## STORMWATER MANAGEMENT REPORT

40 BRYANT STREET, PADSTOW

08 April 2024

JOB NO. 220628

PREPARED FOR ALGORRY ZAPPIA & ASSOCIATES

#### SYJ CONSULTING ENGINEERS STAFF RESPONSIBLE FOR THIS REPORT WERE:

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certifier – Stormwater, Registered certifier – Structural

Job Code 220628

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#### 1. INTRODUCTION

SYJ Consulting Engineers has been engaged for the preparation of Stormwater Strategy suitable for Development Application for the proposed work at 40 Bryant St, Padstow (Site).

#### 1.1. Site Description

The site is currently occupied by existing industrial buildings and concrete pavements. The site falls from South to North with an average grade of 3.3%.

The total area of the development site is approximately 1.047 hectares. Pre-development impervious ratio is 85% with 15% pervious coverage.

#### 1.2. Proposed Development

The proposed development includes the demolition of existing structures and pavement to facilitate the construction of a 2-storey light-industrial building including 52 units, and a public driveway with parking.

#### 2. REFERENCES

In our assessment we have considered the following documents:

- Australian Rainfall & Runoff 1987
- Canterbury-Bankstown Development Control Plan 2023
- Canterbury-Bankstown Development Control Plan 2023 Development Engineering Standards Guide
- Stormwater System Report by City of Canterbury Bankstown
- Managing Urban Stormwater "The Blue Book", Soil & Construction 4<sup>th</sup> Edition March 2004



#### 3. STORWMATER QUANTITY MANAGEMENT

As per the Canterbury Bankstown Development Control Plan, the stormwater quantity management requirements are as follows:

- OSD must be designed and constructed to control stormwater runoff from development sites such that, for 5 to 100-year ARI events, peak stormwater discharges from the site do not exceed predevelopment stormwater discharges.
- Finished floor levels of existing and new buildings are to be set so they are a minimum of 0.3m above the OSD storage's maximum design water surface level and the spillway water level.

#### 3.1. Methodology

A DRAINS model was prepared to assist with the sizing of the on-site stormwater detention (OSD) tank for the proposed development.

The following table is a summary of the inputs used within the mode:

Parameter	Value
Impervious Area Initial Loss (mm)	1.5
Impervious Area Continuing Loss (mm/hr)	0
Pervious Area Initial Loss (mm)	23.1
Pervious Area Continuing Loss (mm/hr)	0.72
Overland Flow Equation	Kinematic Wave

The Rainfall Intensities were generated using the AR&R 2019 method.

#### 3.2. Pre-Development Conditions

The existing site is mainly impervious that includes buildings and concrete paved driveways. The site survey and aerial photograph were used to determine the approximate impervious fraction of the site to be used as part of the pre-development hydrological model.

The approximate impervious fraction of the site is 85%. That is, a 15% or approximately 1570sq.m of landscaping exists currently within the site.



#### 3.3. Post-Development Conditions

A DRAINS model was prepared to assess the extent of stormwater detention which is required to achieve the Canterbury Bankstown Council's stormwater quantity objectives of post-development flows not exceeding the predevelopment peak flow.

Although the proposed development proposed a similar site coverage as pre-development, some of the impervious areas are not able to drain to the OSD system due to topographical constrains. As such, maximum discharge from the OSD has been reduced to cater for the bypass flow.

Our DRAINS modelling show that a minimum of 103cu.m storage volume for the OSD is required with a plate orifice of 120mm. A Schematic DRAINS modelling results are shown below for both the 5-Year and 100-Year ARI storm events.

Refer to the attached Stormwater Drainage Concept Plan documenting the proposed OSD system in Appendix A.

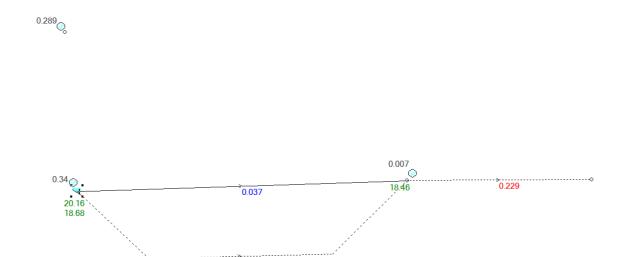


Figure 1. 5-Year ARI (20% AEP) Storm Event.

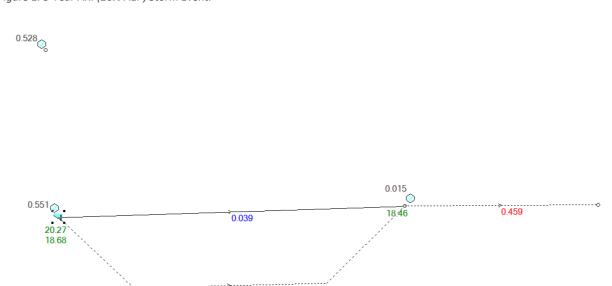


Figure 2. 100-Year ARI (1% AEP) Storm Event



AEP Event (%)	Total Pre-Development flow (m³/s)	Total Post-Development Flow (m³/s)	Is Post-Development less than the Pre-Development flow rate?	
1	0.528	0.468	Yes	
20	0.340	0.236	Yes	
50	0.243	0.167	Yes	

Table 1. DRAINS Summary Table

#### 4. STORMWATER QUALITY MANAGEMENT

As discussed with Council Development Engineers Raj Rajakumar, Stormwater filter cartridges are not required for the site. The proposed Silt Arrestor controls will be sufficient for the development.

The proposed development is located adjacent to an existing Sydney Water asset. A 3.25m x 2.43m encased sewer running from the south-west to the north-east direction, and located approximately 96m below the existing grade.



#### 5. CONCLUSION

The provision of an OSD system as documented in attached Stormwater Concept Design in Appendix A shows:

- OSD must be designed and constructed to control stormwater runoff from development sites such that, for 5 to 100-year ARI events, peak stormwater discharges from the site do not exceed predevelopment stormwater discharges.
- Finished floor levels of existing and new buildings are to be set so they are a minimum of 0.3m above the OSD storage's maximum design water surface level and the spillway water level.

The utilisation of a Water Sensitive Urban Design which incorporates best practice treatment methodologies enables the stormwater quality to be met as descripted in Section 4.

It can therefore be concluded that the proposed stormwater drainage strategy for the proposed development is compliant with Canterbury Bankstown Council's relevant standards.

Prepared By:

**WEI SHI** 

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Registered certifier – Road and Drainage

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Registered certifier – Structural



#### 6. APPENDIX A – STORMWATER DRAINAGE PLAN

# PROPOSED DEVELOPMENT

## STORMWATER 220628 40 BRYANT ST, PADSTOW

#### GENERAL NOTES

- THESE PLANS SHALL BE READ IN CONJUNCTION WITH OTHER RELEVANT CONSULTANTS'
  PLANS, SPECIFICATIONS, CONDITIONS OF DEVELOPMENT CONSENT AND CONSTRUCTION
  CERTIFICATE REQUIREMENTS.
- 2. WHERE THESE PLANS ARE NOTED FOR DEVELOPMENT APPLICATION PURPOSES ONLY, THEY SHALL NOT BE USED FOR OBTAINING A CONSTRUCTION CERTIFICATE NOR USED FOR CONSTRUCTION PURPOSES.
- SUBSOIL DRAINAGE SHALL BE DESIGNED AND DETAILED BY THE STRUCTURAL ENGINEER. SUBSOIL DRAINAGE SHALL BE CONNECTED INTO THE STORMWATER SYSTEM IDENTIFIED ON THESE PLANS.

#### STORMWATER CONSTRUCTION NOTES

- 1. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH AS/NZS 3500 (CURRENT EDITION) AND THE REQUIREMENTS OF THE LOCAL COUNCIL'S POLICIES AND CODES.
- 2. THE MINIMUM SIZES OF THE STORMWATER DRAINS SHALL NOT BE LESS THAN DN90 FOR CLASS 1 BUILDINGS AND DN100 FOR OTHER CLASSES OF BUILDING OR AS REQUIRED BY THE REGULATORY AUTHORITY AND SHALL BE SEWER GRADE upvc type SN8 MIN
- 3. THE MINIMUM GRADIENT OF STORMWATER DRAINS SHALL BE 1%, UNLESS NOTED OTHERWISE.
- 4. COUNCIL'S TREE PRESERVATION ORDER IS TO BE STRICTLY ADHERED TO. NO TREES SHALL BE REMOVED UNTIL PERMIT IS OBTAINED.
- 5. PUBLIC UTILITY SERVICES ARE TO BE ADJUSTED AS NECESSARY AT THE CLIENT'S EXPENSE.
- 6. ALL PITS TO BE BENCHED AND STREAMLINED. PROVIDE STEP IRONS FOR ALL PITS OVER 1.2m DEEP.
- 7. MAKE SMOOTH JUNCTION WITH ALL EXISTING WORK.
- 8. VEHICULAR ACCESS AND ALL SERVICES TO BE MAINTAINED AT ALL TIMES TO ADJOINING PROPERTIES AFFECTED BY CONSTRUCTION.
- 9. SERVICES SHOWN ON THESE PLANS HAVE BEEN LOCATED FROM INFORMATION SUPPLIED BY THE RELEVANT AUTHORITIES AND FIELD INVESTIGATIONS AND ARE NOT GUARANTEED COMPLETE NOR CORRECT. IT IS THE CLIENT & CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL PRIOR TO CONSTRUCTION.
- 10. ANY VARIATION TO THE WORKS AS SHOWN ON THE APPROVED DRAWINGS ARE TO BE CONFIRMED BY SYJ CONSULTING ENGINEERS PRIOR TO THEIR COMMENCEMENT.

#### EXISTING SERVICE LEGENDS

NOTES: ALL EXISTING SERVICE LINES ARE DRAWN SCHEMATICALLY AND NOT TO BE USED FOR CONSTRUCTION.

