527 SK14
Concept External Catchment Plan	240527 SK15
Concept Diversion Drian Plan	240527 SK16

LEGEND

- PROPOSED STORMWATER RETICULATION
- PROPOSED KERB
- PROPOSED WATER RETICULATION
- PROPOSED SEWERAGE RETICULATION
- PROPOSED SWALE DRAIN
- EXISTING CONTOUR
- EXISTING WATER
- EXISTING STORMWATER
- EXISTING SEWER
- BUILDING HYDRAULICS (BY OTHERS)
- ACOUSTIC FENCE (BY OTHERS)
- PROPOSED WALLS (RW1)
- KOALA OVERLAY
- FLOOD HAZARD AREA
- PROPOSED VEGETATION REHABILITATION AREA

No.	DATE	ISSUE	REVISED	CHECKED
P3	02/25	PARKING UPDATE	J.L	J.A.W.
P2	01/25	ROAD , PARKING WALL UPDATES	J.L	J.A.W.
P1	01/25	ORIGINAL ISSUE	J.L	J.A.W.

IN ASSOCIATION WITH

PRELIMINARY
NOT FOR CONSTRUCTION

SCALE A 0 5 10 1 : 250

SCALE B

DATUM ???? SCALES SHOWN ARE AT A1 SIZE

COZENS REGAN GROUP PTY LTD
CONSULTING ENGINEERS • CIVIL • STRUCTURAL
SUITE 7 ADVANCE BUSINESS CENTRE
39 LAWRENCE DRIVE NERANG
PO BOX 2711 NERANG QLD 4211
P: (07) 5578 4100
F: (07) 5578 4092
E: mail@cozreg.com.au
W: www.cozreg.com.au
CONSULT AUSTRALIA Member Firm

DESIGNED	JL/JAW
DRAWN	JL
CHECKED	JAW

APPROVED FOR AND ON BEHALF OF COZENS REGAN WILLIAMS PROVE PTY LTD (RPEQ No 4)

(RPEQ No 4536)

CLIENT: BANNER STC (LOGAN VILLAGE) PTY LTD

PROJECT: PROPOSED COMMERCIAL DEVELOPMENT
1332-1346 WATERFORD-TAMBORINE ROAD, LOGAN VILLAGE, QLD
CONCEPT OVERALL PLAN

JOB NO. 240527
DRAWING NO. SK00
ISSUE P1 P2 P3

IMPORTANT NOTE:

BEFORE YOU DIG www.byda.com.au

ALL UNDERGROUND SERVICES SHOULD BE LOCATED ONSITE BY RELEVANT AUTHORITIES BEFORE ANY WORK IS COMMENCED.

UNDER QUEENSLAND LEGISLATION, THE GENERAL BIOSECURITY OBLIGATION REQUIRES ALL REASONABLE STEPS TO BE TAKEN TO PREVENT THE SPREAD OF FIRE ANTS.

ALL SUSPECTED SIGHTINGS OF FIRE ANTS MUST BE REPORTED WITHIN 24 HOURS OF THEIR DISCOVERY (PH: 13 25 23). THE MOVEMENT OF FIRE ANTS IS PROHIBITED. FAILING TO COMPLY MAY INCUR PENALTIES.

THE CONTRACTOR SHALL ACQUIRE THE NECESSARY PERMITS AND EDUCATION TO MOVE ORGANIC MATERIALS THAT MAY CONTAIN FIRE ANTS.

LEGEND

- PROPOSED VEGETATION REHABILITATION AREA
- DENOTES TEMPORARY SILTATION CONTROL
- DSP — DENOTES DRAINAGE STRUCTURE PROTECTION.
- TEMPORARY CONSTRUCTION ACCESS SEDIMENT TRAP
- STABILISED DIVERSION BUND / DIVERSION DRAIN
- ROCK CHECK DAM
- SB1 — TEMPORARY SEDIMENT BASIN

SEDIMENT FENCE

STABILISED DIVERSION DIVERTING UPSTREAM CLEAN WATER CLEAR OF WORK AREA

STABILISED CONSTRUCTION ACCESS

PROPOSED TEMPORARY BASIN IF REQUIRED , FINAL LOCATION AND SIZE T.B.C AT OPW STAGE DEPENDANT ON PROPOSED DEVELOPMENT STAGING

STABILISED DIVERSION BUND TO PROPOSED TEMPORARY BASIN

STABILISED CONSTRUCTION ACCESS

VEGETATION MANAGEMENT LINE

73 RP210268 · 35 RP224392 · 72 RP210268

No.	DATE	ISSUE	REVISED	CHECKED
P2	01/25	ROAD , PARKING WALL UPDATES	J.L	J.A.W.
P1	01/25	ORIGINAL ISSUE	JL	J.A.W.