\_\_\_\_ s \_\_\_\_ EXISTING SEWER MAIN

EXISTING UNDERGROUND ELECTRICITY LINE

— — — — EXISTING UNDERGROUND COMMUNICATION LINE

\_\_\_\_w\_\_\_w\_\_\_

EXISTING UNDERGROUND WATER MAIN

DRAWING INDEX					
DRAWING NO. DRAWING TITLE					
D001 COVER SHEET					
D010 BASEMENT STORMWATER GENERAL ARRANGEMENT D011 BASEMENT STORMWATER MANAGEMENT PLAN -					
				D012	BASEMENT STORMWATER MANAGEMENT PLAN - 2
D020	SITE STORMWATER GENERAL ARRANGEMENT PLAN				
D021	SITE STORMWATER MANAGEMENT PLAN - 1				
D022	SITE STORMWATER MANAGEMENT PLAN - 2				
D030	STORMWATER DETAILS - 1				
D031	STORMWATER DETAILS - 2				
D040	POST DEVELOPMENT SITE CATCHMENTS PLAN				
D050 SITE EROSION AND SEDIMENTAL CONTROL PLAN					

#### SEDIMENT AND EROSION CONTROL

- 1. THESE NOTES ARE TO BE READ IN CONJUNCTION WITH LANDCOM'S SOILS AND CONSTRUCTION 'MANAGING URBAN STORMWATER'
- 2. SEDIMENT AND EROSION CONTROL SHALL BE IMPLEMENTED PRIOR TO AND MAINTAINED DURING AND AFTER THE CONSTRUCTION WORKS.
- 3. SOIL AND SEDIMENT CONTROL DEVICES SHALL BE AS SHOWN IN THE DRAWINGS. THE CONTRACTOR SHALL REGULARLY MAINTAIN ALL SEDIMENT AND EROSION CONTROL DEVICES AND REMOVE ACCUMULATED SEDIMENT FROM SUCH DEVICES BEFORE 50% CAPACITY IS USED. ALL THE ACCUMULATED SEDIMENT SHALL BE RE-SPREAD OR REMOVED IN ACCORDANCE WITH THE SUPERINTENDENTS INSTRUCTIONS. THE DEVICES SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL SUCH TIME AS THE DISTURBED AREAS HAVE BEEN REHABILITATED TO A CONDITION SATISFACTORY TO THE SUPERINTENDENT.
- 4. NO DISTURBANCE OF SITE PERMITTED OTHER THAN THE IMMEDIATE AREA OF THE WORKS.
- 5. COUNCIL TO RE-INSPECT TREES PRIOR TO THE CONSTRUCTION WORKS COMMENCING.
- 6. NO TREES ARE TO BE REMOVED WITHOUT PRIOR COUNCIL CONSENT.
- 7. VEHICULAR ACCESS TO THE SITE SHALL BE CONTROLLED THROUGH THE ACCESS POINTS IDENTIFIED ON THE DRAWINGS. VEHICLES NOT REQUIRED IN THE PERFORMANCE OF THE WORKS SHALL BE PARKED OFF SITE AWAY FROM DISTURBED AREAS.
- 8. A VEHICLE WASHDOWN BAY INCLUDING A 25mmØ HOSE SHALL BE PROVIDED.
- THESE PLANS ARE SUPPLEMENTARY TO THE CONTRACTORS EMP FOR CONSTRUCTION AND SHALL BE READ IN CONJUNCTION WITH THE BUILDING CONTRACTORS E&SC PLANS
- 10. THE CONTRACTOR SHALL ENSURE TEMPORARY CONTROLS DO NOT DAMAGE EXISTING STRUCTURES.
- 11. ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE INSTALLED PRIOR TO SITE DISTURBANCE.
- 12. ALL SEDIMENT CONTROL STRUCTURES TO BE INSPECTED FOLLOWING EACH RAINFALL EVENT FOR STRUCTURAL DAMAGE AND ALL TRAPPED SEDIMENT TO BE REMOVED TO A NOMINATED SITE.
- 13. THE CONTRACTOR SHALL INFORM ALL SUB-CONTRACTORS OF THEIR OBLIGATIONS UNDER THE EROSION AND SEDIMENT CONTROL PLAN
- 14. ALL FILLS ARE TO BE LEFT WITH A LIP AT THE TOP OF THE SLOPE AT THE END OF THE DAYS ACTIVITIES.
- 15. THE CONTRACTOR MUST ENSURE THE SUITABILITY AND INTEGRITY OF ALL WORKS AT THE END OF EACH DAYS
- 16. NOMINATED UNDISTURBED AREAS SHALL BE BARRICADED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
- 17. PUBLIC ROADS ARE TO BE SWEPT FREE OF DEBRIS
  RESULTING FROM CONSTRUCTION ACTIVITIES. SWEEPING
  SHALL BE UNDERTAKEN AT A MINIMUM TWICE WEEKLY.
- 18. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE LOCATED ON EXISTING ACCESS TRACKS OR ROADWAYS SO AS NOT TO ENCROACH ON TRAFFIC. ALL EROSION CONTROL MEASURES PLACED SHALL BE CLEARLY IDENTIFIABLE DURING BOTH DAY AND NIGHT. EROSION CONTROL MEASURES SHALL BE COORDINATED WITH THE CONTRACTORS TRAFFIC MANAGEMENT PLANS IN ORDER TO LIMIT 'CLUTTERING' OF THE EXISTING TRAFFICABLE AREAS.
- 19. PROVIDE 150mm TOPSOIL WITH TURF OR GRASS SEEDING ON ALL BATTERS & DISTURBED AREAS.
- 20. TURFED AREAS ADJACENT TO CONSTRUCTION AREA ARE TO BE MAINTAINED TO PROVIDE A VEGETATED BUFFER STRIP.
- 21. THE CONTRACTOR SHALL STRIP AND STOCKPILE TOPSOIL PRIOR TO EXCAVATION OR FILLING. TOPSOIL SHALL BE RESPREAD ON THE COMPLETION OF EARTHWORKS.
- 22. THE CONTRACTOR SHALL STABILISE ALL DISTURBED AREAS AND STOCKPILES WITHIN 14 DAYS.
- 23. THE CONTRACTOR SHALL INSTALL A MIN. 300mm WIDE STRIP OF TURF BEHIND THE KERB.
- 24. THE CONTRACTOR SHALL PROVIDE A MIN. 1m WIDE TURFING AROUND ALL SURFACE INLET PITS.



SITE LOCALITY PLAN NOT TO SCALE C ISSUE FOR DA APPROVAL J.S. L.L. 20/03/2024

B ISSUE FOR CO-ORDINATION ONLY J.S. L.L. 29/01/2024

A ISSUE FOR CO-ORDINATION ONLY J.S. L.L. 12/10/2023

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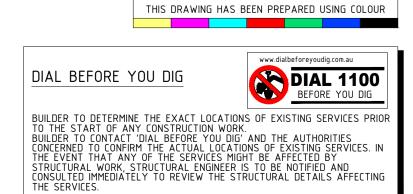
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PADSTOW

SHEET SUBJECT

ARCHITECT

COVER SHEET



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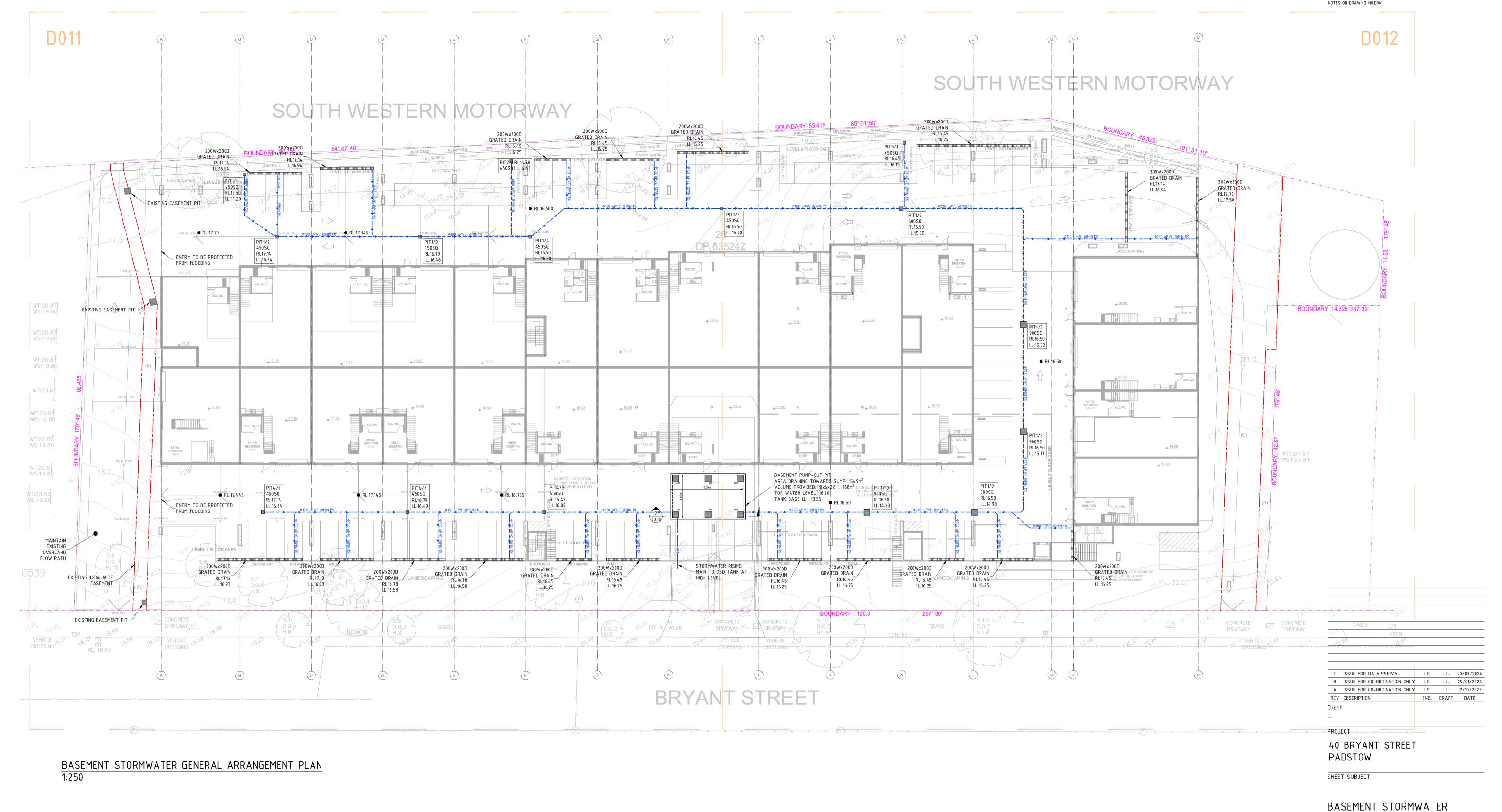
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GENERAL ARRANGEMENT PLAN