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SCALE A 0 2 4 6 8 10 1 : 200

SCALE B

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APPROVED FOR AND ON BEHALF OF COZENS REGAN WILLIAMS PROVE PTY LTD (RPEQ No 4)

(RPEQ No 4536)

CLIENT: BANNER STC (LOGAN VILLAGE) PTY LTD

PROJECT: PROPOSED COMMERCIAL DEVELOPMENT
1332-1346 WATERFORD-TAMBORINE ROAD, LOGAN VILLAGE, QLD
CONCEPT EROSION AND SEDIMENT CONTROL PLAN - SHEET 1 OF 2

JOB NO. 240527
DRAWING NO. SK01
ISSUE P1P2

IMPORTANT NOTE:

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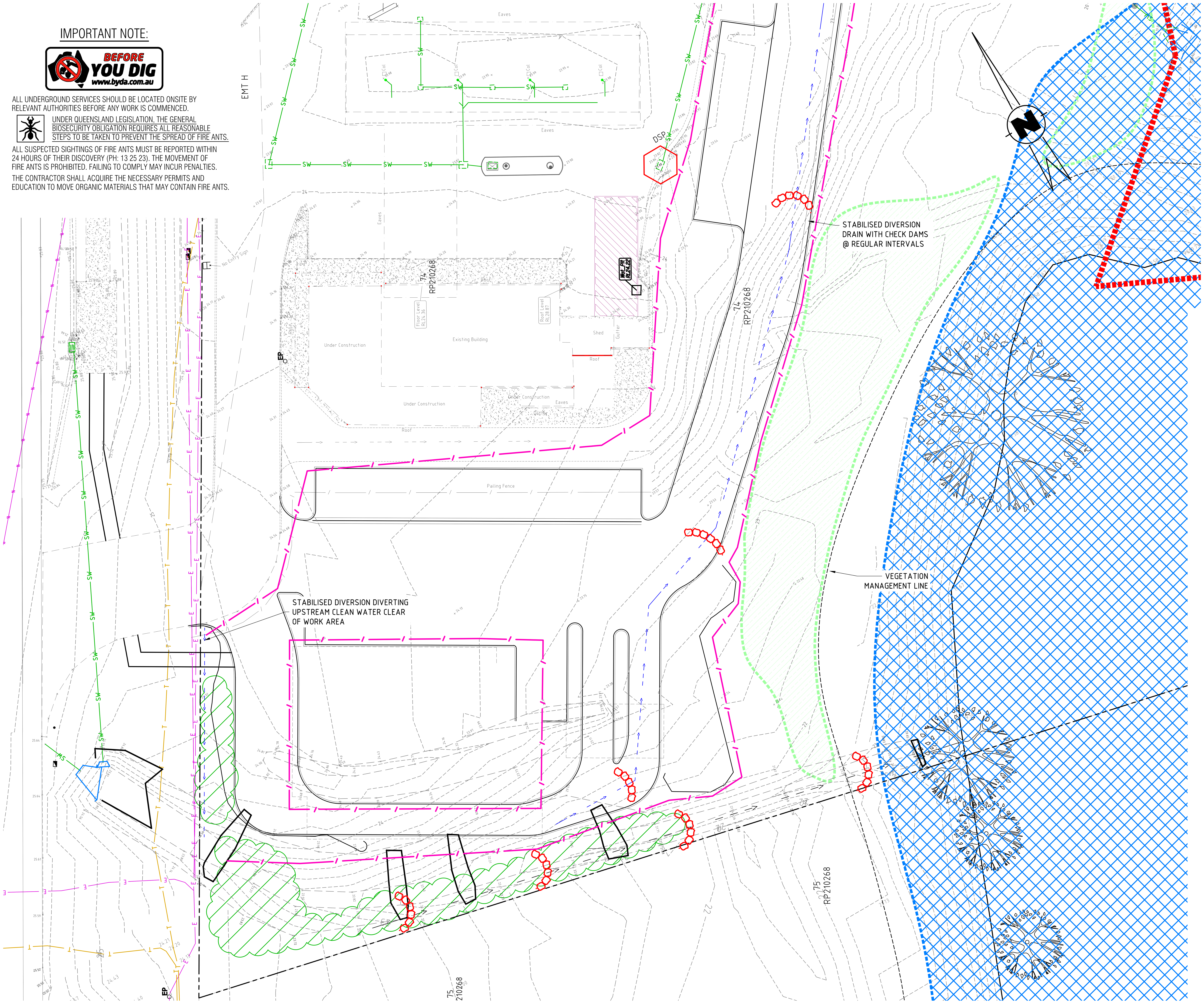

LEGEND

- PROPOSED VEGETATION REHABILITATION AREA
- DENOTES TEMPORARY SILTATION CONTROL
- DSP — DENOTES DRAINAGE STRUCTURE PROTECTION.
- TEMPORARY CONSTRUCTION ACCESS SEDIMENT TRAP
- STABILISED DIVERSION BUND / DIVERSION DRAIN
- ROCK CHECK DAM
- SB1 — TEMPORARY SEDIMENT BASIN

NOTES : SEDIMENT CONTROL

1. CONSTRUCTION IS TO BE PROGRAMMED TO PROVIDE INSTALLATION OF PERIMETER LANDSCAPING/SURFACE TREATMENT AS EARLY AS PRACTICAL.
2. AT THE PRESTART MEETING THE CONTRACTORS WORKS PROGRAM IS TO BE REVIEWED. ALTERATIONS TO THE PROGRAM MAY BE REQUIRED TO ENSURE SATISFACTORY EROSION AND SEDIMENT CONTROL.
3. A PHOTOGRAPHIC RECORD OF SEDIMENT AND EROSION CONTROL DEVICES AND THE IMMEDIATE DOWNSTREAM STORMWATER SYSTEM IS TO BE CARRIED OUT ON A FORTNIGHTLY CYCLE AND AFTER EACH MAJOR STORM EVENT. CARRY OUT CORRECTIVE AND PREVENTATIVE ACTION AS REQUIRED.
4. PUBLIC AND WORKPLACE SAFETY ISSUES MUST BE CONSIDERED AND MONITORED FOR EACH DEVICE TO THE SATISFACTION OF THE SUPERINTENDENT,
5. WOVEN FABRICS ARE TO BE USED FOR SEDIMENT FENCE FILTER FABRIC.
6. SEDIMENT MANAGEMENT DEVICES SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES AND MAINTAINED AT A SUITABLE LEVEL/CONDITION THROUGHOUT CONSTRUCTION. SEDIMENT FENCES ARE TO BE CLEANED OUT WHEN CAPACITY IS REDUCED TO 30%. DRAINAGE STRUCTURE PROTECTION IS TO BE CLEANED FOLLOWING EACH SIGNIFICANT RUNOFF PRODUCING STORM.
7. THE CONTRACTOR SHALL PROVIDE TEMPORARY DRAINAGE CONTROL TO DIVERT FLOW FROM UNDISTURBED AREAS AROUND DISTURBED AREAS AND DIRECT FLOW FROM DISTURBED AREAS TOWARDS CONTROL DEVICES.
8. PONDED RAINFALL SHALL BE PUMPED THROUGH A SEDIMENT FENCE LOCATED ON THE SITE BEFORE DISCHARGING INTO THE DOWNSTREAM STORMWATER SYSTEM.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSPECTION AND MAINTENANCE OF SEDIMENT AND EROSION CONTROL DEVICES. ALL DEVICES ARE TO BE INSPECTED AT LEAST WEEKLY AND AFTER SIGNIFICANT PRODUCING STORMS.
10. IF EROSION AND SEDIMENT CONTROL DEVICES HAVE BEEN FOUND TO BE DEFICIENT OR FAILED IN SERVICE DUE TO UNFORESEEN CIRCUMSTANCES CORRECTIVE ACTION IS TO BE UNDERTAKEN BY THE CONTRACTOR IMMEDIATELY WHICH MAY INCLUDE AMENDMENTS/ADDITIONS TO THE ORIGINAL EROSION CONTROL PLANS. SUCH ADDITIONS OR AMENDMENTS ARE TO BE APPROVED BY THE SUPERINTENDENT.
11. STRAW BALES USED IN SEDIMENT DEVICES ARE TO BE REPLACED AFTER A MAXIMUM SERVICE PERIOD OF 6 WEEKS.
12. SEDIMENT MANAGEMENT DEVICES ARE TO BE MAINTAINED BY THE CONTRACTOR AS NOTED AND DETAILED UNTIL APPROVAL HAS BEEN GRANTED BY THE ENGINEER FOR THERE REMOVAL THE CONTRACTOR IS TO REMOVE AND DISPOSE OF THESE DEVICES OFF SITE.
13. ALL TEMPORARY ACCESS ROADS AND HARDSTAND AREAS ARE TO BE TRIMMED AND MAINTAINED IN A SERVICEABLE CONDITION FOR THE DURATION OF THE CONTRACT.
14. ALL TEMPORARY ACCESS ROADS AND HARDSTAND AREAS ARE TO BE REINSTATED TO THE SATISFACTION OF THE SUPERINTENDENT AT THE END OF THE CONTRACT.

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(RPEQ No 4536)

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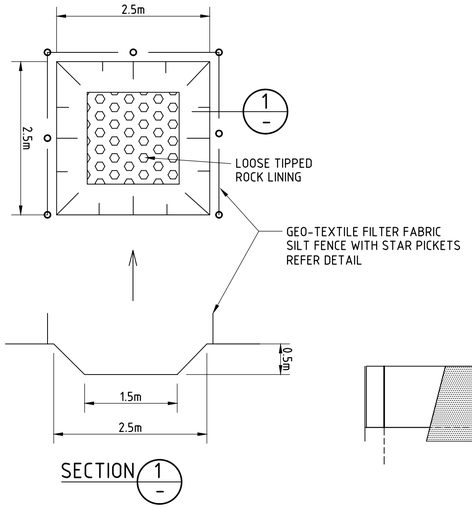
PROJECT: PROPOSED COMMERCIAL DEVELOPMENT
1332-1346 WATERFORD-TAMBORINE ROAD, LOGAN VILLAGE, QLD

CONCEPT EROSION AND SEDIMENT CONTROL PLAN - SHEET 2 OF 2

JOB NO. 240527

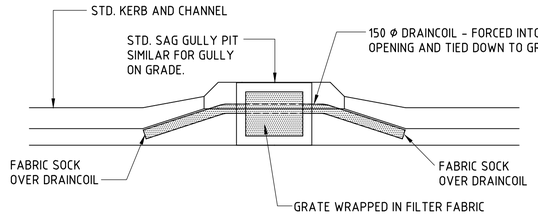
DRAWING NO. SK02

ISSUE P1 P2



SILTATION TRAP DETAILS

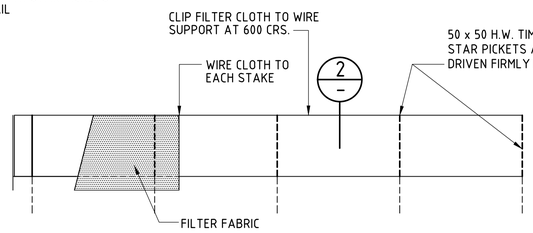
SCALE 1 : 50



SILTATION CONTROL AT GULLY PIT (EXISTING)