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SYJ CONSULTING
ENGINEERS CHILL STRUCTURAL
ENGINEERS FACADE!TRAFFIC!FLOOD

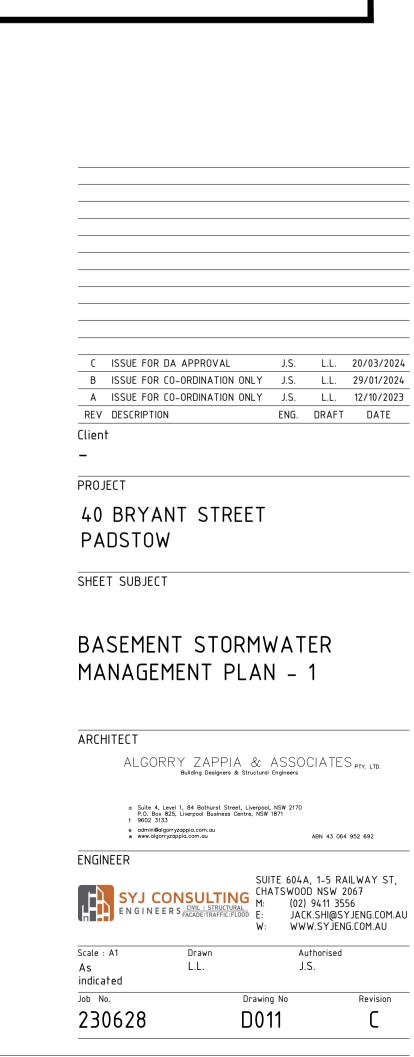
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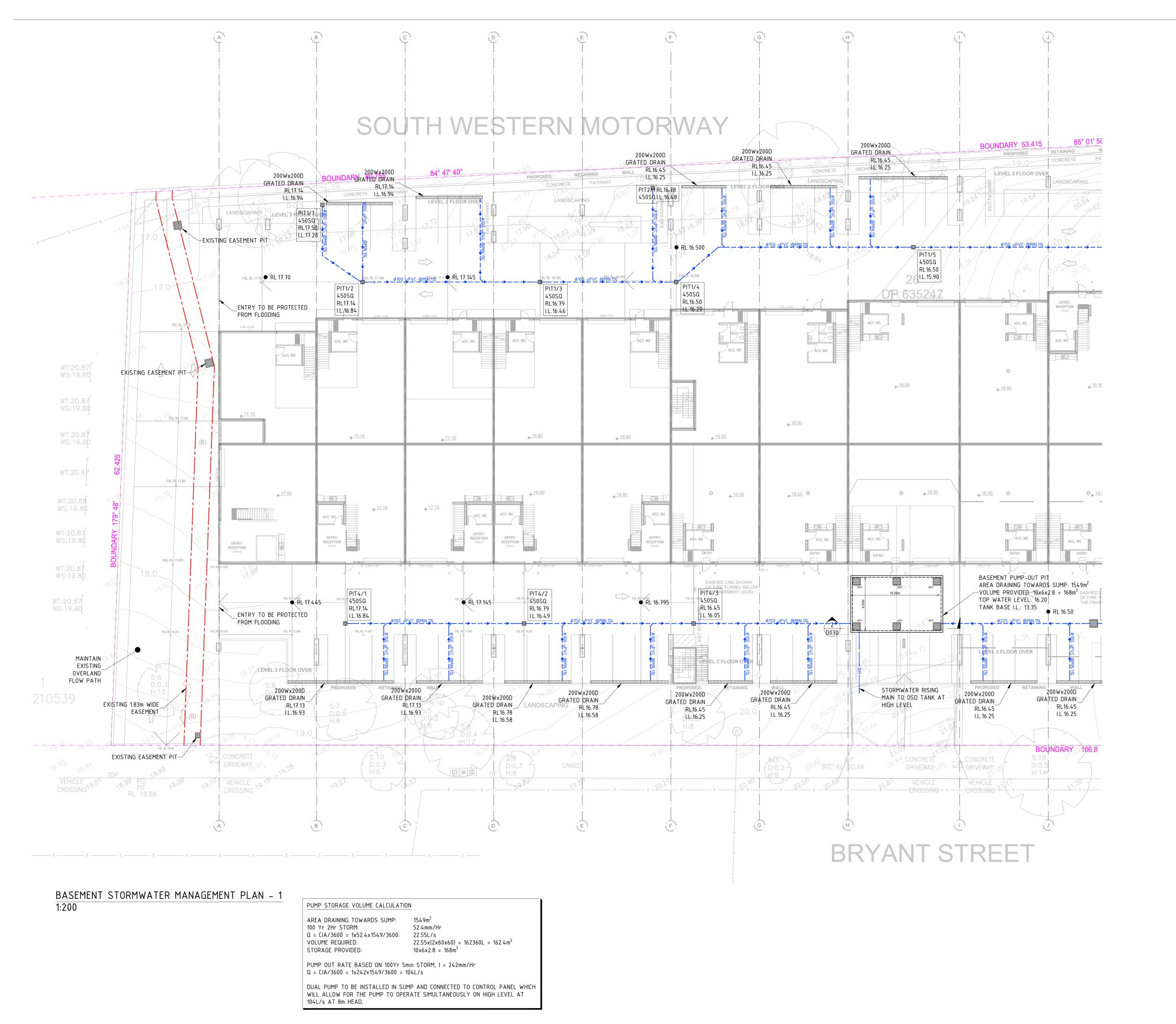
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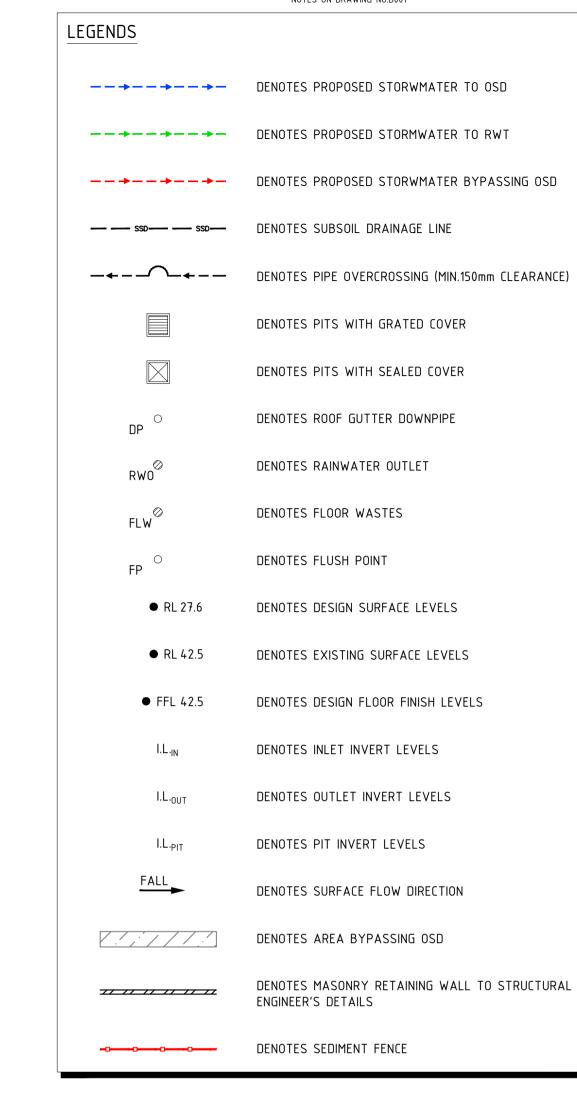
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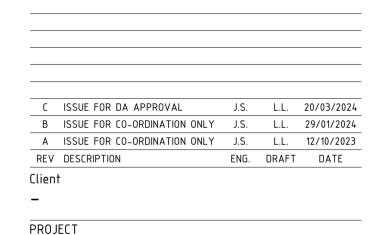
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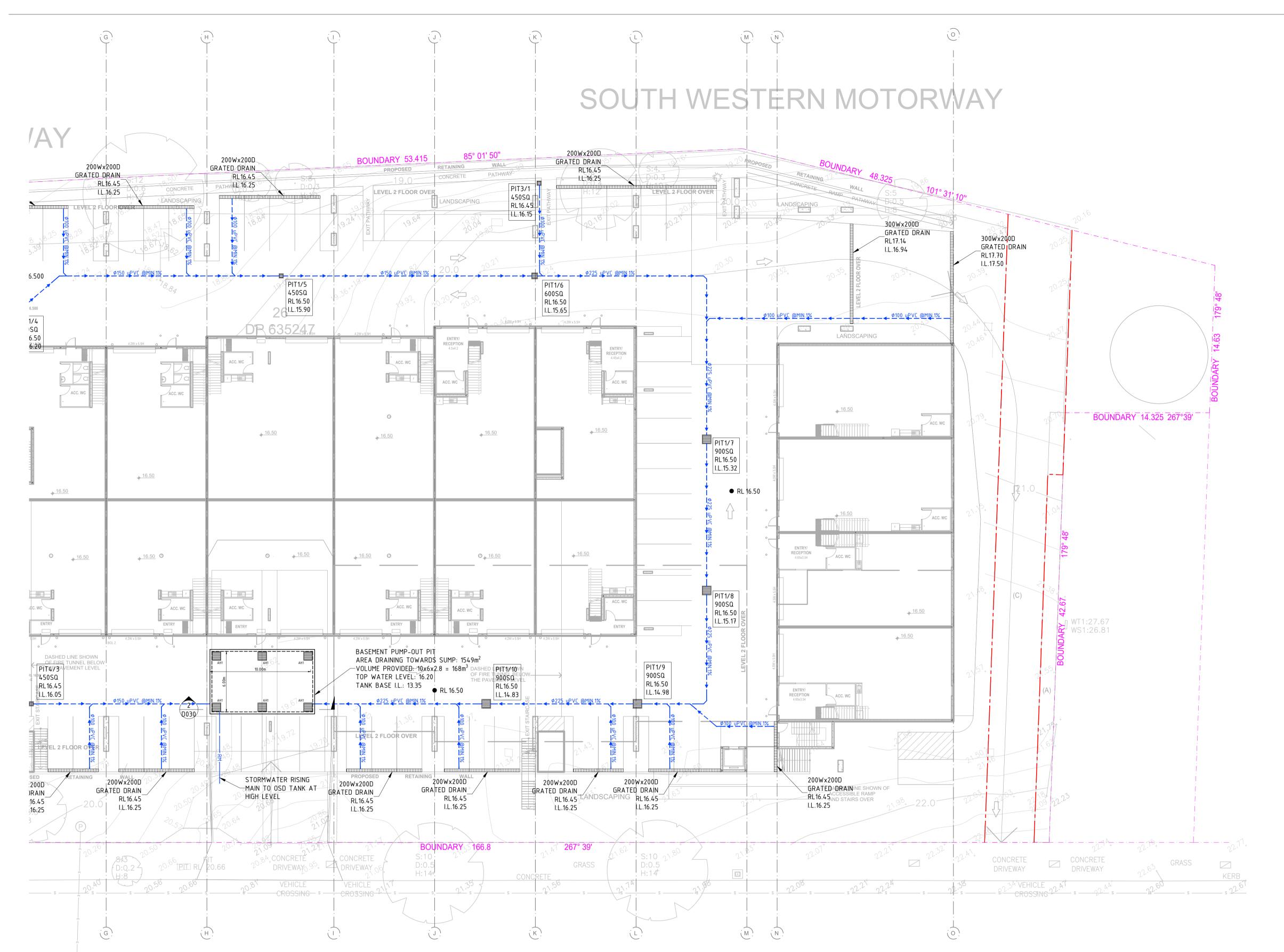
#### BASEMENT STORMWATER MANAGEMENT PLAN - 2