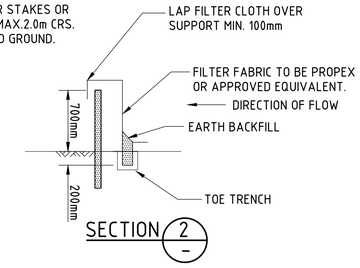
SCALE 1 : 50

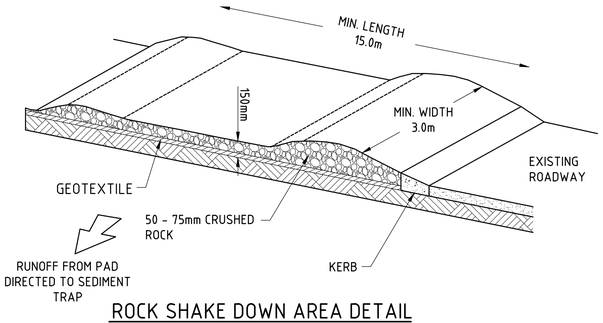
TO BE PROVIDED AT EXISTING GULLY PITS EXTERNAL TO SITE WHERE DIRECTED.



SEDIMENT FENCE DETAILS

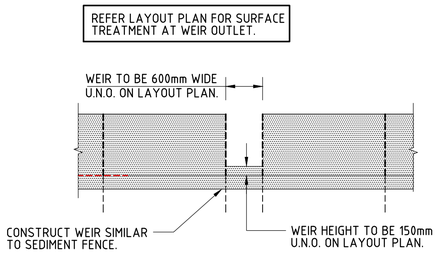
SCALE 1 : 50





ROCK SHAKE DOWN AREA DETAIL

SCALE N.T.S.

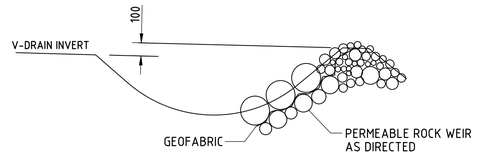


SEDIMENT FENCE WEIR

SCALE 1 : 50

NOTES : SEDIMENT CONTROL

1. REFER SK2 FOR NOTES



SEDIMENTATION POND DETAIL

SCALE 1:20

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(RPEQ No 4536)

CLIENT BANNER STC (LOGAN VILLAGE) PTY LTD

PROJECT PROPOSED COMMERCIAL DEVELOPMENT
1332-1346 WATERFORD-TAMBORINE ROAD, LOGAN VILLAGE, QLD
CONCEPT EROSION AND SEDIMENT CONTROL DETAILS

JOB NO. 240527

DRAWING NO. SK03

ISSUE P1

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GENERAL NOTES

1. FILLING TO ALLOTMENTS TO HAVE MINIMUM FALL 0.70% TO ROAD ALIGNMENT, OR TO PIPED DRAINAGE SYSTEM AT REAR .
2. ALL EXPOSED CLAY AND BARE SOIL ARE TO BE TOPSOILED AND GRASSED AS SPECIFIED, WITH MINIMUM SOIL DEPTH OF 100mm. A CATCH DRAIN IS TO BE CUT TO PROTECT SUCH GRASSED AREAS FROM SCOUR DURING INITIAL GROWTH.
3. SERVICE CONDUITS FOR WATER, ENERGEX , GAS AND TELSTRA/OPTUS ARE TO BE INSTALLED AS DIRECTED, AND IN ACCORDANCE WITH L.C.C. STANDARD DRAWING AND STANDARD SPECIFICATION.

DRAINAGE

1. STORMWATER DRAINAGE SHALL BE CONSTRUCTED IN ACCORDANCE WITH L.C.C. STANDARD DRAWINGS AND STANDARD SPECIFICATION FOR STORMWATER DRAINAGE CONSTRUCTION.
2. ALL PIPEWORK TO BE STEEL REINFORCED CONCRETE PIPE (SRCP) RUBBER RING JOINT UNLESS OTHERWISE APPROVED.
3. STORMWATER MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH L.C.C. STANDARD DRAWING. PROVIDE 100mm DIA. uPVC SEEPAGE DRAIN AROUND MANHOLE BASE TO DRAIN BACKFILL/BEDDING AS DIRECTED. 2.

LEGEND

- PROPOSED STORMWATER RETICULATION
- PROPOSED KERB
- PROPOSED WATER RETICULATION
- PROPOSED SEWERAGE RETICULATION
- PROPOSED SWALE DRAIN
- EXISTING CONTOUR
- EXISTING WATER
- EXISTING STORMWATER
- EXISTING SEWER
- BUILDING HYDRAULICS (BY OTHERS)
- ACOUSTIC FENCE (BY OTHERS)
- PROPOSED WALLS
- KOALA OVERLAY
- FLOOD HAZARD AREA
- PROPOSED VEGETATION REHABILITATION AREA

PROPOSED INLET PITS TO BE PROVIDED WITH SPEL STORMSACKS OR APPROVED EQUIVALENT

RELOCATE EXISTING STORMWATER TO SUIT PROPOSED LAYOUT

RELOCATE EXISTING STORMWATER TO SUIT PROPOSED LAYOUT

EXISTING BASIN DETENTION VOLUME 281m³ TO R.L 20.70 , REQUIRED DETENTION VOLUME 226m³

EXISTING 80m² BIORETENTION FILTER AREA

DISCHARGE TO EXISTING STORMWATER SYSTEM & MAKE GOOD

PROPOSED ADDITIONAL 40m² OF BIORETENTION AREA TO CREATE TOTAL 120m² BIORETENTION FILTER AREA

EXISTING DISCHARGE CONTROL PIT REFER SK06 FOR DETAILS

VEGETATION MANAGEMENT LINE

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P4	04/25	STORMWATER UPDATES	J.L	J.A.W.
P3	02/25	PARKING UPDATE	J.L	J.A.W.
P2	01/25	ROAD , PARKING WALL UPDATES	J.L	J.A.W.
P1	01/25	ORIGINAL ISSUE	J.L	J.A.W.

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(RPEQ No 4536)

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PROJECT: PROPOSED COMMERCIAL DEVELOPMENT
1332-1346 WATERFORD-TAMBORINE ROAD, LOGAN VILLAGE, QLD
CONCEPT STORMWATER MANAGEMENT PLAN 1 OF 2

JOB NO. 240527

DRAWING NO. SK04

ISSUE P1 P2 P3 P4

WATERFORD-TAMBORINE ROAD

RP210268

Under Construction
Existing Building
Shed
Roof
Gutter
Eaves
Paling Fence
No Entry Sign
Floor Level RL24.35
Roof Level RL28.83

PROPOSED INLET PITS TO BE PROVIDED WITH SPEL STORMSACKS OR APPROVED EQUIVALENT

VEGETATION MANAGEMENT LINE

EXISTING DAM WL 19.75

DUMPED ROCK SCOUR PROTECTION

TIE INTO EXISTING DRAIN & ENSURE FREE DRAINING

DRAINAGE EASEMENT , WIDTH VARIES T.B.C AT DETAILED DESIGN STAGE

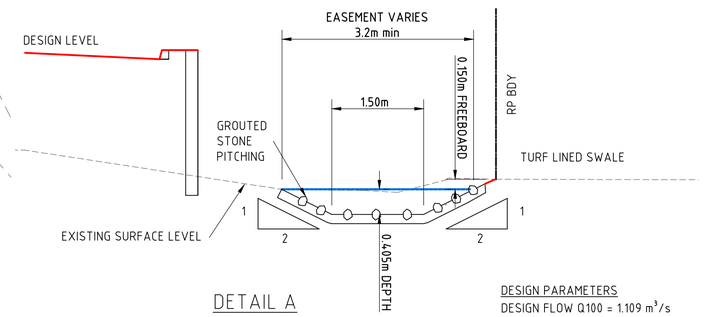
GROUTED STONE PITCHING TYPICAL

MODIFY EXISTING DRAIN TO ENSURE SUFFICIENT CAPACITY MAINTAINED, REFER SK16 FOR FURTHER DETAILS

CH 0.000
CH 10.000
CH 20.000
CH 30.000
CH 40.000
CH 50.000
CH 60.000
CH 70.000
CH 80.000

LEGEND

- PROPOSED STORMWATER RETICULATION
- PROPOSED KERB
- PROPOSED WATER RETICULATION
- PROPOSED SEWERAGE RETICULATION
- PROPOSED SWALE DRAIN
- EXISTING CONTOUR
- EXISTING WATER
- EXISTING STORMWATER
- EXISTING SEWER
- BUILDING HYDRAULICS (BY OTHERS)
- ACOUSTIC FENCE (BY OTHERS)
- PROPOSED WALLS (RW1)
- KOALA OVERLAY
- FLOOD HAZARD AREA
- PROPOSED VEGETATION REHABILITATION AREA



DETAIL A
SCALE - 1:50

DESIGN PARAMETERS

DESIGN FLOW Q100 = 1.109 m^3/s
GRADE = 1% min
MANNING'S 'n' = 0.025
DEPTH = 0.405m
dV = 0.6

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P1	01/25	ORIGINAL ISSUE	JL	J.A.W.

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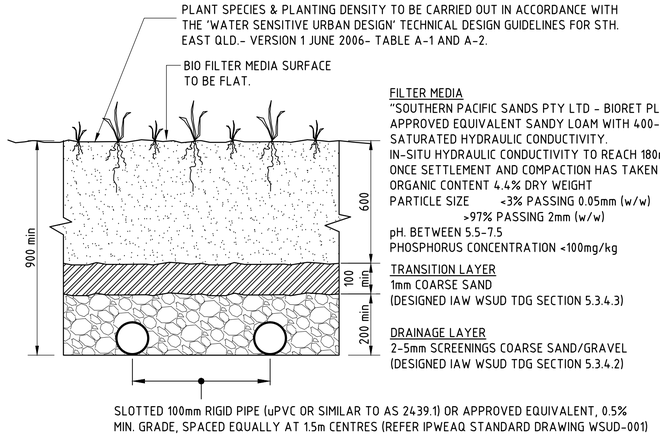
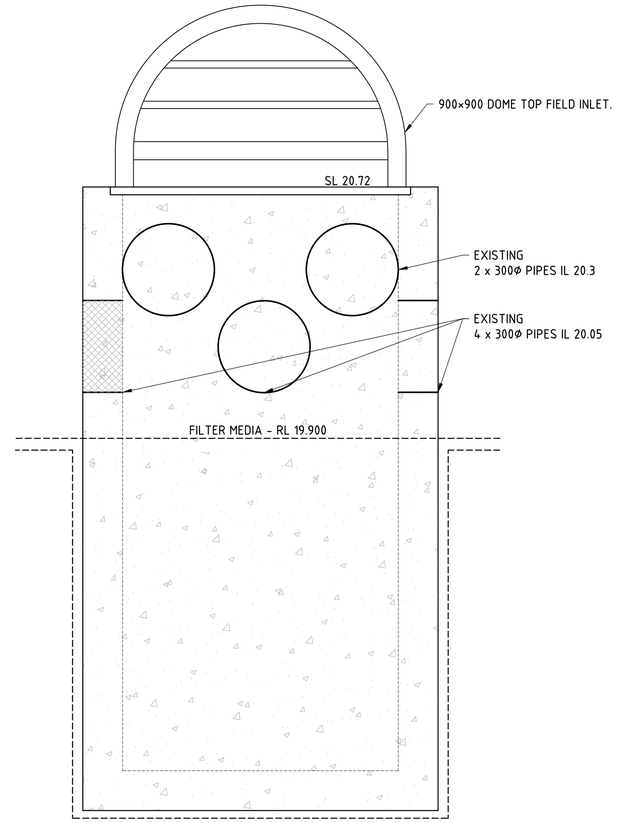
(RPEQ No 4536)