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### **BRYANT STREET**

BASEMENT STORMWATER MANAGEMENT PLAN - 2 1:200

PUMP STORAGE VOLUME CALCULATION 1549m² AREA DRAINING TOWARDS SUMP: 100 Yr 2Hr STORM: 52.4mm/Hr Q = CIA/3600 = 1x52.4x1549/3600: 22.55L/s  $22.55x(2x60x60) = 162360L = 162.4m^3$ VOLUME REQUIRED:  $10x6x2.8 = 168m^3$ STORAGE PROVIDED: PUMP OUT RATE BASED ON 100Yr 5min STORM, I = 242mm/Hr Q = CIA/3600 = 1x242x1549/3600 = 104L/sDUAL PUMP TO BE INSTALLED IN SUMP AND CONNECTED TO CONTROL PANEL WHICH WILL ALLOW FOR THE PUMP TO OPERATE SIMULTANEOUSLY ON HIGH LEVEL AT 104L/s AT 8m HEAD.

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MANAGEMENT PLAN FOR DETAILS EXISTING 1.83m WIDE EASEMENT PIT<u>5/3</u> 450SQ RL21.17 PIT6/1 900SQ RL19.35 900SQ I.L.20.87 SILT ARRESTOR PIT PIT5/1 450SQ RL21.70 PIT5/2 450SQ RL21.65 RL19.11 OSD TANK UNDER DRIVEWAY I.L.17.72 TOP WATER LEVEL: 20.00 I.L.21.15 267° 39' 18.15 AR 18.41 1.53m 110.16m<sup>3</sup> 103m<sup>3</sup> OUTLET I.L.: CONNECT TO EXISTING OUTLET C.L.: EASEMENT PIT TO COUNCIL'S EXISTING EASEMENT PIT CONCRETE DRIVEWAY AVE. DEPTH DETAILS DRIVEWAY 9 VOLUME PROVIDED: DRIVEWAY VOLUME REQUIRED: 3ª VEHICLE 20 AT C ISSUE FOR DA APPROVAL J.S. L.L. 20/03/2024 B ISSUE FOR CO-ORDINATION ONLY J.S. L.L. 29/01/2024 BRYANT STREET A ISSUE FOR CO-ORDINATION ONLY J.S. L.L. 12/10/2023 REV DESCRIPTION ENG. DRAFT DATE Client PROJECT 40 BRYANT STREET SITE STORMWATER GENERAL ARRANGEMENT PLAN PADSTOW SHEET SUBJECT SITE STORMWATER GENERAL ARRANGEMENT PLAN ARCHITECT ALGORRY ZAPPIA & ASSOCIATES PTY. LTD.
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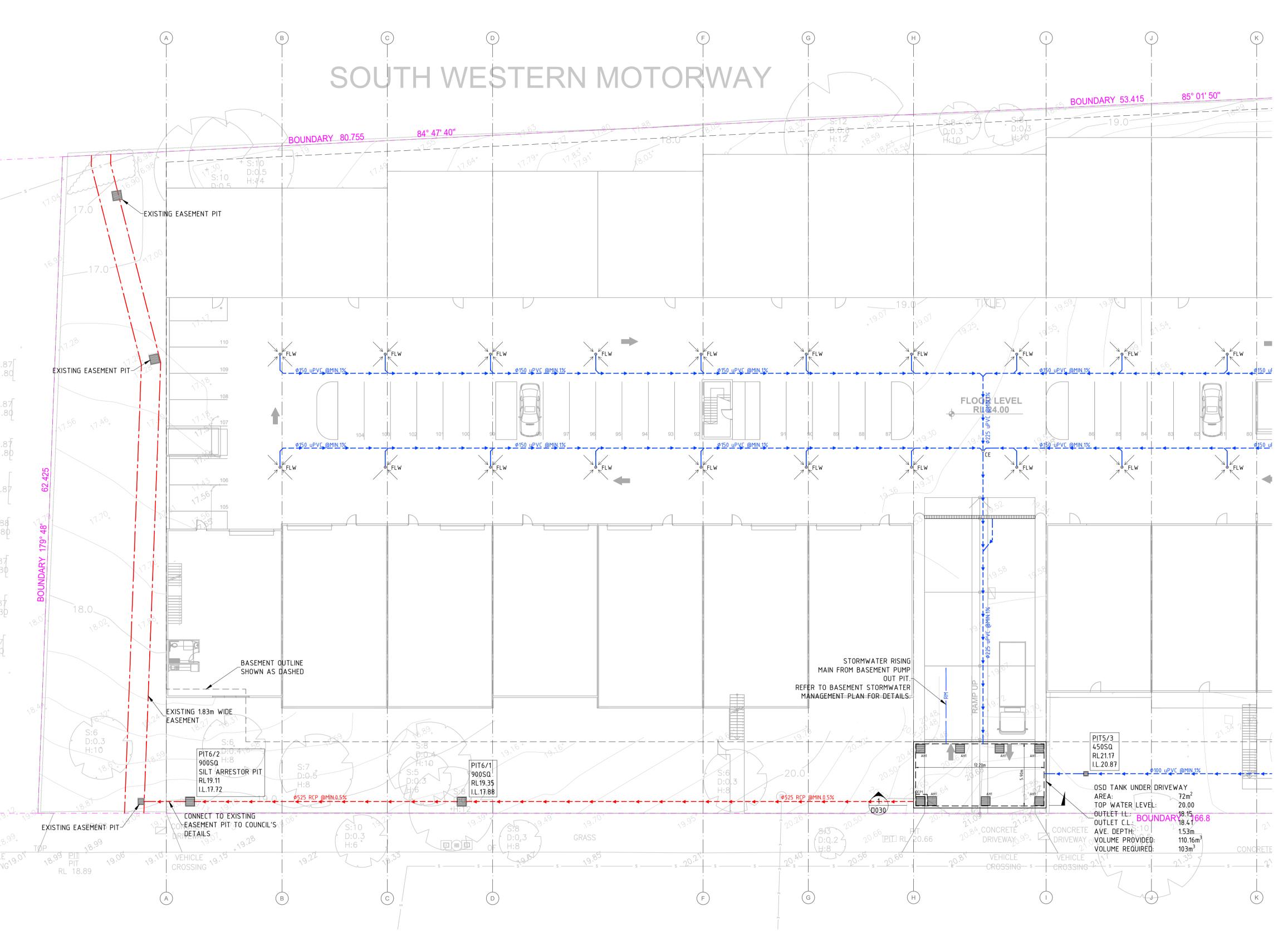
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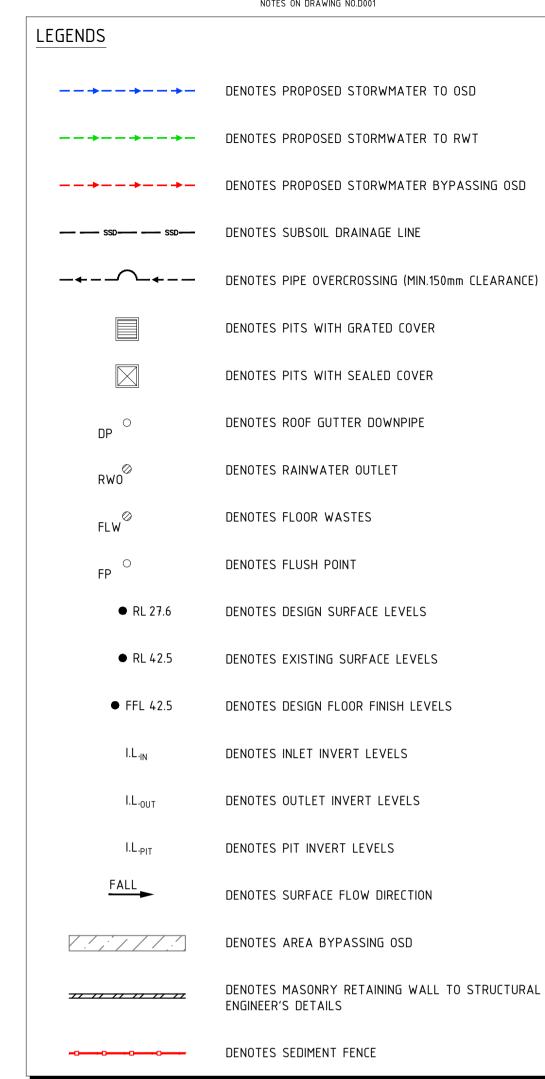
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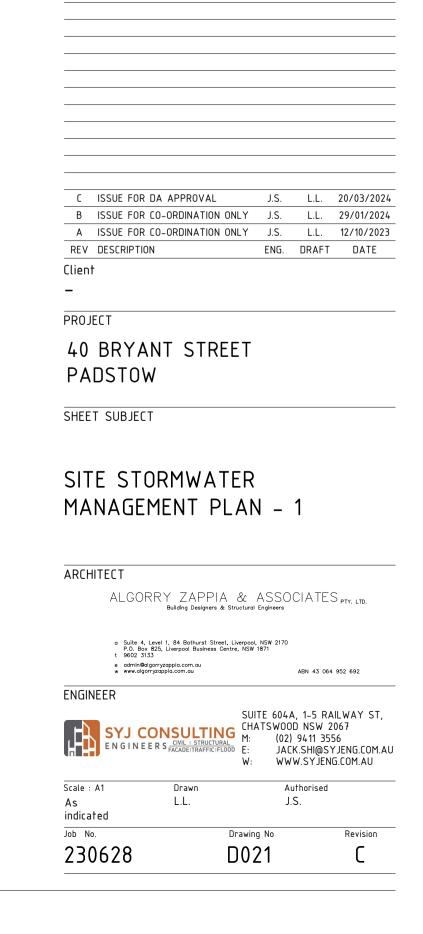


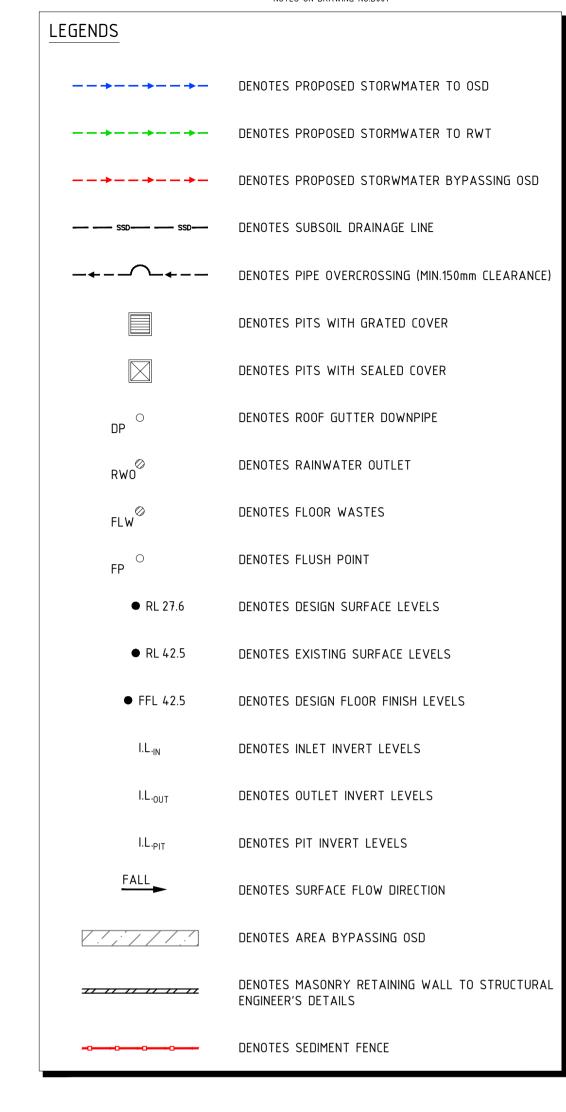
SITE STORMWATER MANAGEMENT PLAN - 1 1:200

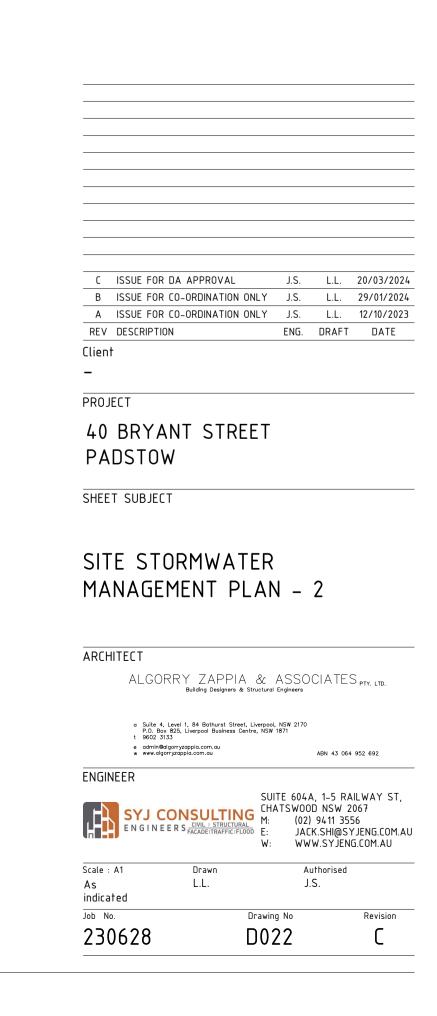
NOTE: REFER TO DRAINS MODEL\_\_40 BRYANT ST, PADSTOW-REV1 FOR DESIGN DETAILS

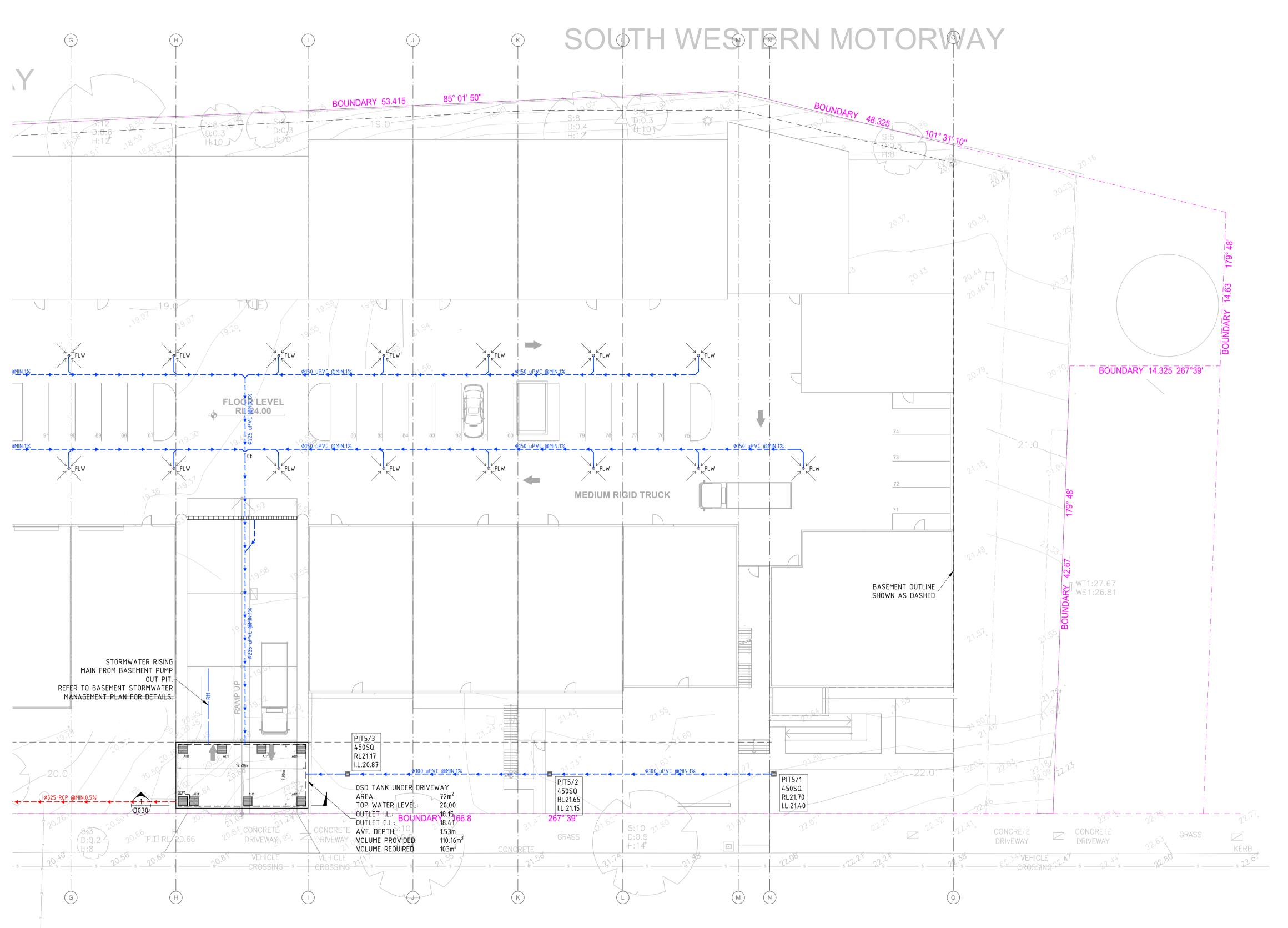
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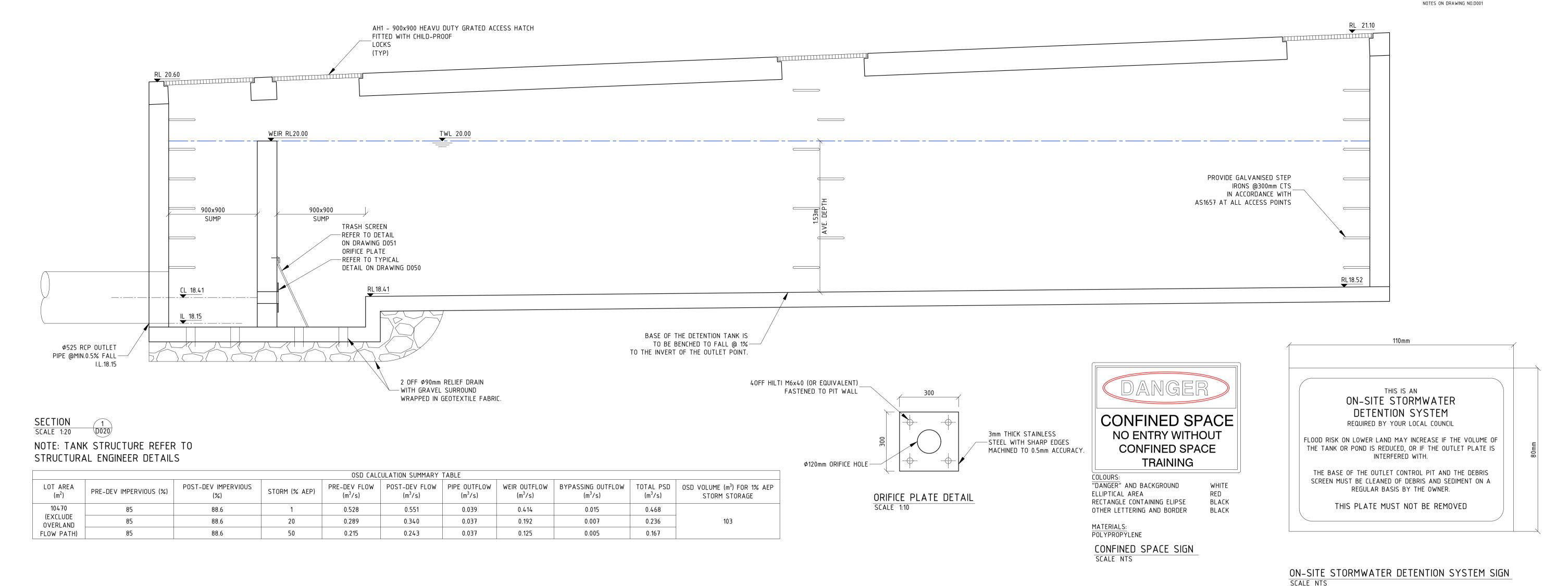