CLIENT: BANNER STC (LOGAN VILLAGE) PTY LTD
JOB NO. 240527
PROJECT: PROPOSED COMMERCIAL DEVELOPMENT
1332-1346 WATERFORD-TAMBORINE ROAD, LOGAN VILLAGE, QLD
DRAWING NO. SK05
CONCEPT STORMWATER MANAGEMENT PLAN 2 OF 2
ISSUE P1 P2 P3

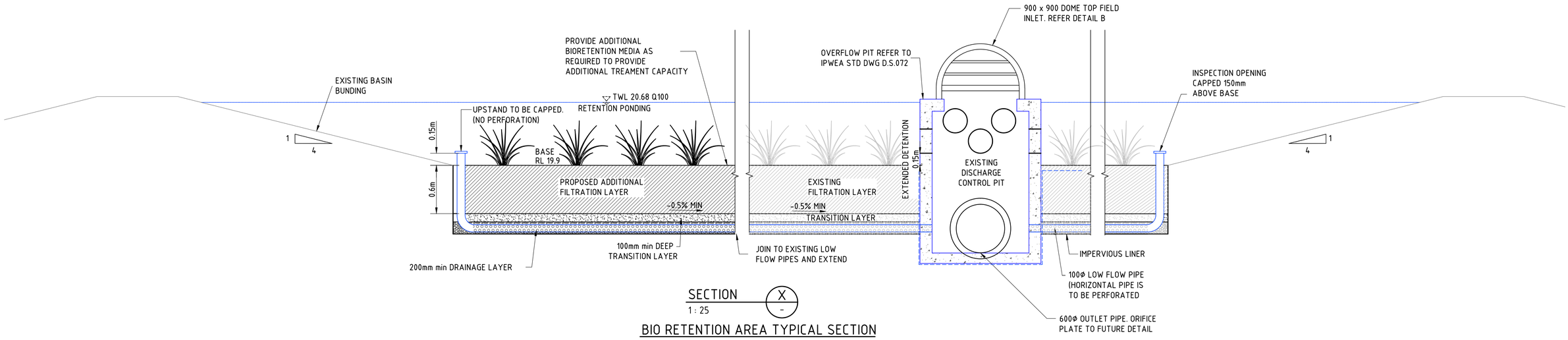


TYPICAL BIORETENTION SECTION



DISCHARGE CONTROL PIT ARRANGEMENT

SCALE 1:10



SECTION X - 1 : 25

BIO RETENTION AREA TYPICAL SECTION

SCALE 1:25

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PROJECT: PROPOSED COMMERCIAL DEVELOPMENT
1332-1346 WATERFORD-TAMBORINE ROAD, LOGAN VILLAGE, QLD
CONCEPT STORMWATER DETAILS

JOB NO. 240527

DRAWING NO. SK06

ISSUE P1 P2

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LEGEND

FLOW ARROWS

A — CATCHMENT NUMBER

CATCHMENT BOUNDARY

CATCHMENT TABLE

CATCHMENT No.	AREA
A	1.170 Ha.
B	0.405 Ha.

STOCKLEIGH ROAD

WATERFORD-TAMBORINE ROAD

VEGETATION MANAGEMENT LINE

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CONCEPT CATCHMENT PLAN

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ALL SUSPECTED SIGHTINGS OF FIRE ANTS MUST BE REPORTED WITHIN 24 HOURS OF THEIR DISCOVERY (PH: 13 25 23). THE MOVEMENT OF FIRE ANTS IS PROHIBITED. FAILING TO COMPLY MAY INCUR PENALTIES.

THE CONTRACTOR SHALL ACQUIRE THE NECESSARY PERMITS AND EDUCATION TO MOVE ORGANIC MATERIALS THAT MAY CONTAIN FIRE ANTS.

LEGEND

- EXISTING PAVEMENT
- EXISTING FOOTPATH
- EXISTING ROOF AREA
- PROPOSED PAVEMENT
- PROPOSED FOOTPATH
- PROPOSED ROOF AREA

NOTE: REMAINDER OF UNHATCHED AREA CONSIDERED AS LANDSCAPED AREA

- KOALA OVERLAY
- FLOOD HAZARD AREA
- PROPOSED VEGETATION REHABILITATION AREA

STOCKLEIGH ROAD

WATERFORD-TAMBORINE ROAD

A

B

VEGETATION MANAGEMENT LINE

No.	DATE	ISSUE	REVISED	CHECKED
P3	02/25	PARKING UPDATE	JL	J.A.W.
P2	01/25	ROAD , PARKING WALL UPDATES	JL	J.A.W.
P1	01/25	ORIGINAL ISSUE	JL	J.A.W.