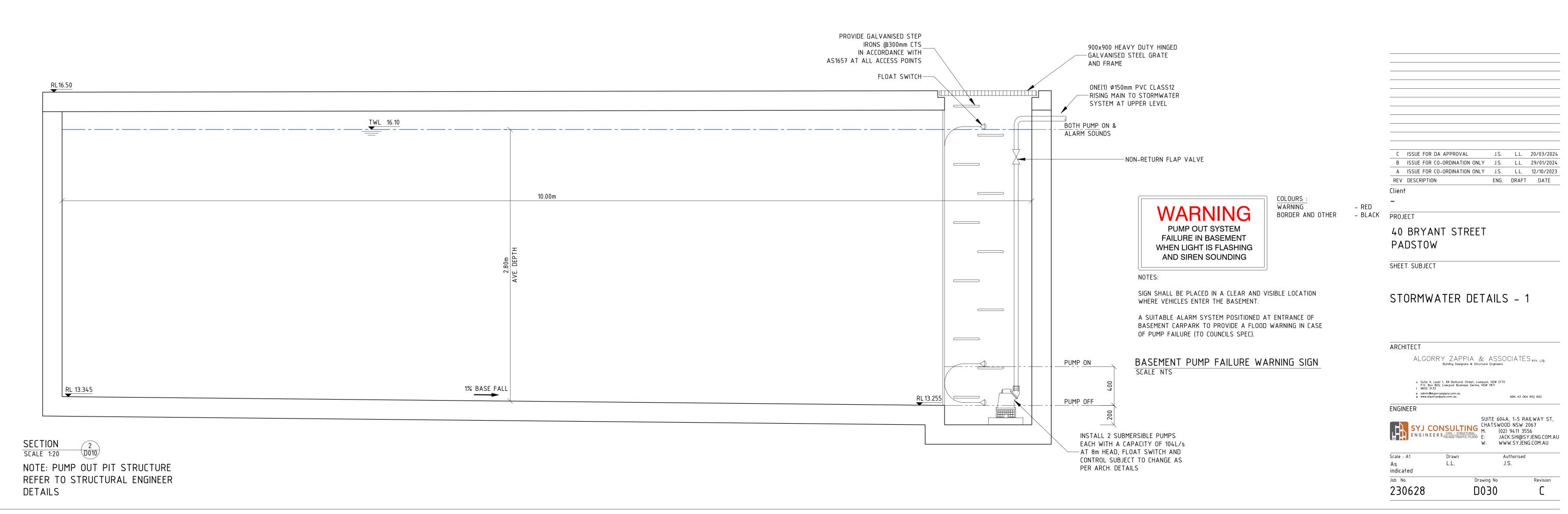


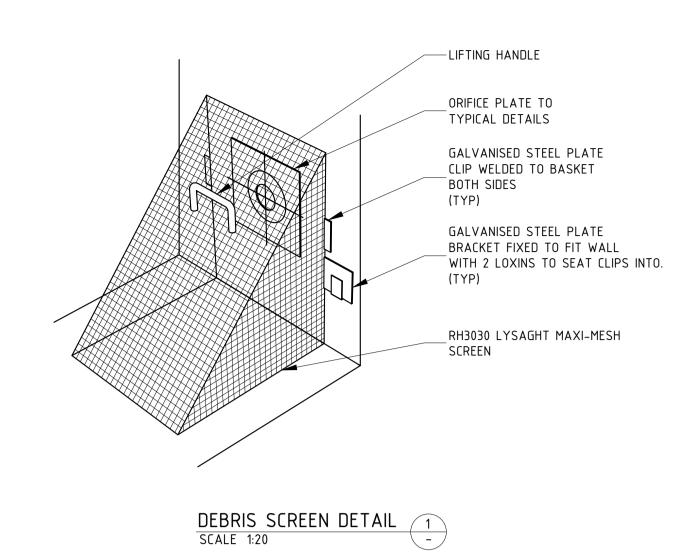
## **BRYANT STREET**

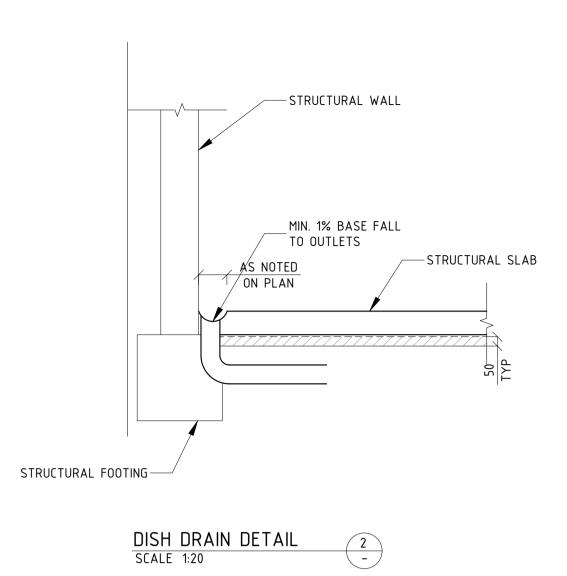
SITE STORMWATER MANAGEMENT PLAN - 2

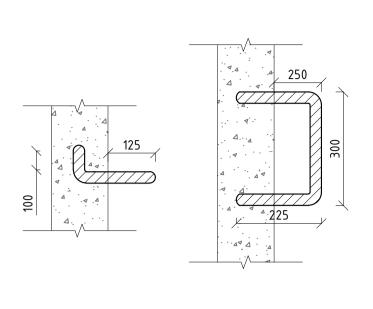
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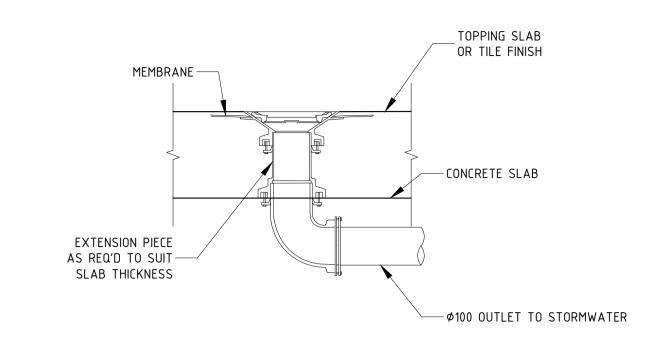






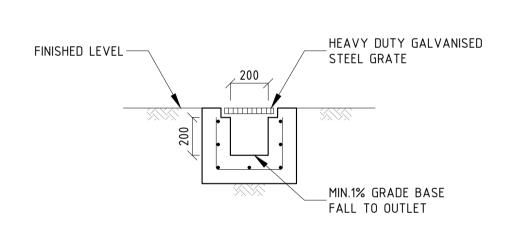


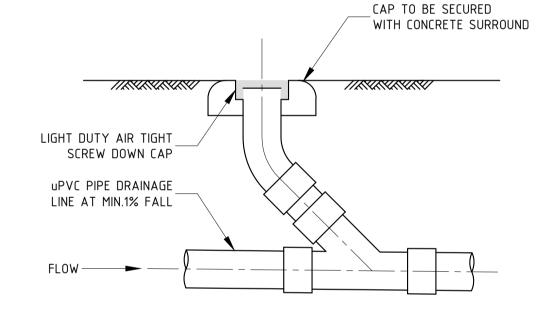


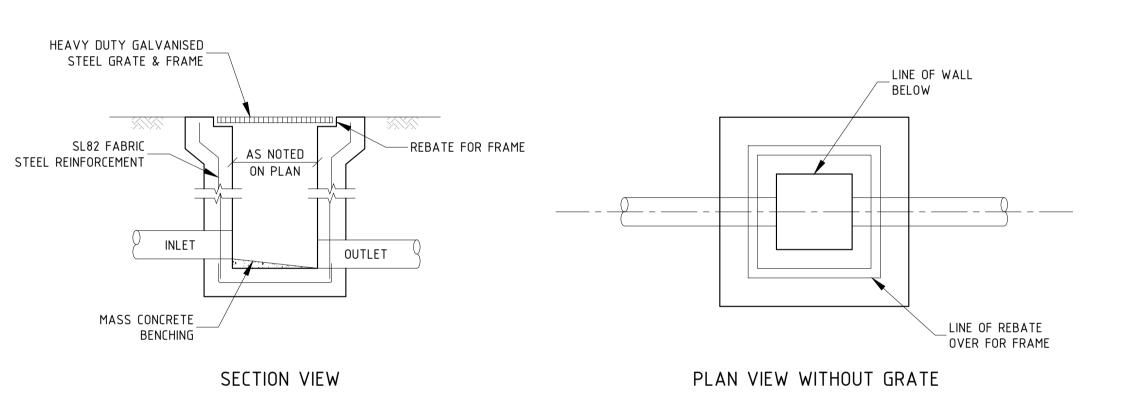


STEP IRONS DETAIL
SCALE 1:10









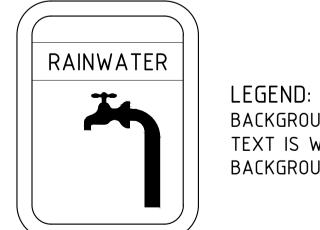
GRATED TRENCH DRAIN 5
SCALE 1:20



TYPICAL PIT DETAIL

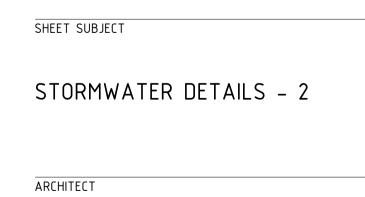
SCALE 1:20

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B ISSUE FOR CO-ORDINATION ONLY J.S. L.L. 29/01/2024 A ISSUE FOR CO-ORDINATION ONLY J.S. L.L. 12/10/2023

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C ISSUE FOR DA APPROVAL

40 BRYANT STREET

REV DESCRIPTION

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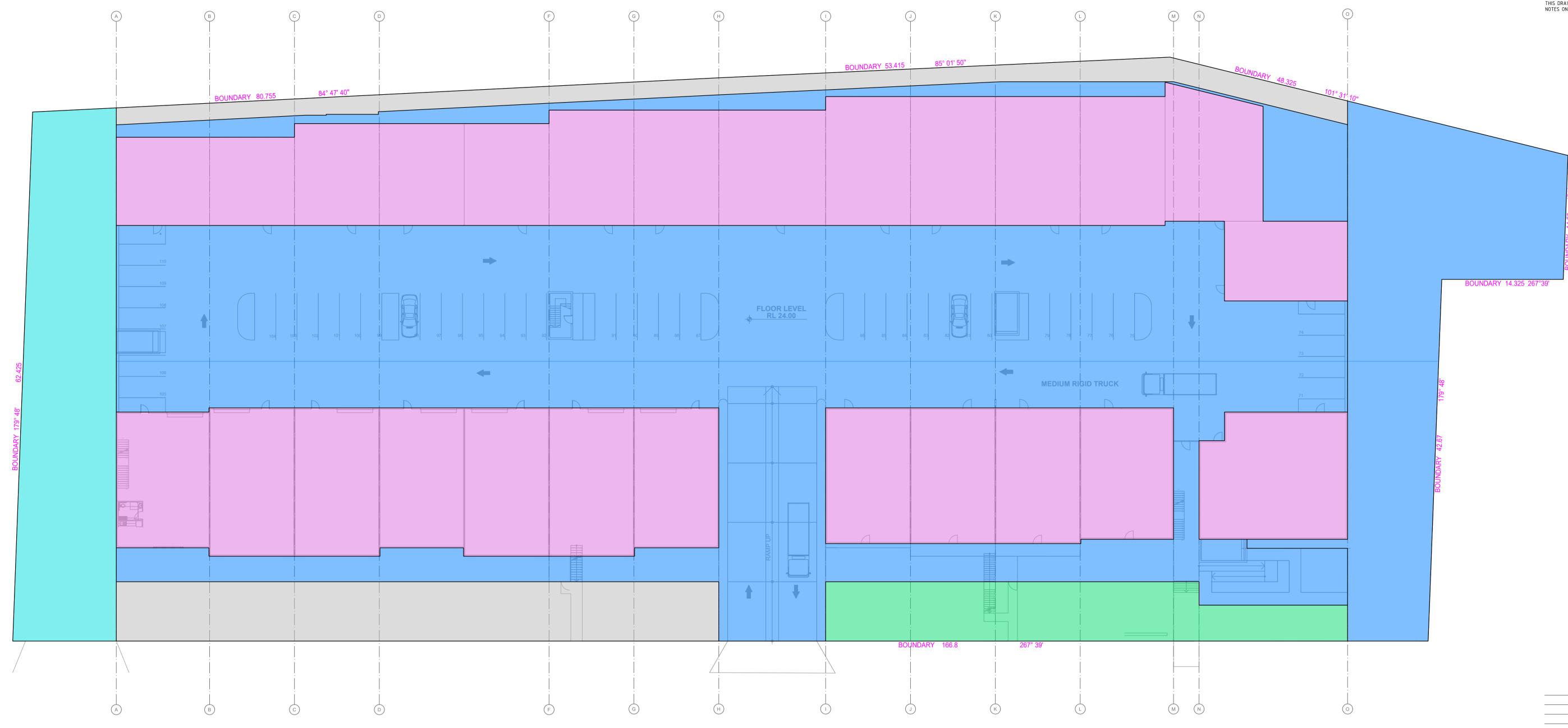
Client

PROJECT

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ENGINEER			
SY	J CONSULTING GINEERS CUVIL 1 STRUCTURAL FACADE TRAFFIC FLOOD	CHATSWOOD M: (02) E: JACI	A, 1–5 RAILWAY ST, D NSW 2067 9411 3556 K.SHI@SYJENG.COM.A W.SYJENG.COM.AU

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Building Designers & Structural Engineers

Scale : A1	Drawn		Authorised	
As indicated	L.L.		J.S.	
Job No.		Drawing No		Revision
230628		D031		C



POST DEVELOPMENT SITE CATCHMENTS PLAN 1:250

POST-DEVELOPMENT SITE CATCHMENTS					
TERRAIN	AREA(m <sup>2</sup> )	PERCENTAGE (%)			
ROOF AREA	4048.2	36.3			
GROUND AREA	5225.8	46.8			
LANDSCAPE AREA	382.1	3.4			
BYPASS AREA	813.8	7.3			
OVERLAND FLOWPATH	690.2	6.2			
TOTAL	11160.2	100.0			

С	ISSUE FOR DA APPROVAL	J.S.	L.L.	20/03/2024
В	ISSUE FOR CO-ORDINATION ONLY	J.S.	L.L.	29/01/2024
Α	ISSUE FOR CO-ORDINATION ONLY	J.S.	L.L.	12/10/2023
REV	DESCRIPTION	ENG.	DRAFT	DATE
 Client	-			

PROJECT

40 BRYANT STREET PADSTOW

SHEET SUBJECT

POST DEVELOPMENT SITE CATCHMENTS PLAN

ARCHITECT

ALGORRY ZAPPIA & ASSOCIATES PTY, LTD.
Building Designers & Structural Engineers

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ENGINEER



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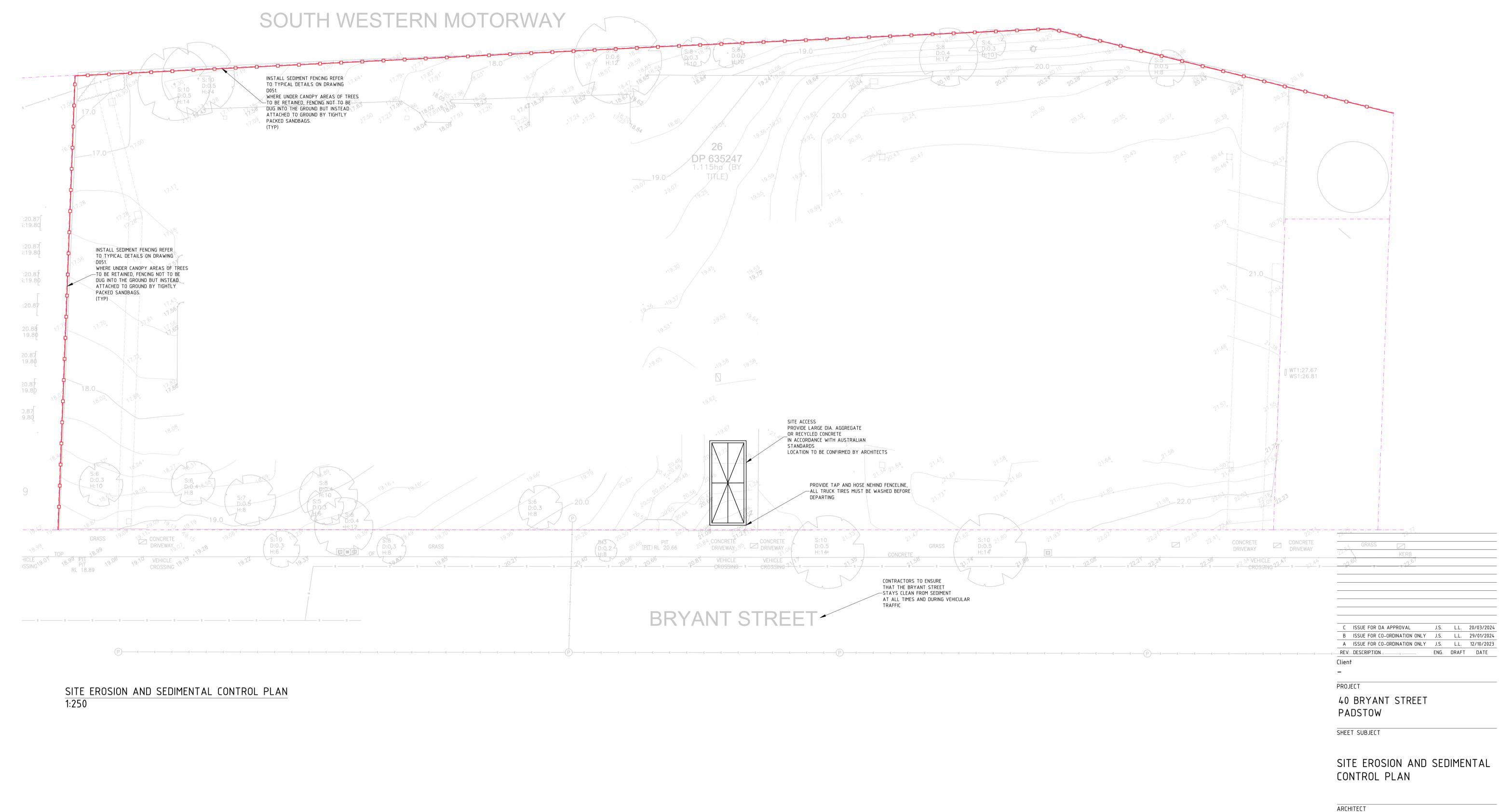
Scale : A1 Drawn Authorised
As L.L. J.S. indicated

Job No. Drawing No Revision

230628 D040 C

ABN 43 064 952 692

### SOUTH WESTERN MOTORWAY



SUITE 604A, 1-5 RAILWAY ST, CHATSWOOD NSW 2067
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As L.L. J.S.