IN ASSOCIATION WITH

PRELIMINARY
NOT FOR CONSTRUCTION

SCALE A 0 5 10 15 20 1 : 500

SCALE B

DATUM ???? SCALES SHOWN ARE AT A1 SIZE

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CONSULT AUSTRALIA Member Firm

DESIGNED	JL/JAW
DRAWN	JL
CHECKED	JAW

APPROVED FOR AND ON BEHALF OF COZENS REGAN WILLIAMS PROVE PTY LTD (RPEQ No 4)

(RPEQ No 4536)

CLIENT: BANNER STC (LOGAN VILLAGE) PTY LTD

PROJECT: PROPOSED COMMERCIAL DEVELOPMENT
1332-1346 WATERFORD-TAMBORINE ROAD, LOGAN VILLAGE, QLD
CONCEPT MUSIC CATCHMENT PLAN

JOB NO. 240527
DRAWING NO. SK14
ISSUE P1 P2 P3

WATERFORD TAMBORINE ROAD

STOCKLEIGH ROAD

EXTERNAL

CATCHMENT				
NAME	AREA (ha)	IMPERVIOUS (%)	Tc (min)	Q100 FLOW (m^3 / s)
EXTERNAL	1.966	40%	11	1.109

IMPORTANT NOTE:

BEFORE YOU DIG www.byda.com.au

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No.	DATE	ISSUE	REVISED	CHECKED
P1	04/25	ORIGINAL ISSUE	JL	JAW

IN ASSOCIATION WITH

PRELIMINARY
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SCALE A 0 5 10 15 20 1 : 500

SCALE B

DATUM ???? SCALES SHOWN ARE AT A1 SIZE

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DRAWN	TCM
CHECKED	JAW

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(RPEQ No 4536)

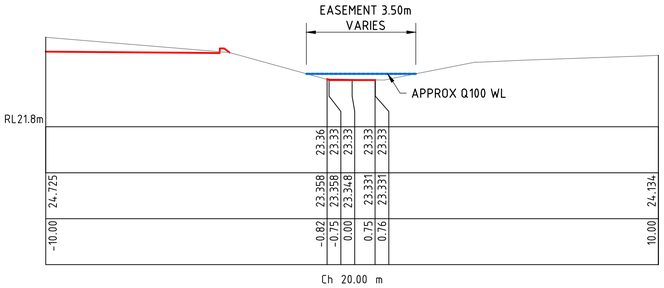
CLIENT: BANNER STC (LOGAN VILLAGE) PTY LTD

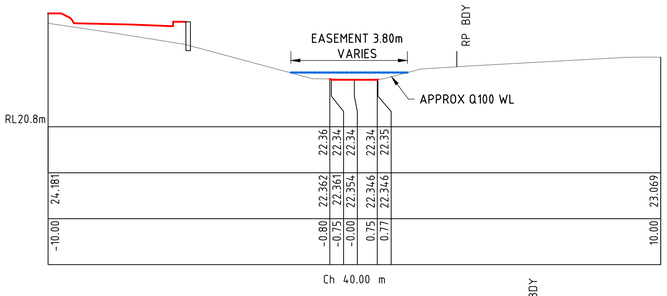
PROJECT: PROPOSED COMMERCIAL DEVELOPMENT
1332-1346 WATERFORD-TAMBORINE ROAD, LOGAN VILLAGE, QLD
EXTERNAL STORMWATER CATCHMENT PLAN

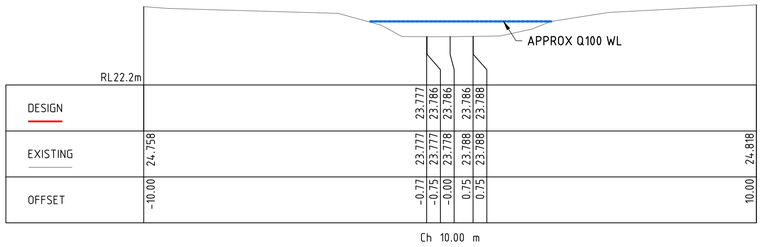
JOB NO. 240527

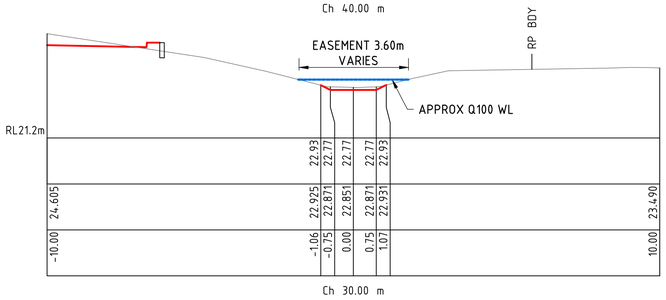
DRAWING NO. C27

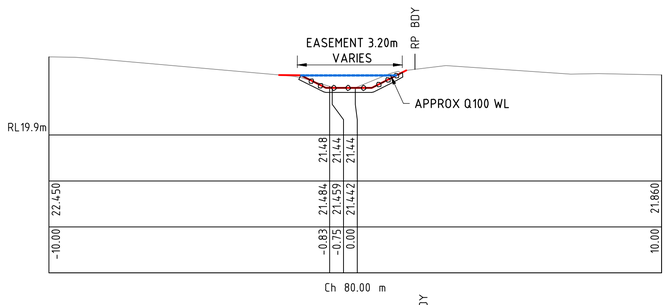
ISSUE P1

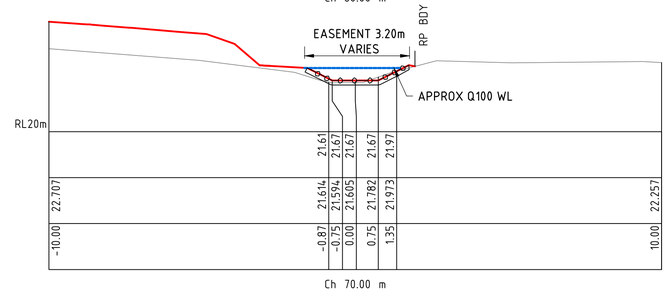


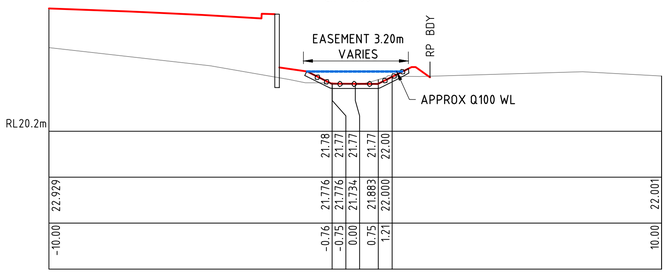


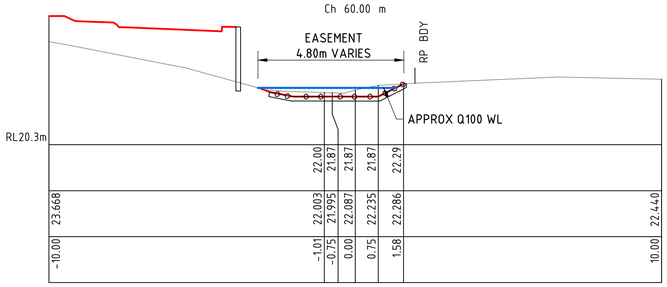


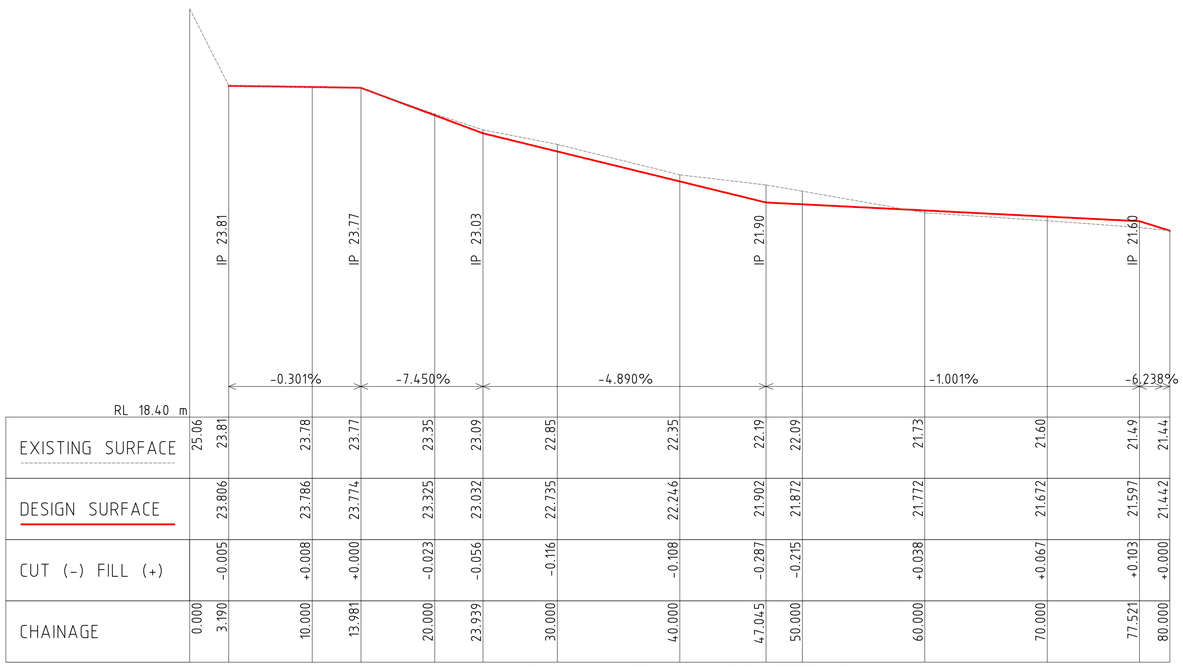












LONGITUDINAL SECTION -CL PERIMETER DRAIN
SCALE 1:250 H 1:50 V

No.	DATE	ISSUE	REVISED	CHECKED
P1	04/25	ORIGINAL ISSUE	J.L	J.A.W.

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0 1 2 3 4 5 — 1 : 100
SCALE B 0 1 2 — 1 : 50
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DRAWN	J.L
CHECKED	J.A.W

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(RPEQ No 4536)

CLIENT BANNER STC (LOGAN VILLAGE) PTY LTD

PROJECT PROPOSED COMMERCIAL DEVELOPMENT
1332-1346 WATERFORD-TAMBORINE ROAD, LOGAN VILLAGE, QLD
CONCEPT DIVERSION DRAIN DETAILS

JOB NO. 240527
DRAWING NO. SK16
ISSUE P1