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ENGINEER

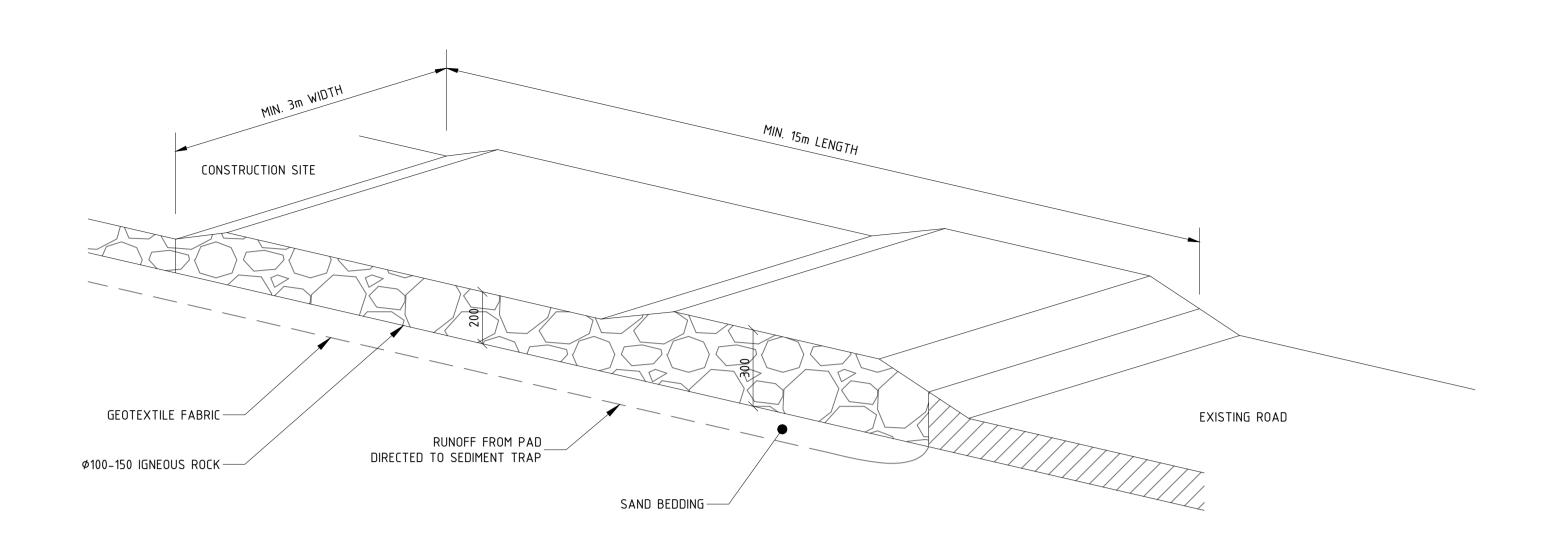
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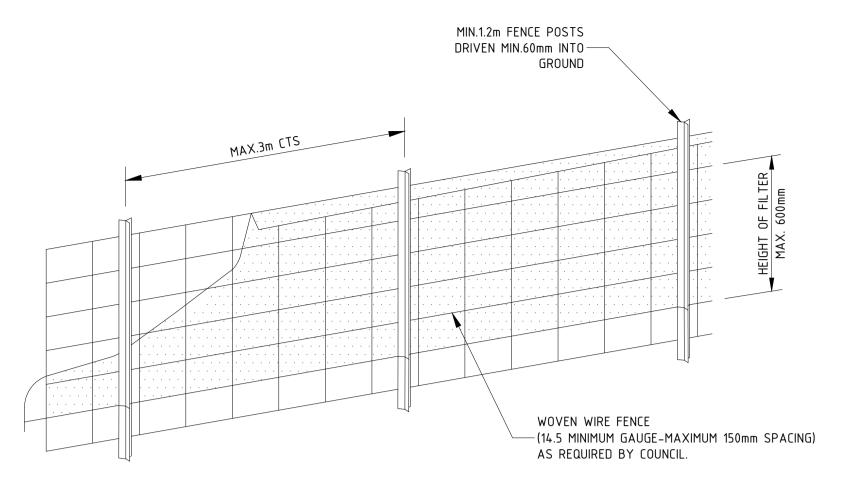
ABN 43 064 952 692

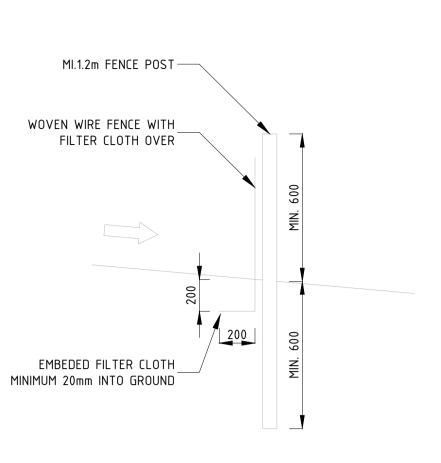
As L.L. J.S. indicated

Job No. Drawing No Revision

230628 D050 C







DIAGRAMMATIC VIEW

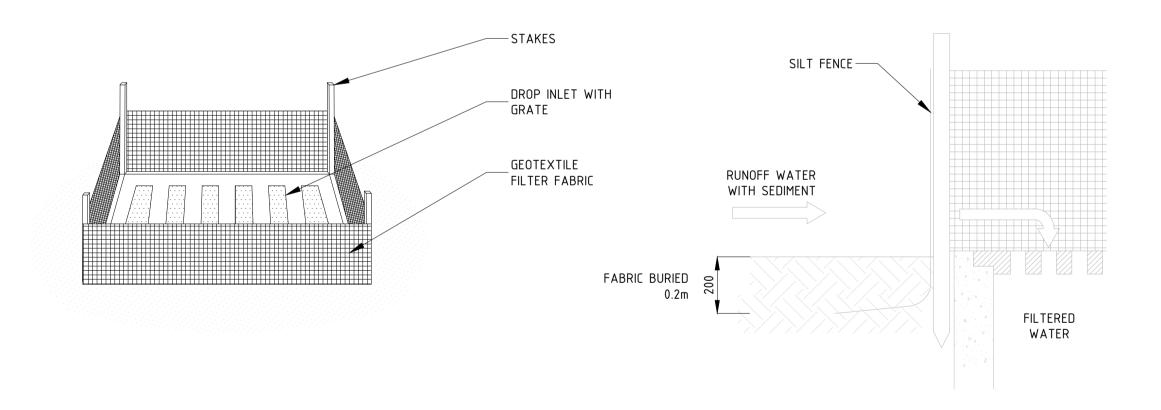
TYPICAL SECTION

TEMPORARY CONSTRUCTION ENTRY/EXIT

SCALE NTS

1
-

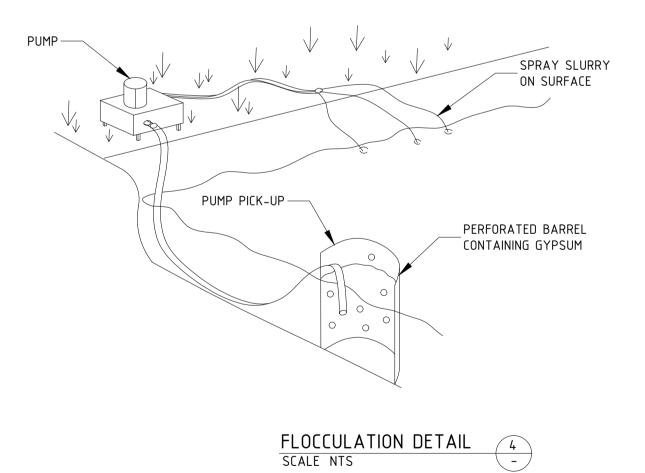
TEMPORARY CONSTRUCTION ENTRY/EXIT 2
SCALE NTS



SUMP SEDIMENT TRAP

SCALE NTS

-



NOTES:

- FLOCCULATION TO BE USED IF WATER IS NOT CLEAR. (i.e. SEDIMENT GREATER THAN 50mg/L) PRIOR TO DISCHARGING FROM TEMPORARY PUMP-OUT.
- FOR RATES & AGENTS REFER TO NEW SOUTH WALES DEPARTMENT OF HOUSING 'MANAGING URBAN STORMWATER SOILS & CONSTRUCTION'.

	ISSUE FOR DA APPROVAL	J.S.	L.L.	20/03/2024		
В	ISSUE FOR CO-ORDINATION ONLY	J.S.	L.L.	29/01/2024		
Α	ISSUE FOR CO-ORDINATION ONLY	J.S.	L.L.	12/10/2023		
REV	DESCRIPTION	ENG.	DRAFT	DATE		
Client						
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PROJECT
40 BRYANT STREET
PADSTOW

SHEET SUBJECT

SITE EROSION AND SEDIMENTAL CONTROL DETAILS

ARCHITECT

ALGORRY ZAPPIA & ASSOCIATES PTY. LTD.

Building Designers & Structural Engineers

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SYJ CONSULTING
ENGINEERS CIVIL I STRUCTURAL
ENGINEERS FACADEITRAFFICIFLOOD

Scale : A1

Drawn

Authorised

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